



WHA STANDS

FOR **WORLD, HUMAN,**
ACCOUNTABILITY



FOR **WORLD, HUMAN,**
ACCOUNTABILITY
UTILITIES &
POWER WITH
ENVIRONMENT CARE



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A man with short dark hair and glasses, wearing a black suit, white shirt, and yellow patterned tie, stands with his arms crossed against a solid blue background. The text 'CEO MESSAGE' is overlaid in large white letters at the bottom.

CEO MESSAGE

CEO MESSAGE

Apart from prolonged COVID-19 pandemic that created big impact on our economic and sociality, the climate change become salient issue, accelerating by COP26. All member nations including Thailand are required to commit the main goal to secure global net zero by 2065 and to keep a maximum of 1.5 C degrees of warming. Our world is currently facing a drastic transition, substantially, the shift in global trends with major emphasis on digital, innovation and energy transformations, as well as natural resources conservation. WHA Utilities and Power Public Company Limited (WHAUP) as a services provider of water procurement, production, and distribution, wastewater treatment, and power generation and distribution to customers; thus, the Company has always been competitively engaging with these global trends. The Company has been contributing to the energy transformation by promoting renewable energy consumption that will positively support a climate action and conserving natural resources through water recycling and its wastewater treatment services. The Company aims to utilize technology to transform its businesses and to become a leading provider of utilities and power in the region.

In accordance with the vision to become “Asia’s Leader in Utilities and Power Businesses” by providing total solutions to partners with good corporate governance in an environmentally and socially friendly manner, the Company has placed great priority on its commitment to align its business’s targets, strategy, actions, operations and management approach with the sustainable development framework and principles. The Company consistently pursues its environmental, social and governance commitments, while maintaining continuous engagement with its stakeholders to ensure that all their expectations and concerns are effectively addressed.

Following the Company’s pursuit and dedication towards sustainability, WHAUP supports WHA Group’s sustainability strategy with the long-term sustainability goals in 2021. The strategy is built upon the nine material issues on governance, social and environmental topics that are mindful about the stakeholders as well as the risks and opportunities arising from global trends. The Company, has included ESG metrics in one of Key Performance Indicators (KPIs) of managements, in order to track and improve WHAUP’s performance along with contribute positively to an environment.

The Company commits to conduct its business ethically, transparently, and responsibly, and harness appropriate digital infrastructures and innovations to encompass ‘good corporate governance’ within the Company. The stakeholders’ interests, expectations and concerns are very important to the Company as it influences the Company’s directions, strategy and influences its decision-making process. As a result, in 2021, the Company has conducted a stakeholder identification and prioritization to ensure that proper engagement approaches and channels are in place for all stakeholders. Concurrently, the Company is continuously improving its risk management system, which is paramount in order to achieve good governance. The risk management is also extended to its suppliers in order to further its commitment for stakeholder engagement.

Remarkably, WHAUP's achievement in solar private PPA business illustrates its environmental responsibility by contributing to the reduction of greenhouse gas emission and promoting the production and consumption of energy from renewable sources for its customers. At the end of 2021, the Company fully succeeded in sign solar power purchase agreement of 92 megawatt. Thanks to the generation and distribution from the solar rooftops, the greenhouse gas emission could be reduced for over 26,378 tons of carbon dioxide equivalent in 2021. By comparing it to the greenhouse gas emission of 13,732 tons of carbon dioxide equivalent from the activities of the Company in the same period, it could be considered that WHAUP achieved the carbon neutrality by 2021. However, the Company still dedicated to minimizing environmental effects and involving in solving the problems from the climate changes in order to achieve the net zero. For 2022, the Company aims to secure new solar rooftop power purchase agreements to reach accumulated 150 MW in total and to gear up to 300 MW within 2023 through its peer-to-peer energy trading program, demonstrating its expertise in providing fully integrated power and utility services for industrial customers.

The Company continuously improves existing assets and seeks new business opportunities. In 2021, the Company invests in solar rooftop project with battery energy storage system, aiming to reduce costs and enhance energy stability of solar power generation. The company recently developed an 820-kWp Solar Rooftop project, with a 550-kWh Battery Energy Storage System (BESS) to supply power to the utility system in the Eastern Seaboard Industrial Estate (Rayong). WHAUP is gearing up investment opportunities in solar energy projects. Additionally, WHAUP continues to expand its solar power business through innovative technologies such as a smart energy trading platform and a Peer-to-Peer energy trading system (P2P), using blockchain technology. WHAUP believes, the latter; P2P would become a game changer of solar energy business. When it is allowed to be commercialized, the Company will be able to utilize WHA Group's logistic and warehouse's rooftop by installing solar panel and supplying electricity to customers within WHA Industrial Estates.

For utilities business, the Company has been progressively and continuously improving its highly successful Wastewater Reclamation projects. WHAUP invested

in the expansion of reclaimed water capacity at WHA Eastern Industrial Estate (Map Ta Phut, Rayong Province), to 9.1 million cubic meters per year, making it Thailand's biggest reclamation water plant. WHAUP's ambition towards environmental and social contributions lead to its many investments on value-added products such as demineralized water, premium clarified water and wastewater reclamation which have illustrated tremendous positive long-term impacts, spanning from greenhouse gas reduction to providing clean water resources for surrounding communities. WHAUP believes that these new innovations on Demineralized Reclaimed Water, an alternative water resource, and technological advancements could create opportunities for sustainable growth, while helping to comply with the new government-related regulations and all in all, pathways for the Company to fulfill its environmental and social commitments.

The Company also implements wastewater treatment projects as part of its corporate social responsibility initiatives with the constructed wetland, an eco-friendly, cost-effective and low maintenance approach to treat water. Moreover, there is a constructed wetland project with the treatment capacity of 400 m3 of wastewater/day developed under the concept of 'Clean Water for Planet' to treat water in natural resources that are utilized by the local communities. This project provides local communities with access to clean water, while the facility is also opened to university students, and offers internship and training programs.

Finally, the Company believes that Environmental, Social, and Governance (ESG) is a crucial part of achieving a sustainable future. The Company believes that would like to thank all stakeholders who have always supported and hopes to make headways towards achieving sustainable growth without leaving no one behinds by adhering to the balanced business principle, contributing with its social and environmental responsibilities to create shared values in the society. Ultimately, WHAUP hopes to become one of helping hands for Thailand's achievement and contribution to the global sustainable development goals.

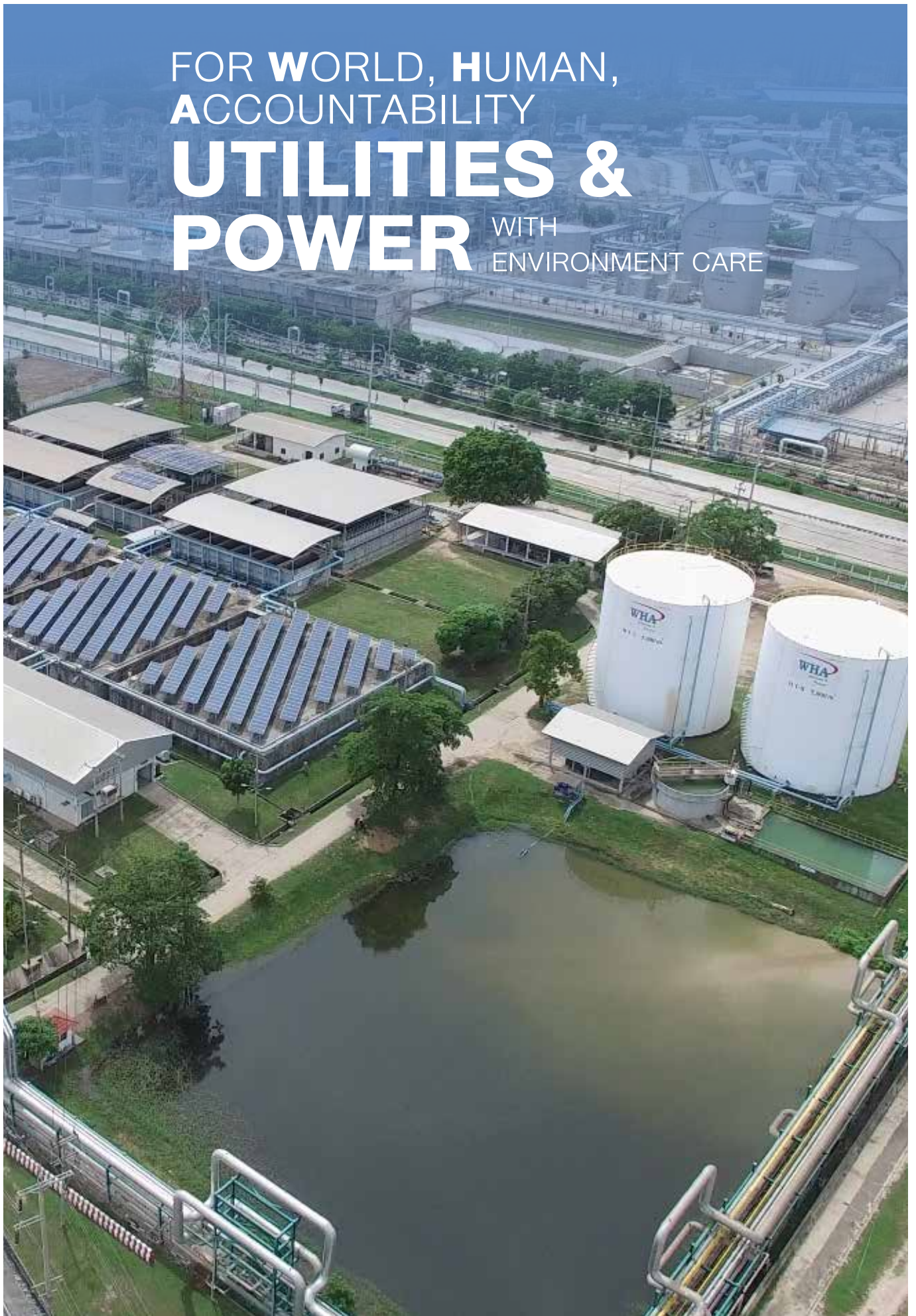


Dr. Nipon Bundechanan
Chief Executive Officer\

FOR **WORLD, HUMAN,**
ACCOUNTABILITY

UTILITIES & POWER

WITH
ENVIRONMENT CARE



AWARDS AND MEMBERSHIPS

AWARDS



At the “SET Awards 2021” ceremony, WHAUP received the Outstanding Innovative Company Awards from the SET Awards 2021 for its innovation on Demineralized Reclaimed Water, an alternative water resource for sustainable development. The Outstanding Innovative Company Awards is a prestigious distinction that reflects WHAUP’s DNA and shows its commitment and determination to initiate quality innovative works that can bring positive changes to society. WHAUP is considered a model organization that helps lift the standards and bring sustainable growth to the country’s economy and society in the long run.



THAILAND SUSTAINABILITY INVESTMENT (THSI) 2021 INDEX

At the “SET Awards 2021” ceremony, WHAUP has been listed in 2021 Thailand Sustainability Investment (THSI) Index or selected as one of the ‘Sustainable Stock’, for 2 consecutive years. This ensures that WHAUP continue being aligned with changing sustainability trends at the international and national levels.

Conducting a business in a sustainable manner is a crucial part of WHAUP's organizational culture. With the constantly strengthening and extensive networks and partnerships, WHAUP is able to expose themselves to new opportunities and achieve new goals. Nonetheless, a key contribution that allows WHAUP to demonstrate its commitments to conducting business with integrity and transparency is its certified membership for Thailand Private Sector Collective Action Coalition against Corruption (CAC) that was given to WHAUP in November 2019. Furthermore, WHAUP, also, owes its success to the associations in which they collaborate with.

MEMBERSHIP OF ORGANIZATION OR ASSOCIATION

1. Thai Photovoltaic Industries Association: TPVA Thailand
2. Water and Environment Institute for Sustainability: WEIS
3. The Federation of Thai Industries
4. Thai Industrial Estate and Strategic Partner Association



ABOUT THIS REPORT

WHA Utilities and Power Public Company Limited (WHAUP) published an annual sustainability report, with the first published report in 2019. The aim of the sustainability report is to disclose and communicate the Company's management approach to all of its stakeholders, covering its sustainable practices and performances in terms of governance, social and environment. This report is WHAUP's third sustainability report which covers the reporting period from 1st January to 31st December 2021.

WHAUP's sustainability report has been prepared in accordance with Global Reporting Initiatives (GRI) Standards: Core option. WHAUP has, also, adopted United Nations Sustainable Development Goals (UN SDGs) as a framework for the Company's progression and performance reporting. The boundary of this report discloses information for all WHAUP's operations and its subsidiaries in Thailand, and that the Company holds greater than 50 percent of the total share and has management control. In 2021, WHAUP improved

the comprehensiveness of its materiality assessment in which 20 material topics were identified, similar and some renamed compared against those disclosed in the previous report. Market opportunity is the new material topic covered in this report.

This report did not receive external party verification, but the contents and data were reviewed and approved by top executives from relevant functions to ensure its accuracy and completeness.

For more information, please contact:

WHA Utilities and Power Corporate Secretary
WHA Utilities and Power Public Company Limited (WHAUP)

777 WHA TOWER, 22nd Floor, Unit 2203-2205,
Moo 13, Debaratna Road (Bangna-Trad) KM.7,
Bang Kaeo, Bang Phli District,
Samut Prakan 10540, Thailand
Tel: (662) 719-9559

E-mail: ESG@wha-up.com



GETTING TO KNOW WHAUP

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

- 1 To develop world class utilities and power solutions fitting customers' needs.
- 2 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).

- 3 To continuously develop human resources competencies to build talent and experience to enhance organizational core competency including encouraging workplace environment for employee wellbeing.
- 4 To nurture an innovative culture in the organization.
- 5 To add value to communities and the environment with good corporate governance and sustainable development strategies.

GOALS

The Company aims to be a leader in integrated utilities and power businesses and to operate in compliance with the principles of good corporate governance with responsibility for the community, society and the environment. It also plans to expand its customer base in the segments of utilities and power services, both domestically and in the South East Asia countries particularly Cambodia, Laos, Myanmar and Vietnam (the CLMV countries) and expand to related businesses in order to widen its range of products and services.

STRATEGY

1. Continuously improving its utilities business and power business to ensure the constant and predictable generation of income, maximise profit and add value to shareholders.
2. Applying its expertise in management in respect of infrastructure, environment and good relationship with customers with the aim of expanding its business opportunities
3. Efficiently using its human resources and financial assets to create the prospects of business investment
4. Incessantly carrying out educational, community and environmental campaigns for the benefit of the community, society and all other stakeholders to maintain good relationship with locals.

VALUES & CULTURE

ADVANCED

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 was established on June 30, 2008. It is a subsidiary company of WHA Corporations Public Company Limited (WHA Group) that develops world-class utilities and power solutions for both industrial and non-industrial customers and partners. The Company's core business relates to the: (i) utilities business, i.e. procurement and distribution of raw water, production and distribution of industrial water and providing wastewater treatment services to manufacturers and operators in industrial estates and industrial lands; and (ii) power business through its own operation and through investments in power generation businesses, both domestically and abroad, and engaging through strategic partnerships with reputable Thai and international operators. To pursue WHAUP's business ambition in becoming "Your Ultimate Solution Partner in Utilities & Power with Environmental Care", the Company continuously improves and expands both its utilities and power businesses, to ensure that it excels in the competitive market and with environmental care. The Company strictly abides by the regional regulations prescribed under the Ministry of Industry, Ministry of Labor, Industrial Estate Authority of Thailand (IEAT), Stock Exchange of Thailand, Ministry of Natural Resources and Environment as well as internal standards such as the UN SDGs. In 2017, WHAUP was listed on the Stock Exchange of Thailand (SET).

WHAUP UTILITIES

WHAUP serves manufacturers and operators, both within and operating outside, WHA Group's industrial estates and industrial lands across Thailand and Vietnam. The products and services offered are raw water, industrial water (process water, clarified water, premium clarified water and demineralized water) production and distribution and wastewater treatment services. The Company's aggregated maximum industrial water production capacity in all industrial estates and industrial lands is 366,776 m³ per day, and maximum wastewater treatment capacity of 132,456 m³ per day.

RAW WATER

Raw water procured and distributed to industrial operators in WHA Group's industrial areas. The company's core customers are operators in steel industry, IPPs and SPPs.

INDUSTRIAL WATER

Industrial water produced and distributed by WHAUP can be divided under 4 categories.

- 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 those in the automotive industry (e.g. automotive assembly plants and auto part manufacturing plants), food industry and electronics industry.
- 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.
- Premium clarified water is the clarified water produced using the membrane technology (Reverse Osmosis) and has higher quality compared to the clarified water.
- Demineralized water is the highly purified water that most of essential minerals are removed. It is used in some industry such as Power plant, Petrochemical, Electronics etc.





WASTEWATER TREATMENT

- WHAUP provides central wastewater treatment ponds management services of industrial estates. Industrial plant releases wastewater together to ensure that the wastewater is treated in accordance with applicable standards imposed by the Ministry of Industry before being discharged into natural sources of water or being recycled into the production process.

RAW WATER RESOURCES DEVELOPMENT

- From the external factor of drought situation and water resource reliability, the Company started to extend its business to cover self-supply of the water resource. In 2021, the Company has started project related to the water reservoir and be able to claim more security in water resources issue to the operation and customer, especially in EEC area.





WHAUP POWER

CONVENTIONAL POWER

WHAUP has partnered with leading Independent Power Producers (IPP) in three commercially operational power plants both in Thailand and internationally. The IPP plants, including Gheco-One, Glow IPP and Houay Ho Power, generate a total power capacity of 1,525 MW, equivalent to 286 MW according to shareholding equity. The following table portrays the summary of IPP business power plants.

Power Plant	Location	Type of Energy	Category of Plant	Equity Holding (%)	Contracted Generating Capacity	Generating Capacity in proportion to WHAUP's equity	Commercial Operation Date
Joint Venture with the GPSC Group							
Gheco-One	Map Ta Phut Industrial Estate	Coal-Fired Boiler Power Plant	IPP	35.00%	660 MW	231 MW	August 2012
Glow IPP	WHA CIE 1	Gas-Fired Power Plant	IPP	5.00%	713 MW	36 MW	January 2003
Houay Ho Power	Laos	Hydro Power Plant	IPP	12.75%	152 MW	19 MW	September 1999
Total					1,525 MW	286 MW	-

In addition, WHAUP has its own operating power plants in solar rooftop projects and has partnered with Gulf Group, B.Grimm Power Group, Gulf MP Company Limited for eight Small Power Producers (SPP). For eight Very Small Power Producers (VSPP), WHAUP has partnered with Gunkul Group, Gulf Group and GPSC Group together with SUEZ. The total power capacity generated by existing and developing projects represent a total capacity of 2,630.4 MW, equivalent to 601.4 MW equity. Further descriptions of the commercially operating power plants in which WHAUP has invested in are described in the Company's [Annual Report 2021](#).

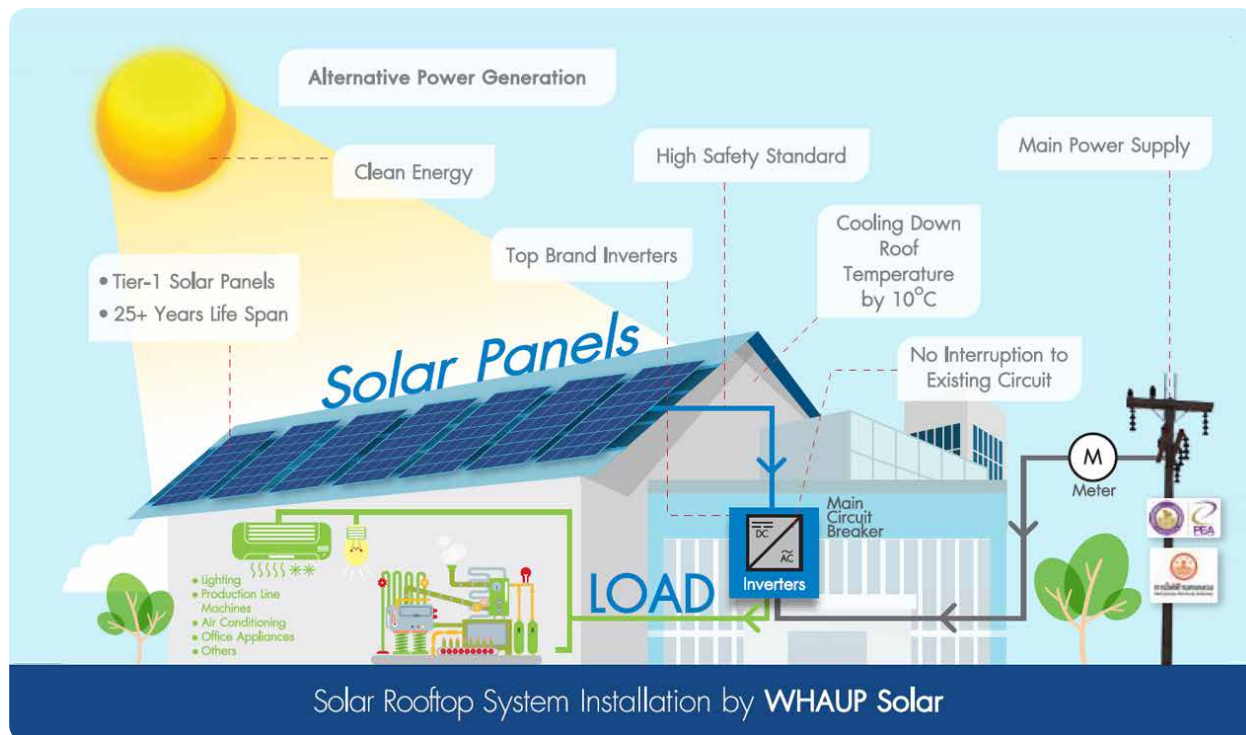
Power Plant	Location	Type of Energy	Category of Plant	Equity Holding (%)	Contracted Generating Capacity	Generating Capacity in proportion to WHAUP's equity	Commercial Operation Date
Commercially operating power plants that WHAUP has investment							
Joint Venture with the Gulf Group							
Gulf JP NLL	WHA RIL	Gas-fired cogeneration	SPP	25.01%	Power 123 MW Steam 8 TPH Chilled Water 4,600 RT	31 MW 2 TPH 1,150 RT	May 2013
Gulf Solar KKS	WHA LP1	Solar power	VSPP	25.01%	Power 0.25 MW	0.06 MW	December 2014
Gulf Solar BV	WHA CIE	Solar power	VSPP	25.01%	Power 0.13 MW	0.03 MW	June 2014
Gulf Solar TS1	WHA ESIE 1	Solar power	VSPP	25.01%	Power 0.13 MW	0.03 MW	August 2014
Gulf Solar TS2	ESIE	Solar power	VSPP	25.01%	Power 0.09 MW	0.02 MW	January 2015
Joint Venture with Gunkul Group							
WHA Gunkul Green Solar Roof 1	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%	Power 0.64 MW	0.48 MW	April 2014
WHA Gunkul Green Solar Roof 3	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%	Power 0.83 MW	0.62 MW	April 2014
WHA Gunkul Green Solar Roof 6	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%	Power 0.83 MW	0.62 MW	April 2014
WHA Gunkul Green Solar Roof 17	WHA Mega Logistics Centre, Bangna-Trad KM.18	Solar power	VSPP	74.99%	Power 1.00 MW	0.73 MW	July 2014
Joint Venture with B.Grimm Power Group							
BPWHA-1	WHA CIE 1	Gas-fired cogeneration	SPP	25.01%	Power 130 MW Steam 30 TPH	33 MW 8 TPH	November 2016

Power Plant	Location	Type of Energy	Category of Plant	Equity Holding (%)	Contracted Generating Capacity	Generating Capacity in proportion to WHAUP's equity	Commercial Operation Date
Joint Venture with Gulf MP Company Limited							
Gulf VTP	ESIE	Gas-fired cogeneration	SPP	25.01%	Power 137 MW Steam 20 TPH	34 MW 5 TPH	May 2017
Gulf TS1	ESIE	Gas-fired cogeneration	SPP	25.01%	Power 134 MW Steam 30 TPH	34 MW 8 TPH	June 2017
Gulf TS2	ESIE	Gas-fired cogeneration	SPP	25.01%	Power 134 MW Steam 30 TPH	34 MW 8 TPH	September 2017
Gulf TS3	WHA ESIE 1	Gas-fired cogeneration	SPP	25.01%	Power 130 MW Steam 25 TPH	32 MW 6 TPH	November 2017
Gulf TS4	WHA ESIE 1	Gas-fired cogeneration	SPP	25.01%	Power 130 MW Steam 25 TPH	32 MW 6 TPH	January 2018
Gulf NLL2	WHA RIL	Gas-fired cogeneration	SPP	25.01%	Power 127 MW Steam 10 TPH	32 MW 3 TPH	January 2019
Joint Venture with GLOW and SUEZ							
CCE	WHA CIE	Waste-to-Energy	VSPP	33.33%	Power 8.6 MW	2.9 MW	November 2019
Commercially operating power plants by WHAUP group							
Solar power plants	-	Solar Power	Private PPA	100%	Power 55 MW	55 MW	May 2018 - December 2021
Total (Consisted of : Commercially operating power plants in term of JV* and WHAUP group)					Power 1,112 MW	321 MW	
					Steam 148 TPH	38 TPH	
					Chilled Water 4,600 RT	1,150 RT	
Power plant(s) under construction by WHAUP group							
Solar power plants	-	Solar Power	Private PPA	100%	Power 35 MW	35 MW	Q1'2022 – Q4'2022
Total					Power 35 MW	35 MW	-

Note* : Exclude Joint Venture with the GPSC Group (IPP Business)

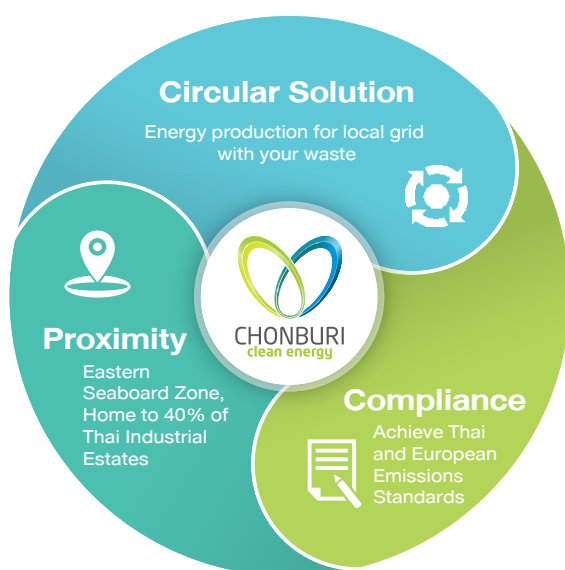
SOLAR ROOFTOP ENERGY

WHAUP has installed and operated solar power systems not only on rooftops of WHA Group's warehouses and factories but also on rooftops of others; the Company has been gearing forward on this environmentally friendly platform to all industrial customers. With the Company's extensive experience, WHAUP offers an 820 kWp Solar Rooftop with a 550 kWh Battery Energy Storage System (BESS) to supply electricity to utilities in the Eastern Seaboard Industrial Estate (Rayong) helping to reduce carbon dioxide levels in the atmosphere. This project started commercial operation date (COD) in November 2021 and has contributed to energy cost savings of roughly 4 million Baht per year and CO2 offset emissions reductions of 10,500 tons.



WASTE TO ENERGY

WHAUP, along with Global Power Synergy Public Company Limited and Suez Services (Thailand) Company Limited, invested in approximately 1.8 billion Baht on an industrial waste-to-energy project known as Chonburi Clean Energy (CCE). CCE is located within WHA Chonburi Industrial Estate 1 (WHA CIE 1) in Chonburi province, Thailand. WHAUP's equity holding accounts for 33.33%. CCE commenced its operation in November 2019. The power plant has an installed power generating capacity of 8.6 MW.



NATURAL GAS DISTRIBUTION PROJECTS

WHA Natural Gas Distribution Projects (WHA NDGPs) is a collaboration among leading energy companies - WHAUP, Gulf Energy Development Public Company Limited, and MITG (Thailand) Co., Ltd., under the joint venture company named GULF WHA MT Natural Gas Distribution Co., Ltd. (Gulf WHA MT). WHAUP's equity holding accounts for 35%.

Natural gas is clean energy with reasonable price and it is the primary energy for industrial use now and in the future, replacing fuel oil and diesel. In addition, the natural gas distribution service can help reduce the road transport risk, reduce traffic in the area, and is very safe to transport. Moreover, it also enhances the stability of customer's energy consumption since WHAUP's natural gas pipeline system is connected with PTT's main natural gas pipeline system.

- Commercially operated since December 2018, WHANGD2 is the first natural gas distribution project set up in the industrial estate. With distribution capability of 2,000,000 MMBTU per year, WHANGD2 project is designed to serve the natural gas demand of manufactures in WHA Eastern Seaboard Industrial Estate 2 (WHA ESIE 2), Sriracha, Chonburi province, in the Eastern Economic Corridor (EEC).



- Gulf WHA MT also launched the natural gas distribution services in WHA Eastern Seaboard Industrial Estate 4 (WHANGD 4), Pluank Daeng District, Rayong province. This new project, which has its capacity to distribute natural gas up to 2,000,000 MMBTU per year, will continuously serve energy demand of industries in WHA Group's industrial estates in the Eastern Economic Corridor (EEC).



WHAUP STRATEGIC LOCATIONS

WHAUP's headquarters is located at the 22 floor of WHA Tower in Bang Na area, the gateway to Eastern Economic Corridor (EEC), Samut Prakarn city, Thailand. WHA Tower is equipped with advanced security and surveillance features, building diagnostics and building management.

WHAUP UTILITES

WHAUP and its subsidiaries have 17 industrial water production plants and 12 wastewater treatment facilities located in 12 industrial estates and lands. Out of all 11 industrial estates and lands operated by WHAID, 10 places are located in Thailand whereas one is located in Vietnam. Additionally, WHAUP has two commercially operating natural gas distribution projects each located in one of WHA Group's industrial estate. The summary of the locations of WHAUP's water and wastewater productions are as shown below.

Industrial Estates and Industrial Lands	Location
WHA Eastern Industrial Estate (Map Ta Phut) (WHA EIE)	Map Ta Phut, Rayong province, Thailand
Eastern Seaboard Industrial Estate (Rayong) (ESIE)	Pluakdaeng, Rayong province, Thailand
WHA Eastern Seaboard Industrial Estate 1 (WHA ESIE 1)	Pluakdaeng, Rayong province, Thailand
WHA Chonburi Industrial Estate 1 (WHA CIE 1)	Sriracha, Chonburi province, Thailand
WHA Chonburi Industrial Estate 2 (WHA CIE 2)	Sriracha, Chonburi province, Thailand
WHA Saraburi Industrial Land (WHA SIL)	Nongkae, Saraburi province, Thailand
WHA Rayong Industrial Land (WHA RIL)	Bankhai, Rayong province, Thailand

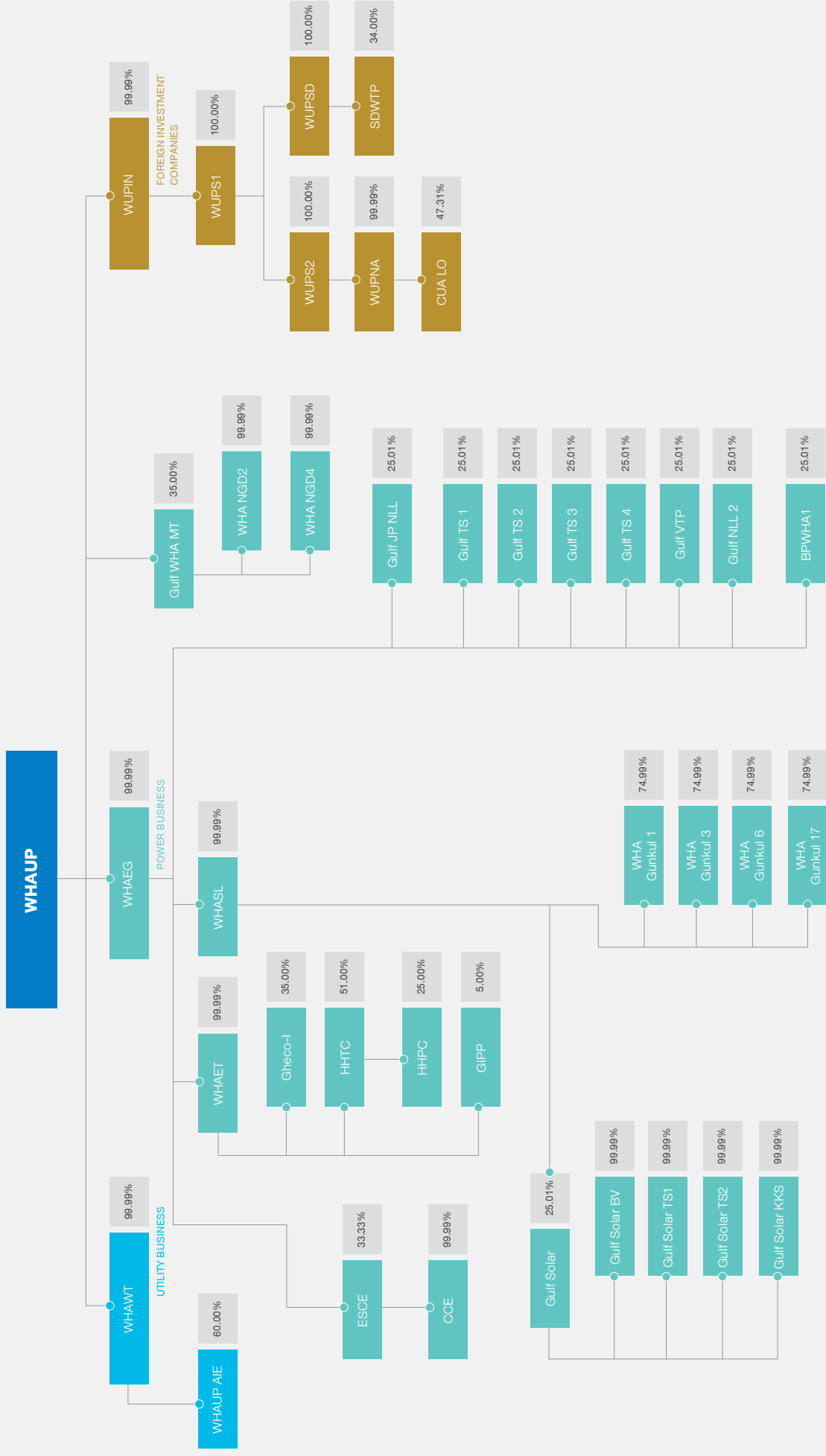
Industrial Estates and Industrial Lands	Location
WHA Eastern Seaboard Industrial Estate 2 (WHA ESIE 2)	Pluakdaeng, Rayong province, Thailand
WHA Eastern Seaboard Industrial Estate 4 (WHA ESIE 4)	Pluakdaeng, Rayong province, Thailand
WHA Eastern Seaboard Industrial Estate 3 (WHA ESIE 3)	Banbung/NongYai, Rayong province, Thailand
WHA Industrial Zone 1 Nghe An	Nghe An, Vietnam
Eastern Economic Corridor of Innovation : EECi	Wangchan, Rayong province, Thailand

WHAUP POWER

Power Plant	Industrial Estates and Industrial Lands	Location
1) Commercially operating power plants that WHAUP has investment		
Joint Venture with the Gulf Group		
Gulf JP NLL	WHA RIL	Rayong province, Thailand
Gulf Solar KKS	WHA LP1	Chonburi province, Thailand
Gulf Solar BV	WHA CIE 1	Sriracha, Chonburi province, Thailand
Gulf Solar TS1	WHA ESIE 1	Pluakdaeng, Rayong province, Thailand
Gulf Solar TS2	ESIE	Pluakdaeng, Rayong province, Thailand
Joint Venture with Gunkul Group		
WHA Gunkul Green Solar Roof 1	WHA Mega Logistics Centre	Bangna-Trad KM.18, Bangkok, Thailand
WHA Gunkul Green Solar Roof 3	WHA Mega Logistics Centre	Bangna-Trad KM.18, Bangkok, Thailand
WHA Gunkul Green Solar Roof 6	WHA Mega Logistics Centre	Bangna-Trad KM.18, Bangkok, Thailand
WHA Gunkul Green Solar Roof 17	WHA Mega Logistics Centre	Bangna-Trad KM.18, Bangkok, Thailand
Joint Venture with B.Grimm Power Group		
BPWHA-1	WHA CIE 1	Sriracha, Chonburi province, Thailand
Joint Venture with Gulf MP Company Limited		
Gulf VTP	ESIE	Pluakdaeng, Rayong province, Thailand
Gulf TS1	ESIE	Pluakdaeng, Rayong province, Thailand
Gulf TS2	ESIE	Pluakdaeng, Rayong province, Thailand
Gulf TS3	WHA ESIE 1	Pluakdaeng, Rayong province, Thailand
Gulf TS4	WHA ESIE 1	Pluakdaeng, Rayong province, Thailand
Gulf NLL2	WHA RIL	Bankhai, Rayong province, Thailand
Joint Venture with GPSC Group and SUEZ		
CCE	WHA CIE 1	Sriracha, Chonburi province, Thailand
2) Commercially operating power plants by WHAUP group		
Solar power plants	*	-

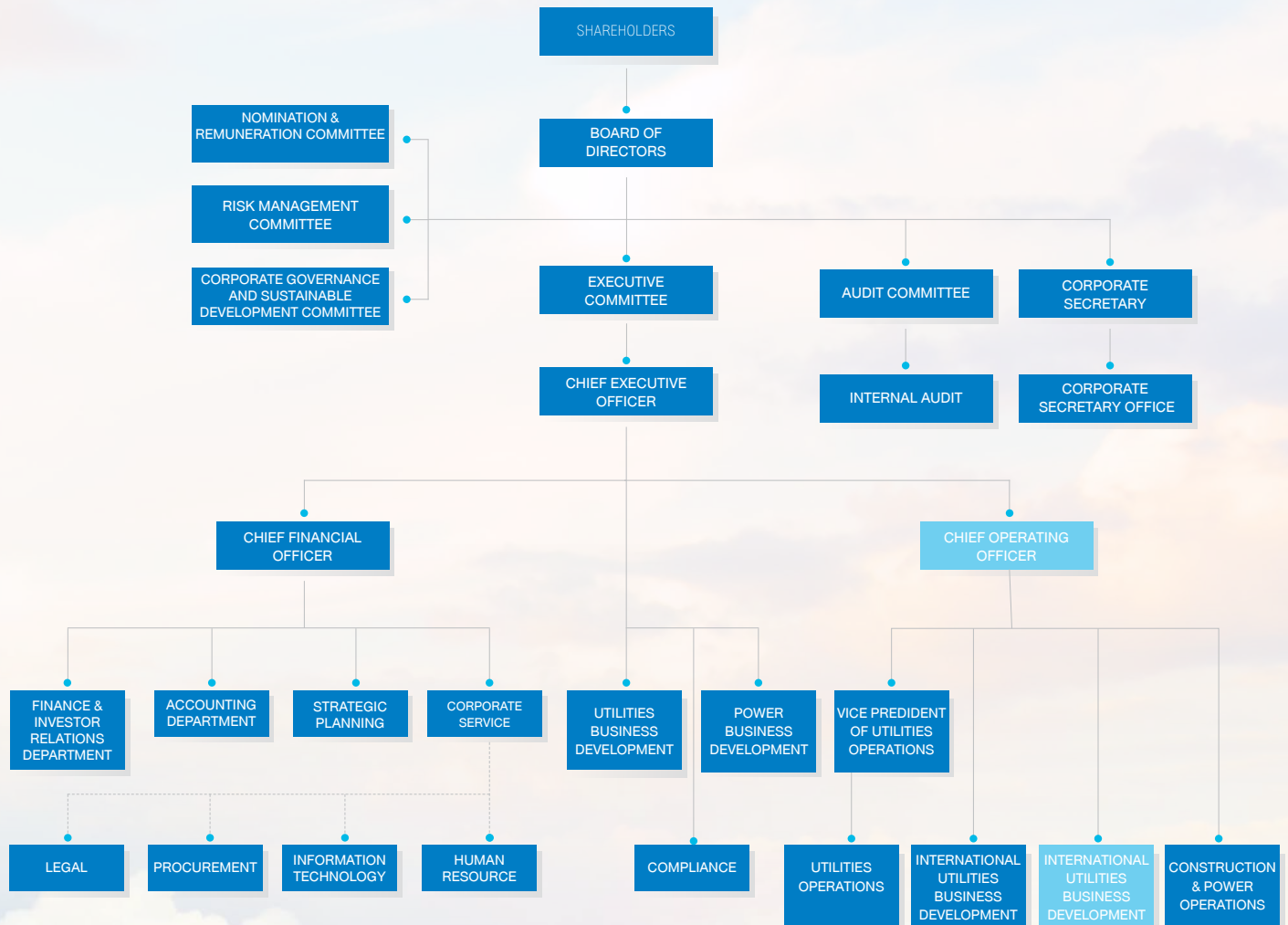
Note*: Solar power plants included many projects located in and out WHAID's industrial estates and lands.

SHAREHOLDING STRUCTURE



ORGANIZATION CHART

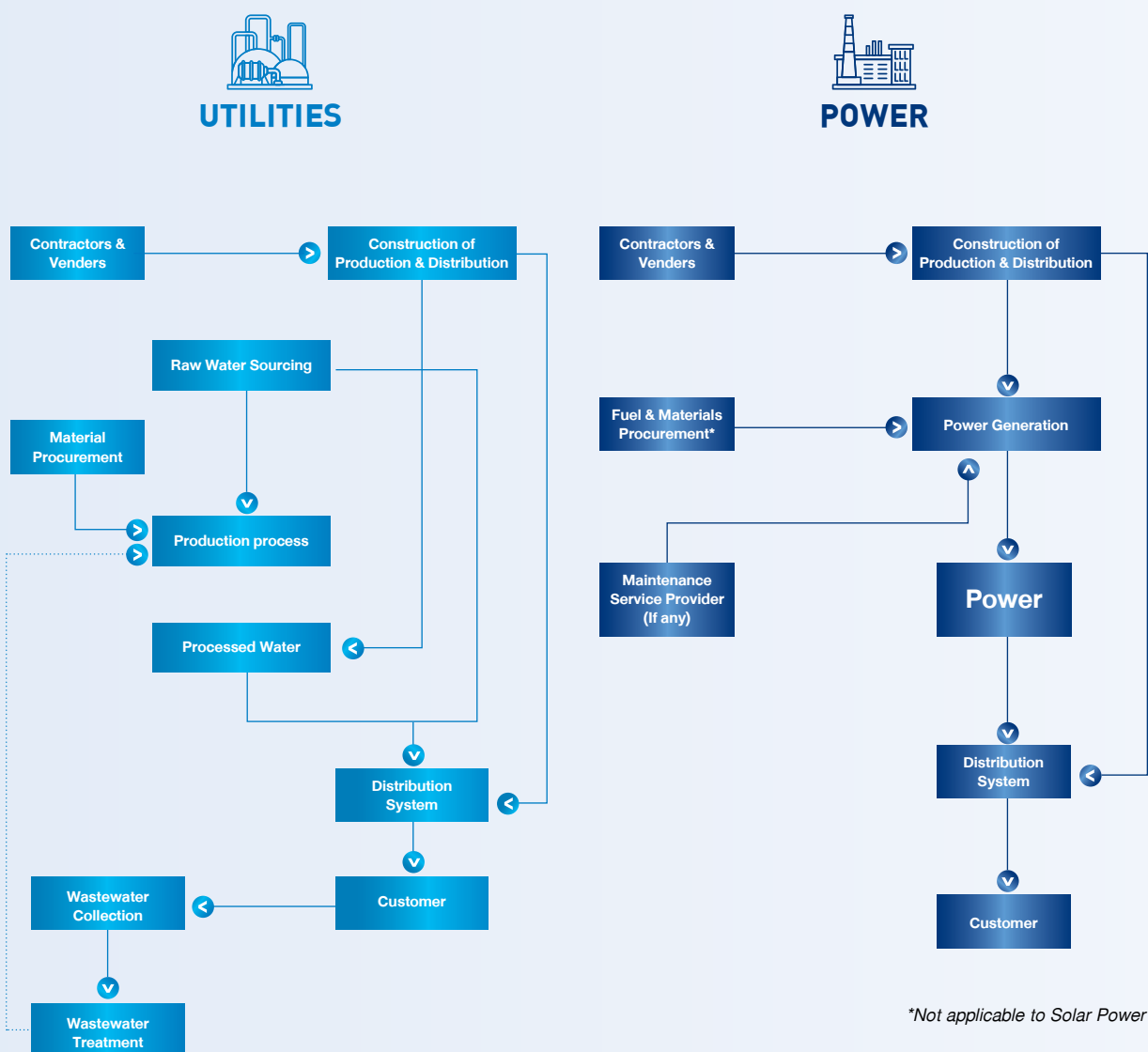
As of 31 December 2021, the management structure of the Company consists of the Board of Directors and five sub-committees, i.e. the Audit Committee, Executive Committee, Risk Management Committee, Corporate Governance and Sustainable Development Committee, and Nomination and Remuneration Committee. The management structure of the Company is as follow.



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

Approved in 2021 but will take place in 2022

WHAUP VALUE CHAIN



SUSTAINABILITY DEVELOPMENT AT WHAUP

WHAUP conducts materiality assessment annually to consider issues that have impact or influence on stakeholders and its operation. Considering internal and external factors, material topics were identified in three aspects: governance/ economics, social, and environment. The materiality assessment process is based on the Global Reporting Initiative (GRI) Standard framework. This allows WHAUP to address the corporate risk management and global trends as well as manage the stakeholders' expectations in a balanced and effective manner.

MATERIALITY ASSESSMENT PROCESS

1. IDENTIFICATION

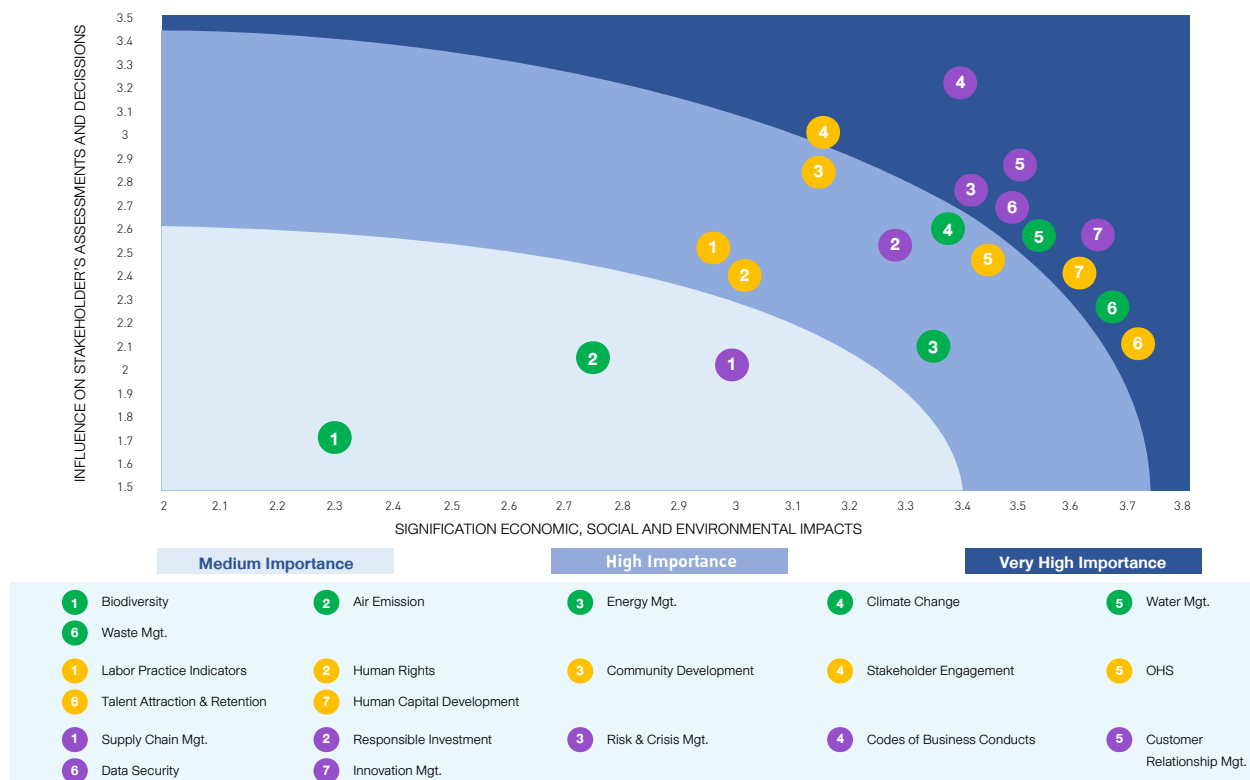
Identify relevant material topics by considering internal and external factors: business strategic direction, corporate risk profile, relevant standards and requirements (e.g., United Nation Sustainable Development Goals (UN SDGs)), global trends relevant to WHAUP service offerings, and the stakeholders' needs and expectations.

2. PRIORITIZATION

The material topics were prioritized based on two criteria: 1) the significance of the topic to WHAUP's economic, environmental, and social impacts and 2) the topic's importance for stakeholders. The material topics were ranked from 1 to 4 which prioritized the material topics into four levels of importance: important, medium, high and very high. In 2021, the materiality prioritization results indicated that the material topics are ranked within the medium, high and very high levels.

3. VALIDATION

WHAUP conducted a materiality endorsement meeting which were attended by WHA Group and WHAUP senior management positions and CEOs. The management took the responsibilities for reviewing and validating the proposed materiality assessment results and provided approval for information disclosure.



SUSTAINABILITY STRATEGY

In 2021, WHAUP has adopted WHA Group's sustainability strategy and corporate long-term targets that contribute and provide support in driving WHA Group to achieve its business ambition to stay ahead and becoming "Your Ultimate Solution Partner". The sustainability strategy is built on the foundation of good corporate governance, human capital as strategic enabler and key driving forces including digitization and natural resources. The strategy supports the UN SDGs, and takes into consideration the risks and opportunities analyzed from global existing and emerging trends.

BUSINESS DIRECTION "Your Ultimate Solution Partner in utilities & power with environmental care"

Corporate Value



Corporate Value

NATURAL RESOURCES

- Double the reclaimed industrial water for industrial use from 30,200 cubic meter/day in 2020 to 60,400 cubic meter/day by 2025
- Optimize proportion of waste to landfill and incineration approach by 2025



Corporate Value

DIGITIZATION

- Revenue generation and cost reduction from innovation projects
- 100% data breach prevention in terms of data leaks, thefts or losses of both inbound and outbound data are achieved in 2025



HUMAN CAPITAL

- Maintain Human Capital Return on Investment at 27 times by 2025
- Have overall turnover rate not greater 3.2% in 2025
- Have talent turnover rate not greater 5% in 2025

Corporate Value









GOVERNANCE














- 100% acknowledgement and communication of Code of Conduct to subsidiary, employees and suppliers/contractors by 2025
- 100% employees at all levels are trained on risk management by 2022
- Support WHA Group to maintain market share for industrial development at 32%
- 95% customer satisfaction score in 2021

Corporate Value



SUSTAINABILITY MATERIAL ISSUES AND IMPACT BOUNDARY

Report Dimension	Material Issues	Corresponding GRI Aspects	Key Stakeholders and Impact Boundary		SDGs	Page
			Internal	External		
	Codes of Business Conduct	Disclosure 205-3 Confirmed incidents of corruption and actions taken	Employee	<ul style="list-style-type: none"> • Supplier/Creditor • Government/Regulator • Financial Institution • Customer 		28-31
	Risk and Crisis Management	GRI 102-31 Review of economic, environmental and social topics,	Employee	<ul style="list-style-type: none"> • Financial Institution • Government/Regulator • Customer • Shareholder/Investor 		32-37
	Supply Chain Management	GRI 308-1 New Suppliers that were screened using environmental criteria, GRI 308-2 Negative environmental impacts in the supply chain and actions taken GRI 414-1 New Suppliers that were screened using social criteria, GRI 414-2 Negative social impacts in the supply chain and actions taken, and	Employee	<ul style="list-style-type: none"> • Supplier/Creditor • Customer 		55-59
	Customer Relationship Management	GRI 102-43 Approach to Stakeholder Engagement,	Employee	<ul style="list-style-type: none"> • Customer • Supplier/Creditor 		47-54
	Innovation Management	Disclosure 203-1 Infrastructure investments and services supported	Employee	<ul style="list-style-type: none"> • Shareholder/Investor • Customer • Financial Institution • Government/Regulator • Supplier/Creditor 		38-46
	Market Opportunity	Disclosure 203-1 Infrastructure investments and services supported		<ul style="list-style-type: none"> • Financial Institution • Media • Shareholder/Investor • Customer 		38-46
	Data Security	Disclosure 203-1 Infrastructure investments and services supported	Employee	<ul style="list-style-type: none"> • Customer • Financial Institution • Shareholder/Investor • Supplier/Creditor 		60-63

Report Dimension	Material Issues	Corresponding GRI Aspects	Key Stakeholders and Impact Boundary		SDGs	Page
			Internal	External		
Social	Human Rights	GRI 412-1 Human rights Assessment, GRI 405-1 Diversity and Equal Opportunity, GRI 406-1 Non-discrimination	Employee	<ul style="list-style-type: none"> Community Government/Regulator Media Supplier/Creditor Customer 		90-96
	Labor Practice Indicators	GRI 401-1 Employment	Employee	<ul style="list-style-type: none"> Media Supplier/Creditor 		125-127
	Talent Attraction and Retention	GRI 402 -1 Labor/Management Relations	Employee	<ul style="list-style-type: none"> Supplier/Creditor 		82-89
	Human Capital Development	GRI 404-1 Training and Education,	Employee	<ul style="list-style-type: none"> Shareholder/Investor Supplier/Creditor 		74-81
	Occupational Health and Safety	Disclosure 403-9 Work-related injuries	Employee	<ul style="list-style-type: none"> Customer Community Supplier/Creditor 		65-71
	Community Development	GRI 413-1 Local Communities	Employee	<ul style="list-style-type: none"> Community Government/Regulator Shareholder/Investor Media Customer 		98-124
	Stakeholder Engagement	GRI 102-43 Approach to Stakeholder Engagement	Employee	<ul style="list-style-type: none"> Community Government/Regulator Shareholder/Investor Media Financial Institution Supplier/Creditor Customer 		128-134
Environment	Biodiversity	Disclosure 304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Employee	<ul style="list-style-type: none"> Customer Supplier/ Creditor Government/Regulator Community Financial Institution Shareholder/Investor Media 		171-173
	Water Management	Disclosure 303-3 Water withdrawal	Employee	<ul style="list-style-type: none"> Customer Supplier/Creditor Government/Regulator Community 		155-160
	Waste Management	Disclosure 306-2 Waste by type and disposal method	Employee	<ul style="list-style-type: none"> Customer Supplier/Creditor Government/Regulator Community 		161-167
	Air Emission	Disclosure 305-7 Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	Employee	<ul style="list-style-type: none"> Customer Supplier/Creditor Government/Regulator Community Financial Institution 		168-170
	Climate Change (Physical and Transition risks)	Disclosure 305-1 Direct (Scope 1) GHG emissions Disclosure 305-2 Energy indirect (Scope 2) GHG emissions Disclosure 305-5 Reduction of GHG emissions	Employee	<ul style="list-style-type: none"> Customer Supplier/Creditor Government/Regulator Community Financial Institution Shareholder/Investor 		138-148
	Energy Management	Disclosure 302-1 Energy consumption within the organization	Employee	<ul style="list-style-type: none"> Customer Supplier/Creditor Government/Regulator Community Financial Institution Shareholder/Investor 		149-154



GOVERNANCE/ ECONOMIC DIMENSION

CODES OF BUSINESS CONDUCT

With the world moving toward a more sustainable economy, good corporate governance is the long-term foundation for long-term business growth. It serves as the foundation for ensuring that a company's management is accountable and ethical. Transparency, accountability, responsibility, and fairness serve as the foundation for the development of core corporate governance principles. As a result, WHAUP's Board of Directors carries critical responsibilities for overseeing the Company's ethical performance. Customers can see from the encapsulated good corporate governance that WHAUP is well managed and that stakeholders' interests are aligned with management's perspectives.

MANAGEMENT APPROACH WHAUP CODE OF CONDUCT

WHAUP commits to be a successful and efficient business by aligning its good corporate governance management approach with the Stock Exchange of Thailand (SET) national guidelines as well as international approaches such as the United Nations Global Compact.

To ensure that business operations are pursued in accordance with the principles of integrity, ethics and responsibility towards the environment, society and governance (ESG). ESG metrics have been implemented as part of the metrics for evaluating the performance of a Board of Directors as well. Corporate Governance and Sustainable Development Committee established a Code of Conduct, which was endorsed by the Board of Directors. The Code of Conduct governs the practices of all WHAUP's employees, suppliers, contractors, joint ventures and subsidiaries. The Code of Conduct is available in both Thai and English to ensure widespread understanding and transparency for all local and foreign stakeholders. The Code of Conduct is reviewed annually, and the most recent revision is made public on WHAUP's website and intranet, allowing employees and external stakeholders easy access to the information. The WHAUP's [Code of Conduct](#) can be found at this.

CORPORATE GOVERNANCE POLICY

1 SHAREHOLDERS' RIGHT

2 RISK MANAGEMENT

3 EQUITABLE TREATMENTS OF SHAREHOLDERS

4 BUSINESS ETHICS AND CODE OF CONDUCT

5 SHAREHOLDERS' ROLES

6 ANTI-CORRUPTION POLICY

7 DISCLOSURE AND TRANSPARENCY

8 PREVENTION AGAINST CONFLICTS OF INTEREST

9 THE BOARD'S RESPONSIBILITY



100%

OF EMPLOYEES HAVE BEEN COMMUNICATED ON THE CODE OF CONDUCT

To ensure compliance with WHAUP's Code of Conduct, the Group has implemented a process for digital acknowledgement on the Code of Conduct and providing training programs in order to communicate the Code of Conduct and business ethics to all employees, contractors, subsidiaries, and joint ventures.

WHAUP used its appropriate performance management system to ensure that all employee can completely perform in compliance with WHAUP's Code of Conduct, whereby there is no any complaint about the conduct violating the Code of Conduct in the year 2021.

ANTI-CORRUPTION

WHAUP strives to empower all employees to act with integrity in order to make a positive impact throughout the Group's business operations. To ensure the company's anti-corruption intentions, WHAUP announced an Anti-Corruption Policy that is enforced on all employees, subsidiaries, suppliers, and contractors. The policy prohibits the misappropriation of authority, the participation in any form of fraud or bribery, and the operation of business in a lawful manner. The person shall be strictly disciplinarily punished, potentially including termination without severance pay. The WHAUP's [Anti-Corruption Policy](#) can be found at this.

Regarding that, Audit Committee was established to oversee and ensure that the operational activities are in accordance with the enforced policy. The Committee is in charge of assessing, managing, and mitigating risks related to illegal activities, corruption, or any fraudulent actions. The development of a guideline for Gift Policy in accordance with the Code of Conduct, as well as a Letter of Request for "No Gifting" Cooperation, is an example of the Company's proactive action. To elevate good corporate governance practice and standardize transparency overall, the Gift Policy was communicated to managing directors, suppliers, and business partners.

Furthermore, WHAUP's determination and commitment to preventing corruption and bribery for business purposes is highlighted by the company's membership in Thai Private Sector Collective Action Against Corruption (CAC). The CAC is a group of private companies united in their desire to combat corruption in Thailand. Since November 2019, WHAUP has been certified by the Thai Institute of Directors (IOD).



COMPLIANT MANAGEMENT

WHAUP listens to and values any concerns stakeholders may have, particularly regarding misconduct, violations, or corruption in violation of laws, regulatory requirements, corporate governance principles, or the Code of Conduct and Anti-Corruption Policy. As a result, to ensure that stakeholders are comfortable reporting and informing on clues, suspicions, advice, grievances, or complaints and also ask for an advice. WHAUP provides various channels and has established a grievance mechanism process. As a whistleblower, the employee or external stakeholders are protected from retaliation.

REPORTING CHANNELS

CHANNELS FOR EMPLOYEES

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

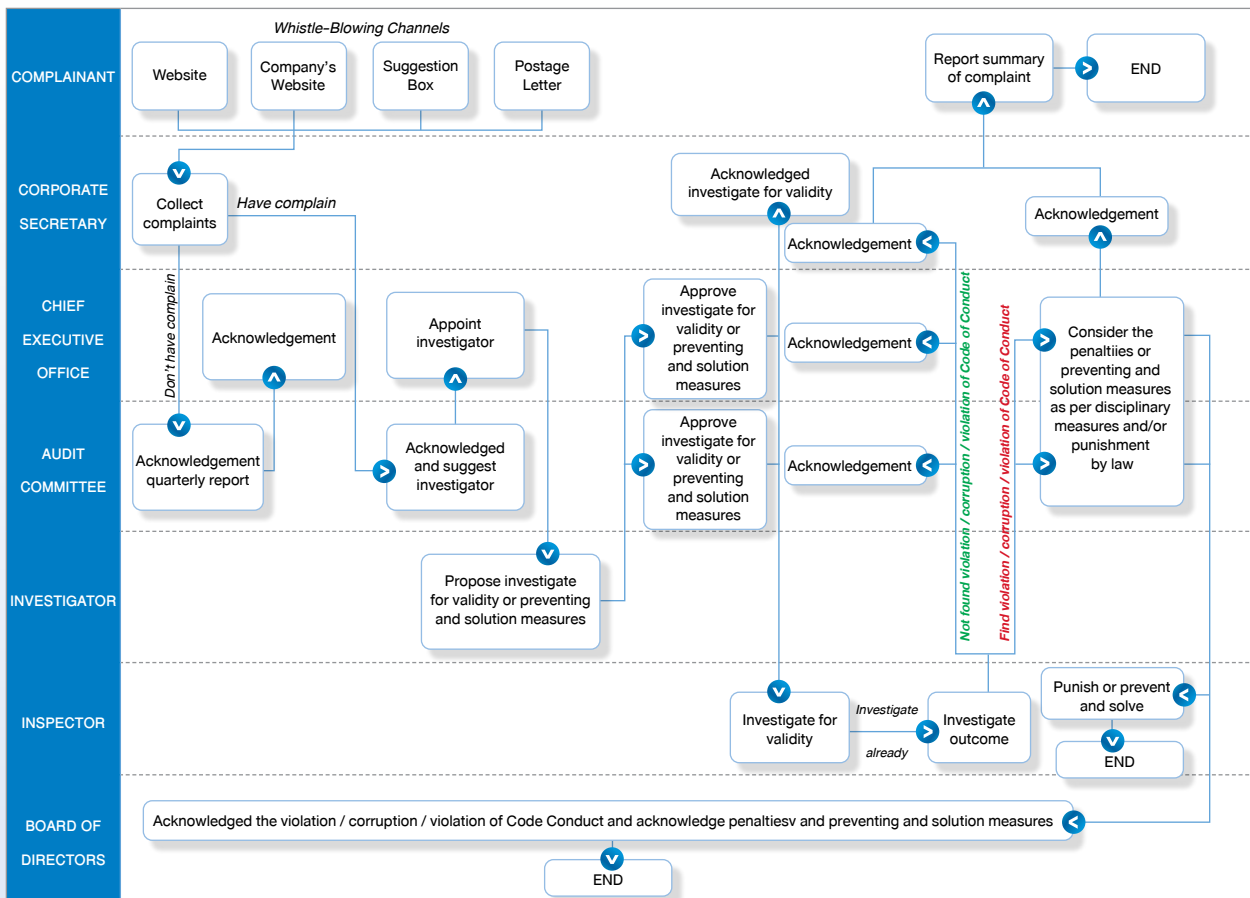
CHANNELS FOR EXTERNAL STAKEHOLDERS

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

If the Company receives a report of corruption, the Corporate Secretary is responsible for reporting the case to the Audit Committee, which will appoint an investigator and conduct an investigation, as appropriate. The Board of Directors will take appropriate disciplinary actions based on the findings of such an investigation. Legal action will be taken if any cases are found to be in violation of applicable laws. WHAUP will conduct internal audits, and if complaints are received, the case will be reviewed quarterly by the Audit Committee and communicated as part of the Board of Directors meeting agenda. As a result, this procedure ensures that potential cases do not reoccur.

Nonetheless, no violations of regulatory requirements or Company's policy were discovered in 2021. There were no reports or complaints about corporate governance or corruption submitted through the established channels.

WHISTLE-BLOWING PROCESS



ENHANCE AND AWARENESS RAISING FOR GOOD CORPORATE GOVERNANCE

WHAUP, as a subsidiary of the WHA Group, fully embraces the Group's corporate values. This ensures that WHAUP employees share the same values, mindset, and competency in order to drive WHAUP and support WHA Group in achieving the established visions. Corporate governance and the corporate value of "integrity" are inextricably linked. Maintaining the integrity value throughout business operations enables WHAUP to cultivate trust and increase stakeholders' confidence that the Company follows good corporate governance principles.

INTEGRITY

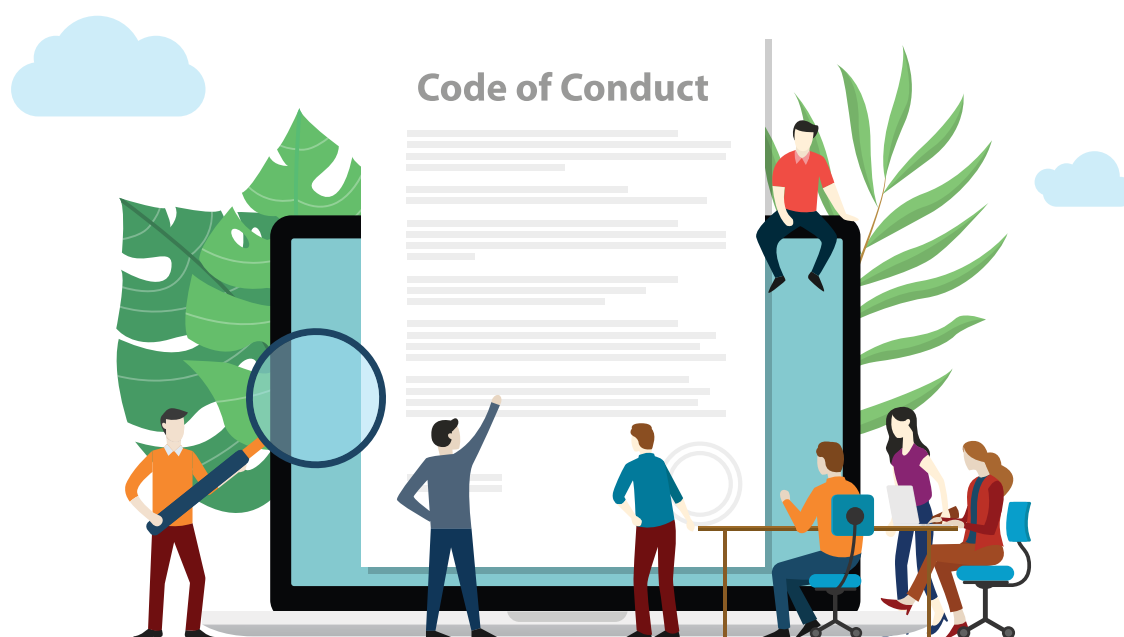
"To instill mutual trust and confidence, create a culture that fosters transparency and work ethics as well as demonstrates a sense of corporate responsibility."



WHAUP, in collaboration with WHA Group, conducted the following training and activities to raise employee awareness of good corporate governance.

- As part of their orientation program, all new employees are required to complete mandatory trainings on the Code of Conduct and Anti-Corruption principles.
- WHA Group's Human Resource Department initiated mandatory online refresher training on the Code of Conduct and Anti-Corruption Policy in 2021 through a "self-learning program" for all current employees, including WHAUP. At the end of each individual online session, the employees' understandings were assessed using mandatory questionnaires. Those who are unable to complete the online training will be required to attend an in-person refresher course in 2022. This online course was held every year as a refresher or whenever corporate governance policies were revised. As a result, it appears that the average employee perception is 100 percent, indicating that WHAUP complies with a stringent code of ethics and conducts business responsibly.
- Moreover, the suppliers and contractors have been communicated WHAUP's Code of Conduct through various communication channels, including attaching it in the contracts. This is to ensure that all suppliers and contractors acknowledge and adopt the Code of Conduct.

Target Groups	2021 Performance	2025 Target
Percentage of employees acknowledging and communicated of the Code of Conduct by 2025	100%	100%
Percentage of subsidiary companies/Joint venture acknowledging and communicated of the Code of Conduct by 2025	100%	100%
Percentage of suppliers/contractors acknowledging and communicated of the Code of Conduct by 2025	100%	100%



RISK AND CRISIS MANAGEMENT

Today business is in challenging environment. The economic fluctuations, disruptive technology, demanding on better environmental management are some examples of current and emerging risks imposed on business operation. It is necessary for the business to prepare itself to stay ahead of this fast-paced world. Being aware of these challenges, WHAUP embeds the proactive and efficient risk management to enhance our ability to adapt to changes, increase agility, effectively respond to uncertainties, and ensure that our business will not be interrupted by any emergencies or crisis.

MANAGEMENT APPROACH RISK MANAGEMENT ORGANIZATION

WHAUP has a commitment in effective risk management. To ensure that the all the risks are properly managed, the Board of Directors (BoD) appoints Risk Management Committee (RMC), which comprises of the CEO and members from BoD, to oversee overall risk management implementation. To ensure that WHAUP manages risk in their entity according to the RMC's guidance, Risk Working Groups, comprising of executives and department heads were appointed. The Risk Working Groups hold regular meetings to monitor operational risk profiles and identify any potential emerging risks, and reports to the entity RMC for subsequent address in Board meetings to review of economic, environmental, and social topics and their impacts, risks, and opportunities in every quarter.



RISK MANAGEMENT FRAMEWORK

RMC developed the Risk Management Policy and Framework. The Policy is reviewed annually to ensure that all the material risks are captured, monitored, managed, and mitigated with appropriate measures. WHAUP implements the Policy throughout the business operations. Management and employees at all levels have responsibility on effective risk management.

In alignment with the Group's Policy, a Risk Management Framework was developed in accordance with the Committee of Sponsoring Organizations of the Treadway Commission (COSO), specifically the COSO Enterprise Risk Management (ERM). Such framework provides a guideline for risk management approach for all employees to implement consistently. The following portrays WHAUP's risk management methodology:



RISK IDENTIFICATION

- identification of internal and external risk, along with business impacts.
- Categorization of identified risks under four categories: Strategic, Financial, Operation and Compliance.



RISK ASSESSMENT

- Calculation of risk levels following standardized assessment criteria.
- Prioritization of risks based on risk profile and appetite.



RISK RESPONSE AND MITIGATION MEASURES

- Determine actions to respond, mitigate potential impacts and ultimately reduce high level risks to acceptable levels



RISK REPORTING, MONITORING AND COMMUNICATION

- Communication of risks to all executive and employees to build a strong risk management culture.
- Risk Working Group reports risk management action plans, results and progress to RMC on a Quarterly basis.
- Optimize internal communication channels to disseminate relevant risk information.

WHAUP has assessed internal and external risk factors on four major areas which are strategy, operational, financial and compliance risks. Material risks and their mitigation measures are regularly communicated to all staff levels to build the overall awareness of risk management within WHAUP, ensuring a uniform objective of supporting WHAUP readiness to any changes and challenges. Additional details of the identified material risks can be found in Risk Factors part of WHAUP's Annual Report 2021.

EMERGING RISKS

WHAUP acknowledges the importance of emerging risks that may impact to business operations. WHAUP's risks management process covers this type of risks. They are monitored, assessed, and addressed by determining mitigation plans which can help minimize adverse impacts. Among the broad range of emerging risks, WHAUP takes the following into consideration:



DIGITAL DISRUPTION

RISK DESCRIPTION

As we are shifting towards the Digital Transformation era, accelerated by the pandemic, technological advancements have changed society's behaviors, and market conditions. Digital disruption creates uncertainty to a business, and is becoming more significant. Thus, failure to prepare and address this emerging risk may cause the business to be disrupted.

Since the traditional ways of conducting business is coming to its end of life and digitalization is shaping the market and revolutionizing the ways of working which poses market risks to many companies, including WHAUP, where digitalization plays a big part in all aspects of its businesses and influences the products and services it offers to customers. This ranges from the product and service development, operational activities, to its end-of-life. Therefore, it is crucial that WHAUP adapt to these changes in market conditions to ensure that WHAUP stays competitive and does not lose its position within the market. Thus, WHAUP embraces digital transformation, technology, people, and culture which are the key focus areas that help driving the growth, grasping new opportunities, and responding to change in market conditions and expectations.

Furthermore, the manufacturing trends in 2022 emphasize on shorter, simpler supply chains, shrinking of new product development cycles, and increase of new production technologies for low-volume manufacturing (e.g. additive manufacturing) responding to consumers' demand for niche and specialty products. In addition, technology

advancement, and the pandemic, shifts people daily routine to be more depending on online services. This may pose a threat to some businesses but an opportunity for some businesses such as, e-commerce and its related businesses.

BUSINESS IMPACTS

WHAUP develops and improves its products and services to respond to the changing demands and expectations from its customers including more digital innovations, and digitally enhanced offerings. Moreover, with increase in number of start-ups entering the market, there is a large-scale reduction in size of WHAUP's customers, illustrating the needs for more optimization services.

With these changing trends, WHAUP must address and manage the customers' expectations and needs to adapt to the new market conditions and remain competitive. WHAUP works to ensure that the Company and its customers stay ahead of the game and grow together. Therefore, the Company never stops developing and offering the customers smart solutions with the cutting-edge technologies.

MITIGATION ACTIONS

To mitigate this risk WHAUP has conducted multiple digital innovations to respond and grasp the opportunities from digitization trend throughout all of its business areas.

Additionally, WHAUP aims to extend its capacity with new utility products as well as broaden its power portfolio with innovation energy solutions through SMART Grid.



CLIMATE CHANGE TRANSITION RISK

RISK DESCRIPTION AND ITS IMPACT

In recent years, climate change is the issue of concern of many parties. The frequency of natural disasters, extreme weather, and demand on cleaner energy are increasing. Stricter policies and regulations towards low carbon future are expected. Unable to adapt to these changes could impact to reputation, penalties, or other liabilities. WHAUP recognizes the importance of climate change that comes with both risks and opportunities to our business. In this transition period, it poses opportunities to WHAUP business through enhancing its renewable energy via solar rooftop services which benefits both the Company and our customers by reducing carbon footprint and providing carbon credit to other companies for carbon emission offsetting. WHAUP will continuously develop this solar rooftop services to be more stable energy sources, securing more benefits to our customers.

BUSINESS IMPACTS

Furthermore, WHAUP aims to ease climate change and move toward low carbon organization with various initiatives and monitoring measures in place that contribute positively to climate change by enhancing solar energy portfolio capacity to 92 MW. Also, WHAUP provides renewable solar energy as one of its core services to customers. This ensures avoided carbon emissions for customers throughout the WHAUP's value chain. In addition, WHAUP ensures to offset transitional risk with regards to technology and social norms by developing additional services to support efficient consumption of natural resources. Nevertheless, the transition period creates opportunities to WHAUP business through its

solar rooftop services which benefits both the Group and our customers by reducing carbon footprint and providing carbon credit to other companies for carbon emission offsetting. WHAUP will continuously develop this solar rooftop services to be more stable energy sources, securing more benefits to our customers.

MITIGATION ACTIONS

WHAUP is a subsidiary of WHA Group, aims to ease climate change and move toward low carbon organization with various initiatives and monitoring measures in place that contribute positively to climate change, including reduction of natural water consumption, waste to landfill and greenhouse gas emission.

WHAUP continuously improves the renewable solar energy service, ensuring high satisfaction from customers. Moreover, to reciprocate transitional risk in the aspect of technology and social norms, WHAUP has been developing additional services to support efficient consumption of natural resources.

WHA Group has conducted a climate change scenario analysis. The analysis covers scenario for increase in global temperature for business as usual (4 degrees Celsius), and for low carbon society (1.5 degree Celsius) and WHAUP is part of this study.

In addition, WHAUP measured its scope 1 and scope 2 greenhouse gas emission. The data was verified by Thailand Greenhouse Gas Management Organization (TGO). WHAUP will use this data as a baseline to set our long-term, ambitious target for greenhouse gas

reduction. With these efforts, WHAUP can reduce the impacts of green-house gas on the environment and on society at large.

CRISIS MANAGEMENT AND BUSINESS CONTINUITY MANAGEMENT

As a part of our risk management, in 2021, WHAUP conducted sensitivity analysis and stress testing to evaluate the consequences and impact of risks events. Accordingly, risk mitigation measures were prepared. WHAUP's sensitivity analysis and stress testing shows that natural disaster, disease pandemic and terrorism are important risks to our business as WHAUP's utility service is dependent on the availability of natural resources (e.g., rainfall for water services), therefore, these impacts could affect its services and customers.

Hence, WHAUP has initiated several projects to mitigate risk from natural disaster and disease pandemic by giving high priority to location selection and a proper security system. In every project we design plant's level higher than the public road and above the 30 years history of highest water flood level. For each project, the Company has applied for all-risk insurance that covers all types of damage caused by natural disasters and accidents.

Apart from actions taken by the public and private sectors through institutions assigned to manage water, such as Water War Room, of which the Company is a member, the Company establishes many internal drought response measures including wastewater reclamation and considering alternative raw water resources.

For the disease pandemic, the Company implementing the measures to safeguard personnel from a recurrent pandemic and to mitigate any unfavorable effects that could delay operations.

As a part of WHAUP's risk management system, a Business Continuity Plan (BCP) is developed to prepare for effective response during the time of emergency or crisis. It helps ensuring the smooth operation of all business hubs. The plan was reviewed and revised to cover all the events identified through risk assessment that could cause potential business disruptions, for instance: natural disasters, fire, pandemic, information security, etc.

In 2021, the effectiveness of the WHAUP's BCP is tested through within key business groups or operational processes as well as applying the test results to improve BCP to ensure accurate response in actual incidents. The BCP test of information security aspects carried out by IT Department covering Disaster Recovery and Backup Media Recovery for WHA's Data Center. For Disaster Recovery, the testing result for critical systems of year 2021 is success. The total time used are within the estimated time. The procedures on Disaster Recovery testing are included.

- Activation & Notification is the first step after a disruption or outage that may reasonably extend beyond the RTO (Recovery Time Objective) established for a system.
- Recovery begins after the Disaster Recovery has been activated. The recovery phase activities are performed for Email / Office 365, EOMS (Billing System) and ERP System
- Testing & Reconstitution is the process by which recovery activities are completed and normal system operations are resumed.

In terms of Backup Media Recovery testing of each system, the latest backup media from backup storage is selected and perform execute recovery process to make sure that the backup media are able to read and restore data. The result media recovery testing of ERP System, File Sharing and MS SQL Database are success.

In addition, WHAUP collaborate with WHAID performed BCP test for various scenario including Emergency plan for chemical spill, road accident and flood prevention. According to the BCP test result report, the testing results are satisfied as all related departments and relevant personnel can conform with instructions as stated in BCP Plan.



HIGHLIGHT PROJECT

In 2021, WHAUP has upgraded its Unified Operation Center (UOC), the Group operation information center, to enhance capabilities in control and manage utilities services. All the water plants and solar power plants can be remotely controlled and managed from the UOC, therefore, during the time of emergencies or crisis where the movement is restricted, e.g., Covid-19 lockdown, the UOC will be a second command center, making the water plants and solar power plants well under controlled, ensuring the continuity of the business.

SHAPING RISK CULTURE

Although risk management and governance frameworks are drivers of a positive risk culture, the underlying factors are the awareness, attitudes and behaviors of employees and executives in the organization. Therefore, WHAUP works to enhance an effective risk culture throughout all business operations.

WHAUP has worked on aligning motivational systems from top-down approach. Identified risk aspects are embedded into executive's and risk owner's key performance indicators (KPIs). With risk indicators integrated as one of the performance evaluation criteria, it directly drives the promotion of risk-oriented communication and practices. An example of evaluation criteria used throughout WHAUP are compliance, reputation, financial performance.

To further strengthen the risk culture, WHAUP regularly organizes trainings and activities on risk management to raise awareness and build employee's competency to identify, assess, control and mitigate potential risks associated with their duties and responsibilities. Key trainings and activities are as follow:

- Executives are updated on global trends via RMC report during the Board meeting. This ensures that throughout the overall risk management process,

executives, RMC as well as Risk Working Groups are well aware of risk profiles, emerging risks and risk mitigation measures. Therefore, it is presumed that 100% of the top managements are trained and informed of risk management.

- Aiming to enhance effective communication on risk management and control, WHAUP has adopted the Three Lines of Defence (3LOD) model since 2020. The model helps clarify essential roles and duties of relevant employees involved. It also helps create risk awareness and culture as all level employees play a part in risk management. In the 3LOD model, the first line is management control, the various risk controls and compliance oversight functions are the second line of defence, and independent assurance is the third. Each of these "lines" has a distinct role within the organization's governance framework. All relevant functions are expected be well aware and communicated on such model to ensure effective risk management within the organization.
- In 2021, WHAUP conducted risk management trainings to all staff level, aiming to enhance the employees' awareness and responsibility on risk management area. This will be leading to an effective risk culture.
- WHAUP also conducted risk management workshop for Site Managers to provide understanding of risk identification, risk assessment and risk mitigation measures at their responsible areas of work and constantly raising awareness of risk management importance.
- In addition, WHAUP aims to adopt digital innovations to promote effective risk culture. The Company is developing a digitalized system, equipped with an alarm, to portray all key risk statuses to effectively monitor and track the risk management implementation.

Target	Performance against Target	
	2020	2021
100% Employees at All Levels are Trained on Risk Management by 2022	100% of Managements (Department head above)	<ul style="list-style-type: none"> • 100% of Managements (Department head above) • 27% of all staff level



MARKET OPPORTUNITIES AND INNOVATION

In fast-paced global economy, the businesses need to be innovative and forward-thinking to be sustainable and achieve long-term business's objectives. The understanding of global megatrends and knowing their impact to the businesses is also necessary. The global megatrends are a combination of technological innovation and changes in global society and environment leading to transformation in economies, businesses, and lifestyles. For example, pressure from climate changes leads to demanding on cleaner energy. Therefore, businesses need to understand the impacts of global megatrends and address them properly. To grasp opportunities, the businesses are required to make new investments in innovative technologies to improve operation efficiency or expand to new businesses that enhance competitive advantage.

WHAUP continuously seeks business opportunities and undertakes measures to develop and structure new innovations to foster smooth, efficient and agile operations that respond to the ever-changing needs as well as to continuously provide the best possible services for its valued customers. Moreover, the WHAUP embeds sustainability or environmental, social, and governance (ESG) features in every investment to ensure long-term value creation with the least impact possible to the society and the planet.

As the world changes, customer requirements and business competitors change as well. WHAUP regards this as an opportunity investment to enhance its goods and services and to develop new sources of revenue to ensure the organization's long-term sustainability growth.

MANAGEMENT APPROACH

WHAUP understands the importance of impacts the megatrends have on the business, so it has prepared itself to stay ahead and be more competitive and through innovatively seeking new business opportunities. WHAUP sets a clear direction to seek and seize new business opportunities through analyzing regional and global trends, as well as existing and emerging risks and opportunities.

WHAUP supported the Group sets five strategic approaches for market opportunities and innovation management. The five strategic approaches including:

1. Broadening internationally
2. Extending product range through innovative and technology-driven solutions,
3. Establishing win-win collaborations with partnerships
4. Maximizing synergies among WHA Group and
5. Digitalization

WHAUP finds an opportunity for improving the efficiency of the existing business through innovation or expansion to a new business that link to or associate with the existing businesses and fit to the Group's strategy, the Business Development Department will further explore the opportunity together with the related departments.

WHAUP believes that under these approaches, company will be able to transform its business services to become a resilient, and digitalized company that provide value-added services for its customers.

Furthermore, in seizing each opportunity, WHAUP considers economic benefits, integrates ESG factors into all the phases of all the projects, and complies with local and regional regulatory requirements to ensure that its investments do no significant harm to environment and society at large.

INTEGRATION OF ESG FACTORS INTO PROJECT PORTFOLIO





WHAUP Conducts Environmental Assessment that covers the impacts of utilities and power development projects. The assessment does not only ensure compliance with required laws, but also assures that the developed projects are approved by relevant authorities, and that all its associated environmental and social risks are assessed with proper mitigation measures. The following environmental and social related indicators and concerns were assessed during assessment and raised by stakeholders during public participation, and appropriate precautionary and mitigation measures were defined for each project's development through to operation phases. WHAUP abides by the requirements as stipulated in the assessment reports and conducts continuous monitoring throughout project implementation to ensure sustainable operations are achieved throughout the project lifecycle.

Environmental Indicators	Social Indicators
<ul style="list-style-type: none"> • Air Quality • Soil Quality • Water Quality • Biodiversity 	<ul style="list-style-type: none"> • Transportation • Flood and Drought Prevention • Waste Management • Public Health and Hygiene • Occupational Health and Safety

WHAUP and WHA Group also takes into account of the strategic benefits of investment opportunities in the Eastern Economic Corridor (EEC) as well as the incentives and schemes (e.g. tax deductions, connectivity in trade routes, real estate ownership by foreign entities, etc.) that may attract and provide for its customers.

MARKET OPPORTUNITIES AND INNOVATION MANAGEMENT

WHAUP supported WHA Group gives importance to all aspects of their innovation management, ranging from formulating the strategies, defining structures that facilitate innovation, building innovative culture and environment, and including other support systems that drive innovation within the Group.

INNOVATION STRATEGY

WHAUP's applied WHA Group Innovation Strategy focuses on enhancing its competitiveness, expanding or creating higher value of products and services in order to respond to customer needs and maintain customer base through key strategies, as follows:

1. Digital Innovation: Adopting new digital technology and embracing digital innovation within the Group in order to improve and create higher value products and services. This is done through the development of people and digital technology solutions based on the concepts of incorporating business platform into the existing infrastructure and lean-improved operational processes, and in doing so, expanding the Group's business.
2. Digital Transformation: Using digital technology to increase the productivity and efficiency of work processes within the Group in accordance with its management systems such as customer relationship management system, and contract/document management system.

INNOVATION STRUCTURE AND PROCESS

The 21st Century is considered to be the era of technology and innovation. Therefore, modern companies and organizations must establish structures and processes that facilitate the creation of new innovations in order to compete, survive and grow sustainably. Therefore, WHAUP as part of WHA Group was designed to have a horizontal organizational structure so as to reduce the gap between employees and executives. This includes minimizing hierarchical controls and delegating decision-making power to employees within their scope of responsibility as much as possible. Meanwhile, WHAUP have established various ad hoc teams through combining personnel from different departments, such as from business development, operational units and finance departments, to work collaboratively to develop specific projects in addition to the routine work. This organizational structure and approaches will encourage employees to learn, practice and make decisions together as a team. In doing so, it fosters creativity and innovation across the WHAUP (including WHA Group) and its business units.

Nonetheless, WHAUP is currently in the process of developing a framework for Group level risk management for projects related to new technologies and innovations. The risk management helps the Group's business units to appropriately assess and manage the related risks. WHAUP also established a Knowledge management system that allows knowledge to be better shared among the different teams within the Group.

TOOLS AND ELEMENTS THAT SUPPORT INNOVATION WITHIN THE GROUP

WHAUP recognizes the value of all employees as an important force that drives the Group's businesses, its success, its achievement of set targets and goals, and its sustainability growth. As a results, WHAUP place a high importance on the investments in development of human resources potential, and on empowering employees to develop their abilities and skills to the fullest through provision of time, of financial support and of systems and platforms that encourages employees to continuously learn and develop themselves.

CLIMATE AND DRIVING FACTORS FOR BECOMING AN INNOVATIVE ORGANIZATION

WHAUP seeks to develop, retain, and motivate employees with potential, capabilities and values that align with the organization. This is done through planning and selection processes and clear identification of favorable qualifications (e.g. problem solving skill, analytical and critical thinking, creativity skill and positive attitude).





WHAUP also utilizes many effective channels that align with the target groups in order to select applicants with outstanding qualifications before negotiating a satisfactory offer and decide on the most suitable candidate. In addition to recruiting new talents, WHAUP also has a policy to support the rotation of employees within the organization between different departments. This policy aims to support and provide opportunities for employees to show their potential, as well as to find skills and expertise that will support knowledge development and nurture new generations of employees within the organization as well.

Thus, WHAUP as part of WHA Group implemented the Performance Management System (PMS) to conduct annual employee evaluations. The PMS takes into account the Key Performance Indicators (KPIs) which evaluate employees' routine performances, and the Objective Key Results (OKRs) which assess project performances. Consequently, the indicators related to innovation development are appropriately defined for each employee level. The results of such assessments will be used to consider career advancement, compensation rate and further employee incentives.

Likewise, WHA Tower, the new office building of WHAUP, has also been designed to have open-plan spaces, with meeting rooms equipped with modern technology, and common areas for collaborative activities, working as a team, and sharing of creative ideas within the Group.

INNOVATION CULTURE

WHAUP identified innovation as part of its corporate value where the Group management team, such as the CEO and the senior management, becomes the role model in driving innovation within the organization. This is done through various engagements with employees and providing opportunity for employees to participate in expressing their opinions in a safe environment. For instance, during a meal sharing between executives, and, employees in various departments to be rotated every two weeks.

All of WHAUP executives give importance to the development of skills, knowledge, and abilities related to the work. Similarly, the executives find it is essential for employees to develop growth mindset, through coaching, open-ended questions and participation to establish trust between executives and employees and between employees-employees. The trusts established will reduce the pressure when faces with difficulty due to differences, such as generation gap. Ultimately, this will result in cooperation between employees, as well as creativity and growth of ideas from employees, and so on.

MARKET OPPORTUNITIES AND DIGITAL TRANSFORMATION

Moreover, in order to comply with WHA Group's strategy for digital transformation, WHAUP has implemented a Digital Transformation Project which aimed to change the work processes within the organization by applying information technology to make it more efficient and effective. These include searching for new business opportunities in order to expand the business as to be able to compete and prevent risks from the current technology change (Digital disruption) that is changing rapidly all the time. The project has been implemented under 5 main strategies as follows:

D1 DIGITIZE & EMPOWER CORE BUSINESS

To leverage new levels of business operations reliability and efficiency driven by intelligent analytics, automation processes, mobility & connected digital technologies.

D2 BUILD THE WORKFORCE OF THE FUTURE

To prepare & transform way of working & thinking through change & culture transformation program along with strengthening digital end to end talent management & development platform.

D3 ENABLE THE SMART ENTERPRISE

To build Digital Capabilities for Business Processes to Driving Organizational Efficiency and Effectiveness.

D4 ESTABLISH DIGITAL FOUNDATION AND PLATFORM

To build IT foundation supporting business needs in short term and eventually driving long term business goals with open, flexible, and scalable Core IT Platform, and Governance Structure.

D5 LAUNCH NEW BUSINESS

To accelerate New Business Ideation, Incubation, and Scale up through collaborative platforms with both customers & stakeholders in WHA ecosystem.

In this regard, WHAUP has presented various projects that were conceived and initiated by internal employees to improve operational efficiency and new business opportunities. In 2021, there were 2 projects that have been selected and used in the actual work process, with an investment value of more than 10 million baht, with more to come in the upcoming years.

MARKET OPPORTUNITIES AND INNOVATION PROJECT HIGHLIGHT

WHAUP favors investment opportunities and innovation that generate potential tangible sustainable economic and ESG benefits for its business and stakeholders in the value chain, demonstrated by the following projects

SMART UTILITIES & POWER

In respond to the changes in market conditions, WHA Group has explored new market opportunities and innovations through WHA Utilities and Power (WHAUP)'s products and services. WHA Utilities and Power (WHAUP) aims to extend its capacity with new utility products as well as broaden its power portfolio with innovative energy solutions. Considering the community's quality of living and environmental impacts, WHAUP is continuously putting efforts into developing new utility services including wastewater reclamation, demineralized water, and sea water desalination.

WATER RECLAMATION

WHAUP develops water reclamation initiative as an alternative and sustainable source of water for industrials, especially in the EEC area. The project utilizes existing technologies in combination with new innovation to add value to wastewater by turning it to demineralized water which has much higher value at lower cost. In 2021, revenue generated from water reclamation project is 150 million baht, accounting for 8% of total revenue from water

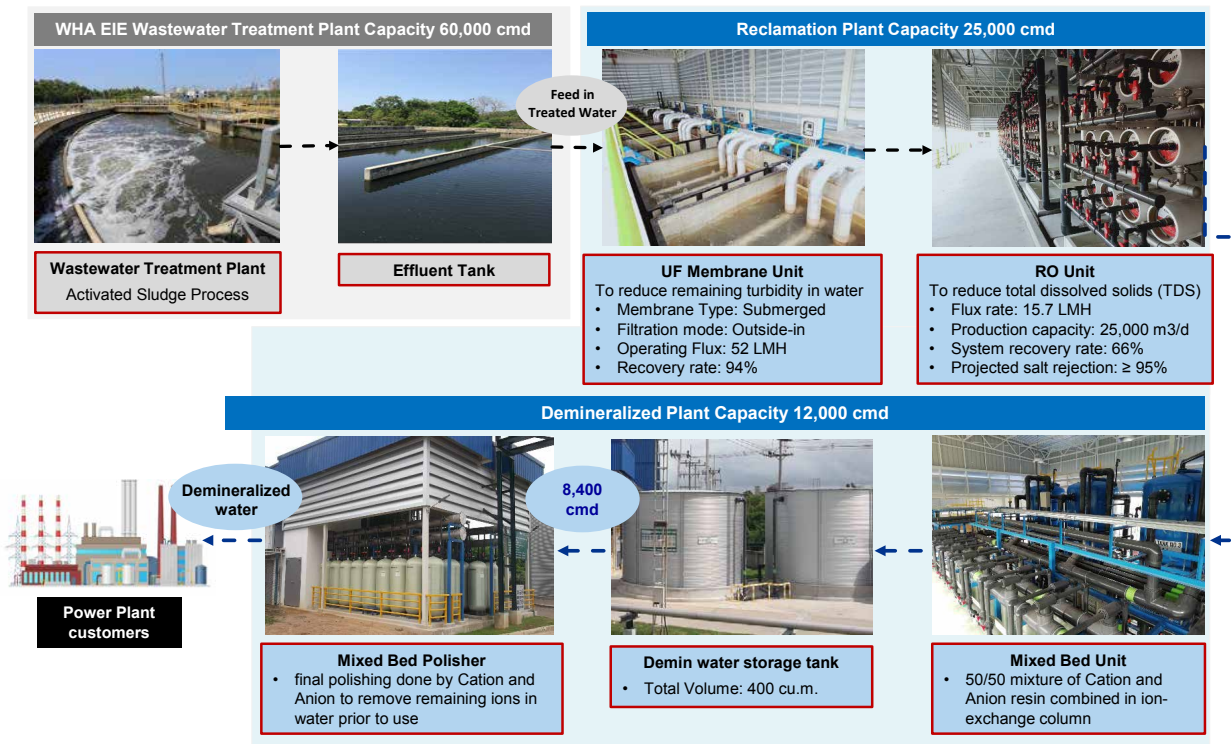
sold. This project also benefits to environment and society as it significantly reduces the amount of wastewater discharging, reduces withdrawal of natural water, helps secure natural resources, and mitigates dispute risk with nearby community.

DEMINERALIZED RECLAIMED WATER PROJECT

Furthermore, WHAUP also invested in the Demineralized Water Project, a large-scale project, consisting of 2 operations, each have maximum capacity of 4.38 mm³/year. The project is developed in WHA Eastern Industrial Estate (WHA EIE) and aimed to increase treated water quality with low cost and using environmental friendly methodology. This innovative project helps the Group in reducing its dependence on major raw water distributors as well as alleviating uncertainty and impacts on both the quantity and quality of upstream water sources due to drought, pollution, contamination, etc., which are the main risk factors for utility providers. The project also helps WHA Group's customers, which are entrepreneurs in various industries, to access to high quality water products and services at reasonable cost. In addition, the Demineralized Reclaimed Water innovation is a prototype project that can be expanded in new industrial estates of the WHA Group as well as extending and expanding the results to the community, for example, using domestic wastewater that has been treated to improve its quality to produce high-quality transformed water, etc.



More detail these projects can be found in Water Management chapter.



SMART METERING

WHAUP develops the SMART Metering initiative to enhance the traceability of utilities provided. It converts the installed analog water meters that record the volume of water supplied and usage by industrial operators throughout the industrial complex to generate digital output. This digitized data recording reduced labor expenses that initially had to collect and compile data from all meters for invoicing purposes. The initiative also enables unusual water consumption behaviors and

irregularities to be detected and addressed promptly. Monitoring for potential water transmission losses and pin-pointing leakage events can also be done through this online metering system. Moreover, the operating performance as well as customer satisfaction are improved.

This online monitoring system is also adopted in recording the solar power consumption by WHAUP's customers, which provides convenience for invoicing scheme. Such data are projected at WHA Tower, therefore, employees are no longer required to travel to each customer site and manually record their energy consumption data. As a result, this initiative can save 3,000 Baht/MW from related expenses. According to the business plan, WHAUP aims to achieve producing 300 MW of solar energy in 2023. Therefore, the SMART metering will save expense by 900,000 Baht.





SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) TECHNOLOGY AT WASTEWATER TREATMENT PLANT

Moreover, WHAUP is currently conducting studies to optimize SCADA technology at its wastewater treatment plant located within the Eastern Economic Corridor of Innovation (EECi) in Wangchan district, Rayong province. This technological system can help monitor the wastewater treatment's performances on a 24-hour basis, thus, the Group can save cost from appointing on-site personnel. It is expected that the construction of such wastewater treatment plant along with the installation of SCADA technology will be completed in 2021.

SMART ENERGY

Following WHA Group's enthusiasm in innovative energy solutions, WHAUP continues its on-going cooperation under the Memorandum of Understanding (MOU) with the Provincial Electricity Authority (PEA) for joint development of smart energy and micro-grid system to reduce electricity cost and increase reliability within the industrial complex. The first project to reach approval phase in 2021 is the Peer-to-Peer Energy Trading system which enables direct buying and selling of solar power between industrial users within the Eastern Seaboard Industrial Estate Complex via smart energy trading platform that uses block-chain technology. The system, once fully implemented, will pave way for at least additional 200 MW of solar power available for use within the industrial complex, enabling industrial users to save more than 100 Million Baht per year their electricity cost and achieve over 4,300,000 tons of CO2 reduction over the project life cycle.

CUSTOMER RELATIONSHIP MANAGEMENT

WHAUP prioritizes strengthening relationships with customers and values their trust. The company's commitment to being "Your Ultimate Solution Partner in Utilities and Power with Environmental Care" has inspired a customer-centric principle to be embedded in all aspects of the business. Customer relationship management is regarded as a foundation and core strategy that WHAUP prioritizes in order to generate long-term economic growth in the company while also reinforcing customer confidence. The company believes that providing excellent customer service will help maintain a good reputation, which is critical for its business success.

WHAUP and WHA Industrial Development (WHAID) share the same client base because they both operate within the same industrial complex. WHAUP is Thailand's largest private provider of industrial water production and distribution, which includes raw water, process water, clarified water, and conventional and renewable energy.

With its utilities products, WHAUP contributes to providing integrated solutions for customers within the industrial complex and plays a critical role in assisting WHAID to maintain its 6-yr historical market share over 40% of the industrial estate.

MANAGEMENT APPROACH

Due to the variety of customers and diverse requirements, WHAUP has implemented a customer relationship management approach in order to cater to all customers' requests and concerns. WHAUP manages customer relationships using the Customer Relationship Management (CRM) System, which is a centralized and standardized system that stores all of the customer's information and requests. In 2021, WHAUP had launched an online application, allowing an effective and timely responses to customer requests. The application's goal is to strengthen customer relationships and experiences.



At the heart of WHAUP's operations is the Unified Operation Center (UOC), which provides an integrated visibility of the company's operations and points of interest in various locations. Located at WHA Tower, the Group's headquarters along Bangna Trad Road, the central command system coordinates with power control rooms, makes it possible to track and control various programs and also provides real-time monitoring of several environmental parameters in WHA industrial estates, such as air and water quality, air pollution and CO2 emissions, rainfall and flooding status. The UOC is also linked to emergency platforms such as fire stations to ensure the steady operations of companies and the security and safety of communities and stakeholders. In addition, the UOC also surveys water and wastewater treatment plants to enable efficient data collection and ensure efficient operations. It is also linked to the Chonburi Clean Energy Power Plant in WHA Chonburi Industrial Estate where non-hazardous industrial waste is transformed to energy. As a result, UOC potentially raise customer trust while minimizing environmental impact and also strengthen customer relationships and experiences.

WHAUP values and nurtures the strong relationships and trust that it has developed with its customers. WHAUP ensures that the communication channels are accessible, accurate, and inclusive of all customers involved in one approach to strengthening customer relationships. As part of WHA group, WHAUP contribution in the "WHA Connect Newsletter," which is distributed to customers on a quarterly basis and contains information about the company's news, activities, and training programs.

Furthermore, two-way communication is facilitated through regular customer visits, phone calls, emails, club meetings, and the appointment of a focal person to address customer concerns or requests. The company welcomes and highly values all customer feedback and opinions received via the aforementioned available channels and website, as they are viewed as constructive opportunities for further improvement and growth. Feedback is processed in accordance with the Customer and Public Complaint Procedure, which includes notifying the respective Department Manager and assigning a competent staff member to investigate, address, and document the filed complaints. The status of complaint responses is reported to the plant manager, who then reports it to management during meetings.

WHAUP also conducts an annual customer satisfaction survey to deepen the company's understanding of customers' concerns, improve services for smooth operation, and ensure high satisfaction levels. The survey examines customers' attitudes toward the quality of services, products, and information they have received. The Customer Development Department compiles and analyzes the survey responses. When an issue has been identified, the department will determine the root causes and take preventive measures to ensure no future reoccurrences while also maintaining good customer relationships. Meetings are also used to communicate the results to the management levels, which will be used when maturing business strategies for product and service development. In 2021, WHAUP received an average customer satisfaction score of 95.27%.



CUSTOMER SATISFACTION SCORE

Satisfaction Measurement	2018	2019	2020	2021	Target 2022
Customer Satisfaction Score	96%	94%	96%	95.27%	97%
Total Number of Customers Surveys	181	264	425	367	400

Based on the customer satisfaction survey results conducted in 2021 and complaints received through the aforementioned communication channels and approaches, it was identified that the following areas can be improved to further enhance customers' experiences. All complaints have been resolved within due dates. Furthermore, this is done so that the survey results and customer and consumer feedback can be effectively used to improve the products and services in the business operations. In line with the present competitive environment, a platform to support more modern activities was designed by the careful and professional service of WHAUP.

Key Area of Concerns	Mitigation Measures Implemented
1. Water quality was off for a brief period (3 cases)	It was an incident where there was a very brief power outage in the supply network and the restart of supply had stirred up turbidity. The pipes were flushed and water quality was restored.
2. Customer wanted to be informed a few days in advance for wastewater sampling collection appointment (1 case)	Wastewater sampling collection is intentionally carried out in a random time fashion so the sample would closely represent the typical quality of the wastewater from the customer's process. The customer accepted the explanation.
3. Customer did not receive response and help from the company (1 case)	The customer had used a Line Group account to convey a message to the company and did not receive any response from the company. The customer misunderstood that the company is member to the Line Group. The company has given a direct contact number to the customer for future communication.



CUSTOMER RELATIONSHIP ENHANCEMENT INITIATIVES

WHAUP commits to providing its customers with the best products and services possible. As detailed in the chapter on Innovation Management, the company prioritizes the development of new innovative initiatives to address this goal. In addition to value-added services, WHAUP conducts the following initiatives to strengthen and improve customer engagement.

CUSTOMER CLUB

WHA Group and WHAUP established multiple customer clubs, which are considered communication channels to closely interact with customers to address their interests or concerns. Four customer clubs will be highlighted in 2021:

1. WHA Investor Club is opened for all customers that are situated in WHA Group's industrial estates. Members of the Club will receive monthly/ quarterly newsletters and invitations to attend variety of training seminars. In 2021, a total of 4 trainings and seminars were facilitated for the club members, including:
 - Innovation Advance Security System and Engineering Solution for Smart Factory
 - Enhances Reality in Production, QC and Safety with AR VR
 - Preparation for IoT and AI Risks in New Era Manufacturing
 - IoT Technology solutions for future
2. Japanese Club is established for over 20 years which comprises of 150 Japanese representatives from factories located within the Eastern Seaboard Industrial Estate. In 2021, the Club organized monthly meetings, in which examples of meeting topics were on waste management, waste-to-energy and property tax transfer.
3. The Eastern Seaboard Industrial Estate Human Resource Club (ESIE HR Club) was founded in 1997 with the goal of keeping members up to date on labour laws and news that are relevant to completing human resource tasks. The club currently consists of over 110 factories operating within ESIE, and members meet once a month.
4. The Eastern Seaboard Labour Relations Club (ESLR Club) was founded in 2005 to serve as a central labour-related information support platform for members, focusing on labour unions, regulations, and coordination/advice on any arbitration or labour-related matters. The club is comprised of members from 140 factories located within the respective industrial estate, and the club meets once a month.



WHAUP INTERVIEWS SHOWCASING POSITIVE CUSTOMER RELATIONSHIPS

PRINX CHENGSHAN TIRE SOLAR ROOFTOP PROJECT, THE LARGEST SOLAR ROOFTOP PROJECT IN ASEAN

Prinx Chengshan Tire (Thailand) Co., Ltd., the leading car tire producer and distributor from China, which relocated its tire production to WHA Eastern Seaboard Industrial Estate 3 on a 280-rai plot in 2018.

Mr. Zhang You Gan, Managing Director of Prinx Chengshan Tire (Thailand) Co., Ltd. a subsidiary of Chengshan Group, said “I am delighted to sign the Solar Rooftop Power Purchase Agreement with WHA Utilities and Power Plc, which will enhance energy stability and reduce production cost for our factory. I’m confident that this project will benefit both parties and promote environmental protection in the long term,”

Furthermore, this project will help the company achieve its longstanding goal of energy cost reduction to lessen its impact on the ecosystem. It will reduce electricity expense throughout the 25-year lifespan by up to THB 1,750 million, or THB 70 million per year on average. At the same time, it will offset CO₂ emissions by up to 366,000 tons, in line with environment policies to reduce global warming and greenhouse effect.

The solar rooftop system at Prinx Chengshan’s facility will be the largest of its kind in ASEAN with a total rooftop area of 229,000 sq.m. Electricity costs are expected to be reduced by approximately THB 1,750 million and CO₂ emissions offset by 366,000 tons for the 25-year contract period. The project once completed will be the largest solar rooftop system in ASEAN with an electricity-generating capacity of 19.44 MW.

The project will cover an area of 219,000 sq. m. of factory rooftop and 10,000 sq. m. of carpark area, representing a total electricity generating capacity of 19.44 MW. This will enhance energy stability and reduce electricity cost for the customer, create innovation to increase business opportunities, and help safeguard the environment by reducing global warming.

The solar system installation is expected to be completed by 2022, bringing the total electricity-generating capacity of WHAUP to 635 MW, based on its shareholding equity. The company expects to generate revenue from this project at an average of around THB 40 million per year throughout the 25-year contract period. This will make the solar rooftop business expansion to grow as planned at 300 MW by 2023.



CONTINENTAL TYRES (THAILAND) CO., LTD. A BRIGHT FUTURE LIES AHEAD FOR THE GREENFIELD FACTORY AT WHA ESIE 4, EQUIPPED WITH WHAUP SOLAR ENERGY SYSTEMS



and to its key markets in the Asia-Pacific region. “Since Day 1, the WHA Industrial Development team has not just been a supplier for us, but a reliable partner that has constantly supported us in terms of regulations and general advice,” explains Mr. Vignesh Devasenapathy, Plant Manager.

To develop the knowledge and expertise of its employees, Continental Tyres (Thailand) has set up a 2-year vocational program called “Work Integrated Learning Program” (WiL) with Rayong Technical College, for high vocational degrees, and Chulalongkorn University, for master’s degrees. In 2020, the company also organized CSR activities focusing primarily on ‘Safety on roads nearby schools.

Continental Tyres’ Greenfield Rayong plant is one of the more than 20 production units worldwide under the ‘Rubber Technologies’ sector of Continental Group. Present in 17 countries, Continental’s Tire Business Area employed nearly 57,000 people and recorded sales of EUR 11.7 billion in 2019.

Located at the WHA Eastern Seaboard Industrial Estate 4 (WHA ESIE 4) in Pluak Daeng District, Rayong Province, the plant occupies a 470-rai plot (750,000 sqm). With a workforce of 700 people, the Greenfield factory manufactures passenger and light truck tires. Following the start of operations two years ago, it produces today 1,85 million tires annually and expects to reach a capacity of 4.4 million tires by 2025. In July this year, the facility will also start to manufacture motorcycle tires, adding 100 more people as the production ramps up.

As WHA ESIE 4’s first occupant, Continental Tyres selected its location according to specific and strict requirements in terms of plot size, easy access, modern infrastructure, reliable electricity and water supply, as well as the availability of skilled workforce. Another important prerequisite was its proximity to its customers in Thailand

It also signed an agreement with WHA Utilities and Power (WHAUP) for representing a total capacity of 4.2 MW. Solar roof panels have been installed on two factory buildings and on the car park, plus a floating solar farm on a 7,000 sqm pond. These systems started operations in February 2021. “In our industry, energy efficiency is a key element. Solar energy will represent over 20% of our power consumption and will enable us to contribute towards our sustainability initiatives and thereby also lower our production costs.” concluded Mr Vignesh, who looks forward to the promising outlook of the 3-year old production facility.

Continental’s Greenfield Tyre Plant in Rayong province is one of the company’s most environmentally-friendly facilities worldwide. One of the largest investors in WHA industrial estates in Thailand, Continental has brought to Thailand over 140 years of tire manufacturing know-how as well as the most advanced technologies.

Mr. Vignesh Devasenapathy
Plant Manager
Continental Tyres (Thailand) Co., Ltd.

WISEWOODS CO., LTD.

REAPING THE BENEFITS OF COST-EFFECTIVE SOLAR ENERGY PROVIDED BY WHAUP



Established in 2015, Wisewoods Co., Ltd. is part of a group of companies founded in 1979 by the Palarit family, specializing in the production of wood panels. Located in Khao Yoi, Phetchaburi, the company manufactures high-quality Medium Density Fiber (MDF) boards, entirely made of rubber wood, for the furniture industry. One of the top 5 producers in Thailand, Wisewoods exports 60% of its production to the Middle East (Saudi Arabia, United Arab Emirates, Iran), 30% to Asia (China, India, South Korea and Vietnam) with the remaining 10% for the Thai market.

Since its founding, Wisewoods has based its development on sustainability and innovation. Its manufacturing plant in Phetchaburi utilizes the latest technologies that meet European specifications. For instance, to protect communities around the facility and preserve the environment, it uses a special type of glue that is more eco-friendly, despite its higher cost. It has also installed its own wastewater management system. "Implementing European standards facilitates exports to more markets overseas," relates Mr. Visarut Palarit, Wisewoods Marketing Manager.

Wisewoods' latest initiative is the use of solar energy, developed in collaboration with WHA Utilities and Power (WHAUP). "We considered several options, such as wind energy or burning sawdust for power, but we quickly saw the advantages of solar energy," explains Mr. Visarut. "With electricity representing 15% of our total operational costs, solar energy enables us to reduce our expenses by up to a significant 5%," he continues.

Through a 20-year partnership agreement, WHAUP has just completed the installation of two solar farms at Wisewoods' premises, the first one on land with a capacity of 3.76 MW; and the second one as a floating unit with 1.23 MW, taking advantage of the plant's numerous ponds and water reservoirs. Under the terms of the agreement, Wisewoods provided its land and ponds, and committed to buy the electricity generated by the solar panels from WHAUP. In return, WHAUP provided free installation and will be responsible for maintenance throughout the 20-year contract period.

Operational since February 10, 2020, the solar farms' total production of 4.99 MW is enough to supply the factory during the day, while at night, the company continues to buy electricity from the Provincial Electricity Authority (PEA). "Our collaboration with WHAUP has been a win-win situation for both parties. We foresee a bright outlook for the development of more solar energy projects in our region that is blessed with abundant sunshine," concluded Mr. Visarut.

Contact Information:

Mr. Visarut Palarit
Marketing Manager
Wisewoods Co., Ltd
Tel. +66 32 706 563-4
www.wisewoods.co.th

AUTO ALLIANCE (THAILAND) CO.,LTD.(AAT) SOLAR ROOFTOP PROJECT

Auto Alliance (Thailand) Co., Ltd. (AAT), a manufacturer of automobiles and automotive parts for Ford and Mazda, situated in Eastern Seaboard Industrial Estate (Rayong), handed over the completed solar rooftop project to Auto Alliance (Thailand) Co. Ltd., from WHA Utilities and Power (WHAUP) Plc., in September 2021.

The Auto Alliance Executives; Mr. Kel Kearns, President & CEO, and Mr. Tomoyuki Kazama, Executive Vice

President and Chief Financial Officer, CP & Finance, aimed that the solar rooftop project at the AAT factory in Eastern Seaboard Industrial Estate (Rayong), which is covering over 45,000 square meters and with a capacity of 5 MW, will help reduce CO2 emissions by switching to a cleaner and more environmentally friendly energy resource. The project is expected to also help reduce AAT's electricity costs at an average of THB 31.6 million per year, or THB 790 million for the next 25 years.



SUPPLY CHAIN MANAGEMENT

There is an increasing pressure on sustainable supply chain from stakeholders, such as regulators, customers, and shareholders. Addressing impacts of supply chain to environment, society, and economy, e.g., pollution, working condition, and online privacy, is now a part of effective supply chain management.

Focusing on sustainability, WHAUP is aware of the importance of suppliers' actions which can impact its reputation and stakeholders' perception. Therefore, WHAUP expands its sustainability-oriented, fair, and transparent model of conducting its business operations to its suppliers by encouraging and enhancing suppliers' competency to grow together sustainably.

MANAGEMENT APPROACH

According to WHAUP's diverse business activities, there are many suppliers that WHAUP interacts with through its four business hubs. WHAUP places sustainable operations and adherence to regulatory requirements a priority. To ensure that suppliers actions are in line with principles WHAUP valued, a Supplier Code of Conduct is developed and applied across all the business hubs with the aim to set an expectation and to provide a set of principles and guidelines to WHAUP's existing and prospect business partners. The Supplier Code of Conduct comprises of 3 sustainability dimensions, requiring the business partners to act in compliance with the stated business ethics, fundamental human rights, occupational health and safety and environmental management. WHAUP's [Supplier Code of Conduct](#) can be found at WHAUP's Website In 2021, 100% of suppliers are communicated and, 189 or 87.91% have signed acknowledgement to the Supplier Code of Conduct. For the rest will be completed by 2022.



WHAUP practices sustainable sourcing for products such as raw materials, equipment and construction materials to ensure that none originates from protected areas. Additionally, WHAUP places great importance in procuring suppliers that can provide services or products that align with the WHAUP's green building designs or initiatives. WHAUP prioritizes environmental care as stated under the Environmental Quality, Energy Conservation and Biodiversity Policy, therefore, expects its suppliers from project construction to operation phases to abide, reduces resource consumption and manages environmental practices accordingly as stated under the Supplier Code of Conduct. To reduce the impact to the environment, WHAUP encourages the suppliers to apply the environmental-friendly concept or framework. It now can be observed the application of circular economy concept through using of reusable plastic formwork, and the application of some requirements of Leadership in Energy and Environmental Design (LEED) can be observed.

WHAUP's Procurement Department is responsible for overseeing overall supply chain management at a group

level. The supplier screening and assessment process is in line with WHAUP's Procurement Procedure that is reviewed on an annual basis.

NEW SUPPLIER SELECTION PROCESS

All potential suppliers are required to complete the Pre-Qualification (PQ) form which consists of a set of questions to assess their quality, price, capacity, management systems as well as sustainability performance and risk. PQ form is designed to assure that the potential supplier has in place policies or management system regarding sustainability, e.g., business integrity, safety management and environmental impact management. In addition, in order to effectively manage sustainability risks throughout the supply chain, the assessment of potential suppliers' practices on environmental, social, and governance (ESG) aspects is included in PQ form so ESG risks can be identified and managed at the first place.

The ESG criteria for supplier selection follows 3 dimensions, as demonstrated below. The following dimensions will be assessed on a 1 - 5 scale.



Moreover, the criteria for assessment also includes the assessment of the origin of the procured products to ensure that the procured products are not from restricted areas or the areas with high biodiversity risks.

In 2021, 100% of new suppliers were screened using such PQ form. This screening process helps assure that selected suppliers to the approved vendor list (AVL) will conduct business in a sustainable manner.

SUPPLY CHAIN RISK ASSESSMENT

Apart from procurement procedure, WHAUP is a subsidiary of WHA Group which conducts supplier risk assessment in areas of business conduct, environmental impact, and social impact to manage the WHA Group's supply chain sustainably and help improve the supply chain impacts in the process of New Suppliers Selection and Supplier Evaluation.



CRITICAL SUPPLIER IDENTIFICATION

WHAUP realizes 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.

In 2021, there were a total of 215 suppliers in the WHAUP's supply chain, categorized into each respective business hubs as the following table.

Supply Chain Analysis	Number of Suppliers
Total supplier	215
Critical Supplier	16
critical non-tier 1 suppliers	To be identified 2022

Critical suppliers are identified by considering the spending analysis (e.g. up to 80% of total purchasing value), frequency of procurement and type of procurement job that depends on project development. In 2021, the total numbers of identified critical suppliers are 16 following the aforementioned criteria, representing 7.44% of WHAUP's total active supplier base, and covered up to 80.82% of WHAUP's total purchases.

SUPPLIER SUSTAINABILITY RISK ASSESSMENT

Every year, the WHAUP conducts an evaluation process to assess the critical suppliers' risks associated with economic, governance, social and environmental aspects. 16 Critical suppliers had been evaluated by users of the suppliers' services, together with the group-level Procurement Department, assess the suppliers' performances by completing an evaluation form, which consists of assessment components including quality of products/ services provided, price, delivery and cooperation. In addition to the aforementioned criteria, the supplier evaluation form also assesses the suppliers' compliance with WHA Group's environmental related policy, quality and health and safety procedures, etc. Upon completion of the evaluation process, WHAUP will inform final results and management measures categorized for respective scoring results achieved to the respective suppliers. Alternatively, in the event that the evaluation results are poor for a period of two consecutive years, the suppliers will be notified and removed from the approved vendor list and a written notice will be issued.

SUPPLIER RISK MANAGEMENT MEASURE

With the aim to assess all the critical and high risk suppliers on its performance associated with governance, social and environmental aspects, the suppliers will be evaluated annually by the Procurement Department and the user through completion of the supplier's evaluation form. The form focuses on assessing quality of provided products or services, price, delivery, and cooperation. In addition to the aforementioned criteria, the supplier evaluation form also assesses the suppliers' compliance with WHAUP's environmental related policy, quality, health and safety procedures, supplier code of conduct, and etc.

The evaluation result will be communicated to each supplier/contractor. In case that the supplier or contractor does not meet the Company requirements, the corrective action plan must get agreed. In the event that the supplier receives poor evaluation results for 2 consecutive years, it will be notified and removed from the Approved Vendor List (AVL) and a written notice will be issued.

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.

In addition to the evaluation form, WHAUP conducts ESG evaluation process through onsite audits, as appropriate to the circumstances, to assess the qualifications and performances associated with business ethics, environmental, health, safety and social management of the critical and high risk supplier include critical non tier 1 suppliers in accordance with the Company requirements and standards. In 2021, audit performance had shown in table below

Supplier	Number of onsite audit	Number of Supplier with require Corrective action plan
Critical supplier	16	no
High risk supplier	0	no
Critical non tier 1	0	no

All corrective action raised during audit, had corrective action plan in place 100%.

SUPPLY CHAIN MANAGEMENT INITIATIVE

“E-PROCUREMENT”

In 2021, WHAUP has launched phase 2 of the E-Procurement system. The system was developed to facilitate in-time efficiency, transparency and cost management for project bidding processes. Prospect suppliers are able to upload quotations to the system, streamlining the overall process, where responsible personnel can conveniently approve the quotation through the system depending on the project contract value. Furthermore, the system is also comprised of a comparative database to ensure that selected suppliers are within the competitive market range. The E-Procurement system will be incorporated with functions where users will be able to conduct PQ screening process, ESG audits and manage vendor list within the system. Additionally, the system will also enable automated bidding process where the pricing, analysis and award are conducted without manual intervention.

“COVID-19 MEASURES”

Particularly regarding COVID-19, WHAUP has been monitoring the situation and communicating with suppliers. In present, the situation increases the likelihood of widespread, protracted outbreaks. As a result, WHAUP has taken steps and implemented measures to care for suppliers with the goal of containing and preventing the spread of COVID-19 disease.

Moreover, to address the COVID-19 crisis in WHA Group, the following steps were taken:

1. Wearing Mask
2. Social Distancing
3. Washing your hand often
4. Testing ATK before working



DATA SECURITY

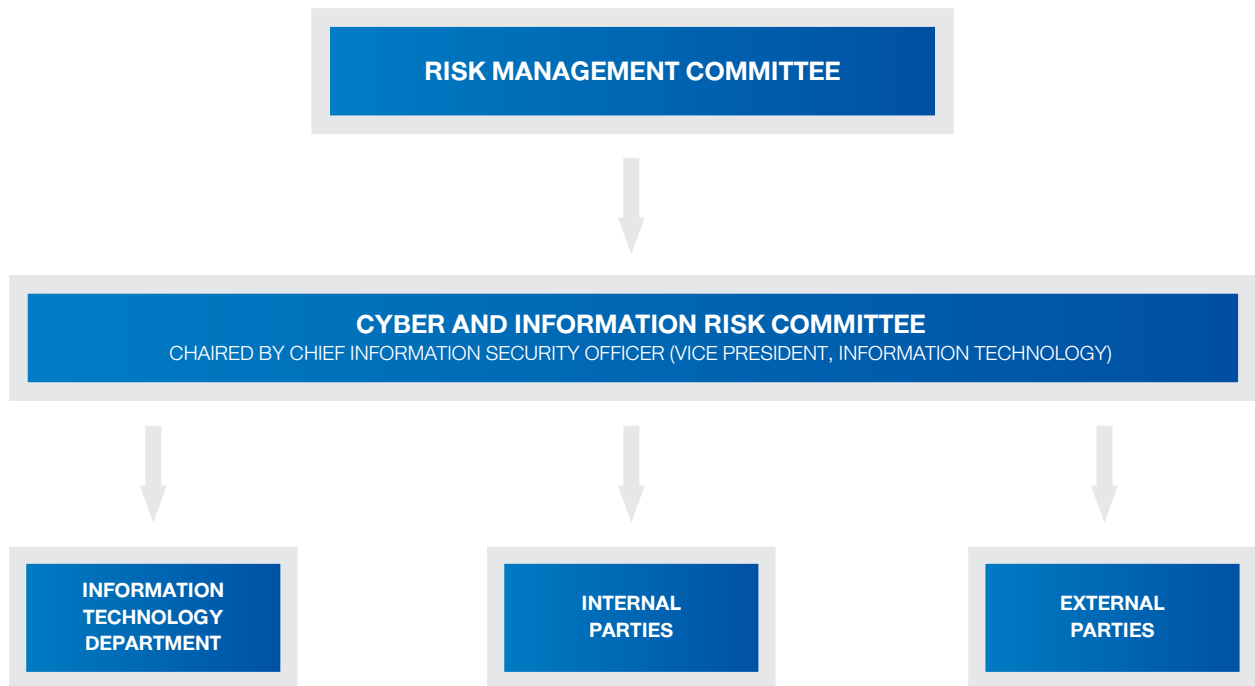


Accelerated by COVID-19, the digitalization of global economy is rapidly growth. Businesses need to be agile, adaptive, and positively transforming. Using of digital infrastructure and data is necessary to collaborate, develop innovative business models, navigate disruption, and transition to a new normal, sustainable, and purpose-driven world. However, assuring the stability of the systems and securing data at all times is challenging. Technical failure, human error, cyberattack may cost the companies' reputation. Managing these risks is necessary to ensure business continuity. WHAUP strives to stay competitive through digital transformation, leading to significant investments and heavy reliance on information technologies and systems. As a result, the potential risks related to cybersecurity, and information security breaches are increasing. Internal and customers' assets and information could be lost or misused leading to severe impacts on the company. The potential impacts range from losing customers' trusts to financial disruptions and

in some cases, could lead to non-compliance, lawsuits or business disruptions. WHAUP is aware that data security lies at the core of running all of its business hubs successfully as it gives the WHAUP customers and employees the confidence that their data are being collected, processed and transferred securely.

MANAGEMENT APPROACH

WHAUP is committed to comply with the Personal Data Protection Act (PDPA) B.E. 2562 (2019) and Cybersecurity Act B.E. 2562 (2019) as they are fundamental to ensure effective protection of customer and internal data. [The Privacy Data Protection Policy](#) can be found at WHAUP's Website. WHAUP also exercises the Information Security developed by WHA Group. In 2021, the Information Security Policy was revised and renamed to Cyber Security and Information Security Management Policy to ensure WHAUP effective digital transformation.



An Information Technology Department (ITD) was appointed to undertake holistic review of information technology security throughout all the business hubs, including installation and maintenance of the information technology system. Additionally, the ITD is also required to summarize all the reported information security incidents, including the types and details of the issues faced (e.g., place of occurrence, consequences imposed, immediate response conducted), root causes and mitigation measures implemented. The ITD reports directly to the Cyber and Information Risk Committee that is made up of department heads who are responsible for approving

policies and provide directions, performing key decisions related to data security and cyber security issues. This Committee is chaired by the Chief Information Security Officer (CISO) who is a Vice President of Information Technology. The Cyber and Information Risk Committee subsequently reports to the Group's Risk Management Committee (RMC), inclusive of WHAUP, quarterly to ensure that risks related to information technology are fully captured. The RMC, consisting of a member who has a background in information technology and cybersecurity, reviews the information security risks through quarterly meetings, then reports to the Board of Directors.



WHAUP believes that digital transformation will help create business resiliency and drive the growth of the business. Therefore, WHAUP has adapted to digital transformation through digital innovation and digital transformation. Initiatives have been set and started to implement to transform its core business or its backbone. Digital transformation also helps to ensure effective data security systems which support the goal to achieve 100% data breach prevention by 2025.

In 2021, WHAUP strengthens security to delivering efficient digital and IT operations and services. The risks related to data security of each business hub are assessed, categorized, and rated. The risks that are rated as medium to low are mitigated by the following actions:

IMPROVING IT GOVERNANCE AND ENSURING THE IMPLEMENTATION

- The revised Cyber Security and Information Security Management Policy and other related policies and procedures are introduced such as, IT Service Request Procedure, IT Change Management Procedure, and IT Incident Management Procedure. The objective of revising policies and procedures is to establish the best practice of procedures, standards and controls to govern IT processes as a means to align IT users and organization as well as to optimize the IT operation performances through effective IT governance.
- All the WHAUP employees are trained to ensure that the policies and procedures introduced are effectively implemented. WHAUP has planned and conducted mandatory training sessions to all the employees. Each mandatory training session has a test to evaluate the employees' understanding and it is set as the employees' KPI to pass the test in the mandatory training. In case that employees do not pass the test, they must re-attend the training until they pass. Mandatory training sessions include
 - Cybersecurity awareness training: Account and Password Management policy is included in this session. There are 435 employees attended this class and all of them passed the exam.
 - Data/Information Protection Policy Training: The policy will be developed and trained to all employees in 2022.

- Corporate Document Management System (CDMS): The system will be go live on 1/ Feb/2022 and start roll-out tall departments including document management process and system training.
- For new joiners, they must attend the induction session which includes the training on policies and procedures related to cybersecurity, physical security, email security, password security, mobile devices, wireless network and security, and etc.

ENHANCE SECURITY SOLUTION

As a means to prevent a risk of data loss, WHAUP has implemented the Group's policy as below:

1. Cybersecurity and Information Security Management Policy
2. Account and Password Management Policy
3. Computer and Network Usage Management Policy
4. Cybersecurity Awareness Training
5. Enhance Microsoft Security Solution (DLP, MFA, Condition Access, etc.)
6. Disable USB Mass Storage with enable procedure if need
7. Implementing Corporate Document Management System (CDMS)
8. Developing Data/Information Protection Policy

CORPORATE DOCUMENT MANAGEMENT SYSTEM (CDMS)

To efficiently manage the corporate document, Information Classification is revised and incorporate in Cybersecurity and Information Security Management Policy. Information classification is redefined to 5 categories, ranging from public to personal. Defining category of document helps manage and secure WHAUP information as appropriate information handling for each classification.

BLOCK USB STORAGE AND EXTERNAL HARD DISK

In order to prevent WHAUP computers and network from virus and malware transmitted through USB devices, to minimize risk of intended or unintended data leakage, WHAUP does not allow the use of unauthorized USB storage devices . WHAUP disabled the USB port of all staff's computers for mass storage purpose on 23 September 2021.

MOBILE DEVICES MANAGEMENT

The Group, aligning with WHAUP practices, has deployed Mobile Device Management (MDM) with Microsoft EMS (Enterprise Mobile Security) to manage mobile devices in the organization, either on-premises or cloud-based, aiming to control the usage of organization's devices. The focused devices include mobile phones, tablets and laptops. The Group can also configure specific policies to control applications to ensure the organizational data stays protected and is secluded from personal data.

ASSURE SECURITY OF THE SYSTEM

To assure security of the system, penetration and vulnerability tests is conducted in 2022 to ensure that we can protect our data, reduce cyber risk, satisfy stakeholder requirements, and preserve the organization's image and reputation. In 2021, the Group's subsidiary, WHA Infonite Company Limited is certified for ISO/IEC 27001: 2013. For the Group, it now prepares for ISO/IEC 27001: 2013 certification with a plan to get certified by the first quarter of 2023.

INFORMATION SECURITY RESPONSE MECHANISM

The security and confidentiality of information are also governed by WHAUP's Code of Conduct and Practices. Any suspicions, grievances or breach cases on potential violations to such principles can be reported and investigated following the established whistle-blowing process as stated in the Codes of Business Conduct chapter. Additionally, WHAUP has conducted a breach assessment and implemented a Cyber Security and Information Security Management Policy. The Policy enforces to all employees, states the procedures and responsible personnel for management and reporting of information security events in respondent to a reported breach case.

ENSURING CUSTOMER'S DATA SECURITY

As WHAUP provides information technology solutions through WHA Digital Platform, protection of the customer's data is prioritized equally as security of its own internal data. Consequently, WHAUP continues to improve and keep its technological services up to date.

PERFORMANCE

WHAUP commits to continuously improve its data security management and systems in order to continuously ensure that 100% data breach prevention in terms of data leaks, thefts or losses of both inbound and outbound data are achieved.

Performance	2019	2020	2021
Total Number of Complaints Received from Outside Parties an Substantiated by the Organization	0	0	0
Total Number of Complaints from Regulatory Bodies	0	0	0
Total Number of Identified Leaks, Thefts, or Losses of Customer Data	0	0	0



SOCIAL DIMENSION

OCCUPATIONAL HEALTH AND SAFETY

Managing health and safety is an essential component of running a business. Occupational health and safety (OHS) imposes a duty on all operators to ensure that their employees and third-party contractors performing work on their behalf work in reasonable conditions and that OHS is a top priority. The protection of valuable human assets and their health guarantees that they will be more productive, which will be beneficial in driving companies to achieve business objectives and support sustainable growth. Given the recent COVID-19 pandemic, it is more important than ever that operators improve their OHS management systems. WHAUP recognizes the importance of effective OHS management in order to achieve their objective of preventing and minimizing accidents, occupational injuries, and illnesses. WHAUP takes proactive measures to ensure the safety and well-being of its employees, suppliers, contractors, and visitors on its premises. This includes preventive controls to manage emergency incidents, safety standards training, and cultivating an internal safety culture.

MANAGEMENT APPROACH

To ensure effective OHS management practices, WHAUP strictly adheres to the Occupational Safety, Health, and Environment Act, B.E. 2554 (2011) and all related rules and regulations, as well as international

safety standards. WHAUP operates within WHA Group's industrial estates, so OHS is overseen by the Group's Safety Department, which is led by WHA Group's Chief Operating Officer. WHAUP also contributes to group-wide OHS management by closely collaborating with and serving on the Safety Committee.

The Company applies WHA Group's OHS Management System to manage health and safety risks throughout its operational business to achieve its zero incident goal for employees, contractors, customers, visitors as well as surrounding communities. The adopted Management System ensures that the Company can continually improve its safety performances and comply with the health and safety legislation and standards. Following the elements of the Management System, a risk assessment was conducted by the safety officers, holding an OHS certificate, to identify all hazards and risk factors that have the potential to cause harm to its people, and determine appropriate control measures to eliminate hazards and minimize risks associated with operational procedures such as production, storage and etc. The risk assessment is subjected for annual review or whenever there are changes to operational processes. Risk assessment results conducted in 2021, portrayed the following key risk factors



Safety Risks	Description	Mitigation measures
Chemical Leakage <ul style="list-style-type: none"> Chlorine gas supply system leak. Chlorine gas tank leak Chemical container used in production, wastewater treatment leak or break. A chemical transport vehicle was involved in an accident while in transit. 	<p>Operator chlorine gas workers and nearby employees There is a chance of exposure and danger from leaking chlorine gas.</p>	<ul style="list-style-type: none"> Train employees and related persons in working on chlorine gas, in the course, the safety use and storage of chlorine gas. Daily inspection of gas cylinders and equipment Checking gas detection equipment to ensure that it is ready for use, as well as having equipment calibration Keeping the use of chlorine gas and storage facilities in order and safety
Fire <ul style="list-style-type: none"> There are explosions and fires in the work area, electrical equipment, machinery, fuel, etc. There are explosions and fires in nearby areas that cause impact or damage. 	<p>Company, property, employees or others are damaged and harmed by fire. including the image of the organization or other effects</p>	<ul style="list-style-type: none"> Inspect working areas, fuel storage areas, chemical storage areas, and other areas. To be safety Check electrical equipment and use. To be safety Check the firefighting equipment in each area. To be ready and sufficient for use. Train the staff involved in firefighting. to be ready in the event of an accident

Safety Risks	Description	Mitigation measures
Construction work using heavy Equipment <ul style="list-style-type: none"> • Cranes (e.g. Tower crane, Mobile crane / Hiab fall on operator. • Broken pile driver Broken piles fell on workers. • Active scaffolding and bracing fall or collapse. 	<p>use of heavy Equipment to work there is a high likelihood of occupational hazards. causing harm and injury to operators and people around them</p>	<ul style="list-style-type: none"> • Must comply with the machine safety manual and strictly comply with the regulations prescribed by law Operation • Must check equipment, tools, machines for readiness and safety before use. • Training on safety in the use of each type of machinery related to the employees who use it and those involved to have knowledge and understanding of the operation.
Covid-19 pandemic	<p>The outbreak of Covid-19 pandemic could impact the health of WHAUP employees contractors or those exposed to such risks.</p>	<ul style="list-style-type: none"> • Application of WHA Group's established precaution methods in order to ensure the safety of its employees and workers. • Comply with the regulation and recommendations on safeguarding against COVID-19 instated by the Ministry of Public Health • Conducts regular cornification of facilities with alcohol • Checks body temperatures upon entrance to WHAUP's offices and • Regular communication to employee on update news regarding COVID-19 through email and internal SharePoint • Employees are tested for Covid-19 twice a week for follow-up and prevention • Provide home isolation for employees to quarantine

Two cases of work-related injuries were recorded. 1. An employee in the Operator's part had an accident while working to take note of the water meter. 2. Contractors working on behalf of WHAUP Contractors face problems when they are under construction. In both incidents, the injured received immediate medical attention. There were no reported cases of spill incident that occurred in 2021. Correspondingly, WHAUP commits to regularly and continuously improve the OHS system in order to prevent any past incidents from reoccurring, and achieve its target of zero incident goal.

Emergency Management

WHAUP's Employees can report all work-related incidents through an event submission form, a complaint form, or directly to their supervisors in an emergency. These cases will be investigated in accordance with the WHA Group's Emergency Calls Process. Employees are strongly encouraged to follow the protocol in the event of an incident and, in extreme cases, to be responsible for removing themselves from the situation. Similarly, the Safety and Security Departments will thoroughly review the incident to protect employees from retaliation and to prevent future accidents from occurring.

WHA Group established an Emergency Control Center (ECC), which are located at 10 of the Group's industrial estates to monitor and suppress emergency situations that occur within or near the industrial complex. The ECC is managed by occupational health and safety experts and equipped with fire control systems, ready to operate at any time. In 2021, the ECC stopped one emergency case at a factory in the Group's industrial estate. Furthermore, the ECC assisted the local authorities in suppressing 5 emergency cases in the surrounding communities outside of the industrial complex premises.

EMERGENCY DRILLS

WHAUP participates in the Group's annual emergency drills for various potential incidents such as firefighting and evacuation, hazardous chemical spillages, traffic accidents, floods, and emergency events related to factories within the industrial estates because it operates within WHA Group's industrial estates. WHA Group hosted a fire response drill at WHA Eastern Industrial Estate (WHA EIE) in 2021, with 10 WHAUP employees participating. The drill covered advanced-level firefighting

training. The review score for this fire drill is 82.5% for all processes (communication, equipment, personal protective equipment, reporting process, and timing), demonstrating the success in raising employees' awareness of potential risks as well as responding to a fire event.

- In June 1 2021, WHA Group hosted an emergency response drill for fire and chemical spillage incident at WHA Chonburi1 Industrial Estate (WHA CIE) and WHAUP is parts of this. 9 representatives
- In June 17 2021, WHA Group hosted an emergency response drill for fire incident at WHA Chonburi2 Industrial Estate (WHA CIE) and WHAUP is parts of this. 5 representatives
- In June 24 2021, WHA Group hosted an emergency response drill for fire and chemical spillage incident at WHA Eastern Seaboard Industrial Estate 2 (WHA ESIE2) and WHAUP is parts of this. 8 representatives
- In July 14 2021, WHA Group hosted an emergency response drill for fire and chemical spillage incident at WHA Eastern Seaboard Industrial Estate (WHA ESIE, ESIE1) and WHAUP is parts of this. 16 representatives

participated from the Industrial Estate Authority of Thailand (IEAT) representatives, Department of Disaster Prevention and Mitigation, Department of Labor Protection and Welfare, local authority offices, local communities, local hospital, customers, the Group's employees, etc. There employees from WHAUP that participated in the drill. The responding measures performed during the drill include emergency reporting, first-aid, selection of appropriate personal protective equipment, order and control etc.





COVID-19

COVID-19 has been identified as a potential threat that could impact the health of WHAUP employees, contractors, or those exposed to such risks in 2021 due to the ongoing spread of the pandemic virus. As a result, good OHS practices are critical during pandemics. WHAUP employs a COVID-19 Procedure that prescribes precautionary practices in accordance with the regulatory requirements of the Ministry of Public Health. This includes, among other things, regular alcohol sanitization of facilities, body temperature checks, and the recording of personal data upon entry to workplaces. Furthermore, through internal SharePoint and emails, all employees were kept up to date on any COVID-19-related news.

In 2021, WHAUP implemented the Bubble and Seal measure in accordance with the government's goal of protecting industrial plant workers and surrounding communities from COVID-19 infections. The process of this measure is Comply with the Business Continuity Management Plan (BCP) and comply with government regulations for compliance. Result from this measure Process water and wastewater treatment systems can produce and treat wastewater continuously does not affect business and employees are not at risk of contracting COVID-19 in the work area



SAFETY CULTURE

WHAUP participates in training programs to educate relevant stakeholders about workplace safety, with the goal of integrating OHS practices for all stakeholders. Training programs are created in response to risk assessments and changes in legal requirements.

Afterwards, on an annual basis, WHAUP provides and ensures that all of its employees receive appropriate health surveillance programs. Furthermore, access to medical services for employees is ensured through the provision of health and safety insurance. Nonetheless, WHAUP welcomes and encourages its employees to make suggestions to their supervisors about how to improve working conditions. Departments of Human Resources and Safety and Safety Committee about how to improve working conditions.

Safety concerns are important for WHAUP; it extends from its employees to the suppliers and contractors performing work on behalf of WHAUP. All suppliers and contractors are subjected to adhere to WHAUP's safety requirements, and surpass training course on the Company's environmental policy and relevant regulatory

and safety standards. Those that have surpassed the training will receive a contractor card that will expire in one year from issuance date. Such training course was conducted in 2021 for 186 new WHAUP

WHA Group established the Safety Club, which includes WHAUPs' employees, contractors, and customers, to collaboratively improve safety measures with its stakeholders. The goal of this Safety Club is for participants to share their thoughts and opinions on safety practices. The Club holds quarterly meetings, the most recent of which was held in October 2021. There were 41 people in attendance at this meeting, and the topics of discussion included traffic management, road safety, drug addiction and abuse control, first aid, cardiopulmonary resuscitation, and the benefits of community enterprise.

Furthermore, in 2021, WHAUP participate employee recreation activities by supporting employee clubs such as fitness clubs, boxing clubs, yoga clubs, football clubs, and badminton clubs, among others, in order to promote employee health and well-being



Make "Employee Wellbeing" a new priority, with an emphasis on occupational health and safety. WHAUP prioritizes employee health because the company's success is based on the health and safety of its employees. As a result, WHAUP has taken steps to promote health and safety in order to keep employees healthy. Furthermore, WHAUP promoted employee well-being through the following program:

- Creating a well-being program that aligns with employees' needs in terms of health, wealth, and career
- Workplace improvement projects
- WHA Care; Voice of Employee program

Furthermore, WHAUP uses an online communication activity called "WHAPPY program" from The Group via Microsoft Team to provide knowledge to all employees

In 2021, the Group has organized online activities with health-related topics such as “Stress management and burnout syndrome”, “Stretching fit for fun” and “Life balancing to fit and firm”, “WHappy Health & Wellness - Met. Tips for taking care of your physical and mental health while working during COVID-19” etc.



NIAA Friday Activity

X AIA Vitality



WHA GROUP

Welcome Back to Office Series

ตอน : Stretching Fit for Fun

เราาม Warm Up ร่างกาย อ่อนน้อมร่างกายกับท่าทางส่วนบน
 เชื้อตามข้อเท้า ทุ ปกติด้วยเทคนิคการเล่นโยโย่ด้วยตัวมัน

กรุณาร่วมกิจกรรมนี้ 14 ตุลาคม 2564 เวลา 14.00-17.00 น.

WHA Tower : ไทนาทาวน์ Hall ชั้น 24 IFC Amphitheater ชั้น 22, 23

Site Office : ห้องประชุมประจำแผนกสำนักงาน



กรุณาสวมหน้ากากอนามัยมาด้วย






สุขภาพดีไม่ใช่เรื่องไกลตัวอย่างที่คิด อยู่ออฟฟิศ ก็ Fit ได้ !!!

เตรียม
ชุดสบายๆ

มายืดเล่นยืดคลายส่วนกัน







Stretching Fit for Fun







Microsoft Teams Meeting

[illegible]

INTRODUCTION TO HUMAN RESOURCES MANAGEMENT

While human resource and workforces has always played a leading role in the success of the business, a skilled and capable workforce also creates a strong foundation for sustainable growth. In the recent years, society, environment and technology are changing rapidly. More opportunities are presenting themselves to companies to drive progress in sustainable development. Through interactions and engagement with workforces, companies are starting to integrate the vision “Future of Work” to their workforces, across the globe, to be inclusive, develop and motivate them in both their personal and professional aspects, as well as preparing them for future challenges they may encounter.

Consequently, the “Future of Work” is forcing WHAUP to rethink their People Strategy and re-formulating their human resource management and principles to adapt to this ever-changing society. Thus, WHAUP recognizes that, in present days, different work needs to be done, people need to work in different ways, and people want to work differently. Likewise, the changes in people’s attitudes lead to equal employment opportunities and inclusiveness in workforce. WHAUP acknowledges that the changes in the world of work can results in more jobs being created, jobs evolving, and jobs being eliminated.

Accordingly, WHAUP continuously put tremendous efforts into all aspects of its human resource management system. This is demonstrated through WHAUP’s effective talent attraction and retention processes, and their advanced and holistic approach to human capital development. The management approach takes into account, not only the intellectual, and physical attributes of a workforce, but also their health and well-being, safety, emotional health as well as the working conditions and environment. Moreover, WHAUP takes into consideration the labor practices that is fair, ethical, respectful towards human rights and ultimately, having the employees’ best interest at heart.

WHAUP ‘5 YEARS’ DIRECTIONS FOR HUMAN RESOURCE MANAGEMENT

WHAUP sets out a 5-year strategic direction for human resource management, starting from 2022 to 2026, aiming to be one of the best employers in Thailand and the region. The strategy is implemented to re-vitalize and revamp the existing human resource management systems, including talent attraction and retention, human capital development and managing labor practices. The overview of the goals for each year are as follows:





WHAUP CORPORATE VALUES

Established in 2017, WHA Group's corporate values are exercised at WHAUP which plays a vital role in promoting and fostering digital transformation and innovation within the organization. The WHAUP's Core Values were implemented throughout the four business hubs. The corporate values instill and foster employees' mindset to act and perform their roles with inclusivity and harmony in the most effective ways. Advanced, Champion, Resourceful, Partnership and Integrity are the key five

elements of the corporate value, which are delicately designed to support the development of employees' leaderships and competencies. In 2022, WHAUP is planning to the core values to align with the corporate branding and instill digital elements into the corporate DNA (WHAUP DNA). This process will play an important role in capacitating WHAUP to improve business through its digital transformation aspiration as well as in driving WHAUP's strategic direction to turn WHAUP into tech company by 2024.



HUMAN CAPITAL DEVELOPMENT

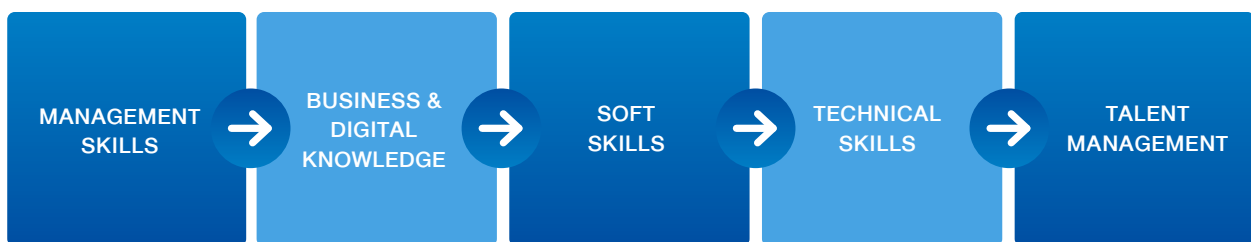
'Future of Work' has become the key driver that is shaping needs for change of the current workforce and its management for most organizations. Together with the global trends such as technological advancement, innovation, demographic shifts and society development, it is essential that companies rethink its human capital development which is crucial to the business success and sustainable growth.

To address these changes, WHAUP is re-assessing its current workforce and human capital development, from identifying skill gaps, investing in trainings, upskilling and reskilling, to ensure that there are necessary skill sets are aligned with the WHAUP's business visions and strategy. WHAUP truly believes in the philosophy that people is the most valuable asset to the company, and recognize that they play a critical role in the organization's sustainable growth. Thus, WHAUP prioritizes human capital development to support its employees to reach their full potential and capabilities.

MANAGEMENT APPROACH

Human Resource Department is the key function to plan, execute, and manage all HR relating issues for the whole Group. WHAUP realizes that investing in employee learning and development not only serves as a motivation for employees to develop themselves, but also enables the organization to ensure the continuity and growth of our business with uninterrupted supply of highly skilled workforces. Therefore, WHAUP provides comprehensive development programs to support personal and career advancement, which in turn leads to greater job satisfaction and motivation.

The learning and development program focuses on five key growth areas including 1) Management skills development, 2) Business and digital knowledge development, 3) Soft skills development, 4) Technical skills development, and 5) Talent management.



To foster the employees' knowledge and capabilities, WHAUP also analyzes human capital return on investment (HCROI) to serve as an indicator to reflect appropriate levels of employee investment. In 2021, WHAUP's HCROI rate is at 23 times. Thus, WHAUP has successfully achieved its 2021 target for maintaining the rate at 22 times. WHAUP has also initiated a target for maintaining the HCROI rate at 27 times by 2025.

Moreover, WHAUP has dedicated 213180.87 Baht to people development in 2021, which was accounted as 1402.5 Baht per FTE.

TABLE 1: HUMAN CAPITAL RETURN ON INVESTMENT (HCROI)

	FY 2019	FY 2020	FY 2021	Target FY 2025
HCROI (Times)	31	18	23	27

WHAUP has revamped its human resource strategy to accelerate people transformation through enhancing capabilities, upskills & reskills, and promote creative work environment to support continuous self-development as well as driving business results. WHAUP is improving their organization capability requirements to build core skill sets for future employees; this is in line with WHA's strategic plan and each business hub's requirements, as follows:

Business Hubs	BU's Specific Skill Sets
WHA Group	International expansion across the Group
WHA Utilities and Power (WHAUP)	Value added products for WHAUP

Moreover, WHAUP is focusing on the Upskill Digital Competency, ranging from fundamental skills for all employees to more savvy skills; e.g., data analytic, programming, or more sophisticated skills for specific functions and levels

EMPLOYEE DEVELOPMENT PROGRAMS

WHAPPY PROGRAM

In 2021, WHAUP implemented together with WHA Group's WHAppy program which is the combination of WHA + Happy. This program is a series of change management activities and communication to promote positivity and can-do attitude among WHA community. The program includes various activities to enhance employees' knowledge, capabilities, mindset, including health and well-being.

As part of the WHAppy Programs, various sessions were conducted on different topics that are important to employee development and align with WHAUP's change strategy. We have grouped all activities to 4 key categories including;

1. WHAppy Talk - a series of knowledge sharing and inspirational talk by both external well-known guest speakers and internal WHA's own management and staffs, e.g., Talk by Khun Krating: KBTG, Talk by Khun Joe Thana: SCB, etc.
2. WHAppy Friday Activity - a series of laid-back, relax, yet beneficial activities mostly held on Friday to help destressing our people from their week-long calendar, e.g., Stress Management by doctor from Bangkok Hospital, Live with Covid-19 by doctor from Bamrungrad Hospital, Food Nutrition and Exercising by AIA, Money Management by SCB, etc.
3. WHAppy Podcast - a series of podcast to be broadcasted internally to enhance staffs' awareness and knowledge on global new trends and ongoing digital transformation journey, e.g., Cybersecurity, How to become paperless organization, Data-driven organization, etc.
4. WHAppy Festival - a series of activities aligning with key festive seasons for the whole year to create bonding and unity among WHA staffs, e.g., Songkran Festival, Annual Merit Making Day, WHA Group New Year Party, etc.

As a result, in total of 20 activities had been hosted in the year 2021, after the kick-off of WHAppy program in March. All activities had been adjusted to accommodate and comply with the social-distancing and work from home policy, which have been quite challenging for the team. However, the results from each activity had been beyond the expectation. In total, average satisfaction rate for all activities are at 4.35 out of 5 scale, and more than 60% of all employees participated 100% in all activities. Most importantly, working team has received abundant of feedbacks and suggestions from staffs to further plan for a more employee-focused activities in the year 2022.



MANAGEMENT SKILLS DEVELOPMENT

In 2021, WHAUP has organized various training programs for employees to gain and improve their management skills. The programs include:

- Human Resource was virtually conducted “Effective mid-year performance review” and “Coaching for Result” course for people managers over 6 hours in which 161 participants from a target of 186 participants that attended the 5 sessions. The program objective is to equip line managers with techniques and guidelines for giving feedback and applying continuous effective performance review to drive the team towards expected business results. Satisfaction assessment was conducted to determine the knowledge gaining of the participants after this training program.
- WHAUP as part of WHA Group organized executive briefing session topic “Exponential people development for Sustainable Growth” for executive and department head 41 participants. This session focused on the new leadership challenges, the new leadership capabilities and the new way of leadership & people development, was facilitated by Khun Porntip Iyimapun, CEO and Founder of PacRim Group.

BUSINESS AND DIGITAL KNOWLEDGE DEVELOPMENT

The following training programs were organized with the aim to build employees’ understandings and knowledge on business and digital aspects.

- WHAUP as part of WHA Group collaborated with “RISE Accel Company Limited” to initiate Innovation Journey workshops for top management 24 participants. This workshop was facilitated over two sessions by khun Apisith Thanopajai (Aj.Kla) and khun Narudee Kristhanin, in which each session was conducted over 6 hour. The program objective is to identify WHA strategic direction “How to be tech firm in 2024”. In addition, there are also “WHA Innovation Journey Forum: Enhancing Innovation Power from You” was offered to WHA Group’s employees all level over 3 hours in which 370 participants. This forum focused on the key characteristics of innovative organization and innovative People and transforming

to the innovative corporate from Leadership to Innovation culture & Innovative mindset of people.

- “Business agility for leading change” and “HEM for beyond leading change” are the training course with the objective to apply the principles of agile development to the entire organization’s culture and behavioural characteristics an agile organization. The training course offered a helpful guide to each step of transformation process for Change Agent 26 participants and DTO Team 15 participants over 15 hours duration.

SOFT SKILLS DEVELOPMENT

The following training program were initiated or organized with the objective to develop and enhance the employees’ soft skills.

- In 2021, WHAUP has provided a digital transformation program to upskill and reskill digital mind-set and digital literacy for employees at all levels across the four business hubs.

YOUR NEXT YOU

Starting in 2020, in response to COVID-19 pandemic, WHAUP adjusted its human resource development training to suit the situation through online learning virtual course. The training program is named ‘Your Next You’ which is organized by the SEAC Institute. The training aims to enhance employees’ knowledge, capabilities and innovative mindset including design thinking, creative thinking blocker, growth mindset, outward mindset, recharge creative capacity and step-in-leader, etc In 2021, there were 7 employees that attended this training program. The program lasted for 3 months in which participants were required to attend the online virtual course for no less than 35.5 hours in total.

BEYOND TRAINING

WHAUP as part of WHA Group has provided online learning platform for employee at all levels across the four business hubs. The training program is organized by Beyond Training Plus. The training aims to lay foundation, build readiness for digital transformation and agile way of working such as Reshaping the future of work, Digital Mindset, Data driven organization, Agile Leadership, Changing for growth and New way of work thru changes beyond agile, Innovation in organization, etc. there were 501 from 585 employees that attended

this training program. The program lasted for 5 months in which participants were required to attend the online course for no less than 20 course in total. Satisfaction assessment was conducted to determine the knowledge gaining of the participants after this training program.

TECHNICAL AND FUNCTIONAL SKILLS DEVELOPMENT

In 2021, WHAUP organized the following competencies and development training programs for employees to improve their functional and technical skills and knowledge they need, such as compulsory occupational safety and health trainings.

- Safety training programs covering the following topics were provided as per required by the regulations including occupational, health, safety and environment in workplace, working at height, confined space, overhead crane, electrical safety, fire drills, hazardous chemicals, etc. Such training programs were provided for WHAUP and WHAIDs' relevant employees at various levels from managers to operation staffs. Altogether, the total training hours for safety programs are 582 hours, with a sum of 42 participants across all sessions.
- WHAUP as part of WHA Group has also organized the Computer 101 programs. The program included 6 sessions relating to computer skills which are the use of Mitel, Microsoft Teams, Onedrive & VPN, Microsoft Outlook, Computer, Printer, Network, and MRBS. The program conducted training total of 8 hours with 648 participants, across all sessions. Participant's knowledge on the topics improved from average of 58% to 84% after the training sessions

TALENT MANAGEMENT

INDIVIDUAL PERFORMANCE APPRAISAL

WHAUP uses individual employee evaluation activities to determine skill and competency development in line with the organization's growth strategy. WHAUP has implemented various tools and measures to assess employees' individual's performance across all business hubs. WHAUP has adopted 3 types of individual performance appraisal for use in identifying the individual performance-related compensation

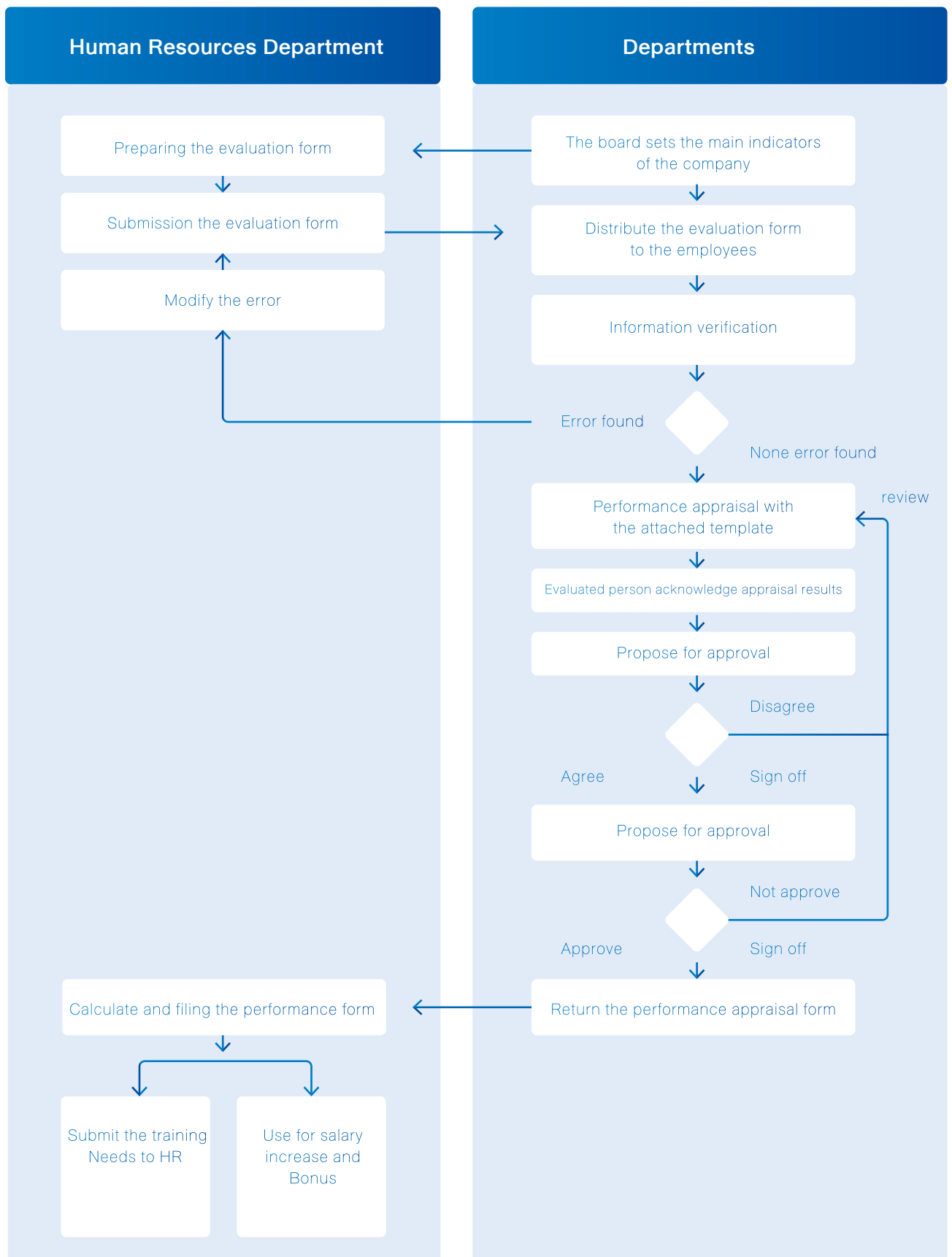
Type of performance appraisal	% of all employees (coverage)
Management by objectives: systematic use of agreed measurable targets by line superior	100%
Multidimensional performance appraisal (e.g. 360 degree feedback)	100%
Formal comparative ranking of employees within one employee category	100%

PERFORMANCE MANAGEMENT

Moreover, WHAUP implemented performance management to in order to guide all employees, for all employment levels. As part of measuring employees' performance, WHAUP has recorded employee training hours and implemented corporate KPIs, Functional KPIs and Behaviors measurement. Furthermore, WHAUP also set targets and weighting for each components measured, including: innovation, integrity, partnership, solution focus, team alignment, task management and people management.



PROCESS OF THE PERFORMANCE EVALUATION.



INDIVIDUAL DEVELOPMENT PLAN

Additionally, WHAUP prepared short and long-term individual development plans (IDP) for each employee to cater for their career advancement and growth. The IDP helps to identify and outline the employees' knowledge, skills, and abilities as well as to improve their performances and sharpen their professional competencies.

INNOVATION LEADERSHIP PROGRAM

In 2021, WHAUP, as part of the WHApy Talk Program, organized together with WHA on the WHA Innovation Journey Forum. There were 361 participants in total from

all business units. The objective of the session was to communicate the strategic direction of turning WHA Group to Tech company within 2024, and to preempt all staffs to participate in this journey. The program promoted the participants' necessary skills and capabilities to lead the organization through changes and disruptions. During the program, the potential leaders were engaged in enriching innovation project experiences which promoted start-up minds and customer-oriented mindsets. This helped to encourage an innovative workplace and enhanced innovative culture. After the session, employees were asked to complete the satisfaction survey. The satisfaction score was 4.46 out of 5.



MANAGEMENT PERFORMANCE

In 2021, performance in terms of average hours of training per year per employee are as portrayed in the following table.

Breakdown Category	Number of Average Training Hours/Year (hours)	Average hours per FTE of training and development (hours)	Average amount spent per FTE on training and development (Baht)
Gender			
Male	25.99	25.99	1,630.99
Female	23.41	23.41	510.68
Age groups			
<30 years old	21.31	21.31	1,104.17
30-50 years old	21.89	27.89	1,584.40
>50 years old	20.16	20.16	1,029.79
Management level			
Junior/low level management	14.29	14.29	553.85
Middle level management	31.37	31.37	3,110.18
Senior/Top level management	22.79	22.79	3,291.67
Race, Ethnicity, Nationality, Country of origin, cultural background			
Thai	25.4	25.45	1,402.51
Type of training			
In house	21.02	21.02	424.69
Public	4.42	4.42	997.82

TALENT ATTRACTION AND RETENTION

In this highly competitive and fast-paced environment, companies are finding it more challenging to attract top talents while retaining existing employees. The challenges are intensifying, especially amidst the post-pandemic economy. New strategies and tactics for human resource management must be devised for employers to remain competitive and attractive for both existing and future talents, aligned processes for talent attraction and retention are crucial to the growth of new business opportunities and shifting business directions.

The current pandemic is accelerating the disruption of how we work and it will shape up the new normal for 'Future of Work'. Noticeable changes include increasing in remote working, flexible working hours, online meetings and work collaborations, as well as virtual hiring. Remote working, or the 'work from home' practice, brings to light the importance in obtaining employees with skill and knowledge suitable and adaptable to these societal changes (e.g. technological-specific skills and digital literacy).

Furthermore, with the shifts towards digital transformation, new jobs have been created, which require new capabilities that are currently not available in the companies. Within the existing jobs, a change in mind-set, job focus and approaches are needed to perform certain tasks more effectively in this competitive environment. Nonetheless, certain jobs may be eliminated and obsolete; these jobs are being replaced by new technologies, new alternatives, or are simply not needed anymore.

Moreover, COVID-19 had resulted in business' high lay-off rates and hiring freeze. The impacts have also led many people to re-allocate across the globe, or enforced circumstances that may disrupt their normal routines and/or prevent them from working. Therefore, these circumstances caused companies to lose their high-skilled and talented employees.

As a result, WHAUP puts great importance to attract new and retain existing talents. Fundamentally, human resource is one of the critical drivers in gearing the company towards achieving sustainable business successes.

MANAGEMENT APPROACH

WHAUP's talent attraction and retention management is under the responsibility of the group-level Human Resource Department. WHAUP realizes that low employee turnover rate helps to maintain the company's productivity and experienced talents, and that recruiting is a costly endeavor that is also time consuming. To save itself from such hassle, WHAUP has initiated to reduce the total turnover rate at 7.8%, voluntary turnover rate at 3.55%, and turnover rate of talent at 2.5%.

To foster the employees' knowledge and capabilities, WHAUP also analyses human capital return on investment (HCROI) to serve as an indicator to reflect appropriate levels of employee investment. In 2021, WHAUP's HCROI rate is at 23 times. Thus, WHAUP has achieved its 2021 target for maintaining the rate at 22 times. WHAUP has also initiated a target for maintaining the HCROI rate at 27 times by 2025.

WHAUP also recognizes that in order to achieve sustainable business success, its current human resource strategy and corporate values are no longer sufficient. Therefore, WHAUP has revamped its human resource strategy, and incorporating Strategic Workforce Planning (SWP) and People Analytics (PA) as part of its human resource management system. SWP is a long-term planning process, providing up to 3-5 years of future forecasts. It allows WHAUP to align their workforce to the business needs and outcomes. SWP focuses on identifying the workforce implications, current, transition and future of business strategic objectives, including scenario planning.

STRATEGIC WORKFORCE PLANNING (SWP)

WHAUP's strategic workforce planning process aim to build WHAUP future. Agile workforce planning will shape WHAUP employee experience in significant ways. It also helps companies form teams that work well together for long-term results and enhances talent management capabilities.

As part of the SWP, WHAUP utilizes People Analytics to estimate the future workforce that the Company will need along with studying external landscape. People Analytics (PA) is determined as methods, tools or applications that integrate the use of advanced analytics and large, complex data sets into human resource management system. PA allowed companies to identify current risks and opportunities, provide better understanding of organizational networks and information flows leading to an informed decision-making process in talent management. WHAUP collects data through the Human Resource Information System (HRIS) in order to track current human capital and headcounts with the manpower planning and adjust implementation plans. The data collected, such as human capital vacancies, and human capital return on investment (HCROI) are used to analyze progress and success, and to monitor human capital with business performance. Therefore, WHAUP continuously implements these applications into all aspects of its human resource strategy. This includes, recruiting and hiring, measuring employee performance, identifying workforce skill gaps, and identifying flight risks to improve retention. Ultimately, this will help companies improve their business performance and sustainable growth.

People Analytics (PA) has been used to collect data for improving human resources performance i.e. identify, attract, develop and retain our talent. As a results, WHA Group was able to transform HR business interaction and build employee relationship.

RECRUITING & HIRING

Recognizing the importance of attracting new talents, WHAUP has strengthened the awareness and attractiveness of the Company among targeted graduates and professionals through a clearly defined and effective Employee Value Proposition (EVP), that align with their corporate values. The objective of this process is to fulfill manpower planning in order to meet the plan and business objectives that have been set. To start, WHAUP is seeking talent insights from both internal and external inputs. This is so that the talent attraction process matches with the external perceptions as well as the internal reality of the organization. WHAUP aims to bring EVP to life through creative assets and communications. Moreover, the Company has also implemented WHAUP's recruitment rebranding program which aims to bring EVP to life through creative assets and communications.

Additionally, WHAUP aims to enhance their employment branding in targeted workforce markets by developing a strategic partnership with targeted academic institutions and professional groups. This is done through two engagement processes:



1. Academic Partnership

- WHAUP engages with young academic talents through internship program, on-site visits, coaching & action-learning projects hackathons, projects-based learning etc.

2. Professional Community Outreach

- WHAUP reaches out to professional/ business associations and communities to increase exposure of the Company through knowledge sharing, keynotes speech, and social activities to connect with experienced professional.

Furthermore, WHAUP is re-designing an end-to-end talent acquisition process that are customized to fit with the business needs and respond to the behaviors of new generation talents. This includes on-going social network activities, digitalized approaches to support new ways of workforce sourcing. The Company is developing a more comprehensive sourcing database to enable a more efficient candidate management and also implementing recruiting technology on cloud-base and on mobile device, incorporate into WHAUP's new HRIS. In order to track, monitor and analyze the success from these processes, the Group collected data on new hire ratio, filling time, and termination ratio, as well as assess the % of recruitment achievement with plan to accelerate key strategic position and enhance support to the business needs and growth. Nonetheless, through these processes, the Group have met with some challenges as certain skills and positions are hard to fill, therefore the Group will continuously improve these processes to ensure that it is keeping up with the changing markets, trends and future of work.

MEASURING EMPLOYEE PERFORMANCE

WHAUP measures employee performance through its annual performance review, in accordance with the Company's Performance Management System (PMS). The review provides an analysis of the employees' performance against KPIs, as well as the ratio of talent (i.e. top performers). The objectives for this process are to support and strengthen talent pool within the Group, to improve employee engagement across the hubs, and to close the relationship gap between supervisor and staff. In 2021, 100% of all employees have completed

the performance review. Additionally, WHAUP is implementing a coaching system, for all employees in manager roles, to develop coaching skills, and reinforce coaching at work as part of leader role to ensure team performance and productivity. As part of the system, WHAUP is also promoting regular performance dialogue between manager and employees. In term of tracking, monitoring and analyzing success, WHA Group continues to monitor quality of performance management and give feedback to staff.

Moreover, WHAUP is developing a Multiple-track Career System, which is a job grading system that is harmonized across its business. The system is designed to be applicable to various job family model across WHA Group. As part of the system, WHAUP will be able to see the career progression and rotation opportunities for all employees.

IDENTIFYING CURRENT WORKFORCE SKILLS GAPS

As part of the SWP, WHAUP also identifies gaps in the current workforce, such as lack of technical skills, or specific knowledge, to ensure that WHAUP's operational activities and achievement of business goals can continue smoothly towards WHAUP strategic direction. The process includes WHAUP Development program. It is a short-term approach, in order to identify which positions are needed and can be open for the next recruitment or which skills/positions are needed in specific years. This is to ensure that critical skills and knowledges for both existing and future business activities are timely developed and secured for the whole organization. The information collected as part of the process includes ratio on training completion per departments, training completion alignment with plans, ratio of training hours per headcounts. Similarly, this information is collected through HRIS system and are used to evaluate, upskill and reskill employee skill gaps. By collecting and analyzing these data, WHAUP will also be able to develop employee capabilities and build their career plan within the organization, as well as, to build talent pipeline to succession across all business hubs.

IDENTIFYING FLIGHT RISKS TO IMPROVE RETENTION

Certain employees may not be satisfied with their current compensation, career prospects, or working environment, which leads to searching for new opportunities elsewhere. To retain its talent pool, WHAUP must identify disengaged or dissatisfied employees. Thus, WHAUP conducts annual employee engagement survey in order to locate and understand the factors that contribute to employees' turnover intentions.

Employee engagement is a process that promotes employees' satisfaction, maintain efficiency, and ensures

all employees feel valued and involved in their everyday work. Employees across four business hubs that have been employed for over six months are subjected to participate in this survey. In 2020, the survey was conducted by an external third-party company, NIDA, through the Employee Engagement on Meter (EMO Meter) methodology, while in 2021 the company has collaborated with Kincentric, a global employee engagement consultant, to conduct the survey for the journey to become one of the best employers in Thailand and region. This is to ensure the transparency of the methodology, unbiased data collection and analysis, as well as the benchmarking opportunity with other best employers.

The survey assessed employees' satisfaction on eight categories including:



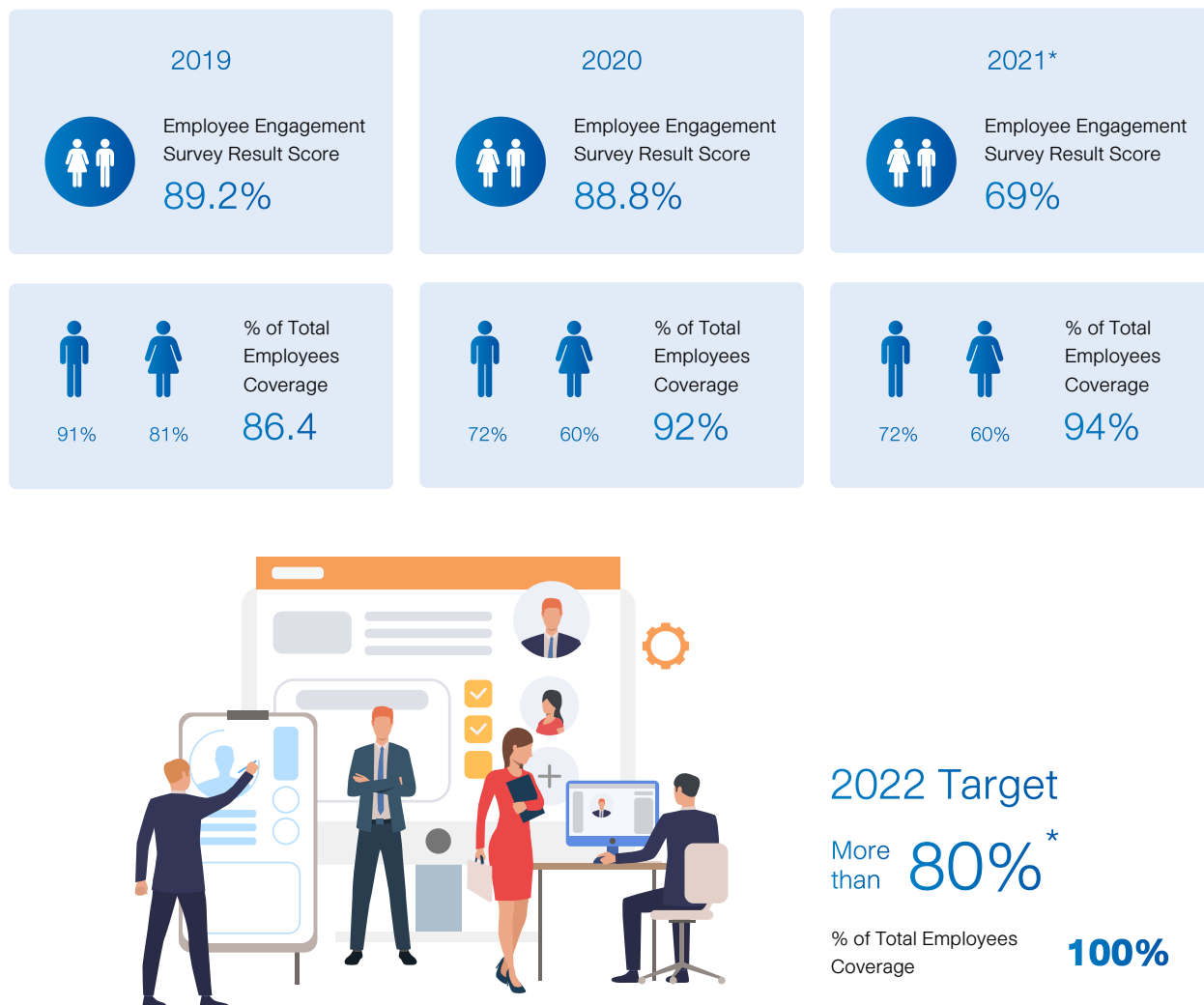
In 2021, the Group of companies developed a roadmap with the goal of continuously improving itself until it achieved national certification as one of the best employers in the country. As a result, the Group decided to modify the tool used to conduct employee engagement surveys. For the first year, Kincentric Thailand used the Employee Engagement Survey as a tool

The tool addresses issues involving and affecting employee engagement with the organization. These issues have been proven and developed over the last 20 years to be good for long-term employee engagement with the company. Additionally, using such tools will enable WHAUP to compare its performance to that of its counterparts both nationally and globally in order to implement best practices for human resource development to maintain a sustainable level of employee engagement within the company group.

Employee Engagement Survey results from the Kincentric Thailand tool for 2021 indicated a score of 68 percent, which is an acceptable level for those attending this program for the first time during its first year. The evaluations in the surveys represent a complete difference from those recorded last years. As a result, this year's survey results cannot be directly compared to previous surveys. However, WHAUP has benefited by identifying opportunities and gaps in the operations of a wide range of positions, and perhaps most significantly, WHAUP has received the highest volume of comments and ideas from employees. Additionally, an employee engagement survey was conducted, and each employee's voice will be critical in determining the Group's long-term development strategy.

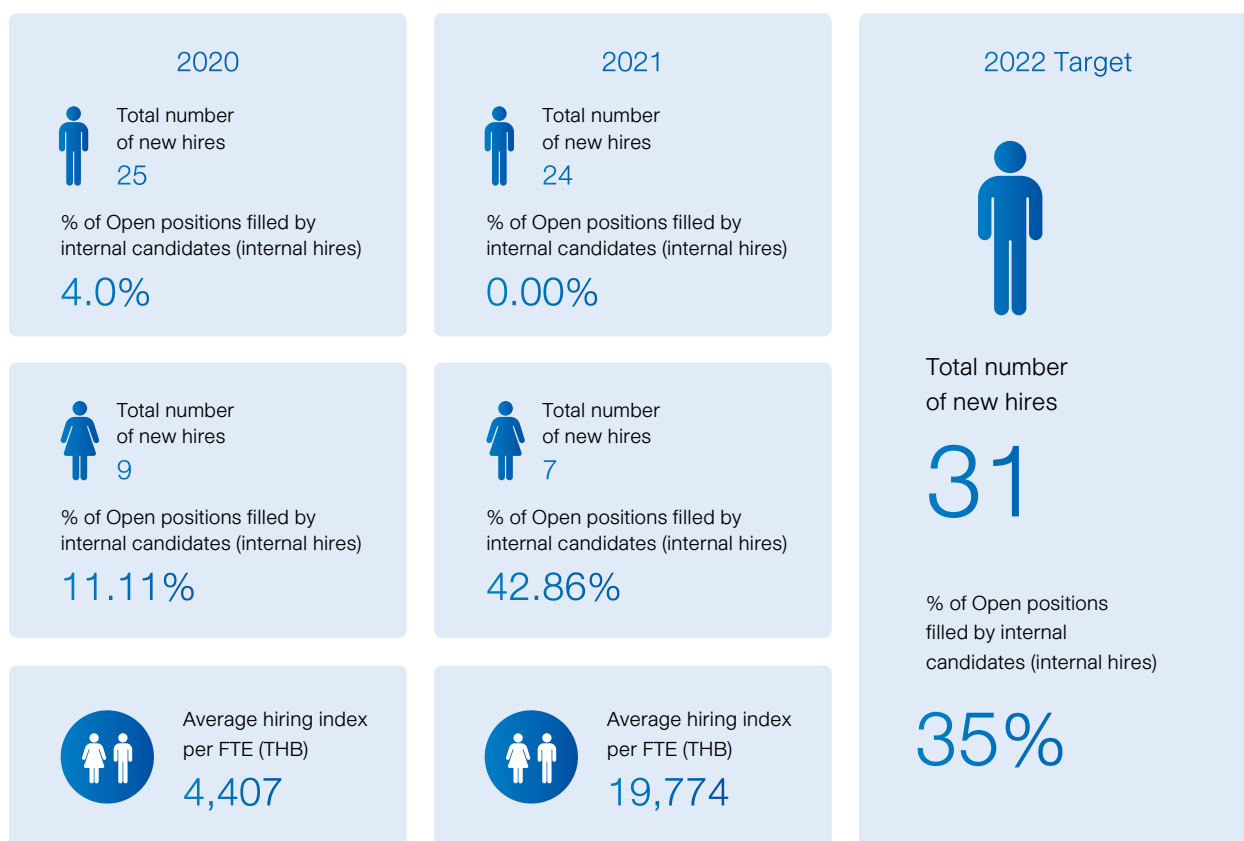
The engagement survey results were communicated to the Executives and the respective business hubs' management levels, and results were also shared to all employees via the internal SharePoint platform. In 2021, 93% of the total eligible workforce had completed the survey, and received a favorable score rating of 68%.

To get a more accurate engagement result, WHAUP aims to survey 100% of full time employees by 2022.



Remarks: Assessment score methods and criteria have changed in 2021. The 2021 target also makes reference to the scoring process and criteria used in the previous year's assessment. The goals for 2022 have been revised to reflect the new assessment system and scoring criteria.

As a results, all employees' insights from the performance review, as well as the engagement survey, were gathered and analyzed to promote career advancement or formulate meaningful development programs, job-rotation programs, and pre-retirement plans as well as to fill internal job opportunities. In 2021, 9.68% of open positions are filled by internal candidates (internal hires).



PROGRAMS TO ENHANCE EMPLOYEE'S ENGAGEMENT AND SATISFACTIONS

To further enhance employee engagement and satisfaction to the company, WHAUP provided the following initiatives, including:

- WHA Group has established the **Facebook "Advance" Campaign** which is an internal communications platform that allows the company, by the Human Resource Department, to share information and executive interviews on the internal SharePoint platform. The shared information will allow the employees to keep-up with the trend, and be aware of the business directions through executives conducted interviews.



- To increase employee engagement, WHAUP as part of WHA Group organized an annual Town Hall Meeting facilitated by the Group's CEO in 2021 to keep the employees engaged and informed on the business strategies of each business hubs for the upcoming year.
- Launched in 2021, WHAUP as part of WHA Group leveraged digital technology to support human resource department by developing the '@Work' application, which is a centralized human resource communication platform for employees across all business hubs to conduct employee self-services and have access to e-application online and the company's announcements.

WORK-LIFE SOLUTIONS

WHAUP as part of WHA Office Solutions, a high-performance office premises, which include projects such as WHA Tower, @Premium, SJ Infinite I, and TusPark WHA. With its flexibility and adaptability, WHA Office Solutions offers a working environment that allows for creativity, innovation and collaboration with new advanced technologies — thus enhance employees' satisfaction and attracts potential talents to the workforce.

WHAUP launched its new headquarter, WHA Tower, in 2021. It is located in the Bangna business center. WHA Tower project has also received an award for "Commercial High Rise Architecture Thailand". This transition to a new headquarter will promote employees' work-life solution. This is because WHA Tower has a working environment that is easily adjustable, and consists of various amenities such as co-working space, coffee shop that is surrounded by beautify scenery, garden and fountain. There is also a versatile open area for activities in order for employees to have an effective working experience, while maintaining a balanced, and healthy lifestyle, with relaxation and entertainment.

Moreover, WHA Tower has advanced technologies, incorporating with safety and flexibility, as well as innovation technologies that is operated by digital system that is highly known for its effective safety management. The technologies within the building include a face scanner for when entering or exiting, a body temperature monitoring system to ensure good public health, parking lots of up to 500 spaces, as well as, innovative

technologies that is environmentally friendly and a light rail project that is expected to be completed in 2023.

Nonetheless, the transition to a new headquarter is also a process to group together all the business units into one location. This is to increase work performance, reduce transportation, and minimize communication limitations between the business units.

WELFARE AND BENEFITS

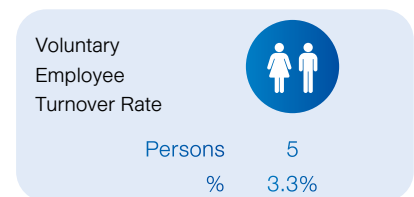
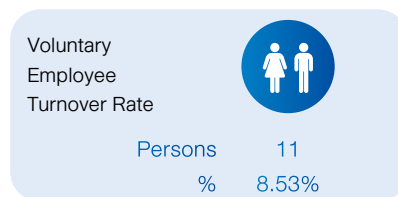
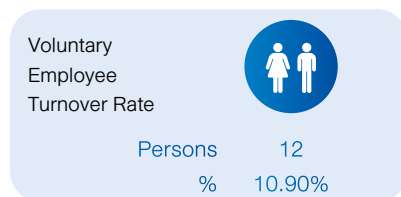
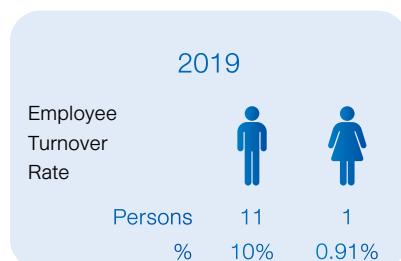
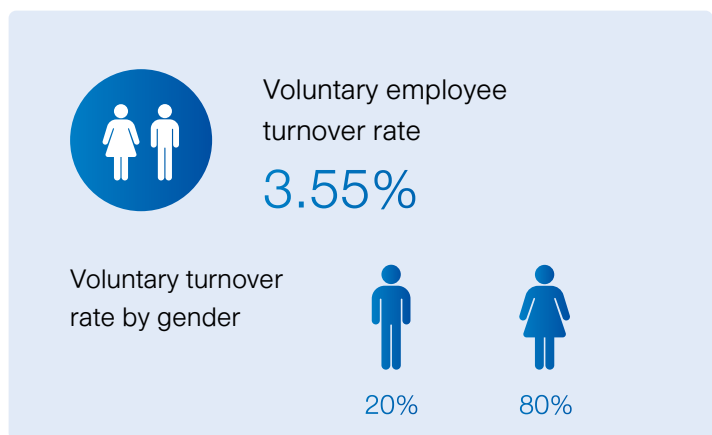
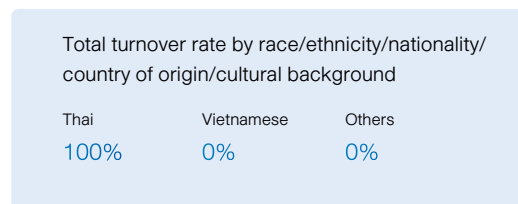
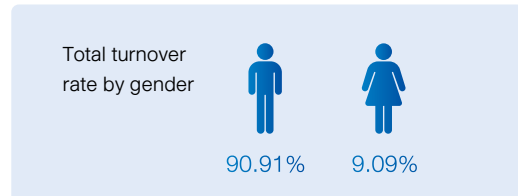
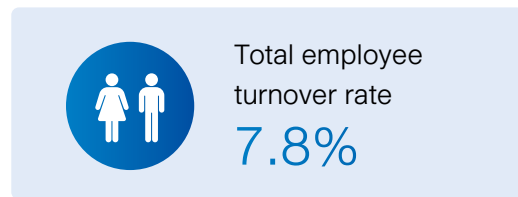
WHAUP's aspiration, to be attract and retain its talent pools, drives the Company to enhance their welfare and benefits, which are provided appropriately to employees and exceeds the regulation requirements where possible. All employees were informed of their rights to receive the welfare and benefits at the beginning of their employment. All WHAUP's full time employees are entitled to a standard WHAUP benefit package which consists of life and accident insurance, health insurance covered to staffs' family members, annual health check, safety uniform, provident fund and financial assistant fund. A communication channel for employees to propose benefits improvements was set up through the Welfare Committee and Human Resource Department.

Moreover, WHAUP is working on creating a positive atmosphere with boosted employee morale. As the group values the well-being of the employees, WHA Group arranged employee well-being activities and programs. As part of the new human resource strategy, WHAUP articulates its "employee well-being" by focusing on occupational health and safety as the new priority. This includes establishing the WHA Care, and Voice of Employee Program In 2021, WHAUP as part of WHA Group organized a WHappy Friday activities, Fit and Firm balance, Stretching fit for fun, Stress Management program which aimed to promote employees' wellbeing through staff activities. Altogether, there were a total of 60% participants to the event.

Lastly, WHAUP also provides and extra incentives in 2021, with paid to our volunteer who dedicate and drive the Change agent program . This program applies to those who are our talented. This program is also associated with WHAUP's sustainability performance target to Digital Transformation.

MANAGEMENT PERFORMANCE

Employee Turnover Rate



HUMAN RIGHTS

Human Rights are inherent rights in which every human-being are entitled to. Nonetheless, there have been a rising number of human rights violations across the world. Whether it is the violations of human rights-related laws, international standards or commitments, or human rights circumstances in which leads to human rights abuse. Salient human rights issues in which business operations are paying close attention to includes unfair labor practices and unsafe working environment, insufficient occupational health and safety management, excessive environmental pollution and degradation of ecosystem, restrictive on freedom of association and rights to collective bargaining, forced re-settlement and improper land acquisition, and the use of illegal forms of labors from unsystematic recruitment processes (i.e. child labor, forced labor, human trafficking). Especially with the on-going pandemic, the employees' and communities' rights to health as well as fair working conditions are highly subjected to being violated due to the risks of spread of COVID-19 virus.

The interconnections between business and human rights is increasingly drawing attention from various actors and stakeholders, within the public and private sectors, and growing their expectations for companies to conduct their businesses with respect to human rights. This emphasis

on human rights became a key driver for businesses to proactively act upon the human rights risks and mitigate human rights impacts, negative reputations, complaints from human rights' defenders and protests by right holders.

As an operator of multiple business services, WHAUP believes that to become a truly sustainable business, it is essential that the Company enhance the human rights practices in their own operations as well as promoting WHAUP's human rights principles and commitments to all relevant stakeholders, rights holders, and vulnerable groups across the value chain.

MANAGEMENT APPROACH

WHAUP incorporated WHA Group's Human Rights Due Diligence (HRDD) to assess human rights risks and impacts throughout its the value chain. WHAUP's HRDD process is in accordance with international guidelines such as Universal Declaration of Human Rights (UDHR), United Nation Guiding Principles on Business and Human Rights (UNGPR), United Nation Global Compact (UNGC) and the International Labor Organization's Declaration on Fundamental Principles and Rights at work. WHAUP has an annual systematic review of the HRDD and conduct the Human Rights Assessment every year.



WHAUP'S HUMAN RIGHTS DUE DILIGENCE PROCESS



1. POLICY COMMITMENTS

As part of the HRDD, WHAUP has established the Group's Human Rights Policy which adhere to international human rights standards, local as well as international laws and regulations. The scope of the Human Rights Policy explicitly covers all relevant stakeholders and affected rights holders, including all employees in our operations, and extends to all suppliers, contractors and business partners, and in new business relations (i.e. mergers, acquisitions, joint ventures). Moreover, WHAUP extends these human rights commitments to their customers, communities, and vulnerable groups (i.e. women, children, migrant workers, third-party contracted labor, local communities, people with disability, elderly, and LGBTQI+ communities). Furthermore, the Policy was communicated to all employees at every business hub by a group-level Human Resource Department.





HUMAN RIGHTS POLICY



2. ASSESS POTENTIAL AND ACTUAL HUMAN RIGHTS RISKS AND IMPACTS

Additionally, the Human Rights Risk Assessment (HRRA) was also conducted in WHAUP's own operations as part of its respective Environmental Impact Assessment (EIA) study.

The HRRA covered 100% of WHA Group's operational sites which are categorized by business hubs and its associated activities (ranging from construction to operation phases) in WHA Group's value chain, as follows:

Business Hubs	Upstream	Operations	Downstream
Logistics Hub 	<ul style="list-style-type: none"> Land acquisition Property development 	<ul style="list-style-type: none"> Warehouse leasing and sale Asset management 	<ul style="list-style-type: none"> Maintenance Customer service
Industrial Development Hub 		<ul style="list-style-type: none"> Industrial plot sale Asset service management 	
Utilities & Power Hub 	<ul style="list-style-type: none"> Raw Water Procurement Fuel and solar panel procurement 	<ul style="list-style-type: none"> Water production Wastewater treatment Power production Solar rooftop installation 	
Digital Platform Hub 	<ul style="list-style-type: none"> IT product and service procurement 	<ul style="list-style-type: none"> Data Center service and solution management Network service management Managed services and solutions management 	

HUMAN RIGHTS CONSIDERATION

WHAUP has identified and assess potential and actual human rights issues (including risks and impacts) as part of the due diligence process. The human rights issues covered are as follows:



EMPLOYEE RIGHTS

- Illegal forms of labor (i.e. Forced labor, Child labor, Human trafficking)
- Freedom of Association
- Right to Collective Bargaining
- Equal Remuneration
- Segregation and Discrimination
- All forms of Harassment, including sexual and non-sexual harassment (e.g. verbal threats)
- Foreign Human Capital, and Migrant Workers
- Employee Health and Safety and COVID-19 risks
- Work Environment and Workers' Quality of Life
- Working Hours



COMMUNITY RIGHTS

- Resettlement
- Socio-economic impacts
- Environmental impacts
- Livelihood and Standard of Living
- Community Health and Safety
- Foreign human capital



CUSTOMER RIGHTS

- Data Privacy
- Health and Safety of Customer
- Waste, Hazardous waste and contagious waste management

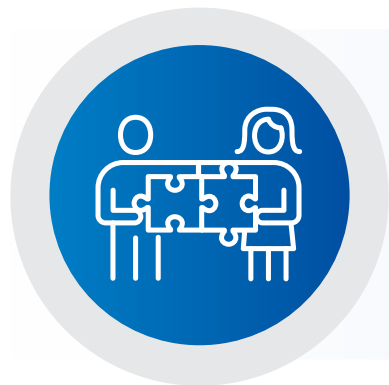


SUPPLIER RIGHTS & BUSINESS PARTNERS

- Health and Safety in the Supply Chain
- Fair Hiring Condition for Suppliers
- Working Condition and Environment for Contractors and Suppliers
- Joint venture partnership's unsafety or unhealthy working conditions

VULNERABLE GROUPS

The vulnerable groups covered by the risk assessment includes:



- Own employees
- Women
- Children
- Indigenous People
- Migrant workers
- Third-party contracted labor
- Local communities
- People with disabilities
- Elderly
- LGBTQI+ communities

Moreover, WHAUP has also covered the human rights risks identification for its new business relations (i.e. mergers, acquisitions, and joint ventures) where human rights criteria have been incorporated into the M&A Check-list.

HUMAN RIGHTS ASSESSMENT METHODOLOGY

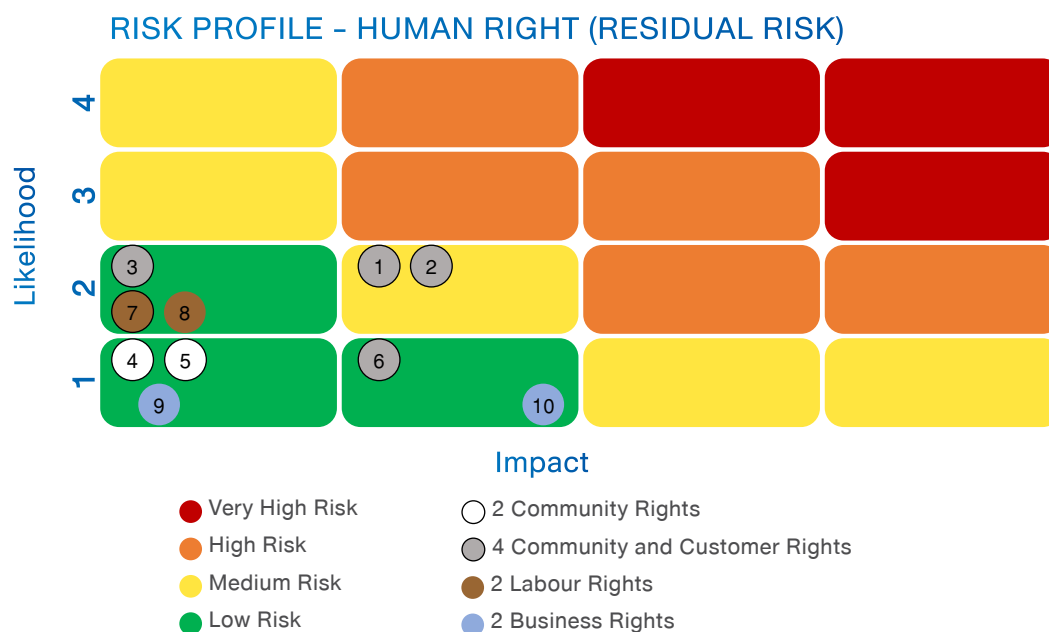


The HRRRA was conducted using WHAUP adopt WHA group Human Rights Risk Assessment Criteria to determine the significance of each human rights issues. The human rights criteria covered the likelihood and impacts of each human rights issues.

		Impact				Risk ratings		Risk score
		1	2	3	4			
Likelihood	4	M	H	VH	VH	VH	Very High	9.01 to 16.00
	3	M	H	H	VH	H	High	4.01 to 9.00
	2	L	M	H	H	M	Medium	2.01 to 4.00
	1	L	L	M	M	L	Low	1.00 to 2.00

Criteria for Likelihood	1 (Low)	2 (Medium)	3 (High)	4 (Very High)
Level of likelihood	Almost never (<14.99%)	Occurs rarely (15% - 39.99%)	Occurs very often (40% - 79.99%)	Occurs all the time (>80%)
	Such human rights issues have never occurred in our business operation but have occurred in the industry of the operation.	Such human rights issues have happened in the past and also occurred sometimes at the present depending on operation of business unit.	Such human rights issues have happened in the past and also occurred very often at the present.	Such human rights issues have occurred consistently from the past until present.

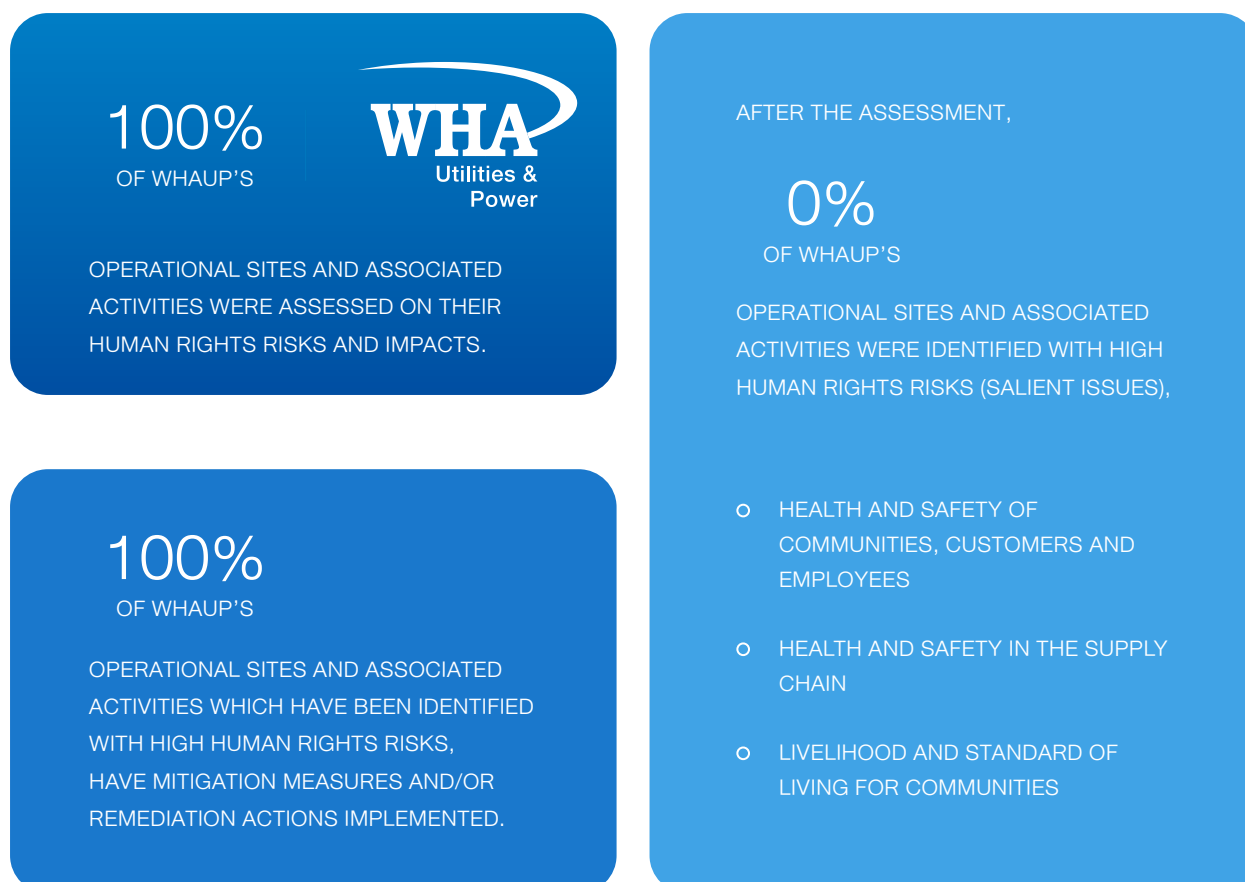




Risk #1 – Noise, smell, pollution, dust, light and vibrations that may occur from development and operation of industrial estates creating impacts on health and safety of communities and customers

Risk #2 – Accident from Client’s operation in industrial estates such as gas pipe explosion, fire and chemical spill creating impact on the right to health and safety of members of surrounding communities and customer

WHAUP’S HUMAN RIGHTS PERFORMANCE



3. INTEGRATE FINDINGS AND POTENTIAL IMPACTS INTO HUMAN RIGHTS POLICY

Once the risks and potential impacts have been identified, the findings are then used to guide the revision of the Human Rights Policy to ensure that WHAUP's Human Rights Policy and commitments is in line with the current global trends, international standards and comply with the most present laws and regulations. The results and findings are also integrating into WHA Group's management systems and approaches, procedures and work processes, and are also use to guide business direction and strategy in the future.

4. IDENTIFY AND IMPLEMENT MITIGATION MEASURES FOR HUMAN RIGHTS IMPACTS;

Based on the nature of WHAUP, it was identified through assessments that human rights related risks are less severe in comparison to other business sectors. This is because WHAUP complies with the governmental laws and involves low numbers of foreign labors.

Nevertheless, WHAUP has implemented various mitigation measures as well as tracking and monitoring processes for the human rights issues identified.

HEALTH AND SAFETY		
Human Rights Issue	Affected Rights Holders and Vulnerable Groups	Tracking and monitoring, mitigation measures, and remediation actions
Health and Safety in the Supply Chain		
<p>Accidents from construction activities which could lead to work-related injuries or loss of life</p> <p><i>For example: falling off height, cuts from sharp objects, burn wounds</i></p>	Contractors and Suppliers	<ul style="list-style-type: none"> Developed safety manual for contractors which they must strictly followed Assessed safety risks and develop safety procedures for each work tasks/types Implemented an approval process for all suppliers and contractors before entering work premises Continuously assess and monitor the safety systems within the industrial estates.
Livelihood and Standard of Living		
<p>Water management, competition for water with local communities and wastewater releases into natural sources</p>	Community	<ul style="list-style-type: none"> Committed to managing water efficiently and effectively. Set target to reduce water uses from natural sources through Recycled water/ Reclamation water system Strictly followed waste management requirements and procedures for industrial estates Controlled and monitored water management parameters in accordance with EIA requirements Developed and continuously improve the efficiency and effectiveness of WHAUP's water production and water treatment systems



5. TRACKING AND MONITORING OF HUMAN RIGHTS PERFORMANCE

Human rights performances can be tracked and monitor through WHA Group's corporate KPIs. Moreover, Human Rights criteria have also been incorporate as part of the Group's KPIs for all levels of employment

Furthermore, the Company has in placed a whistle-blowing channel in which stakeholders could conveniently access to report any potential human rights violation acts, or those against the Human Rights Policy. The grievance mechanism is as detailed under the Codes of Business Conduct chapter.

6. REMEDIATE ADVERSE IMPACTS

WHAUP recognizes that its business activities and operations may cause human rights violations its stakeholders/ rights holders and vulnerable groups. Thus, WHAUP is committed to preventing and mitigating the potential human rights risks associated with these activities, across the value chain.

In the case of human rights violations, WHAUP have implemented various measures to ensure proper remediation actions to restore affected groups that have been harmed by the business's activities to the situation they would have been in had the impact not occurred.

This includes grievance mechanism and complaint channels through telephone, email, and website, as well as, directly informing relevant staffs and employees. WHAUP will assess the causes and address the issues through an anonymous process. Additionally, after the

assessment, WHAUP will ensure that effective remedy, and compensation have been provided, as well as insurance coverage to those that were harmed.

Moreover, WHAUP verifies its human rights results, and review the assessment and due diligence process every year. This is to ensure that its human rights practices are the most effective and updated. Finally, in 2021, there are no human rights violations, therefore, there are no remediation actions.

HUMAN RIGHTS AWARENESS

To ensure alignment with WHA Group's human rights principles and commitments, WHAUP continuously raises awareness and builds understanding of human rights to all employees. The Human Rights Policy is communicated as part of the induction program for all new employees since 2020. This is facilitated by the group-level Human Resource Department. Moreover, in 2021, 100% of 34 new joiners have surpassed the orientation programs. In conclusion, 100% of WHAUP employees were trained and total 34 hours were devoted to training human right policies and procedure, which 10% increase from previous year.

Additionally, the Human Resource Department provided public relations on the importance of the following topics: nationality, religion, language, age and gender. The developed materials are attached with the Human Rights Policy, through the internal SharePoint platform to raise existing employees' awareness on human rights issues and serve as a refresher to revisit the Policy.



COMMUNITY DEVELOPMENT

With the world moving toward a more sustainable economy, it is believed that a business will grow more sustainably if it contributes to the development and prosperity of the community and society that it serves; their acceptance and trust are critical to the business's success. WHAUP understands that its operations and business decisions may have an impact on the surrounding communities and the environment. Furthermore, because of the nature of the Company's business, resource sharing and conflicts between the Company and the communities may be unavoidable. WHAUP places a high value on harmonization and the importance of gaining acceptance from its local communities. WHAUP recognizes its responsibilities to give back to society and contribute to the development of its surrounding communities in order to achieve its vision of becoming Thailand's most admired utility service provider.

MANAGEMENT APPROACH

WHAUP adopts the WHA Group's corporate social responsibility strategy and continues to engage with its neighbors and society through a variety of sustainable programs focusing on education, community development, and environmental development. The programs are designed with the needs of the community in mind, as identified through relevant Environmental Impact

Assessment (EIA) studies, social engagement, and direct feedback from community members. Whistleblowing, phone calls, emails, engagement activities, surveys, and the appointment of local community representatives are some of the methods used to gather information about the needs, feedback, and concerns of communities through <https://envi.wha-industrialestate.com/>.

WHAUP implement a group-wide strategy to positively impact its neighbors and society through long-term programs centered on three pillars: education, well-being, and environmental development, in order to support and address the needs and concerns of the community. In 2021, WHAUP collaborated on a number of corporate social responsibility initiatives with communities within a 50 km radius of the industrial complex. The Group contributed 22.48 million Baht to corporate social responsibility (CSR), as shown in the table of next page. A total of 36,410 employee working hours were contributed to the CSR initiatives' implementation. Such community development projects benefited a total of 126,386 people from 156 different communities. WHAUP has set a goal of reaching more than 97 percent of the communities in the surrounding area as part of its Community Engagement Level. In 2021, the company met this goal by working with 156 out of 159 villages in Rayong, Chonburi, and Saraburi. Its community engagement goal for 2021 will be at 98%



EDUCATION

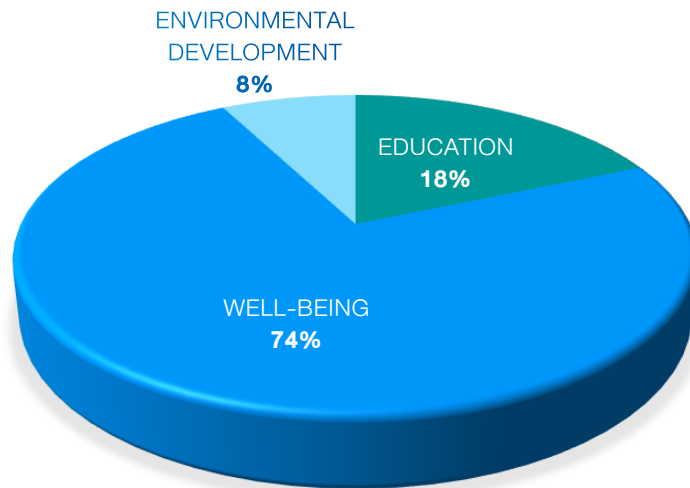


WELL-BEING



ENVIRONMENTAL DEVELOPMENT

THREE PILLARS



Types of Philanthropic Activities

1. Charitable Donations

Amount (Million Baht)	Percentage (%)
4.58	20.37%

Types of Philanthropic Activities

2. Community Investments

Amount (Million Baht)	Percentage (%)
4.12	18.33%

Types of Philanthropic Activities

3. Commercial Initiatives

Amount (Million Baht)	Percentage (%)
6.05	26.91%

Total

Amount (Million Baht)	Percentage (%)
14.75	100%

WHAUP aims to assess companies' awareness of the total costs associated with corporate citizenship programs, including indirect costs such as employee volunteering and management overheads (i.e. the costs associated with having a community affairs function in place).

Type of Contribution

Cash contributions

Total amount (in local currency)

22.48 Baht

Type of Contribution

Time: employee volunteering during paid working hours

Total amount (in local currency)

2,372,974 Baht

Type of Contribution

In-kind giving: product or services donations, projects/partnerships or similar

Total amount (in local currency)

43,497,315 Baht

Type of Contribution

Management overheads

Total amount (in local currency)

1,108,809 Baht

CORPORATE SOCIAL RESPONSIBILITY (CSR) STRATEGY

To ensure that the initiatives and processes implemented by WHAUP as a part of Group are effective and produce the most positive outcomes and benefits to the communities, WHAUP has conducted local stakeholder engagement review to measure the success of each stakeholder engagement activities. Hence, it is crucial for WHAUP to assess and measures the performance of these social activities organized, as the lesson learned from these activities will be incorporated into the Group's business processes and guide the improvement of the Group's CSR strategy. The stakeholder engagement review will be conducted on an annual basis.

Thus, WHAUP has adopted these KPIs to measure the performances:

- **Community Satisfaction Survey** (Units: as operation unit/ %), conducted at the end of the engagement projects and activities.

- **Social License to Operate** (i.e. License to Operate an electric power plant, License to operate electricity business, License for electricity distribution business) that WHAUP has obtained and renewed.
- **Complaints Channels** (i.e. complaints received through whistleblowing channels, Email, Phone call and other communication channels) from local stakeholders e.g. communities, authorities, media, associations and NGOs through <https://envi.wha-industrialestate.com/>

The lessons learned and knowledge gained, both positive and negative matters, through these performance indicators are used to guide WHAUP's business processes and operations, communicated across all WHA Group's BUs. This is done through dedicated interactive intranet site, standardized debriefing process, development of training modules, internal conference where local plant managers meet and share best practices, and road shows to local operating units to share best practices from other operating units.

EDUCATION DEVELOPMENT PROJECTS

WHAUP contributed to WHA Group's implementation of the following development projects, which focused on educational development for community members of all ages.



ART CAMP FOR STUDENTS

Since The Group is concerned about the impact of industrial estates on the community, it has established Corporate Social Responsibility programs to support schools that are located near its industrial estates by developing a love of art for school-age children. Moreover, environmental conservation, history, and local cultural teachings were also incorporated into the curriculum through Art Camp activities to develop the children's creativity, freedom of expression, and communication skills.



In 2020, there were 560 students attended from 20 upper elementary schools and 30 students from 15 junior high schools in total. According to the survey results, the satisfaction rate for the two organized Art Camps was 88.2 percent and 92.4 percent, respectively. The majority of students felt that the program improved their fundamental art skills and that the knowledge gained could be applied in their daily lives. The programs were successful in promoting and improving education for Thai students, which is essential for the development of communities and the country as a whole.





Due to the pandemic crisis, the project was postponed until 2022. On the other hand, WHA Group continued to change things for the better in the lives of these students in 2021 by supporting and donating educational utilities including school bags, books, pencil, and crayon to over 20,400 students in 66 schools around WHA Industrial Estates.



SCHOLARSHIPS

Children are the future workforce and the engine of the nation. Due to financial constraints, some students, despite being exceptionally talented and skilled, may be unable to pursue their education to the fullest extent possible. As a result, the Group and WHAUP see educational support as an important scheme for community development. WHA Group and WHAUP aspire to provide opportunities for youth to develop their competencies and potentially improve their quality of life. As a result, the WHA Group and the Company continue to provide educational assistance to students by providing scholarship funds for them to attend vocational training. Finally, from the beginning, nurture competent youth. WHA Group has currently awarded 26 scholarships totaling 0.7 Million Baht to students. There were 26 students who benefited from these scholarship programs in 2021.

The Eastern Economic Community (EEC), which includes the strategically important provinces of Rayong, Chonburi, and Chachoengsao, continues to attract more private investment. The government is currently developing major projects, such as motorways and double-track railway



systems, as well as the expansion of U Tapao airport and seaport facilities, with infrastructure as one of the pillars of development.

The need for well-trained, skilled workers is a current challenge that must be addressed. The Dual Vocational Training (DVT) initiative was created by the Office of Vocational Education as a result of collaboration between the educational sector and private companies, allowing students to receive on-the-job training in addition to theoretical education.



TEACHER FELLOWSHIP PROGRAM

Our society is facing problems as a result of a lack of qualified teachers. Therefore, WHA Group and WHAUP assisted schools within WHA industrial premises in Rayong and Chonburi provinces by providing a total of 1,260,000 Baht funds for teachers from 7 different schools in the area.



Evaluation of outcomes that provide funds to teachers. There are about 1,400 students from 7 schools in each year that were trained by WHA 's Teacher, or over 19,000 students from 7 schools from 14 years that WHA started the Teacher Fellowship Program since 2008.



WHA GROUP SCHOOL CONTRIBUTION PROGRAM

For the 24th year, WHA Group, in collaboration with over 70 companies in WHA industrial estates, assisted students from low-income families in using education as a stepping stone to improve their quality of life and also their health and safety. Through practical donations, WHA Group's Annual School Contribution Program continues to have a positive impact on the surrounding communities and society.



WHA Group and WHAUP executives visited 50 schools and 15 child development centers in the vicinity of WHA industrial estates for 5 days with social distancing policy during Covid-19 pandemic situation in July to deliver much-needed supplies and sports equipment for the mental, physical, social, and academic development of 20,400 children. Each child received a backpack, notebooks, pens, pencils, crayons, and other basic tools for creative and educational learning both inside and outside of the classroom. Due to the pandemic, alcohol gels were also distributed to all schools to ensure that teachers and students were protected from and prevented the spread of COVID-19.

“Education is vital for a community to prosper sustainably. From a very early age, we can help improve lives and bring social changes to our neighbors,” For over two decades, we have successfully encouraged our employees, management, and customers from various industrial estates to participate in this worthwhile program.” This confirms our belief that by working together, we can effect change through education. We’d like to thank all of our sponsors for their generous support over the years even in the difficult time through the pandemic of COVID-19”.

- Mr. David Nardone, Group Executive Industrial and International of WHA Industrial Development PLC and Director of WHA Utilities and Power PLC.



COMMUNITY DEVELOPMENT PROJECTS

To enhance the livelihood of the community, WHAUP has contributed with WHA Group to implement the following projects in 2021.



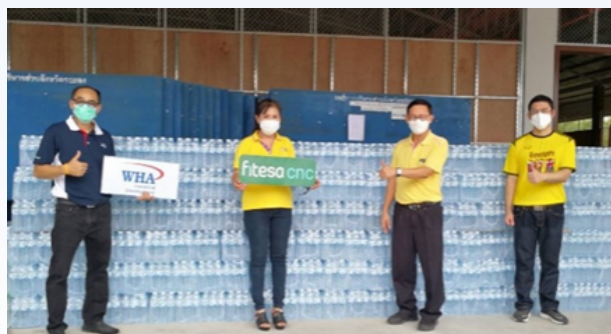
SPONSOR FOR HEALTHCARE BY PROMOTING DIGITAL HEALTH TECHNOLOGY

WHA Group, inclusive of WHAUP, supported Thai startup that is developing an Artificial Intelligence (AI) system that helps doctors analyze X-ray images to help diagnose diseases. WHA gives back to society in many ways to make a positive change. Providing healthcare through sustainable initiatives and the latest technology will ensure a healthy community which is a driver for progress and growth.



COOPERATION WITH CUSTOMERS

WHAUP, WHA Saraburi Industrial Land (WHA SIL) and WHA Rayong Industrial Land (WHA RIL), together with its housed customers, have established a Community Relationship Committee. Members of the Committee cooperatively collect funds to conduct social development programs to enhance the surrounding communities' livelihoods. There are currently 64 members in WHA SIL's Community Relationship Committee with a shared budget of 30,000 Baht/member/year from the participating factories, and 23 members in the WHA RIL's Committee with a shared budget of 30,000 THB/member/year. In 2021, a total of 2,610,000 baht was collected and distributed to scholarship, religious, and youth programs, as well as the "We Care Nong Kae Project." When compared to the previous year, total funds grew by 148,000 THB.





PAN GAN PROJECT

WHA Group and WHAUP launched PAN GAN in 2020, an online marketplace to promote and sell homemade products and homegrown specialties made by local people who live in the vicinity of nine of the Group's industrial estates in Chonburi and Rayong provinces.



There is a promotion channel through social media such as Facebook, and a website, pangan.wha-industrialestate.com/en/home, that aims to connect sellers and buyers by providing a showcase of products ranging from handmade crafts and traditional medicines to local food items and homemade delicacies. To reach a global audience and provide opportunities to increase sales and support communities.

Micro-entrepreneurs, food producers, small cottage industry owners, and housewives were among those who welcomed the program and were invited to participate in order to promote and sell their products to a larger market. The CSR initiative of WHA Group and WHAUP promotes job creation and local economic development. This opportunity represents a new source of revenue or side income for many households, allowing them to improve their lives and secure a better future for their children. Furthermore, it is a means of preserving the community's heritage and passing on the art of handicrafts and specialty food products from various hometowns. It emphasizes the creation of value based on local

traditions, the availability of agricultural products and natural materials, and the transmission of skills from one generation to the next. In 2021, WHA Group promoted and sold local products as new year gifts via the PAN GAN online market place to people who associated with WHA Group.

As a result of PAN GAN market, WHA Group and WHAUP supported to buy products from Pan Gan for New Year Basket almost 1.0 Million Baht, and almost 5 Million Baht is the financial value of the whole purchase and selling via PAN GAN market to the community. There are 12 products and 12 communities participating in PAN GAN project.

WHA PAN GAN Community Shop



MOBILE MEDICAL

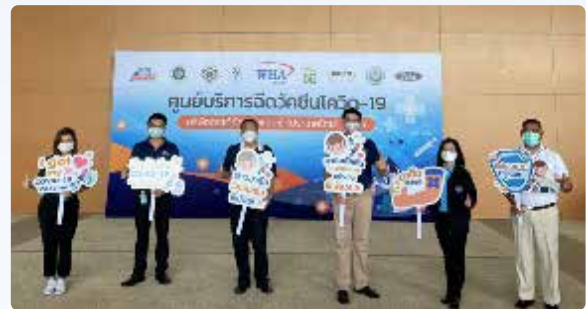
A key health approach used to improve access to health care services in remote areas was the Mobile Medical Unit. As a result, WHA Group recognizes the direct relationship between good health and community livelihood and, as a result, has organized annual mobile medical units to reach out to neighboring community members within

the Group's industrial estate premises in Rayong and Chonburi provinces. In 2021, WHA Group had provided many things such as Flu vaccination over 320 doses, COVID-19 vaccination, survival kits, medical equipment, and field hospitals were distributed to community members to help them live healthier lives.



1. WHA Group had provided the vaccination centre for preventing COVID-19 as follow:

- 5,615 of vaccine doses were offered to Eastern Seaboard Industrial Estate (Rayong)
- 2,285 of vaccine doses were offered to WHA Rayong Industrial Land
- 1808 of vaccine doses were offered to WHA Saraburi Industrial Land (WHA SIL)



2. WHA Group had provided X-Ray mobile system as follow:

- 1,440,000 Baht of X-Ray mobile system offered to Pluak Daeng Hospital



3. WHA Group had provided survival kits include water and food as follow:

- 120 of survival kits were offered to Samut Thai Village
- 210 of survival kits were offered to Tasit and Jompoljaopraya communities.



4. WHAUP and WHA Group had provided medical equipment as follow:

- Disposable medical gloves, Face shield, Medical Mask to Pluak Daeng Hospital for the use of medical and health care personnel to reduce the risk of contamination



5. WHA Group had provided PPE kits as follow:

- 1,000 of PPE kits offered to Ramathibodi Hospital



6. WHA Group had provided field hospitals as follow:

- 3 places in total;
 - Samut Prakarn Ruamjai 5 at the WHA Mega Logistics Center Chonlarn Pichit project 10,000 sq.m. warehouse for 1,300 patient beds



- CP - WHA - CHG Field Hospital" at WHA Mega Logistics Center (Chonlaharnpichit KM.4) : 600 beds



- WHA SIL : 400 patient beds

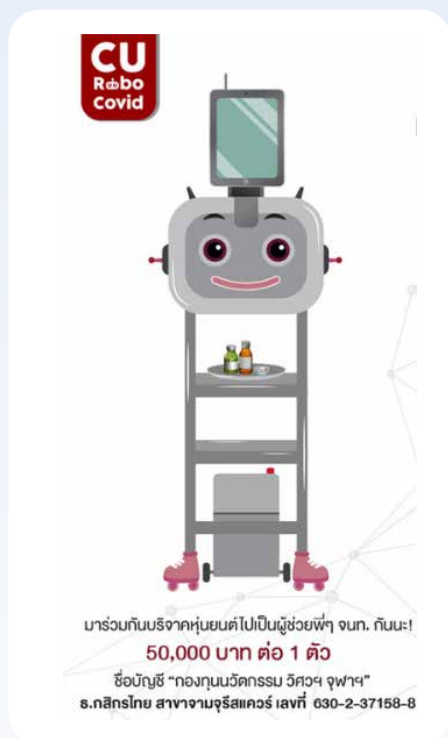


7. WHA Group had provided 10 Million Baht funds for Ramathibodi Foundation and Siriraj Foundation



8. WHA Group sponsored 2 “The “Pinto” robots - CU-RoboCovid” (100,000 Baht) to be used at hospitals nationwide, will assist doctors and nurses in their task to detect and treat COVID-19 cases, while reducing the risk of infection.

In addition, at WHA tower had a donation drop point to drop food, medical equipment, and medical suppliers forward to Samut Prakarn Hospital 5.



SURMOUNTING CHALLENGES OF COVID-19 PANDEMIC

COVID-19 has shaken the world in unprecedented ways, and the consequences are still difficult to assess. In Thailand, the physical and psychological health of countless individuals, families, and communities was severely impacted, while the virus claimed many victims. The pandemic had an impact on many businesses as well as the lives of the most vulnerable members of society. Since its inception, WHA Group has been concerned with the well-being of not only the communities surrounding its industrial estates, but also of the greatest number of people possible. During these trying times, the company launched the following initiatives to adapt to the situation and assist those in need.



- **Tackling the COVID-19 Crisis Together**

WHA Group and WHAUP donated a much-needed negative pressure cabinet to help protect medical front-liners bravely serving COVID-19 patients at Ban Khai Hospital. It is critical for reducing the risk of infection among patients and medical staff because it is designed to prevent the spread of germs and viruses. Food packs were distributed to vulnerable families who had limited access to food or faced economic hardship as a result of the pandemic. A blood donation event was organized in collaboration with the Thai Red Cross Rayong Chapter and Rayong Hospital to ensure that the blood supply is always adequate and ready for those in need.

WHA Group and WHAUP representatives delivered care packages containing first aid kits, adult diapers, soaps, and basic medicines to senior citizens and those with limited or impaired mobility in the Aor Bor Tor Nong Sua Chang community. They also took part in a clean-up activity in the Ban Khai district, strengthening ties with local residents through environmental awareness.





- **Supporting Local Front Liners and First Responders**

The company delivered 1,000 Personal Protective Equipment (PPE) suits to Ramathibodi Hospital, which will be distributed to hospitals across the country. Furthermore, over 5,000 KN-95 masks were distributed to various provincial health administrations and hospitals across the country to ensure that medical staff members are adequately protected from infection. A significant amount of money was also spent to assist and feed front-line personnel who performed their duties bravely and selflessly.



- **Helping the Community Observe Health and Safety Protocols**

WHA Group and WHAUP teams were also constantly distributed KN-95 masks and hand sanitizers to Pluakdaeng Hospital in Rayong, the Pattaya Administrative Office, and other public institutions in the Eastern Economic Corridor. They also visited Rayong's Maenamkoo district to help with the manufacturing of masks for monks and villagers.



Since the outbreak began, the company has distributed hand sanitizers to 66 local schools, as well as hospitals, healthcare centers, and provincial administrative offices. In addition to this donation, WHA executives and staff reached out to schools and child development centers to promote personal hygiene and health awareness through interactive games in order to keep students safe as schools reopened.



Food donations, consisting of nutritious food packs and freshly cooked meals, were also arranged for the province of Saraburi through a giving back program called We Care for Nong Kae to alleviate the impact of COVID-19 on vulnerable residents of nearby communities.



• WHA E-Job Market

In 2021, WHA Group and WHAUP organized the “WHA E-Job Market” Project in collaboration with public companies and industrial operators on the Group’s premises in Rayong and Chonburi. It is an online platform that will match its customers’ recruitment needs with job seekers’ qualifications. The E-Job Market program is easily accessible via the company’s website as part of WHA Group’s CSR initiatives. The project aims to increase hiring in the surrounding communities during the COVID-19 pandemic by providing jobs within the industrial premises. There were 360 job positions or roles available, and 1,036 community members applied through this project.



WHA Group and WHAUP benefited from the E-Job market as a result of the added value created for WHA's customers. To act as a support system for customers during the pandemic's difficult times. The Covid-19 had an effect on a variety of industries and a large number of their employees. However, some businesses are interested in filling vacancies, particularly in their production line. Through the WHA E-Job Market, the WHA Group and WHAUP enables a win-win situation for all stakeholders by matching WHA customers' human resource needs with job seeker expectations, expanding their job channels and opportunities to attract new and skilled talent. Additionally, the entire process was conducted online. There was no paper. This program can assist WHA's customers in reducing the amount of paper used for job applications and recruitment.



ENVIRONMENT DEVELOPMENT PROJECTS

WHAUP, as a water service provider, focuses on community development programs related to water stewardship. Aside from the robust and effective water management schemes implemented within WHA Group's industrial estates, WHAUP collaborates with the Group to engage with local communities in close proximity to resolve water-related concerns through the projects listed below.



CLEAN WATER FOR PLANET

Following this aim, the 'Clean Water for Planet' program was carried out for the fifth year in a row in 2021. The program's aim is to provide clean water to local communities in order to

improve their quality of life and raise public awareness about the importance of water conservation. The following initiatives were carried out in order to meet the program's objectives.



1) TRAINING COURSES FOR STUDENTS AND KNOWLEDGE-SHARING WITH LOCAL ORGANIZATIONS.

Collaborating with Chulalongkorn University, WHAUP offers training courses on water conservation and wastewater management to engineering students. Every year, WHAUP will offer internship programs for university students to gain newfound knowledge from the Company's expertise and specialization in wastewater and water management services. In 2021, there were 4 students participating in the internship program.



2) WHA CLEAN WATER FOR PLANET LEARNING CENTRE

The learning center is a water management consultant center for various organizations or agencies, student communities, and interested individuals. The learning center showcases WHAUP's innovative water management, logistics and supply chain developments, industrial development, utilities, and power development expertise that can run a business with the community while also preserving the environment and reinforcing the circular economy concept. In 2021, 2 visiting groups visited and observed WHAUP's expertise in wastewater treatment at the constructed wetland project.



3) PROVIDE CLEAN WATER FOR LOCAL COMMUNITIES.

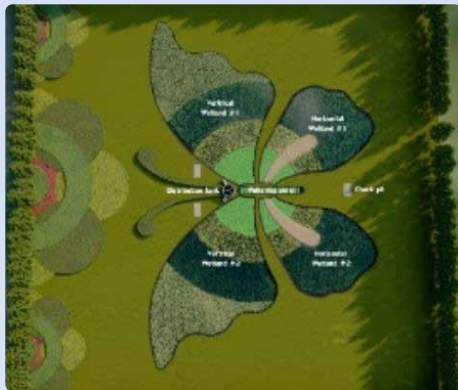
One of the program's most notable accomplishments was the delivery of a constructed wetland system, considered a natural technology that is eco-friendly, cost-effective, and easy to maintain, to the Pluak Dang Sub-District Office in Rayong province.

In addition, Wetland Water Systems have the potential to reduce organic compounds by up to 80%, treat waste water at a capacity of 146,000 cubic meters per year, and benefit 4,000 people, 220 apartments, 125 homes, and 30 local markets in the Pluak Daeng community. As a result, this procedure may reduce the likelihood that the company will receive complaints about water pollution.

WHAUP signed a Memorandum of Understanding (MOU) with Banchang Municipality for Wastewater Reclamation Project in 2021. WHAUP plays a key role in promoting, supporting, sharing knowledge with system operators, and serving as a design consultation system. The MoU agreement is part of WHA Group's Clean Water for Planet CSR initiative, and Ban Chang municipality's plan to embrace a "Smart City" concept. Realizing the need for an enhanced water system management, both parties aim to maximize the use of reclaimed water from Ban Chang communities by industrial operators in neighboring WHA industrial estates.



Moving forward, WHA Group and WHAUP has established a plan to develop similar sustainable wastewater treatment system at Nong-kla municipality, Chantaburi province. The system is estimated to treat up to 800 cubic meter of wastewater per day. The WHA Group sees this project as having two benefits: it gives the Nong Kla communities access to clean water, and it allows the WHA Group to reserve such a water supply as a backup in the event of a drought.



Overall, the Clean Water for Planet Project was awarded the FIABCI- Thai Prix d' Excellence Award 2020 in the Environmental (Rehabilitation/Conservation) Category for its outstanding results in terms of overall environmental impact and benefits to local communities surrounding WHA Group's industrial estates.

In 2021, special for WHA Eastern Industrial Estate (Map Ta Phut) (WHA EIE) received Eco Industrial Town Awards in the Eco-Excellence category during the recent ECO Innovation Forum 2021 co-organized by Industrial Estate Authority of Thailand, Department of industrial works, Federation of Thai Industries and Water and Environment Institute for Sustainability.

In addition, five of WHA Industrial Estates received Eco Industrial Town Awards in the Eco-Champion category



1. WHA Eastern Seaboard Industrial Estate 1 (WHA ESIE 1)
2. WHA Eastern Seaboard Industrial Estate 2 (WHA ESIE 2)
3. WHA Chonburi Industrial Estate 1 (WHA CIE 1)
4. WHA Chonburi Industrial Estate 2 (WHA CIE 2)
5. Eastern Seaboard Industrial Estate (ESIE)

All 6 of WHA Industrial Estates were recognized for their outstanding commitment in operating a conscious business that drives sustainability, in line with the smart and sustainable industrial town concept.



Ms. Jareeporn Jarukornsakul, Chairman and Group CEO of WHA Corporation PCL., received the Rising Star Sustainability Award in the “Sustainability Excellence” category during 2021’s SET Awards Ceremony, held online by the Stock Exchange of Thailand.

WHA Group had received the prestigious Rising Star Sustainability Award for listed companies in real estate and construction from the Stock Exchange of Thailand (SET) during the SET Awards 2021, in recognition of the company’s contribution to society and commitment to the environment. A listed company since 2012, WHA has stood out for its business management practices and operations while strictly adhering to environmental, social and governance (ESG) principles.



Dr. Nippon Bundechanan, Chief Executive Officer of WHA Utilities and Power Public Company Limited or WHAUP, said the company is very honored to receive the Outstanding Innovative Company Awards from the SET Awards 2021 for its innovation on Demineralized Reclaimed Water, an alternative water resource for sustainable development. The Outstanding Innovative Company Awards, granted by the Stock Exchange of Thailand, reflects WHAUP’s commitment to innovation as a driving force towards sustainability. Through human resources strategy, it focuses on providing a working environment that allows employees to create new ideas. “The Outstanding Innovative Company Awards is a prestigious distinction that reflects WHAUP’s DNA and shows its commitment and determination to initiate quality innovative works that can bring positive changes to society. WHAUP is considered a model organization that helps lift the standards and bring sustainable growth to the country’s economy and society in the long run.



WATER HYACINTH PROJECT

In 2021, WHA Group and WHAUP implemented an initiative for their surrounding community in the Baan Kai District, Rayong province, to generate additional income flows towards the local communities. On a monthly basis, the community can take unwanted water hyacinths from WHAUP's wastewater polishing pond at ESIE for free and use them to make and sell products. This enabled the community to generate income, save money on the purchase of such water hyacinths, which can save cost

around 150 Baht per basket, from total cost is 300 Baht per basket, and have a reliable source of raw material on a monthly basis. Every year, WHA purchase 300 baskets that made from the water hyacinth from the local community, and contained with the local Product from Pan Gan Project as a new year gift. As a result, this project generated 1 million Baht in revenue for the community, an additional income of approximately 10,000 Baht/month/person



Additionally, in 2021, WHAUP assisted this business in increasing the value of the water hyacinth through collaboration with PTTGC. WHAUP has come up with a new fabric idea that uses water hyacinth from a built wetland in WHA Group's industrial estates, recycled plastic bottles (PET) from GC's YOUTURN platform, and cotton.

As a result of this project, WHAUP has been able to create jobs and generate over 36,000 baht in revenue for the community through the scraping of water hyacinths into fibers. Prior to processing and spinning, the fibers from water hyacinth, fibers from plastic bottles (PET), and cotton fibers are combined to create the fabric. In addition, it builds a library of knowledge for the community that can be used to make more money in the future.

WHAUP earns revenue in this area by selling such fibers to manufacturers for further processing into products, which generated a total revenue of approximately 40,000 baht.



The collaboration between GC and WHAUP utilized this new fabric to create the laptop case and hampers. WHA Group and WHAUP then created 200 laptop bags and 300 hampers from new innovation fabric as upcycling new year gifts in 2021 for WHA Group and WHAUP's most valued customers, who expressed their satisfaction with the gifts received.





GREEN EFFORTS PROJECT

WHAUP also collaborated with WHAID and community volunteers on a reforestation project in the Bo Win sub-district, planting 300 samples of indigenous trees such as afzelia xylocarpa, lamduan, and mahogany. Students from Chonburi's Ban Khao Hin School were also invited to learn about the importance of trees in the ecosystem and the effects of climate change on daily life. Aside from providing shade, healthy trees also provide oxygen and reduce carbon in the air, as well as food and shelter for wildlife and the preservation of favorable water and soil conditions.

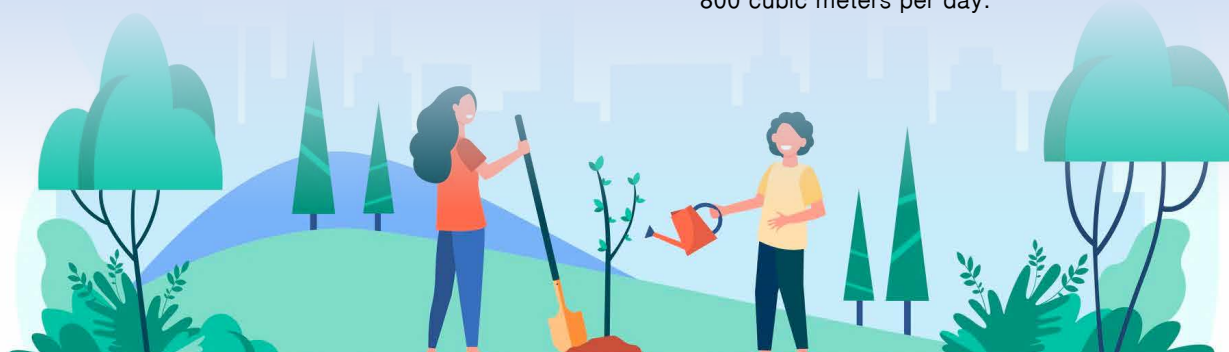


In addition, teaching children about recycling and living an environmentally friendly lifestyle was another activity on the green agenda. Employees from the WHA group delivered color-coded trash bins to the Ban Phan Sadet Nok School in Sri Racha, Chonburi, and explained the concept of sorting and recycling to the students in order to keep the planet clean. The young students engaged in lively discussions about how to sort waste materials and listened to suggestions and tips about waste reduction and reuse. Sharing the value of doing good for nature and the environment can begin at a young age.

WATER MANAGEMENT FOR COMMUNITY

The Community Water Management Program's objectives are as follows:

1. To be a waste water treatment plant for the Nong Khla community that is both technologically and environmentally advanced.
2. To treat Nong Khla Community waste water before discharging it into natural water resources.
3. To serve as a recreation area for the Nong Khla community.
4. The waste water treatment plant's capacity is 800 cubic meters per day.





WHAUP has provided financial support in Construction of the wastewater treatment system for communities in Nong Khla Subdistrict Municipality, and shared knowledge in waste water management, constructed wet land, and etc. Nong Khla Subdistrict Municipality provided the vacant land in area of Nong Khanun for the project of 11 rai.

18 February 2021 - WHA Utilities and Power Plc (WHAUP) and the municipality of Ban Chang in Rayong province recently signed a Memorandum of Understanding (MoU) to collaborate and share knowledge in the field of wastewater management in general, and specifically in the use of recycled wastewater, also known as reclaimed wastewater.

This MoU agreement, which is valid for two years, is part of the WHA Group's Clean Water for Planet CSR initiative and the Ban Chang municipality's efforts to embrace the "Smart City" concept. Recognizing the importance of improved water system management, both parties intend to maximize industrial operators' use of reclaimed water from Ban Chang communities in neighboring WHA industrial estates.

Mr. Suchin Pulhirun, Mayor of Ban Chang Municipality, declared: 'We are very pleased to sign this MoU with WHA Utilities & Power, as our city seeks to become a model for sustainable development in water management. We believe this will be a "win-win" project that will benefit both parties and promote long-term environmental solutions for our community.'

Dr. Nippon Bundechanan, CEO of WHA Utilities and Power Plc., commented: "With this MoU, we are looking forward to share our experience in wastewater management to Ban Chang Municipality, a socially-active district in the Eastern Economic Corridor. The treated wastewater will be converted into high-quality water that can be used by industrial customers in WHA Group's industrial estates. It will help us secure raw water resources in the EEC and contribute to solve the drought problems in the long term."

Ms. Jareeporn Jarukornsakul, Chairman and Group CEO of WHA Group Pcl, added: “This MoU will support the development of the EEC. Together with Ban Chang Municipality, as well as other municipalities and partners, we aim to set the standards for sustainable and environment-friendly techniques and practices in water management and treatment,” she explained. “This

is also a great opportunity to spread information to community members, from households to factories, on the importance of water conservation. This ‘municipal wastewater to industrial user’ concept is a good practice for sustainable development and create the utmost collaboration between local and industry”



WHAUP offers value-added water products, such as wastewater reclamation and demineralized water, to industrial customers both in WHA industrial estates and non-WHA industrial estates, as well as other industrial land developers and municipalities. In 2020, the company invested THB 300 million (nearly USD 10 million) in two reclaimed water projects in WHA Eastern Industrial Estate (Map Ta Phut) and Eastern Seaboard Industrial Estate (Rayong).



MANAGEMENT APPROACH

WHAUP places importance on being a part of society, so WHAUP’s take social factors into consideration when designing or operating a business. Social integration criteria were developed and applied when constructing new building or during reconstruction. This include integrating

As a result, WHAUP has implemented a variety of social integration initiatives and criteria in order to widen its contribution to society. Building social integration is a material topic that is important in utilities and power service provider. In 2021, WHAUP completed the projects listed below to benefit the community by providing good opportunities for low-income or disadvantaged individuals.

LABOR PRACTICE INDICATORS

As the employment landscape is changing drastically in the recent years, new laws, regulations and requirements arise. Unemployment rate and violations of labor practices is intensifying across the globe. These factors put tremendous pressure on businesses to reform their labor practices to prevent potential violations and negative impacts to their employees and media presence. WHAUP is aware of the concern, thus, puts utmost efforts to manage its labor practices effectively and appropriately.

MANAGEMENT APPROACH

WHAUP aims to improve employees' prosperity, promote diverse work environment, and ensure fair and equal treatment of employees, in line with the proper local labor practices and international standards. WHAUP ensures that its employee management practices also adhere to the national labor laws and regulations.

As addressed in the Employee Regulation Manual, WHAUP placed great importance on improving its organization labor practices. Thus, WHAUP prioritizes and enhance its actions and measures towards anti-discrimination throughout its operations and promote diversity in its workforce at both management and staff levels. WHAUP has appointed a Nomination Remuneration and Compensation Committee (NRC) which is comprised of members from the Board of Directors. The NRC is responsible to perform duties to nominate qualified persons, with no limitations or discrimination regarding the gender, age, color, race, ethnicity, nationality and cultural

background to serve as directors and top executives. The NRC is also responsible for proposing principles and guidelines to clearly, fairly and appropriately fix remuneration that is consistent with the labor market conditions. The NRC conducts bi-annual meetings and subsequently reports to the Board of Directors.

Diversity of Director to Executives Level by Age (Persons)	2019	2020	2021
< 30 Years old	0	0	0
30-50 Years old	3	5	4
> 50 Years old	4	2	3

WHAUP promotes diversity in the workforce by supporting and facilitating an inclusive environment that creates a workplace where differences are valued. WHAUP provides equal opportunities for all employees, regardless of their gender, race, religion, age, and other status, across all business hubs, ranging from recruitment to career advancement. In order to optimize the workforce, it is importance that WHAUP considers employees from diversified cultures and backgrounds, with different skill sets, experiences and unique perspectives to enhance workforce diversity. Diversity within the workforce allows WHAUP to broaden the knowledge and enhance creativity within the companies and extending the benefits to the wider society. Thus, WHAUP is monitoring various indicators to ensure the diversity of its workforce.



TABLE 1 WORKFORCE BREAKDOWN: GENDER

Diversity Indicator	Percentage	Targets (in 2023)
Share of women in total workforce (as % of total workforce)	20.39%	30%
Share of women in all management positions, including junior, middle and top management (as % of total management positions)	0%	10%
Share of women in junior management positions, i.e. first level of management (as % of total junior management positions)	12.5%	20%
Share of women in top management positions, i.e. maximum two levels away from the CEO or comparable positions (as % of total top management positions)	14.29%	20%
Share of women in management positions in revenue-generating functions (e.g. sales) as % of all such managers (i.e. excluding support functions such as HR, IT, Legal, etc.)	30.77%	40%
Share of women in STEM-related positions (as % of total STEM positions)	0%	10%

TABLE 2 WORKFORCE BREAKDOWN: NATIONALITY

Categories	Share in total workforce (as % of total workforce)	Share in all management positions, including junior, middle and senior management (as % of total management workforce)
Thai	99.34%	96.77%
Others	0.66%	3.23%

TABLE 3 WORKFORCE BREAKDOWN: OTHER MINORITIES

Diversity Indicator	% of FTEs	Coverage
People with disability	0%	>75% of FTEs
Age Group:		>75% of FTEs
<30 years old	0%	
30-50 years old	0%	
>50 years old	0%	

Furthermore, WHAUP adopted a fair and non-discriminatory recruitment process to ensure equal opportunities for all candidates. Fair compensation is provided and reviewed based on personal performances and achievements. Furthermore, WHAUP has engaged with external institutions to assess the employees' payments to assure that it remains competitive in the labor market.

Embedded in the Human Rights Policy, WHAUP illustrated its commitments to prohibiting all forms of harassment, including sexual and non-sexual harassment. Moreover, the policy also stated the commitments for zero tolerance for discrimination. Nonetheless, as part of WHAUP's commitments to non-discrimination and anti-harassment, WHAUP has also organized training for all employees on discrimination and harassment in the workplace. However, if WHAUP's received reporting's on incidents related to discriminatory behavior and harassment, a defined escalation process as well as proper procedures including corrective and disciplinary actions will be taken. These procedures are outlined in WHAUP Code of Conduct Policy.

WHAUP ensures fair lay off through an established transparent process. Moreover, employees are able to express opinions and propose suggestions on labor practices to the established Employee Committee or other provided channels acquainted with an established grievance mechanism process (refer to details on whistleblowing in Codes of Business Conduct chapter). In 2021, WHAUP received zero case reports regarding violations to labor laws and regulations.



STAKEHOLDER ENGAGEMENT

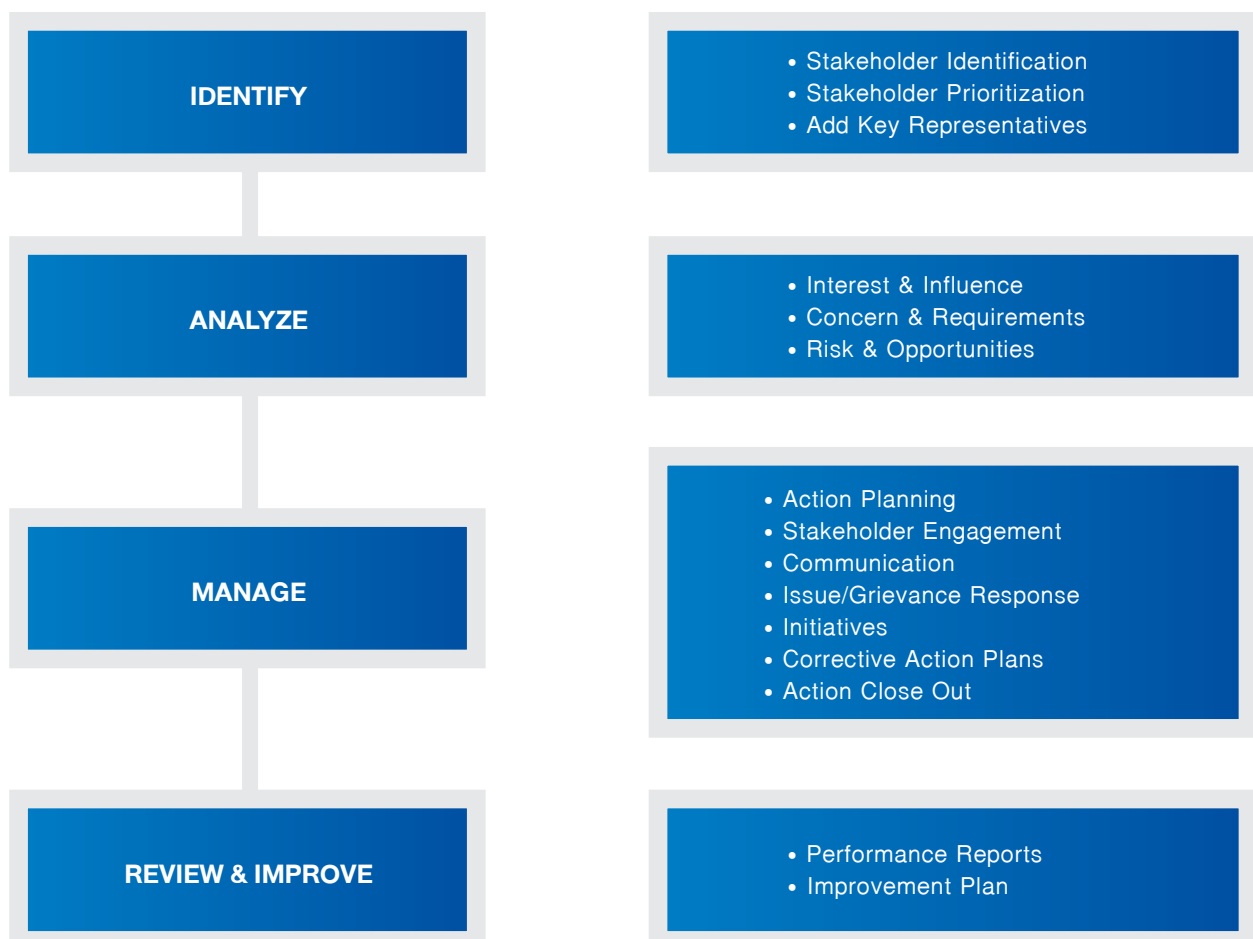
Strong engagement and effective communication are essential components of any business's success. WHAUP recognizes that each stakeholder has a distinct and equally valuable point of view. It is critical for the success of all business operations to have a shared understanding and good relationships with all stakeholders. As a result, in order to maintain a strong foundation for the business's sustainable growth, WHAUP must actively engage and communicate with these stakeholders. Therefore, the objective is to manage stakeholder expectations, to analyze and prioritize stakeholders in order to identify appropriate stakeholders who have an impact on the business's projects or operations. Thus, the stakeholder engagement procedure allows WHAUP to be able to proactively and effectively mitigate negative impacts

and maximize positive impacts. Furthermore, WHAUP reaffirms the trust of all stakeholders along the value chain.

MANAGEMENT APPROACH

STAKEHOLDER MANAGEMENT

Stakeholder management is critical for WHAUP's operations to reduce negative impacts and create positive impacts on society. WHAUP follows the same stakeholder management practices as WHA Group, which has developed a Stakeholder Management Guideline for group-wide implementation, providing guidance to all business units.



As part of the stakeholder engagement, WHAUP has implemented the Corporate Governance Policy which cover all groups of stakeholders. The business has received full support from a variety of stakeholders, which gives the business the ability to compete and generate profits. Thus, it is thought to add long-term value to the company. Establishing and strengthening relationships with stakeholders is one of the key success factors for WHAUP to be a successful business. As a result, WHAUP implemented the stakeholder engagement framework as a proactive system that includes guidelines for identifying, analyzing, managing, reviewing, and improving stakeholders.

The stakeholder engagement framework includes:

1. Identify and prioritize key stakeholders to plan the identification engagement approach process.
2. Analyse: evaluate and analyse the topics that cover all stakeholders' interests, concerns, risks, and opportunities in order to prepare for the stakeholder engagement process.
3. Manage: monitor and implement the stakeholder engagement process by communicating with all stakeholders and responding to issues via the grievance mechanism.

4. Review and Improve: review the efficiency and effectiveness of stakeholders and communicate the findings to WHAUP stakeholders in order to foster trust.

Furthermore, WHAUP utilizes a well-defined stakeholder management strategy. Individuals, groups of individuals, or organizations in the business chain who may be impacted by the Company's actions are referred to as stakeholders. WHAUP utilizes the same stakeholder engagement process as WHA Group to ensure efficient stakeholder management. The process for identifying and prioritizing stakeholder groups is based on the degree of their reliance, either directly or indirectly, on the Company's activities, products, performances, or services, as well as their influence or impact on business strategy or operational decision-making.

In 2021, WHAUP identified all stakeholders with the capacity to affect and/or who are likely to have an interest in the operation and also determine eight stakeholder groups, including Financial Institution, Media, Community, Shareholder/Investor, Customer, Government/Regulator, Employee, and Supplier/Creditor, that the top three of the stakeholders by ranking of WHAUP are as follows.



The interests, expectations, and concerns of the identified stakeholders are addressed through various engagement approaches and channels, as detailed in the following subsections of this report. Concerns and opinions are reported to the Company's supervisor and the Sustainable Development Committee, which is comprised of managers and responsible personnel from relevant departments, in order to acknowledge, assess, and strategize efficient and appropriate responses to cater to the stakeholders' interests. The outcomes of the stakeholder engagement process are then reported to the Executives for their consideration and are incorporated as inputs for maturing business decisions.

The engagement review process are as follows:

- The stakeholders' opinions and concerns were attained via various engagement approaches and available channels as described in the following subsections of this report.
- Concerns received from the engagements were further reported to the Group's Supervisor and the

Sustainable Development Committee, comprising of manager levels and responsible personnel from relevant departments, to acknowledge, assess and strategize efficient and suitable responses to ensure that the stakeholders' expectations are met.

- The results of stakeholder engagement process were then subsequently reported to the executives as inputs for maturing business decisions.



RESULTS OF STAKEHOLDER ENGAGEMENT

• EMPLOYEE

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Various all time communication channels (email, supervisor, intranet etc.) Annual CEO Town Hall Quarterly Executive Sharing Annual employee satisfaction and engagement survey Suggestion box Whistle blowing channel Bi-weekly management meeting 	<ul style="list-style-type: none"> WHAUP outlook Business trends and updates Update on news and knowledge sharing Training and career development program Work environment Compensation, welfare, and benefits Management of occupational health and safety Business continuity plan 	<ul style="list-style-type: none"> Update the performance and business outlook Share business trends and updates via WHA's communication channels Communicate and share updated situations and Executive knowledge Develop and provide suitable training programs Communicate on corporate values and strategy Regularly review and improve employees' compensation and benefits Promote good occupational health and safety culture Implementation of management approaches to prevent COVID-19 impacts (e.g. Work from Home, sanitation as per best practices and regulations) Implementation of management approaches to prevent COVID-19 impacts (e.g. Work From Home, sanitation as per best practices and regulations)Conduct business continuity plan rehearsals to ensure practices and requirements are strictly and effectively followed

• SHAREHOLDER/ INVESTOR

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Annual general meeting Annual Report and Sustainability Report Roadshow Analyst meeting Outlook meeting Investor site visit Opportunity Day Various all time communication channels (e.g. telephone, email, website etc.) 	<ul style="list-style-type: none"> Business performance, such as returns, benefits and profits Business transparency Changes in business management and business risks Sustainability performance 	<ul style="list-style-type: none"> Improve business competitiveness and business directions to be up-to-date Adopt digital technologies including Microsoft Teams and Zoom to conduct meetings to reduce impacts of COVID-19 spread from face-to-face interactions Ensure good corporate governance Take part in Thai CAC Conduct enterprise risk management and establish short and long-term plan Provide information on flooding risk prevention Manage sustainability material topics Ensure environment and social compliance Promote innovation and sustainability initiatives

• CUSTOMER

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Roadshow/ marketing events/ webinar Quarterly business meeting/ video conference Annual customer satisfaction survey Quarterly customer clubs Quarterly WHA Connect magazines Various all time communication channels (i.e. telephone, email, key contact personnel, social media etc.) 	<ul style="list-style-type: none"> Product and service inquiry Quality of after sale services Environment management, compliance and standards Risk and crisis management 	<ul style="list-style-type: none"> Provide product and service information on website and other media Provide prompt response to customers' inquiry Establish effective customer relationship management Continuously improve customer relationship management from customer's comments/ suggestions Strictly comply with related laws and regulations and apply international environmental management standards where possible Conduct risk and crisis assessment and implement appropriate mitigation actions Inform customers of relevant risks and crisis management plans and measures Support customers' impacts from COVID-19 outbreak as appropriate

• SUPPLIER/CREDITOR

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Supplier event Supplier site visit Telephone and Email Self-evaluation and onsite visits 	<ul style="list-style-type: none"> Transparency in procurement process Business opportunities and collaboration Compliance with WHAUP's standard On-time payment and following the contract agreement Environment, social and governance management Material quality and its environmental impacts Labor conditions (i.e. human rights) 	<ul style="list-style-type: none"> Developed procurement policy and procedure Conduct Suppliers-meet- Customers day Communicate on WHAUP's procurement policy Conduct supplier assessment and provide feedback/ corrective action plans to guide suppliers for improvement Follow the contract agreement Disclose information according to the agreed condition Communicate concerns related to environment, social and governance criteria Communicate about the insignificant impacts due to COVID-19 on the Group's business performances to assure suppliers' confidence and trust Reduce face-to-face meetings to reduce COVID-19 risks Evaluate supplier criteria to ensure that environmental, social and governance concerns are limited Ensure environmental management compliance are strictly followed Develop screening process to ensure that it complies with the Supplier Code of Conduct Ensure there is no violations of labor conditions or human rights issues

• GOVERNMENT/REGULATOR

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Meeting on occasion Various all time communication channels (i.e. telephone, email and Line application) 	<ul style="list-style-type: none"> Regulatory compliance Stakeholder impact management Corporate governance and transparency 	<ul style="list-style-type: none"> Strictly comply with relevant laws and regulations Develop effective stakeholder engagement plans Ensure good corporate governance and implementation of business code of conduct

• COMMUNITY

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Public hearing and meeting Community activities Community engagement survey Local community representatives Site visits 	<ul style="list-style-type: none"> Business operations' impacts on communities' well-being (i.e. water withdrawal, water discharge quality, chemical leakage etc.) Environmental management performance Community development and support Community engagement 	<ul style="list-style-type: none"> Conduct regular community feedback survey to ensure there is no 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 Ensure compliance with environmental related laws and standards Initiate community development programs regularly Share WHAUP's expertise with local communities Implement community development initiatives that support the communities to tackle COVID-19 impacts Provide effective and prompt response to community complaints Conduct community meeting to understand communities' needs and suggestions

• FINANCIAL INSTITUTION

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Various all-time communication channels (i.e. email, phone, line application, conference, etc.) Annual greetings Quarterly analyst meetings 	<ul style="list-style-type: none"> Business performance and outlook Business transparency Changes in business management and business risks Sustainability performance Green initiative 	<ul style="list-style-type: none"> Improve and keep business competitiveness and business directions up-to-date Adopt digital technologies including Microsoft Teams and Zoom to conduct meetings to reduce impacts of COVID-19 spread from face-to-face interactions Ensure good corporate governance Strictly comply with Disclosure Policy Notify significant updates or changes in a timely manner Manage sustainability material topics Promote innovation and sustainability initiatives Assess sustainability issues along with investment decision process Seeking out new funding that concerns with green issues and related aspects

• MEDIA

Engagement Approach	Stakeholders' Expectation	2021 Performance Summary
<ul style="list-style-type: none"> Various weekly or bi-weekly communication channels (i.e. press release, photo captions, executive interview and news article) Annual press conference, press tour/visits and annual greetings Quarterly Group interviews Bi-annual press briefings 	<ul style="list-style-type: none"> Business outlook/ Business direction Updates on products and services New customers CSR initiatives and environmental management Business outlook Financial results Technological advancements Strengthening relationships 	<ul style="list-style-type: none"> Hold annual press conference to update business plan and directions Frequently update on the development of company's activities through media channels Disclose accurate information on the basis of facts Maintain good and long-term relationships with the media Communicate through online platforms to reduce COVID-19 impacts from face-to-face meetings

GRIEVANCE MECHANISM

WHAUP established a group-wide grievance mechanism in order to identify issues and implement effective measures to address issues and concerns raised by stakeholders.

There are channels for employees and external stakeholders to confidentially report and inform on clues, suspicions, advice, grievances, or complaints. Employees and external stakeholders who report wrongdoing are protected as whistleblowers.

The report channel as below,

Reporting Channels	
Channels for Employees <ul style="list-style-type: none"> www.wha-up.com Comment Box CEO@wha-up.com auditcommittee@wha-up.com 	Channels for External Stakeholders <ul style="list-style-type: none"> www.wha-up.com CEO@wha-up.com auditcommittee@wha-up.com





ENVIRONMENT DIMENSION

ENVIRONMENTAL IMPACT MANAGEMENT

WHAUP prioritizes ensuring that its business operations, surrounding communities, and the environment coexist in a sustainable and harmonious manner. In this regard, WHAUP places a high value on pragmatic and sustainable environmental management and resource conservation that is relevant to the nature of its business operations and activities, such as active management and monitoring of wastewater quality.

WHAUP has adopted and strictly adheres to the WHA Group's Environmental Quality, Energy Conservation, and Biodiversity Policy. The Policy establishes a framework for WHAUP's commitments to reduce environmental impacts while maintaining and continuously improving its quality, regulatory compliance, and alignment with international standards such as the International Organization for Standardization (ISO) 14001 Environmental Management System and ISO9001 Quality Management System.

Furthermore, the WHA environmental guideline is a management tool for improving environmental performance in a controlled and systematic manner, as well as for managing investments that may incorporate eco-friendly aspects into WHAUP operations. This includes, but is not limited to, preventing and mitigating environmental impacts while continuing to improve quality, ensuring regulatory compliance, and aligning processes with international standards such as those set by the International Organization for Standardization (ISO).

ENVIRONMENTAL STANDARD AND PERFORMANCE

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

In recognition of WHAUP's environmental management operational practices, the company was certified in accordance with international standards by external audits, specifically the International Organization for Standardization (ISO) 14001: Environmental Management System.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

WHAUP's operations are located in WHA Group's industrial estates. To comply with the requirements and conditions outlined in the Promotion and Conservation of National Environmental Quality Act, B.E. 2535 (1992), all environmental and social impacts resulting from WHAUP's projects are evaluated through the Environmental Impact Assessment (EIA) study of the surrounding industrial estate. The EIA boundary encompasses the environmental and social impacts within a 5 km radius of the industrial complex. Before proceeding with the project construction, commencement, and operation phases, the EIA must be approved by the Office of Natural Resources and Environmental Policy and Planning (ONEP). WHAUP aims to meet EIA requirements and ensure complete EIA compliance, particularly in areas related to its business operations such as water management and wastewater quality monitoring. On a bi-annual basis, the results of management and monitoring practices are consolidated and reported to the Industrial Estate Authority of Thailand (IEAT), Natural Resource and Environmental Policy and Planning, and local provincial offices, covering the months of January-June and July-December, respectively. There have been no cases of non-compliance with environmental laws and EIA requirements identified as of 2021. Despite the COVID-19 outbreak in 2021, the environmental monitoring process was unaffected from the crisis.

REAL-TIME WATER QUALITY MONITORING STATION

The Real-time Water Quality Monitoring Station monitors the quality of the wastewater treated at WHAUP's wastewater treatment process prior to discharge to natural sources (WQMS). Organic substances, chemical oxygen demand (COD) levels, and bio-chemical oxygen demand (BOD) levels are the parameters being monitored. The results of real-time monitoring are projected at WHA Group's Unified Control Center (UOC). Furthermore,



the monitoring results are broadcast in real time on the company's publicly accessible website. The main driver for developing this system was regulatory agencies' desire to publicly publicize real-time results, so WHAUP is committed to being transparent with its environmental results. In the case that applicable standards are not met, an alarm will be delivered to appropriate operators, allowing them to take immediate corrective action. In addition to monitoring wastewater quality, the UOC monitors the performance of equipment at both raw industrial water and wastewater treatment facilities to ensure that the thresholds are met before supplying to end-users or discharging into public waterways. WHAUP, as a utility and power industry leader, demonstrates to the public how transparency and well-managed environmental management perform.

ENVIRONMENTAL COMPLAINT HANDLING PROCESS

Following WHAUP's ongoing efforts to improve the environmental management system, environmental complaint channels were established for stakeholders to submit any environmental complaints and concerns. Stakeholders are informed about the channels and instructed on how to use them. The complaint handling process follows the ISO14001:2015 guidelines, in which root causes are identified and appropriate preventive and mitigation measures are implemented to prevent future occurrences. Complaints can be reported via phone, WHAUP's website, through employees, or directly to the Complaint Centre, which is located at each of WHA Group's industrial estates.

There were no environmental complaints concerning WHAUP's operations in 2021.



CLIMATE CHANGE

In the recent decades, the effects of climate change can be felt more severely across the world, and Thailand is no exception. Last year, Thailand experienced the worst drought in the last four decades. Additionally, Bangkok, in particular, is extremely vulnerable to the rising sea levels. Rising waters have flooded Bangkok's riverside districts, forecasting that the entire city may be underwater by 2050. With this climate urgency, many countries around the world came together as part of the 2021 United Nations Climate Change Conference (COP26) to accelerate action towards the climate goals of the Paris Agreement and the UN Framework Convention on Climate Change to maintain the global temperature increase at below 1.5°C. During the conference, Thailand has committed to reaching net zero emissions target by 2065.

As WHAUP's business activities relies heavily on the availability of natural resources (e.g. rainfall for water services and solar for renewable solar energy), the impacts from climate change could affect its services and customers. Furthermore, WHAUP housed various

manufacturing productions; the climate-related incidents, for instance, flooding will directly translate to operational disruption to its customers. Thus, as part of the commitments and global movement to combat climate change, WHAUP places climate change at very high importance.

As a result, the WHAUP will closely monitor COP26 and plan to implement government policies aimed at reducing climate change and Green House Gas emissions in order to meet COP26's pledged target. WHAUP recognizes the negative effects of climate change, including floods and drought, and, as a result, assesses and proposes mitigation measures for any risks posed by climate change to its value chain and the community it serves. As a leading utilities and power service provider, WHAUP will focus on promoting renewable energy sources such as reservoirs and solar energy in order to reduce drought, flood, and greenhouse gas emissions and also protect the environment in the future.



MANAGEMENT APPROACH

Recognizing the urgency to address the issues of climate change and accelerate its climate-related actions, WHAUP has integrated the TCFD framework in the climate-related risk management, from the ways in which WHAUP identifies, manages, tracks and responds to the financial implications of climate-related risks and opportunities. Thus, in this Sustainability Report, WHAUP is disclosing its climate-related financial risks and opportunities in line with TCFD recommendations, for the first year. Nonetheless, this is initial step for WHAUP; annually, WHAUP will update this disclosure to ensure it remains transparent and aligns with stakeholders' expectations, and that WHAUP's climate performance is effective and continuously improving.

GOVERNANCE

WHAUP's Board of Directors assigned the Risk Management Committee to set up working team in managing WHAUP's climate-related risks and opportunities. The working team comprises of the Risk Management Committee members to jointly discuss and regularly evaluate the risk in the organization both internal and external risk factors including strategic risks, business operation risks, financial risks, compliance risks and emerging risks. The emerging risks identified as climate change risks and digital transformation. The risks working team monitors risks, with support from various divisions and report the results to Risk Management Committee for acknowledgement. Risk Management Committee will, subsequently, evaluate the effectiveness of risk management and report it to the Board of Directors at least four times a year to closely monitor and ensure that the Company maintain the risk level to be within risk appetite (acceptable risk level) and achieve the defined objectives and goals of the Company.

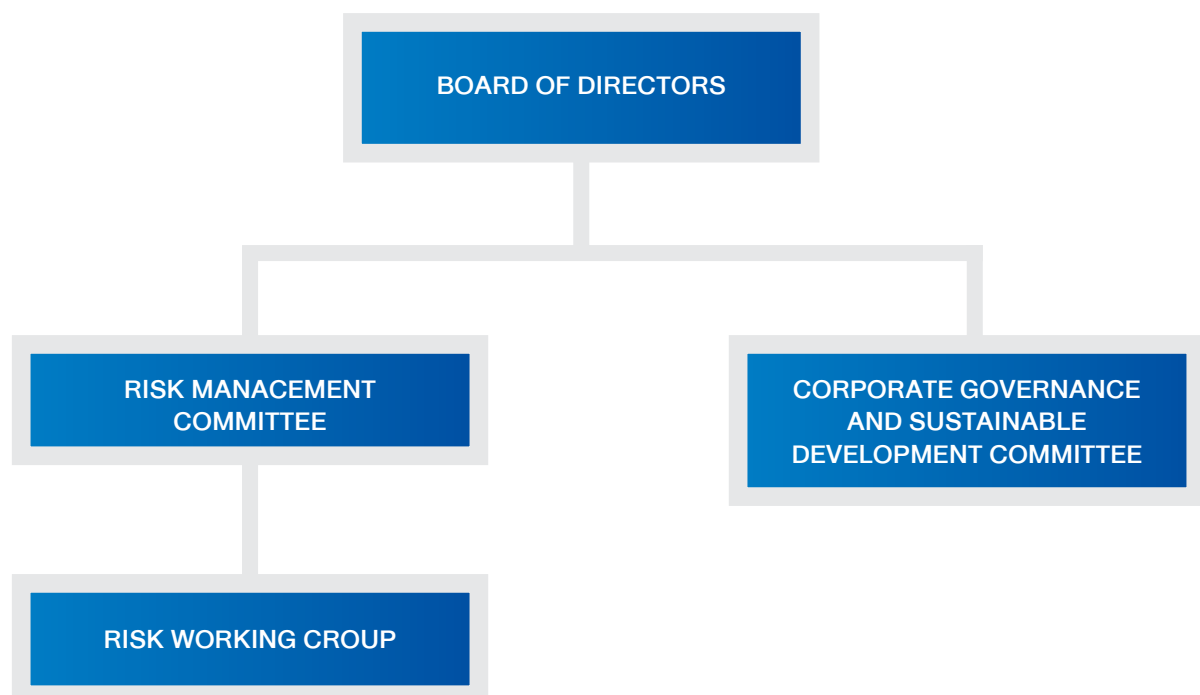


TABLE 1: CLIMATE CHANGE GOVERNANCE AND RESPONSIBILITIES

Role	Responsibilities
Board of Directors (BOD)	The BoD provides visions, missions, directions, and operational strategies with an efficient performance monitoring as well as evaluation system in place, which is independent from the management, to review the operation of Executives.
The Corporate Governance and Sustainable Development Committee	The Corporate Governance and Sustainable Development Committee is responsible for developing strategies associated with climate change, which is a part of the Group's plan for sustainable development.
Chief Executive Officer (CEO)	The CEO is responsible to manage the Company according to the established and agreed policies, plans and budget under the authority granted by the Board of Directors. In regards to Climate Change, CEO has the responsibility of strategic movement to manage climate related risk and opportunities, and ensure sufficient resources are allocated for mitigating climate related risk.
Risk Management Working Team, Sustainable Development Working Team, in collaborations with divisions and business units	The Risk Management working team and business units working team are tasked to define comprehensive key risk management policies and practices, which include climate-related risks. They assess and review risks, taking into account both internal and external factors which may affect the achievement of the Company's goals in order to ensure that appropriate measures that in line with the business are taken place to tackle climate change.

Moreover, in order to demonstrate accountability and responsibility for climate change, WHAUP has implemented a climate-related incentives, for the management and employee. This ensures that climate-related ambitions and goals are embedded throughout the company and that management is held accountable for the achievement of these goals.

STRATEGY AND RISK MANAGEMENT PROCESS

Without effective management against climate change impacts, more frequent and severe weather (i.e. droughts and flooding) can be introduced. Climate change impacts are, therefore, at the forefront of WHAUP's consideration when developing its utilities projects. WHAUP takes into account of the geographical settings of each utility infrastructures, beyond the regulatory zoning requirements, to ensure that potential climate change impacts can be managed at the selected locations. Precautionary actions were effectively laid out and implemented throughout the project life cycle in order to safeguard its services along the whole value chain from climate change impacts (e.g. sufficient water reservoir, increasing Water Reclamation capacity which minimize the Group's reliance on natural resources, monitoring schemes, etc.).



WHAUP is aware of the potential operational risks resulting in potential business disruption or asset damage imposed by climate change upon WHAUP operations and its customers. Therefore, climate change related risk assessment was conducted as part of the Enterprise Risk Management. The objectives of conducting such risk assessment are to:

- Identify significant risks based on hazards, vulnerability and exposure;
- Understand the impacts of climate change on business operation;
- Evaluate the effectiveness of existing mitigation measures; and
- Address future challenges imposed by climate change.

Therefore, WHAUP has identified a timeframe climate-related physical risks and transition risks, as well opportunities. The timeframe, Short term (1-5 years), Medium term (>5 years), and Long-term (>10 years), are also demonstrated below.



SCENARIO ANALYSIS

WHA Group conducted a Climate change scenario analysis for WHAUP. The scenario analysis covered two scenarios, which are climate change physical risks and transition risks and impacts, and financial opportunities at business as usual (4 degrees Celsius or scenario 1) and at low carbon economy (1.5 degree Celsius or scenario 2). The analysis took into account the emerging regulation requirements such as GHG emission reduction that may be enforced in 2030.

SUMMARY IMPACT ANALYSIS

<div> <div>Low</div> <div>medium</div> <div>High</div> </div>		Scenario 1			Scenario 1		
		4 degrees Celsius Scenario			1.5 degrees Celsius Scenario		
		BAU			2DS		
		Short Term (1-5 years)	Medium Term (>5 years)	Long Term (>10 years)	Short Term (1-5 years)	Medium Term (>5 years)	Long Term (>10 years)
Risk Type	Specific Risk	WHAUP			WHAUP		
PHYSICAL RISKS							
Acute	Flooding						
	Drought						
	Storm and lighting						
Chronic	Increase mean temperature						
TRANSITION RISKS							
Policy and Legal							
Technology - New improvements or innovations							
Market - shift in supply and demand							
Reputation - Change in customer and community perception							
OPPORTUNITIES							
Market - Shift in supply and demand							
Resources Efficiency & Energy Source							
Technology - New improvements or innovations							



CLIMATE-RELATED PHYSICAL RISKS AND TRANSITION RISKS

The tables below illustrated the climate-related financial risks that WHAUP has identified.

Physical Risks	Financial Impacts
<p>Acute: The increased in severity of extreme weather events, relating to flooding. Currently, there is medium risk of flooding in WHAUP operation areas in 4 degrees Celsius scenario (scenario 1). While 1.5-degree Celsius scenario (scenario 2) presents a low risk of flooding. Flooding may lead the company or customer to temporarily delay or stop the operation. Additionally, Flooding can cause sediments load, which can reduce the capacity of dams and reservoirs.</p> <p>Timeframe: more than 5 years</p>	<ul style="list-style-type: none"> Moderate impact is expected if the global temperature is increased by 4°C, leading to the occurrence of more severe and more frequent floods. <ul style="list-style-type: none"> Preventive and Maintenance costs might increase from floods and higher sediment loads. Water demand may drop; hence revenue will be affected. Low impact can be marked if the global temperature rise is kept under 1.5°C, the severity and frequency of floods will be lower than those expected if the global temperatures rise above 4°C. <ul style="list-style-type: none"> Preventive and maintenance costs will be regarded as low.
<p>Acute: The increased in severity of extreme weather events, relating to droughts. Currently, there is low risk of droughts in WHAUP operation areas in both scenario 1 & 2. In this regard, the water reserves may not meet its minimum reserve requirements, therefore, it caused a low risk of a water shortages.</p> <p>Timeframe: more than 5 years</p>	<ul style="list-style-type: none"> Low impact can be observed for both scenarios. In scenario 1, if the global temperature is increased by 4°C, drought can cause financial impacts to company's operations by increasing capital costs (e.g. invest in ponds, reservoir) In scenario 2, if global temperature rise is kept under 1.5°C, the severity and frequency of drought will be lower than those expected if the global temperatures rise above 4°C. Thus, there will be low impact to capital and R&D cost
<p>Acute: The increased in severity of extreme weather events, relating to storms and lighting. Currently, there is medium risk of storms and lighting in WHAUP operation areas in scenario 1. While in scenario 2 presents a low risk of storms and lighting. Flooding may lead the company or customer to temporarily delay or stop the operation. Additionally, Flooding can cause sediments load, which can reduce the capacity of dams and reservoirs.</p> <p>Timeframe: more than 5 years</p>	<ul style="list-style-type: none"> Moderate impact is expected if the global temperature is increased by 4°C. Storm & lighting causes financial impacts to company's operations from system interruption and damage resulting in higher maintenance cost. On top of that, revenue can be decreased due to projects suspension for a short period of time. Low impact can be observed if the global temperature rise is kept under 1.5°C. The severity and frequency of natural disaster will be lower than those expected if the global temperatures rise above 4°C. Thus, there will be low impact to maintenance cost and revenue.

Transition Risks	Financial Impacts
<p>Chronic: Fluctuations and changes in precipitation patterns and extreme variability in weather patterns, e.g. rising mean temperatures. Currently, there is low risk of increasing in mean temperature in WHAUP operation areas in both scenario 1 & 2. Extreme heat decreases the efficiency of solar power plant. Higher temperatures lower the ability of transmission lines to carry power, possibly leading to electricity reliability issues during heat waves.</p> <p>Timeframe: more than 5 years</p>	<ul style="list-style-type: none"> Low impact can be observed for both scenarios. In scenario 1, if the global temperature is increased by 4 °C, increasing mean temperature causes financial impacts to company's operations from system deficiency and resource consumption which can also result in increasing cost of operations. Capital costs can be increased to improve and strengthen infrastructure and equipment to endure high temperature. In scenario 2, if global temperature rise is kept under 1.5°C, the severity and frequency of natural disaster will be lower than those expected if the global temperatures rise above 4°C. Thus, there will be low impact to cost.
<p>Policy and Legal: Legal and regulation changes relating to GHG reduction, such as enforcing the use of construction materials with no GHG emission. WHAUP predicted that by 2030, the Thai government should enforce the Greenhouse Gas Reduction Law, which will likely be applied to heavy industry first.</p> <p>Timeframe: more than 5 years</p>	<ul style="list-style-type: none"> Changes in laws and regulations on GHG emission may results in higher cost of construction materials. However, in scenario 1, if the global temperature is increased by 4°C, the business and financial impact is expected to be at a low level, as the laws to control greenhouse gas emissions are not enforced by 2025, hence the current operations and approaches can manage the risks appropriately. In scenario 2, if global temperature rise is kept under 1.5°C, it may be mandatory for the private sector to reduce carbon dioxide or greenhouse gas emissions through a Cap & Trade scheme and/or carbon taxes. Such laws may affect the Company's long-term business strategies, objectives and operating cost.
<p>Technology: Changes in direction and development of advanced and rapid technology in supporting GHG reduction. This is expected to have a low impact as the existing technology can be used to meet the needs of customers immediately.</p> <p>Timeframe: between 1 – 5 years</p>	<ul style="list-style-type: none"> Low impact can be observed for both scenarios. In scenario 1, if the global temperature is increased by 4°C, there will only be low impact to the Company as the existing technology can be used without an introduction of new technology that can produce low-carbon products. In scenario 2, if global temperature rise is kept under 1.5°C, the impact will remain low since technology to generate electric power from renewable energy like solar power has been continually stepped up in line with increasing demands.
<p>Image and Reputation: WHAUP's stakeholders may pay more attention and demand that the Group takes actions to reduce GHG emissions</p> <p>Timeframe: more than 5 years</p>	<ul style="list-style-type: none"> If WHAUP doesn't meet the expectations and demands from its stakeholders (e.g. customers, investors, communities), its reputation can be jeopardized which could lead to long-term financial impacts, if these stakeholders lose trusts and supports in WHAUP.

CLIMATE-RELATED PHYSICAL AND TRANSITION OPPORTUNITIES

The table below demonstrated the climate-related financial opportunities for WHAUP.

Opportunities	Description/Business Impacts
Market: Due to rapid technological advancements, customer behavior in some industries are changing to improve and develop their production processes to utilize more machines or robots to increase efficiency and reduce costs. There may also be more demand in shifting towards electricity generated with lower emission technology. Timeframe: more than 5 years	<ul style="list-style-type: none">Low impact can be observed for both scenarios. Whether the global temperature is increased by 4°C or is kept under 1.5°C, it is expected that the changing customer behaviour will generate more business opportunities for WHAUP and will increase the company's revenue.
Technology: Due to rapid technological advancements, customer behavior in some industries are changing to improve and develop their production processes. There may also be more demand in shifting towards advanced technology or innovation of solar energy storage. Timeframe: between 1 - 5 years	<ul style="list-style-type: none">Low impact can be observed for both scenarios. Whether the global temperature is increased by 4°C or is kept under 1.5°C, it is expected that the advance technology and innovation of solar energy storage will generate more business opportunities for WHAUP and will increase the company's revenue.

Moreover, WHAUP has integrated the climate-related risks and opportunities into their business strategy and operations in order to enhance resilience and drive continuous improvements.

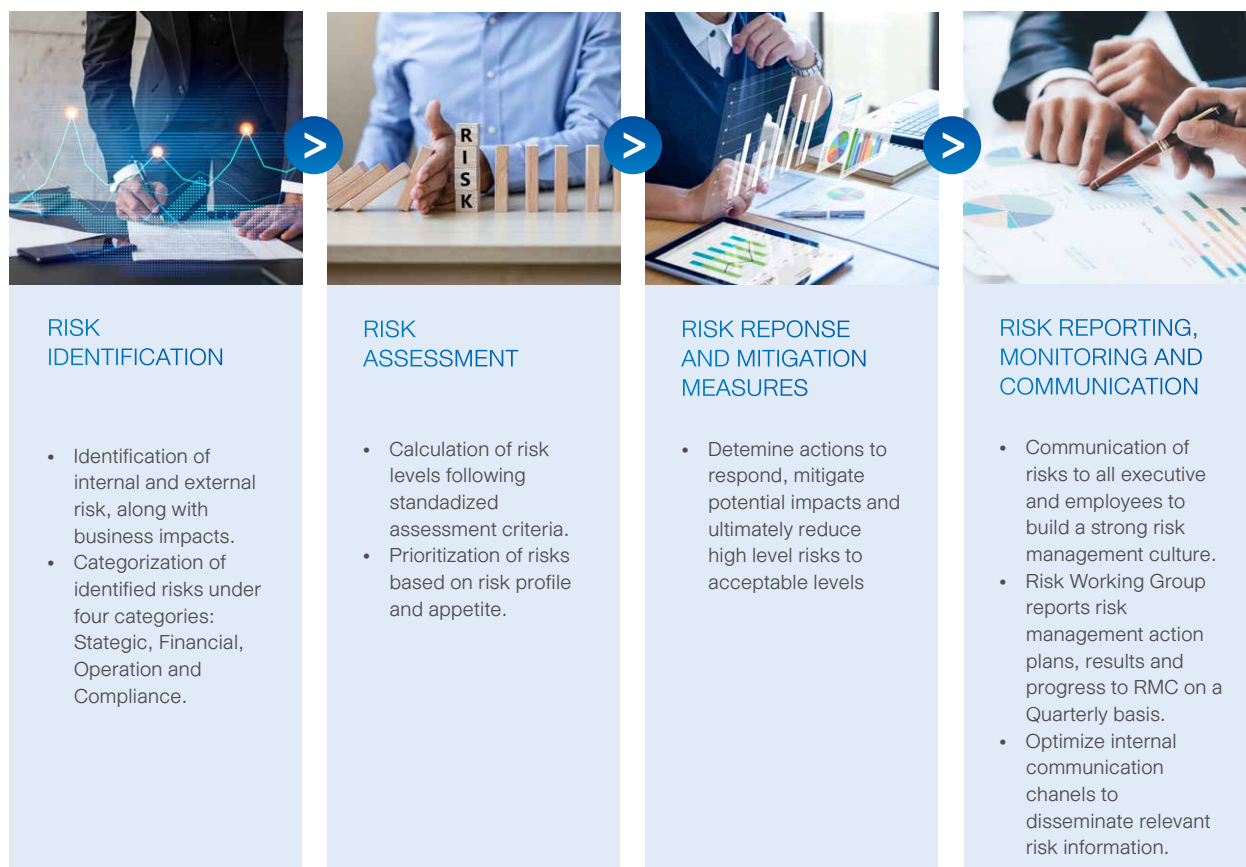
RISK MANAGEMENT

SCENARIO ANALYSIS

WHAUP conducted a Climate change scenario analysis within its operation. The scenario analysis covered two scenarios, which are climate change physical and transition risks and impacts, and financial opportunities at business as usual (Temperature increased by 4 degrees Celsius) and at low carbon economy (Temperature increased by 1.5 degree Celsius). The analysis took into account the emerging regulation requirements such as GHG emission reduction that may be enforced in 2030.



WHAUP'S RISK MANAGEMENT PROCESS



If climate change impacts are not effectively managed, more frequent and severe weather (e.g., droughts and flooding) can be expected. Climate change impacts are indeed prioritized by WHAUP when developing and supporting utility services. Beyond the regulatory zoning requirements, the Group considers the geographical settings of each industrial estate to ensure that potential climate change impacts can be managed at the selected locations. Precautionary measures were effectively laid out and implemented throughout the project life cycle to protect the industrial complex from the effects of climate change (e.g. sufficient water reservoirs, monitoring schemes, etc.)

WHAUP is aware of the potential operational risks that climate change may impose on WHAUP's operations and customers, resulting in potential business disruption or asset damage. As a result, a climate change risk assessment was carried out as part of the Enterprise Risk Management. The goals of such risk assessments are to:

- Identify significant risks based on hazards, vulnerability, and exposure;
- Understand the effects of climate change on business operations;

- Evaluate the effectiveness of existing mitigation measures; and
- Address future challenges posed by climate change.

According to the assessment results, climate change was identified as a threat to the industrial complex as a result of Thailand's overall significant low water levels and drought periods experienced at WHAUP major operation area during the first quarter of 2020. As a result of the risk assessment, the following mitigation measures were identified, which the Company has meticulously implemented at the relevant operation area to manage climate change impacts.

CLIMATE STRATEGY

CLIMATE ADAPTATION

WHAUP developed risk management process in order to respond and address to the physical risks of climate change which may impact and freeze its operations, and throughout the value chain (e.g. customers in the industrial estates, and surrounding communities).

WHAUP has not experienced any risks or impacts relating to flooding in its operation area in Thailand and Vietnam because WHA Group have an effective site selection process which undergo an analysis to ensure that the areas have no history of flooding. Moreover, WHA Group and WHAUP have implemented many measures to mitigate risks. Even the recent drought events in 2020, with effective measures, WHA Group and WHAUP were able to manage the risks and thus, climate physical risks have pose low threat to the Group. Nonetheless, WHA Group and WHAUP continues to actively adapt to climate change and implement actions to address the climate physical risks for the future.

METRICS AND TARGETS

CLIMATE-RELATE METRICS

GHG EMISSION DATA

Performance	Unit	2018	2019	2020	2021
Direct (Scope 1) GHG emissions	Tones CO2e	119.60	89.28	251.57	274.00
Energy indirect (Scope 2) GHG emissions	Tones CO2e	14,758.82	15,730.07	15,782.32	13,458.00
GHG emissions (Scope 1 and Scope 2)	Tones CO2e	14,878.42	15,819.34	16,033.88	13,732.00
GHG emissions intensity (Scope 1 and Scope 2)	Tons CO2e/ THB	0.0000087095	0.0000085178	0.0000094428	0.0000062968
Coverage	%	100	100	100	100

CLIMATE-RELATED TARGETS

1.GHG emission reduction targets (e.g. scope 1, scope 2, scope 3)

WHAUP , in alight with WHA Group, has committed to long-term target to provide solar power and has signed solar power purchase agreement of 300 MW corresponding to 171,000 tons CO2e GHG emission (Scope 2) reduction per year by 2023.

TARGET YEAR
2023

GHG EMISSION

Offset from Grid Electricity
Consumption (tCO2e) per year

171,000

(assuming full year operation of signed capacity)

OTHER CLIMATE-RELATED TARGETS

• WATER MANAGEMENT TARGETS

WHAUP, in alight with WHA Group, targets to double its capacity of reclaimed industrial water for industrial use from 30,200 cubic meter/day in 2020, to 60,400 cubic meter/day by 2025.

TARGET YEAR
2020

Reclaimed Industrial Water for
Industrial Use (cubic meter/day)

30,200

TARGET YEAR
2025

Reclaimed Industrial Water for
Industrial Use (cubic meter/day)

60,400

• ENERGY & RENEWABLE ENERGY TARGETS

WHAUP, in alight with WHA Group, targets to reduce grid electricity consumption within its own operation by 3% within 2022 against 2019 baseline.

• WASTE MANAGEMENT TARGETS

WHAUP, in alight with WHA Group, targets to optimize proportion of waste to landfill or incineration without energy recovery by 2025.

CLIMATE-RELATED MANAGEMENT INCENTIVES

WHAUP, in alight with WHA Group, has integrated climate change into its climate related management incentives, with operational KPIs. For instance, additional MW of renewable generating capacity is part of KPI of WHAUP, accounting around 10% of KPI of WHAUP. In addition, operational performance is also embedded into financial KPI. Company KPI is an important proportion of KPI of each management, with different weight to each management depending on roles and responsibilities.

WHAUP is dedicated to involve in solving the problems caused by the climate changes. According to the continuous implementations of the plans to improve the solar power generation and distribution from the solar rooftops of the group, the greenhouse gas emission could be reduced for over 26,378 tons of carbon dioxide equivalent in the last year. By comparing it to the greenhouse gas emission of 13,732.00 tons of carbon dioxide equivalent from the activities of WHAUP in the same period, it could be considered that WHAUP achieved the carbon neutrality by 2021. However, the company is still dedicated to minimizing environmental effects and involving in solving the problems from the climate changes in order to achieve the net zero. WHAUP is working on a long-term plan to achieve Net Zero Emissions target, which will be announced a detailed plan and a clear timeline further.



ENERGY MANAGEMENT



As the world is transitioning towards 'Net Zero' and 'Low Carbon Society', the market forces and conditions, government's plans and regulations, businesses' opportunities and the society's demands, are, together, driving this green transition and accelerating the adoption of low carbon solutions and business-smart solutions. Equally important, the increasing in resource scarcity has plays a large part in influencing the private and public sectors to develop and optimize energy efficient SMART solutions. Governments around the world including Thailand, have rolled out supporting policies regarding the production and consumption of renewable energies. In parallel, private sectors are also applying technological advancements to create platforms for green energy usage as well as ensuring energy security.

Indefinitely, clean energy is better for the planet and humanity in comparison to energy derived from fossil fuels. Clean energy provides benefits in avoiding greenhouse gas emissions, delivering cleaner air and reducing dependency on scarce natural resources. Therefore, WHAUP places importance to effectively and responsibly manage energy usage within its operations to reduce potential adverse impacts on the environment and all stakeholders involved. As 'Your Ultimate Solution Partner', WHAUP also offers utility service for customers to offset their carbon footprint through renewable energy portfolio. Utilizing renewable energy allows customers to efficiently use energy, reduce dependency on the grid and also mitigate impacts on the wider environment.

MANAGEMENT APPROACH

WHAUP realizes the importance of energy management, therefore, established an Energy Conservation Policy to outline the needs for energy conservation programs within its operations. The Policy is applied to employees and buildings or infrastructures complying with the Building Control Act, B.E. 2540 (1997) and Promotion and Conservation of National Environmental Quality Act, No. 2, B.E. 2550 (2007) across all four business hubs. Energy management is overseen by the Energy Committee, which is comprised of representatives from four business hubs to accurately encapsulate the diverse but supporting nature of WHAUP business operations.

ENERGY CONSERVATION IN OWN OPERATION

As a utilities and power service provider, WHAUP does not have the authority to control industrial operators in the industrial complex to reduce their energy consumption. Hence, WHAUP targets to reduce grid electricity consumption within its own operation by 3% within 2022 against 2019 baseline. To support WHAUP's energy reduction goal, the following energy conservation projects were carried out in 2021.

SOLAR ROOFTOP

WHAUP prioritizes the installation of solar panels within WHAUP's own operations to increase the use of renewable energy consumption. In 2021, renewable energy generated from the installed solar rooftop panels at the water treatment facility at WHA Eastern Industrial Estate (WHA EIE) were able to reduce conventional electricity by 315,857 kWh per year, thus offset 177 tCO₂e of GHG Scope 2 emission. Additionally, the solar carparks at WHA ESIE at Plaza 1 and Plaza 2 and at WHA ESIE 4 carpark also generated and substituted grid electricity usage by 352,015 kWh, thus prevented 197 tCO₂e of indirect emissions with its produced solar energy.



To further increase renewable energy generation capability, WHAUP has developed a pilot project to install solar rooftop panels coupled with battery energy storage system (BESS) at the water plant in Eastern Seaboard Industrial Estate (ESIE). The solar rooftop system was completed and commenced operation in November 2021. The system's solar rooftop panels generated approximately 813.2 kW of solar power with BESS capacity of 550 kWh. This project will help WHAUP reduce around 1,150 MWh of electricity off-take from the grid each year, which is equivalent to saving on electricity expenses of around 4 million Baht per year. Totally, WHAUP will be able to reduce greenhouse gas (GHG) scope 2 emissions by 15,000 tCO₂e due to grid electricity substitution throughout the project's lifetime.

ENERGY SAVING IN OFFICE BUILDINGS

Apart from energy saving schemes conducted at the industrial estates, all business hubs also acknowledge and actively support the directional movement to reduce energy consumption. **“Let’s Save the World Together”** program was initiated to encourage all employees to make slight modifications to current practices to save energy, such as turning off electrical appliances, use stairs instead of elevators, etc. This propagates the positive behavior changes towards energy consumption reduction.



INTEGRATED ENERGY SOLUTIONS FOR CUSTOMERS

SOLAR ROOFTOP SERVICE PACKAGE

WHAUP offers full solar rooftop service package including design, permitting, installation, and long-term operation and maintenance with no additional cost for its customers. Customers are offered energy at lower prices while also being able to offset their GHG emissions. WHAUP commits to a long-term target to a signed power purchase agreement and provide altogether 300 MW of solar power system for potential customers by 2023. By the end of 2021, the cumulative target sign was successfully achieved as WHAUP installed solar rooftop system for customers that generated altogether 92 MW of solar energy. Collectively, the installed solar projects helped customers to offset GHG scope 2 emissions by around 64,400 tCO₂e per year.

Energy Saving	Performance		Target		
	2020	2021	2021	2022	2023
Installed Capacity (End of Year) (MW) ¹	51	92	90	150	300
GHG Emission Offset from Grid Electricity Consumption (tCO ₂ e) (assuming full year operation basis) ²	35,700	64,400	63,000	105,000	210,000

ENERGY EFFICIENCY PROGRAM

To support WHAUP's target to improve energy efficiency and reduce energy consumption, WHAUP has established an energy saving project called 'LED Lamp Replacement Project' in the area of WHAUP operations in 2016. Since 2016 until now, WHAUP has continuously replaced conventional lamp bulbs with LED ones. As a result, a total 2,068 conventional lamp bulbs has been replaced, which helped reduce a grid electricity consumption by 548,622.24 kWh and provided a savings around 2.19 MB. In 2021 alone, the program was able to reduce a total 120,697.12 kWh of grid electricity.

Apart from mentioned LED replacement project, WHAUP installed and operated a solar system on WHAUP water utility plant and its carparks. The solar system supplies electricity from a renewable source, and reduced a grid electricity usage by 667,872 kWh in 2021. Furthermore, WHAUP further enhanced its solar energy capability by installation of battery energy storage system (BESS) coupled with solar rooftop panels at the water plant. This BESS initiative reduced an additional grid consumption around 1,150,000 kWh each year.

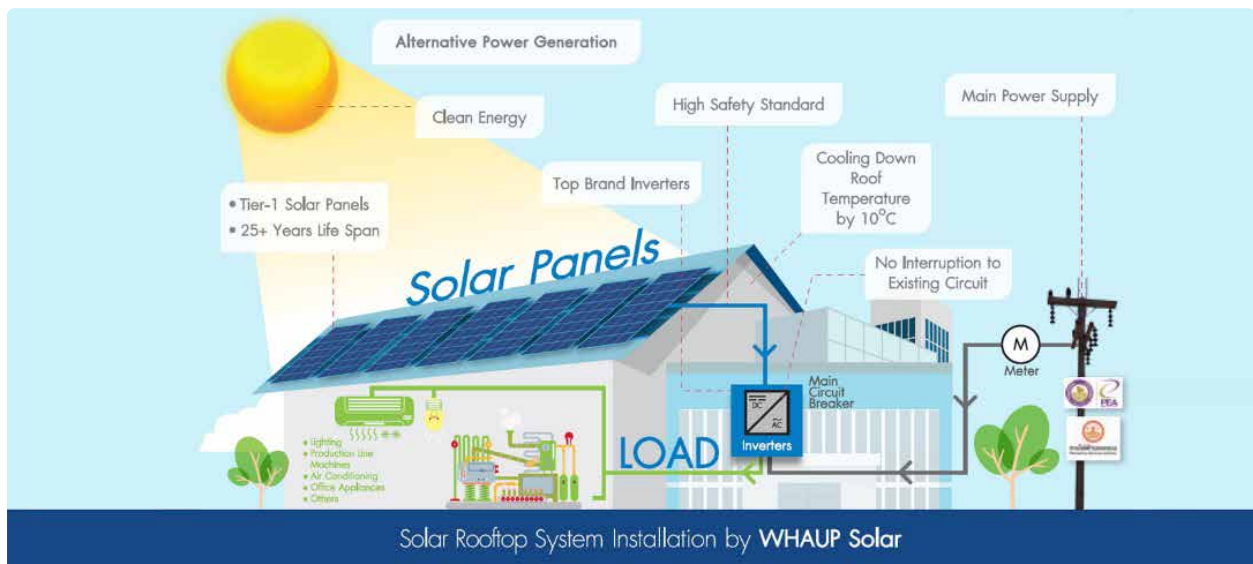
INTEGRATED SOLAR SYSTEM SOLUTIONS FOR CUSTOMERS



Due to the increasing interests from industrial operators looking to transition to green energy for lower costs and to protect the environment, installing solar rooftops have matured into the preferred solution. WHAUP's reputation for high engineering and safety standards along with expertise in solar roof has fundamentally embedded the trust of customers to shift towards renewable energy use through WHAUP's service.

Note: 1 Included MW under both operation and development stage; as of end 2021, operational 57 MW and 35 MW under development

2 Expected level of GHG offset on per year basis. Actual level can be varied with multiple operating parameters and standard used to calculate kg CO₂e/kWh of the grid.



WHAUP offers an all-in solar rooftop service package for customers including design, permitting, installation, and long-term operation and maintenance at no upfront cost to customers. With zero investment and zero maintenance costs, WHAUP's solar rooftop package helps businesses be a part of the green energy cycle under a long-term power-purchase agreement. This solar rooftop is cost-effective and has less impact on the environment.



WHAUP is aware of the environmental impacts that may be imposed by stakeholders within the value chain, therefore, is committed to a long-term target to a signed power purchase agreement and provide altogether 300 MW of solar power system for potential customers by 2023. By the end of 2021, WHAUP installed solar rooftop system capacity for customers has reached 92 MW which surpassed the annual target set. Collectively, achievement of this target will substitute grid electrical consumption with solar energy, which offsets around 64,400 tCO₂e.

Energy Saving	2021		2022	2023
	Performance	Target	Target	Target
Installed Capacity (End of Year) (MW) ³	92	90	150	300
GHG Emission Offset from Grid Electricity Consumption (tCO ₂ e) ⁴	64,400	63,000	105,000	210,000

Per 2021 performance resulted, installed capacity achieved target at 92 MW and beyond at 90 MW, this performance increasing 80% from previous year. In 2021, total energy supplied to customers were 52,800 MWh which accounted for 26,378 tCO₂eq avoided emissions.

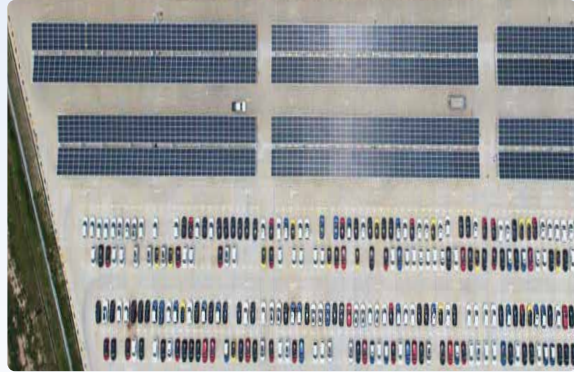
Note: ³ Included MW under both operation and development stage; as of end 2021, operational 57 MW and 35 MW under development

⁴ Expected level of GHG offset on per year basis. Actual level can be varied with multiple operating parameters and standard used to calculate kg CO₂e/kWh of the grid.

THAILAND'S LARGEST SOLAR CARPARK

Starting in 2020, WHAUP officially delivered the solar carpark at SAIC Motor Company - CP Co., Ltd. (SAIC MOTOR-CP) covering 31,000 m² of solar rooftop space. This project has installed capacity of 4.8 MW, making it

the largest solar carpark project to date in Thailand. In 2021, it generated 4,825 MWh of clean energy, The solar roof carpark ultimately support the customer to save energy cost and fulfill their environmental commitments.



INTEGRATED SOLAR SYSTEM SOLUTIONS: SOLAR ROOFTOP, SOLAR CARPARK AND FLOATING SOLAR FARM

WHAUP has installed solar PV ECO system at Continental, one of the leading tire manufactures in the world. This photovoltaic system comprises 3 different types of solar power installation with a total of 4.2 MW at the WHA Eastern Seaboard Industrial Estate 4. Solar rooftop, two factory buildings' roof of 27,400 square meters have been installed solar panel with a total power generating capacity of 2,757 kW. Solar carpark, covering a total of 8,400 square meters will generate electricity of 958 kW, and a floating solar farm on a 7,000 square meters pond, will generate electricity of 475 kW. This project already achieved commercial operation in March 2021 with total energy produce of 4,439 MWh in 2021.



Solar Carpark



Solar Rooftop

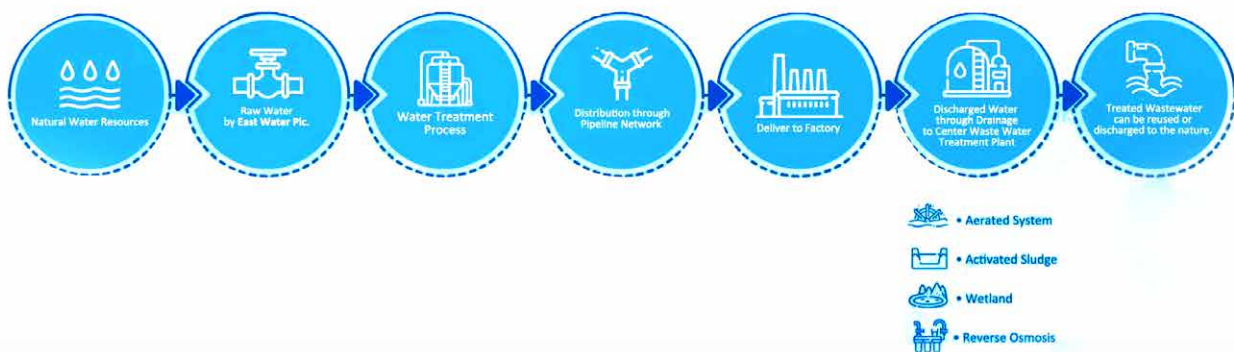


Floating Solar Farm

WATER MANAGEMENT

Water is a vital resource that plays a part in all aspects of life, ranging from our health and well-being, society development, economic growth, and the ecosystem. Hence, it is an essential resource in order for our society to progress sustainably. Currently, with the expansion of industrial operations and climate change intensification, which could ultimately result in the degradation of the natural environment. Subsequently, shifts in precipitation patterns could occur, thus, resulting in low water levels in reservoirs. Thus, water resource has been identified as a critical issue in terms of water deficit (drought), water excess (flood), and water quality and accessibility. As a result, utility service providers could be faced with challenges to ensure clean and sufficient water supply for its business operations. Alternatively, societal and environmental pressures over the recent years have also led to a forward movement for industries to reduce generated wastewater and ensure acceptable quality prior to discharging to natural waterways.

As a provider of industrial water supply and wastewater treatment services, water is inevitably a critical shared resource for WHAUP's business operation. Industrial operators located within the WHA Group's industrial estates utilize such provided industrial water and wastewater treatment services, and at the same time, water sources are also shared with the local communities. 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.

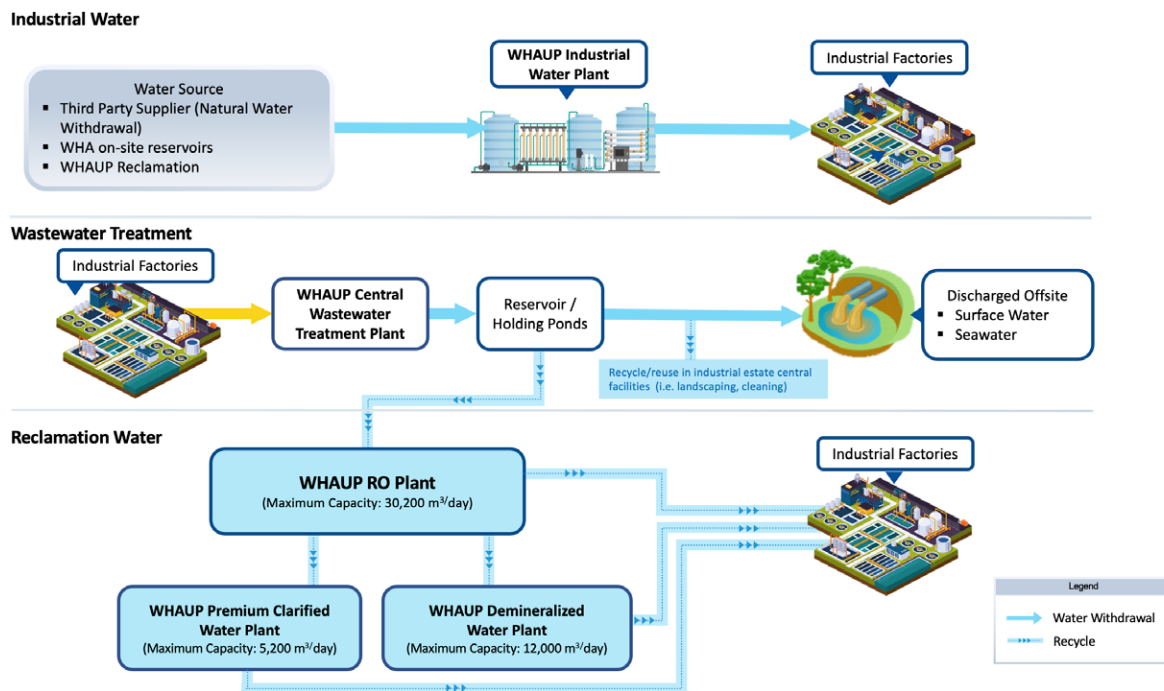


MANAGEMENT APPROACH

Water management across WHAUP's business are governed by the Environmental Quality, Energy Conservation and Biodiversity Policy that was endorsed by the managements. The Policy provides guidelines to ensure effective water balance without posing negative impacts to the nature. Water management at WHAUP was overseen by Utilities Operation department, works collaboratively for the water management and environmental mitigation functions.

The overall process of water management of WHAUP includes industrial water supply management, wastewater treatment system and wastewater reclamation program. This is to ensure effectiveness of water resource management, reduce risk related to water, as well as comply with relevant regulations.

In order to achieve the water management programs, WHAUP is using technology in finding new source of water to reduce impact to community. In 2021, the technology applied in water management includes not only to enhance the existing implemented technologies such as the wastewater reclamation into the value-added products in order to introduce the new utilities to those manufacturers who may need the variety of utilities, but also to start the new frontier in developing the new projects to transform water services and management from mostly physical to digital systems. The projects include real time monitoring and control via reliable SCADA system, UOC (Unified Operational Control) where management can monitor and command all operation unit functions through the UOC from WHA Tower and the Smart Utilities Solution by changing the device such as meter, pump, flow meter into smart device starting at WHA EIE in 2021.



WASTEWATER TREATMENT

For the wastewater treatment service, WHAUP monitors the wastewater quality against the standards on a regular basis. Sampling of wastewater generated from customers prior to treatment via the central wastewater treatment facility are conducted on a monthly basis for parameters including: heavy metals, conductivity, pH, total dissolved solid (TDS) and dissolved oxygen (DO). The parameters are monitored against the standards as prescribed under the respective EIA report. This enables the detection and prevention of potential impacts to the treatment efficiency of the central wastewater treatment facilities. In the event that the sampled wastewater generated from the customers exceed the permitted threshold, the Group will pursue with the following measures:

1. Issuance of an official warning letter to inform and authorize for the operators to re-treat its wastewater;
2. If the issue is not remediated, receiving valve at the central wastewater treatment facility will be closed;
3. Stop supplying industrial water; and
4. Contact Industrial Estate Authority of Thailand (IEAT) to take further actions (e.g. operation termination until remediation).

WHAUP offers wastewater treatment technologies at each industrial estate that is most suitable for the customers' industrial activities including activated sludge system, aerated lagoon system and the hybrid rotation biological contactor system (Hybrid-RBC). The Hybrid-RBC system is a combination of the rotation biological contractor

and activated sludge system, which is capable to treat wastewater with higher organic loading rates. Once treated at the central wastewater treatment facility, the wastewater quality is inspected against the standards prescribed by the Ministry of Natural Resources and Environment, Ministry of Industry, Industrial Estate Authority of Thailand and the respective EIA study prior to discharge. The monitored parameters include heavy metals, pH, temperature, biological oxygen demand, chemical oxygen demand, grease and oil, suspended solid and total dissolved solid (TDS). In 2021, all monitoring parameters complied with the prescribed standards.

In 2022, WHAUP has a plan to continue implementing the smart operation technology 'WHAUP Intelligence Platform' in order to move toward the digital transformation and accurate as-built drawing in digital format in wastewater management system. This includes GIS Hydraulic Model, smart meter, OCR, AMR, Pressure Transmitter and Data Integration. Total budget for this project is 10 million THB/year.

In 2021, the first phase has been started implementation at WHA EIE and will complete the whole system in 2022. WHAUP will expand the system to WHA ESIE (Rayong) and WHA ESIE1. The aims of this project are to reduce water loss, improve meter accuracy, prompt detection & response of water leakage, improve energy usage, better load distribution, and better pressure control as well as gain customer consumption behaviour in order to propose better experienced solution.



INDUSTRIAL WATER SUPPLY

For industrial water service, WHAUP recognizes the importance of water availability for its business, and that it is a shared resource amongst industrial operators, local communities and the environment. From the effectiveness mitigation measures taken in 2021 to address the drought situation in Thailand, e.g. 10% water reduction plan to ensure sufficient water supply in the country.

WATER RECLAMATION PROCESS

To build customers' confidence and take part in the water reduction scheme, WHA Group established a long-term target to double the reclamation capacity from 30,200 m³ per day in 2020 to 60,400* m³ per day by 2025 across the Group. This, in turns, will reduce the volume of raw water withdrawal from natural sources. WHAUP develops water reclamation initiative as an alternative and sustainable source of water for industrials, especially in the EEC area. The project utilizes existing technologies in combination with new innovation to add value to wastewater by turning it to demineralized water and premium clarified water which have much higher value at lower cost. In 2021, revenue generated from water reclamation project is 150 million baht, accounting for 8% of total revenue from water sold.

WHAUP supports WHA Group under the 3R (Reduce, Re-use, Recycle) scheme by using water reclamation project. Through such reclamation maximum capacity, WHAUP was able to reduce and minimize 11 Mm³ of water withdrawal and water discharge. In 2020, the actual water saving is approximately 32% higher than in 2019. By this reclamation program, WHAUP could save cost on raw water sourcing by 81.1 million Baht annually.

Nonetheless, WHAUP commits to continue investing on development for water reclamation process which significantly decreases the Group's dependence on natural water sources. In 2021, WHA Group uses 6,924,065 m³, in comparison to 3,269,895 m³ in 2020, demonstrating an increase of 3,654,170 m³ in total water use from reclamation process from previous year. Moreover, WHAUP sets a target to support the Group to reduce water use from natural resources by increasing the use of water from reclamation process to 7,272,000 m³ in 2022.

DEMINERALIZED RECLAIMED WATER: THE REAL SUSTAINABLE RESOURCE FOR FUTURE DEVELOPMENT

WHAUP invested in Demineralized Water Project, a large-scale project, consisting of 2 operations, each have maximum capacity of 4.38 mm³/year, covering 3% of total WHA Group's operation. The project is developed in WHA Eastern Industrial Estate (WHA EIE) and aimed to increase treated water quality with low cost and using environmental friendly methodology. The Group has developed the Wastewater Reclamation Project as an alternative water source for sustainable industrial development in the country. This is considered to extend the existing technology and create innovations to increase product value, from wastewater by turning it into demineralized industrial water.

The implementation of the aforementioned project has received positive results for the industrial development in many dimensions, such as

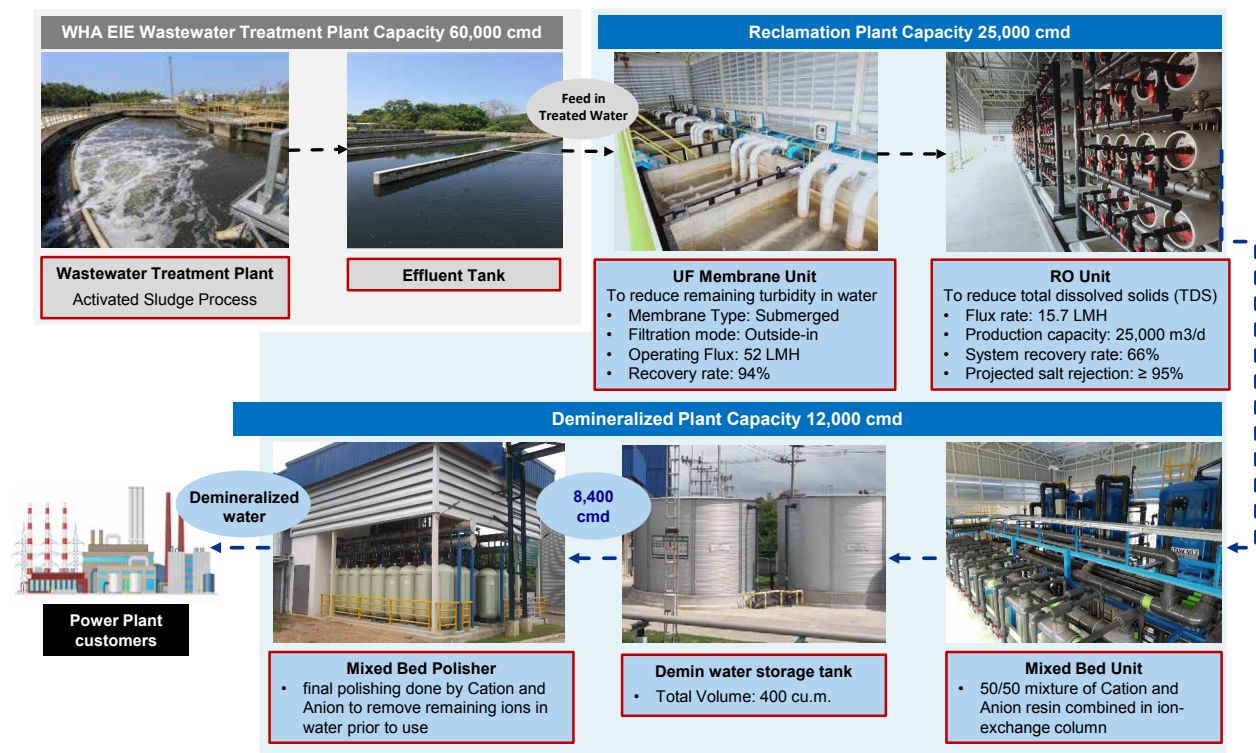


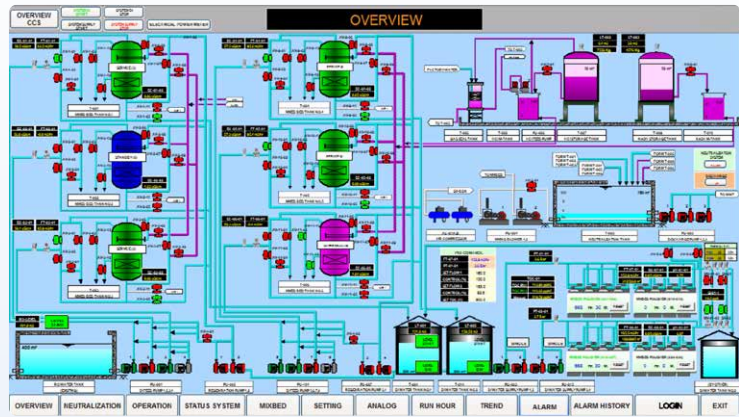
- Significantly reduce the amount of wastewater entering the environment.
- Reduce government investment budget in the development of water storage and delivery.
- Reduce conflicts between the community and industry on the allocation of water resources.
- The industry uses high quality water at a competitive cost.
- Industrial operators in WHA Group's estates receive comprehensive utility services, with a wide variety of products.

Moreover, the project also helps WHAUP in reducing its dependence on major raw water distributors as well as alleviating uncertainty and impacts on both the quantity and quality of upstream water sources due to drought, pollution, contamination, etc., which are the main risk factors for utility providers. This is because if the water

source is not able to supply sufficient production to meet the demand for a certain period of time, it will have a significant impact on the business continuity and the customers' operations within the industrial estates. The project also helps WHA Group's customers, which are entrepreneurs in various industries, to access to high quality water products and services at reasonable cost. In addition, the Demineralized Reclaimed Water innovation is a prototype project that can be expanded in new industrial estates of the WHA Group as well as extending and expanding the results to the community, for example, using domestic wastewater that has been treated to improve its quality to produce high-quality transformed water, etc. Through such demineralized water systems, WHAUP was able to reduce and minimize 2.5 Mm3 of total water withdrawal and water discharge in 2021. By this reclamation program, the WHAUP could save cost on raw water sourcing by 29 million Baht annually.

The Return of Investment (ROI) for the Demineralized Project is 9%.





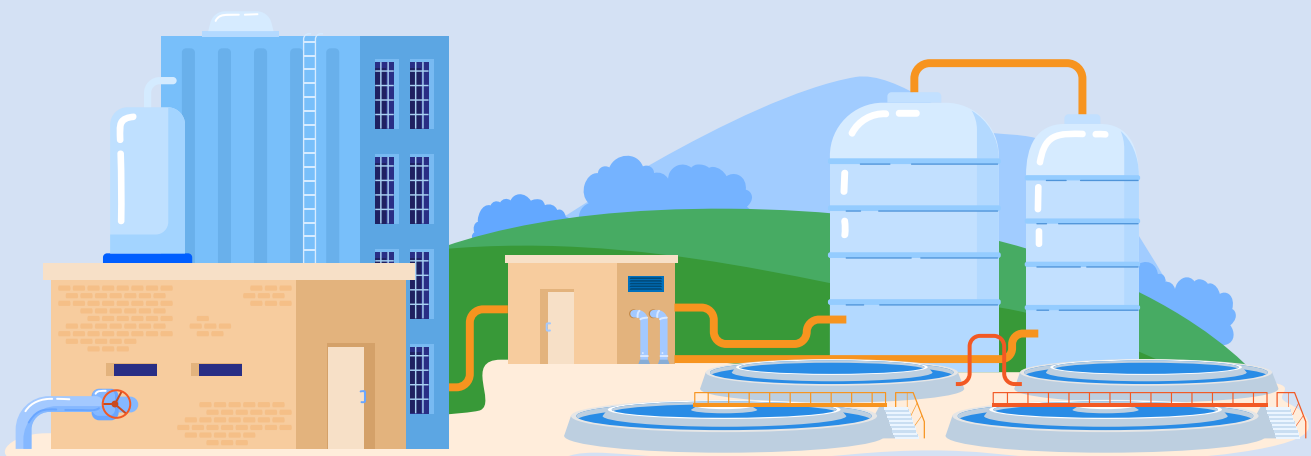
In 2021, WHAUP received an Outstanding Innovative Company Awards from the SET Awards 2021 for its innovation on Demineralized Reclaimed Water, an alternative water resource for sustainable development. This award demonstrated WHAUP's commitment to innovation as a driving force towards sustainability. By implementing this project, WHAUP can reduce water withdrawal by 2 Mm³ in 2020 and 2.5 Mm³ in 2021.

"The initiate quality innovative works that can bring Outstanding Innovative Company Awards is a prestigious distinction that reflects WHAUP's DNA and shows its commitment and determination to positive changes to society. WHAUP is considered a model organization that helps lift the standards and bring sustainable growth to the country's economy and society in the long run."

- **Dr. Nippon Bundechanan, Chief Executive Officer of WHA Utilities and Power Public Company Limited or WHAUP**

SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) TECHNOLOGY AT WASTEWATER TREATMENT PLANT

WHAUP is currently conducting studies to optimize SCADA technology at its wastewater treatment plant located within the Eastern Economic Corridor of Innovation (EECi) in Wangchan district, Rayong province. This technological system can help monitor the wastewater treatment's performances on a 24-hour basis, thus, the Group can save cost from appointing on-site personnel. The construction of such wastewater treatment plant along with the installation of SCADA technology are already completed in 2021.



WASTE MANAGEMENT

With the increasing scarcity of natural resources, resource conservation and efficiency and circular value chain has become increasingly vital. Society has consumed natural resources more than it could be regenerated. Together with the rise of new regulations and agendas, as well as more recognition of business benefits of circular economy principles; businesses are putting tremendous effects into transitioning its waste management approaches to incorporate these circular business model and promote sustainable consumption. Waste are generated from WHAUP's operational activities, thus, the Company is aware of the necessity of effective waste management measures to avoid potential negative impacts to the wider environment, and to protect the public health of its employees and the surrounding communities.

MANAGEMENT APPROACH

WHAUP aware that improper of waste disposal may lead to impact to the environment e.g. air pollution, soil and groundwater contamination, etc., therefore, WHAUP' efforts toward waste management across four business hubs and new project development are governed by the Environmental Quality, Energy Conservation and Biodiversity Policy, respective Waste Management Procedures and the Environmental Assessment. A Waste Management Committee was established to oversee and ensure proper waste management practices in adherence to the regulatory requirements. The Committee is responsible for monitoring and categorizing different types of waste generated from WHAUP operations and instigate effective waste management schemes. The WHAUP sets the target for zero waste to landfill or incineration without energy recovery by 2025.



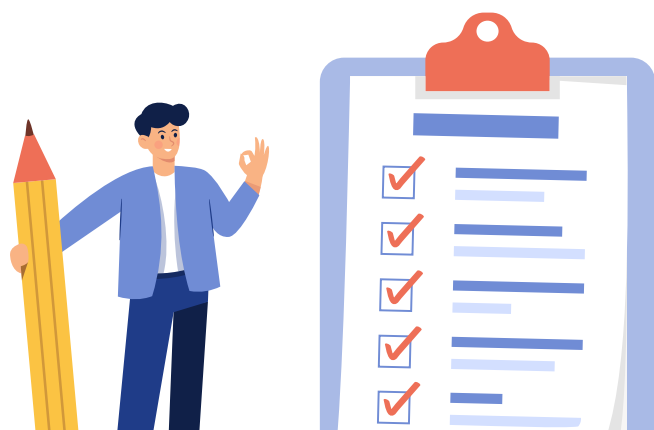
WHAUP adopts the Environmental Quality, Energy Conservation and Biodiversity Policy and related Procedures that are developed by WHA Group as frameworks to govern waste management directions at its operational sites. The Company fundamentally abides by relevant regulations and the requirements stated under the respective industrial estates' Environmental Impact Assessment (EIA) study. Nevertheless, waste management practices are overseen by a Waste Management Committee that is responsible for monitoring and categorizing generated waste, and to formulate effective waste management practices as appropriate. As a utility service provider, non-hazardous waste associated with solid waste and sludge generated from the water and wastewater treatment processes account as the majority of WHAUP's absolute waste footprint. Additionally, hazardous waste associated with oil/chemical contaminated waste from the industrial water production and wastewater treatment processes are also generated. The waste generated from WHA Group and customers are disposed by the licensed waste vendors, all waste disposal information is tracked and monitored by manifest.

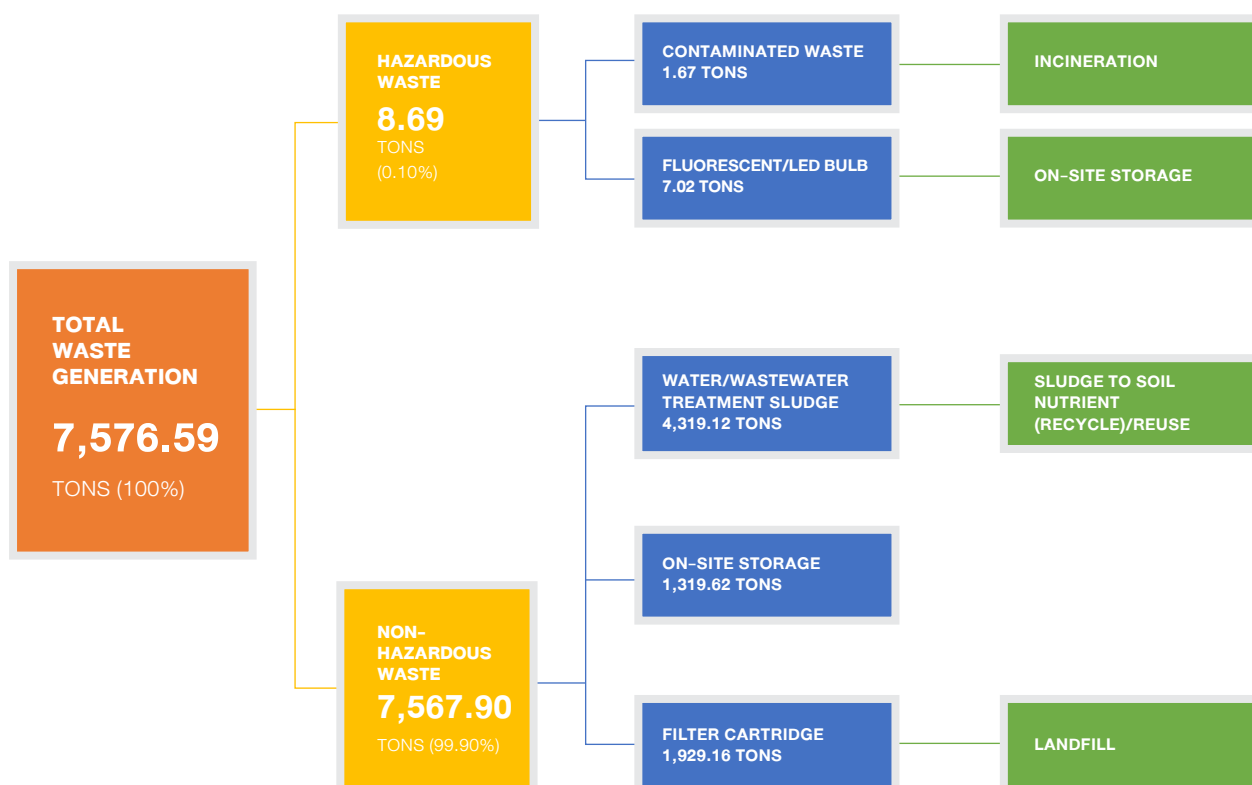
WASTE MANAGEMENT INITIATIVES

WHAUP is committed to a target to reduce proportion of waste to landfill or incineration (without energy recovery) methods using 3R approach (i.e. Reduce, Re-use, Recycle) to total amount of waste generation from 55.66% in 2020 to 25.46% in 2021. The reduction was achieved through a combination of initiatives and efforts, such as conducting research and development on reuse and recycling processes along with investment in technological advancements to provide alternate solutions to landfilling or incineration. Other initiatives include providing useful resources, and engaging with customers and communities in order to raise awareness and promote sustainability in waste management processes and systems. Waste management projects, focusing on reduce, reuse and recycle to contribute to the Group's zero landfill and incineration (without energy recovery) ambition are as highlighted in the following subsections.

In regarding to Project Development, waste management plan is considered and approved for new development projects as part of the EIA study. This is to ensure waste generated are well managed throughout the project life cycle. The plan will also be communicated to the customers in the industrial estates, and WHAUP will monitor the effectiveness of implementation through the reporting submitted by customers.

Based on the 3R approach, the segregation of construction waste is implemented for further reused, recycled and proper disposal. The total segregated waste volume for reuse and recycle is 4,319.12 Ton.





Percentage of Waste to Landfill and Incineration (with no energy recovery)

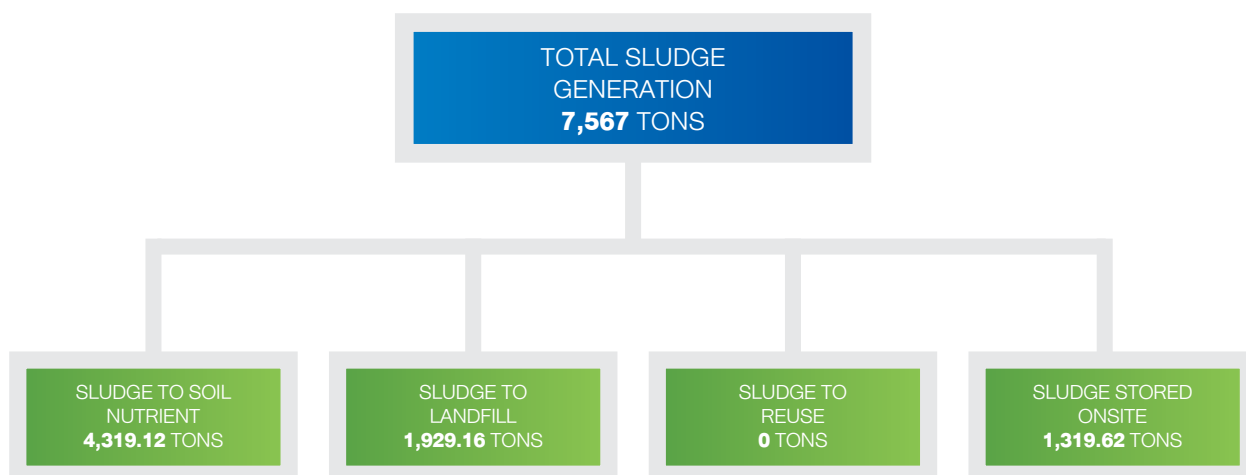
2018	2019	2020	2021
58.6%	89.93%	55.66%	25.46%

Target Year

Reduce proportion of landfill and incineration below 50% in 2021 and below 20% by 2025 (with no energy recovery)

SLUDGE TO SOIL NUTRIENT

To reduce waste disposal through landfill or incineration methods, WHA Group identified an opportunity to divert sludge generated from WHAUP's water and wastewater treatment plants to produce soil nutrient. Such material is used for soil conditioning purposes throughout the industrial complex. Through aerobic composting, quality of the soil nutrient is analyzed to ensure that there are no contaminants of heavy metals or high levels of organic compounds or pathogens. Starting in 2020, up to 23.94 tons of sludge were converted to soil nutrient instead of being disposed via landfill/incineration methods. In 2021, WHA Group performs the producing soil nutrient 4,319.12 tons of sludge against the target 1000 tons of sludge.



WASTE TO ENERGY

Broadly, the waste-to-energy concept utilizes all resources including the residues of everyday operations and converts the otherwise waste, into a valued resource ready for the next cycle of use. In alignment with Alternative Energy Development Plan 2015-2036 (AEDP 2015) which proposes a target of using 30% renewable or green energy of the total energy consumption by 2036; WHAUP views that converting waste to electricity is the prevailing method to tackle the significant waste problems and support concerns on energy demands. As a result, WHA Group along with other two shareholders, invested in a waste-to-energy power plant known as Chonburi Clean Energy (CCE).

CCE is the first industrial waste to energy facility in Southeast Asia to meet European emission standards. CCE was awarded by the Commission of Energy, Ministry of Industry to be constructed as the first industrial waste-to-energy power plant in the Eastern Economic Corridor (EEC). CCE falls in line with the concept of circular economy and sets a good example for sustainable non-hazardous industrial waste management. It has the capacity to generate electricity by converting non-hazardous waste to energy at 400 tons per day, or approximately 100,000 tons per year, enabling a maximum output of 8.63 MW of electricity energy per year.



CCE contribution in 2021:



CCE
has incinerated
102,000 ton waste

CCE
has generated
53,000 MWh to the PEA

CCE
has saved around
33,000t CO2

Sustainable electricity
for around
30,000 homes

Since 2020, WHA Group has signed a contract agreement with its waste management service provider, Waste Management Siam, to send waste acquired from industrial factories to CCE annually for energy recovery. As a result, a total of 1,896 tons of waste was diverted from landfill/incineration disposal methods since 2020. This generated a total of 1,646 MWh.

PAPERLESS TRANSFORMATION

As part of the Group's digital transformation aspiration, use of technological appliances are encouraged and promoted. Communication, information, and meetings are all made through online platforms, ultimately reducing the Group's consumption of paper. WHAUP takes part in WHA Group's journey to digital transformation through the "E-Paperless" project to drive a paperless culture within the Company.

WHAUP provides employees with tablet appliances to create a paperless culture. Meeting slides, reports, inspection forms and minutes are therefore readily accessible and retrieved. Currently, the initiative helped avoid 78,524 document paper from being printed and saved an equivalent to 274,834 Baht of printing expenses. Subsequently, by 2022, WHA Group aims to reduce up to 25% of paper usage.

Accelerated by the effects of the global pandemic COVID-19, adoption of digital technologies has quickly been taken up. For businesses worldwide, including WHAUP, the use of digital technologies has helped reduce face-to-face interactions and safeguard the well-being of employees.

HAZARDOUS CHEMICAL CONTAINMENT REDUCTION

Starting in 2020, WHAUP procured most of the chemical substances for its water and wastewater treatment facilities via loading tankers. Poly Aluminum Chloride (PAC) 20% concentration and liquid chlorine are still procured within chemical containers, but an agreement was made for the suppliers' responsibilities to reuse or dispose the empty containers. Through WHAUP's efforts to reduce the volume of hazardous waste which being disposed by landfill, WHAUP has procured chemical substances via loading tankers and empty chemical storage containers over 2 tons/year to landfill were reduced.

SORT N' SAVE PROJECT

Initiated from WHA Innovation Leadership Program in 2019, WHAUP and WHA Group has continued to support this project in 2021. The objective of the Sort N' Save Project is to increase environmental awareness amongst WHA Group employees as well as explore plausible innovative business platforms in alignment with the circular economy principles. Behavioral oriented campaigns were launched to increase the awareness and adjust employees' practices on recycling and waste minimization. Communication of these campaigns were made through accessible portals such as default desktop screens, Line-application, email signatures and WHA Group's monthly newsletter.

REDUCE DEPENDENCY ON PLASTICS

Served together with comfort and convenience, single-use plastics without proper management are the manmade predators in the ecosystem, imposing potential irreversible, global impacts on vital climate processes and biodiversity levels. To combat this, WHAUP supported WHA Group in taking steps to reduce the consumption and disposal of single use plastics. Since 2020, WHA Group stopped serving plastic bottled drinking water to its guests and visitors, enabling to reduce single-use plastics of more than 20,000 plastic bottles. Collectively, through all of WHA Group's efforts mentioned, WHAUP and WHA Group were able to reduce up to 0.7 tons of total plastic waste generated as a result of less plastic consumption.

GREEN EFFORTS

Educating and empowering posterity to make responsible and environmentally-friendly decisions are WHA Groups' efforts to contribute to a sustainable future. In 2021, WHAUP supported WHA Group in teaching students in schools nearby WHA Industrial estate, such as Ban Pan Sadet Nok school in Chonburi, about waste minimization, segregation and recycling. Students who participated in the program had interesting discussions on the methodology of waste separation, and listened to the recommendations and tips made concerning waste reduction and reuse. Having the opportunity to work with young audiences allowed WHA Group to be a good role model and shared good practices.





WASTE MANAGEMENT COLLABORATION PROJECT: HAMPER AND LAPTOP CASE

WHAUP as part of WHA Group incorporates with PTT Global Chemical (GC) to collect used PET bottles from school under ThinkCycle Bank Project and collect water hyacinth from wastewater treatment system; polishing pond of ESIE, WHA ESIE1 and WHA ESIE2 forming to yarn and produce hampers and laptop cases. In 2021, the project collected 8,850 used PET bottles and approximately 4.0 tons of water hyacinth to produce 300 hampers and 200 laptop cases. The products are sold at 600 THB each. From this project, WHAUP and WHA Corporation are responsible for the processing of water

hyacinth dippers into dry scraped fibres for using as raw materials to produce yarns containing fiber from plastic bottles, fiber from water hyacinth and cotton to produce fabrics that contain ingredients from such raw materials.

WHA Group and WHAUP can reduce the cost of water hyacinth management by generating such an income with the community to sell the dried water hyacinth fibers for approximately 40,000 baht. Moreover, the rest of the water hyacinth in the WHA Group's pond, WHA Group can use it to produce soil fertilizer using in the Group's industrial estates.



AIR EMISSION

While the recent COVID-19 and lock-down have reduced air emission, in Thailand and globally, air pollutants remain one of the major threat for human and our ecosystem. Exposure to air pollutants, such as carbon dioxide (CO₂), methane (CH₄) and dust pollution, is a recurring problem in Thailand; it may lead to tremendous economic and health problems for the years to come. By improving air quality, not only will it deliver massive health benefits to the society but also strengthen the climate actions and mitigations, and making ways towards sustainable development.

WHAUP recognizes the broader effects of air emission which stemmed from the activities within its utilities and power service operations. It can cause impacts to the environment, ecosystem, communities and the society. WHAUP acknowledges that these impacts can be felt both nationally and regionally by the surrounding communities, and especially worse for the vulnerable communities. Emissions from utilities and power service, operating to supply water and manage wastewater to industrial plants, and transportation from both internal and external stakeholders are all common sources of emissions that have an impact on ambient air quality. Therefore, it is a core value of the WHAUP, as stated in the Environmental Quality, Energy Conservation, and

Biodiversity Policies, that industrial utilities and power service provider, communities, and nature can coexist in a harmonious and sustainable manner.

MANAGEMENT APPROACH

WHAUP offers well-rounded solutions for industrial water, wastewater treatment, conventional power, natural gas distribution and renewable energy to manufactures and operators in industrial estates and industrial lands. WHAUP has monitored the pollutants throughout the constructions process to ensure that the monitoring results are not exceed the standards and aligned with the related regulation. In general, WHAUP's plant construction generates very small amount of pollution and not exceed the standards. Apart from that, WHAUP's utilities and solar rooftop operation is also committed to comply with the EIA standard and othe regulations related to air emission that the industrial estates are committed to due to the fact that WHAUP's key business operation is located in industrial estates. Although WHAUP's activities have not had much impact and the conventional power and Natural gas distribution are not under WHAUP's operational control, WHAUP has a desire to reduce the overall amount of air pollution. WHAUP therefore sets air pollution targets with a focus on reducing CO₂ emissions from the expansion of the Solar business and recalculation to CO₂e offset at 210,000 tCO₂e by 2023.



By reason of WHAUP's operation involve solar rooftop, The Company is aware of the GHG emission that may be imposed by stakeholders along the value chain, therefore, WHAUP committed to a long-term GHG reduction target by monitoring such parameter as shown in the following table. WHAUP was able to surpass its GHG emission offset target in 2021, and this target will substitute grid electrical consumption with solar energy. The offset result equals to 64,400 tCO₂e which was indicative of 80% increment from the previous year.

GHG Emission Offset from Grid Electricity Consumption (tCO ₂ e) ¹				
Performance		Target		
2020	2021	2021	2022	2023
35,700	64,400	63,000	105,000	210,000

Additionally, WHAUP addressed this air emission problem, by developed a policy ensures that such major emissions are carefully monitored and managed to meet the requirements and standards for air emission management from project development to project operation.

During 2021, WHAUP monitored levels of air emission such as total suspended particulates (TSP) prior to starting WHAUP construction site. This is to reduce the dust particulates caused by construction phase and while transporting construction materials. The monitoring results illustrated that the monitored TSP parameter was aligned with the Thai standards.

Emission	Sampling Date	Unit	2021 Monitoring Results	Thai Regulation
Particles with aerodynamic diameter less than 100 micron (TSP) for 24 Hours Average	4-5/3/2021	mg/m ³	0.062	≤ 0.33
	5-6/3/2021		0.065	
	6-7/3/2021		0.064	
Particles with aerodynamic diameter less than 10 micron (PM-10) for 24 Hours Average	4-5/3/2021		0.030	≤ 0.12
	5-6/3/2021		0.033	
	6-7/3/2021		0.032	

Note¹: / Expected level of GHG offset on per year basis. Actual level can be varied with multiple operating parameters and standard used to calculate kg CO₂e/kWh of the grid.



AIR EMISSION INITIATIVE

In 2021, WHAUP conducted various air emission reduction initiatives, which include studying the development of innovative technologies to apply with solar power business, such as a Peer-to-Peer (P2P) energy trading for application among WHA IE's industrial customers and a Smart Microgrid. Peer-to-Peer energy trading is a co-developing project with leading energy and technology partners, using block chain technology. It is also a part of the Sandbox program of the Energy

Regulatory Commission (ERC), which is currently being tested in preparation for commercial trading, while waiting for the government's green light. This will be WHAUP's main growth factor for its renewable energy business portfolio to reach up to 100-200 MW, to help achieve the company's target of 300 MW by 2023. This initiative will divert the reliance on conventional electricity for both WHAUP as well as the Group's collective operation, and consequently the Company is moving towards reducing overall emission.



BIODIVERSITY

Policymakers and investors are now taking notice of biodiversity loss and adapting a playbook they developed for measuring and managing the risk. It is no longer a matter of caring about nature, but fear of facing extinction which could have devastating human, economic, and environmental consequences. Global regulators have begun to develop more stringent biodiversity protection strategies in response. As a leading industrial utilities and power service provider that serves manufacturers and operators across industrial estates and industrial lands, WHAUP fully understands the potential impacts posed on the environment and biodiversity via construction of utility infrastructures, water withdrawal, and discharging and the use of power supply. As a result, it is the responsibility of WHAUP to protect the environment and to minimize potential impacts on biodiversity in the local areas.

TARGET FOR BIODIVERSITY

By adopting [WHA Group's Environmental Quality policy](#), WHAUP is committed to minimize its impacts on biodiversity. To ensure that our business activities have net positive impact or at least no net loss of biodiversity and no deforestation, WHAUP applies mitigation hierarchy to manage risks and impacts to biodiversity.

We avoid creating negative impact through proper site selection, operation design and closely monitor on possible impact and prompt mitigation. We prohibit the operations in World Heritage sites or IUCN Category I-IV protected areas. However, if our operations are located near such the areas, measures for mitigation will be implemented to avoid negative impacts, minimize remaining impacts through controls measure, restore the damage caused by our activities, and offset by compensating for any residual negative impacts.



SCOPE OF COMMITMENT

WHAUP conducts business with an understanding of the value of biodiversity, as well as a proactive business strategy to manage natural loss and reduce environmental impact. WHAUP encourages and expects our business partners, such as contractors and tier-1 suppliers, to maintain and preserve biodiversity in their operations.

BIODIVERSITY POLICY

WHAUP applied WHA group policy in commits to taking unwavering responsibility for environmental preservation through biodiversity management actions. WHAUP conducts its operations in accordance with the Environmental Assessment report in according to code of practice: COP and develops action plans to protect and restore ecosystem services that may be harmed by the company's operations, as well as to prevent the extinction of endangered species. On top of that, WHAUP has worked on a biodiversity assessment for the operations located at WHA Chonburi Industrial Estate (CIE), WHA Eastern Seaboard Industrial Estate 2 (WHA ESIE 2), WHA Eastern Seaboard Industrial Estate 4 (WHA ESIE 4) and WHA Rayong 36 Industrial Estate in 2021. The primary focus on this biodiversity assessment on impact from water utility and wastewater treatment include operation of solar business.

According to action plans, WHAUP demonstrated that no project posed a high biodiversity risk because biodiversity risks are assessed since new projects are initiated.

MANAGEMENT APPROACH

WHAUP encapsulates the Environmental Quality, Energy Conservation, and Biodiversity Policy in accordance with WHA Group's policy for biodiversity protection. The policy strengthens the WHAUP's commitment and establishes a framework for the conservation of biodiversity in the ecosystems, landscapes, and species of the territories in which all of its business hubs operate. Furthermore, WHAUP implements the management approaches that are in line with regulatory standards and the Environmental Assessment report in according to Code of practice that was conducted for solar project that its installed capacity is greater than 1 MW. For projects that are located in high-risk biodiversity areas, its activities and related impacts must be surveyed such as specific types of operation, size and proximity from protected areas and the geographical locations of the project, as well as have mitigation measures deployed to mitigate biodiversity loss and negative impacts to the surrounding ecosystem. The Environmental Assessment report also captures all biodiversity related risks associated with their respective utility process start from construction through operational phases. Identified risks and impacts are then utilized as an input to determine systematic management and monitoring practices for biodiversity protection.

WHAUP is the direct responsible business for water and wastewater treatment systems in the Group's industrial estates and solar business, therefore WHAUP strictly ensures water and wastewater stewardship against biodiversity protection are aligned with relevant regulatory requirements, as well as impact from solar farm to ensure biodiversity preservation, WHAUP has established a risk monitoring process after risk assessment from its activities and provided training program or circulate knowledge through E-Connect magazine in order to communicate environment and biodiversity to all stakeholders.



BIODIVERSITY PROTECTION MEASURES

Following the EIA process of WHA group, it was highlighted that WHA Eastern Seaboard Industrial Estate 4 (WHA ESIE 4) were identified to have biodiversity concerns due to their close proximity to protected areas, Nong Pla Lai Reservoir. Biodiversity within the canal is of concern as it is a discharging point of treated wastewater from WHAUP at ESIE 4. WHAUP had addressed this potential risk on biodiversity and strictly monitor both operation impact and biodiversity surrounding.

WHAUP ensures that the precautionary actions and mitigation measures outlined in the respective industrial estate's EIA report are carried out. For example, at WHAUP at ESIE 4, it is necessary to monitor nearby aquatic ecology within the canal into which the industrial estate discharges its treated wastewater. A baseline study of each biodiversity parameter (phytoplankton, zooplankton, aquatic animals, aquatic plants, and benthos) was conducted to allow for comparison with monitoring results. On a biannual basis, such monitoring is carried out at the upstream and downstream of the wastewater discharging point. Based on 2021 monitoring results, the diversity index remains at a moderate level, confirming that the operation of WHAUP at ESIE 4 had no significant impact on biodiversity. All EIA-required monitoring results are reported to local authorities as well as the Industrial Estate EIA Committee.

Additionally, WHAUP has ensured that its operation, service and products, such as water supply, are sustainable and no harm biodiversity. WHAUP has executed various projects to achieve this task including wastewater reclamation project which reclaimed water as a premium industrial water and demineralized water to our customers in ESIE, WHA ESIE1 and WHA EIE. The combined production capacity is more than 30,200 cmd or equivalent to the production of industrial water from wastewater at relatively 11 mcm/year.

This amount of water is equivalent to the daily domestic consumption of approximately 240,000 people with the calculation reference of 150 liters per capita. It entails that WHAUP can preserve the natural surface water of around 32% of the total population in Rayong province (as referred to Rayong's registered population totaling 751,000 capita in 2021). The same amount, at the same time, is the number of non-discharge wastewater to the environment through the reclamation projects only. By the same token, other projects such as on-site catchment storm water, DO improvement of effluent, etc. also contribute to the friendly biodiversity operation.

Apart from various water development projects, WHAUP also develops several renewable energy projects including solar rooftop with the installed capacity totaling 92 MW as of 2021, which offsets approximately 64,400 tCO₂e per year of GHG scope 2 emission to the environment.

PERFORMANCE SUMMARY

ECONOMIC PERFORMANCE

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
201-1	Direct economic value generated					
	Revenue	Million Baht	3,755.70	3,738.37	2,564.23	2,498.16
	Economic value distributed					
	Annual dividend payment	Million Baht	778.01	1,162.80	965.81	965.81
	Operating cost		1,088.31	1,127.08	1,150.69	1,421.21
	Employee expenses		91.63	106.37	111.02	128.73
	Tax		65.01	62.63	54.04	44.54
	Social investment		1.07	0.30	16.31	12.61
	Economic value retained		1,731.67	1,279.19	266.36	(74.74)
205-2	Communication and training on anti-corruption policy to governance body members					
	Number of governance body members	%	75	100	100	100
	Communication and training on anti-corruption policy to employees					
	Number of employees	%	17	100	100	100
205-3	Confirmed incidents of corruption					
	Total number of confirmed incidents of corruption	Case	0	0	0	0
	Number of employees who 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 viola-tions related to corruption	Case	0	0	0	0
	Public legal cases regarding corruption	Case	0	0	0	0
	Anti-competitive practice					
	Total amount of fines and settlements	Baht	0	0	0	0
	Total amount of fines and settlements	% of revenues	0	0	0	0
	Corruption and Bribery Cases					
	Total number of confirmed incidents of corruption	Case	0	0	0	0
	Employees who were dismissed due to corruption	Person	0	0	0	0
	Business partners who were terminated or not renewed due to corruption	Number	0	0	0	0
	Public legal cases regarding corruption (public investigations, prosecution or close cases)	Case	0	0	0	0
	Violations of Business Ethics					
	Violations received from grievance mechanisms specified by the company	Case	0	0	0	0
	Violations that are in the process of being resolved	Case	0	0	0	0
	Violations that have been resolved	Case	0	0	0	0
	'Written Acknowledge (%)					
	Employees	%				100
	WHA Utilities & Power					100
	Contractors/ Suppliers/ Service Providers					
	WHA Utilities & Power					100
	Subsidiaries					
	WHA Utilities & Power					100
	Joint Ventures (including stakes above 10%)					
	WHA Utilities & Power					100

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
205-3	Training Provided					
	Employees	%				100
	WHA Utilities & Power					100
	Contractors/ Suppliers/ Service Providers					
	WHA Utilities & Power					100
	Subsidiaries					100
	WHA Utilities & Power					100
	Joint Ventures (including stakes above 10%)					100
418-1	WHA Utilities & Power					100
	Customer privacy					
	Total number of substantiated complaints received concerning breaches of customer privacy from outside parties and substantiated by the organization	case	0	0	0	0
	Total number of substantiated complaints received concerning breaches of customer privacy from regulatory bodies		0	0	0	0
	Total number of identified leaks, thefts, or losses of customer data		0	0	0	0

Supply Chain Management

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
308-1	Supplier Environmental Assessment					
	New suppliers	Number	0	0	1	1
	New suppliers that were screened using environmental criteria	Number	0	0	1	2
		Percentage	NA	NA	100	200
308-2	Negative environmental impacts in the supply chain and actions taken					
	Number of suppliers assessed for environmental impacts	Number	0	0	9	16
	WHA Industrial Development	Percentage	NA	NA	100	100
414-1	New suppliers that were screened using social criteria					
	New suppliers that were screened using social criteria	Number	0	0	1	2
		Percentage	NA	NA	100	100
	WHA Utilities and Power	Number	0	0	0	0
414-2	Negative social impacts in the supply chain and actions taken					
	Number of suppliers assessed for social impacts	Number	0	0	9	16
	Total tier 1 supplier					
	Absolute number of suppliers	Number				215
	Share of total procurement spent	%				100
	Critical tier 1 suppliers					
	Absolute number of suppliers	Number				16
	Share of total procurement spent	%				55.17
	Critical non-tier 1 suppliers					
	Absolute number of suppliers	Number				16
	Supply chain risk exposure					
	Tier 1 suppliers					
	Number of tier 1 suppliers assessed (for sustainability risks) in the last 3 years	Number				0
	Percentage of suppliers in that category assessed in the last 3 years (based on total number of suppliers in that category provided in "Critical Supplier Identification" question).	%				0

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
414-2	Number of suppliers classified as high-risk	%				0
	Percentage of total suppliers in that category classified as high-risk (based on total number of suppliers in that category provided in "Awareness" question).					0
	Critical non-tier 1 suppliers					
	Number of critical non-tier 1 suppliers assessed (for sustainability risks) in the last 3 years	Number				0
	Percentage of suppliers in that category assessed in the last 3 years (based on total number of suppliers in that category provided in "Critical Supplier Identification" question).	%				0
	Number of suppliers classified as high-risk	%				0
	Percentage of total suppliers in that category classified as high-risk (based on total number of suppliers in that category provided in "Awareness" question).	%				0
	Supplier Risk Management Measures					
	Critical suppliers (tier 1 and non-tier 1)	%				
	Percentage of critical suppliers assessed (ongoing sustainability monitoring) annually					100
	Percentage assessed at least once every 3 years					100
	Suppliers with high sustainability risk (If you have not identified any suppliers with high sustainability risks, please ensure to input "0")					
	Percentage of suppliers with high sustainability risk assessed (ongoing sustainability monitoring) annually	%				0
	Percentage assessed at least once every 3 years	%				0
	Total (should not exceed 100%)	%				0
	Suppliers who were monitored for compliance with the Supplier Code of Conduct	Number				29
		Percentage				4.55

Customer Relationship Management

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
	Satisfaction Measurement					
	Satisfied Respondents	% of satisfied respondents out of total number of respondents to survey	96%	94%	96%	95%

Customer Privacy

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data					
	Total number of substantiated complaints received concerning breaches of customer privacy	Incident	0	0	0	0
	Complaints received from outside parties and substantiated by the organization	Incident	0	0	0	0
	Complaints from regulatory bodies	Incident	0	0	0	0
	Total number of identified leaks, thefts, of losses of customer data	Incident	0	0	0	0

SOCIAL PERFORMANCE

Employment

GRI STANDARD	PERFORMANCE	Unit	2018		2019		2020		2021	
			Male	Female	Male	Female	Male	Female	Male	Female
102-8	Total number of employees	Persons	101		110		129		152	
	Employee by gender									
	Total number of employees by gender	Persons	83	18	92	18	106	23	121	31
	Permanent employees									
	Number of permanent employees by gender	Persons	83	18	92	18	106	23	121	31
	Total number permanent employees		101		110		129		152	
	Temporary employees by business units									
	Number of temporary employees by gender	Persons	0	0	0	0	0	0	0	0
	Total number of temporary employees:		0		0		0		0	
401-1	New Employee									
	Total new employee	Persons	17	4	19	1	25	9	24	7
			21		20		34		31	
	New hire rate	%	16.83	3.96	17.27	0.91	19.69	7.09	15.79	4.64
			20.79		18.18		26.78		20.39	
	New employee by age									
	Below 30 years old	Persons	9	2	12	0	14	7	12	5
		%	8.91	1.98	10.91	0	10.85	5.43	7.89	3.29
	30-50 years old	Persons	7	2	7	1	11	2	12	2
		%	6.93	1.98	6.36	0.91	8.53	1.55	7.89	1.32
	Over 50 years old	Persons	1	0	0	0	0	0	0	0
		%	0.99	0	0	0	0	0	0	0
	Turnover rate									
	Total employee turnover	Persons	3	1	11	1	8	3	4	1
			4		12		11		5	
	Turnover rate	%	2.97	0.99	10.00	0.91	6.20	2.33	3.3	3.2
			3.96		10.91		8.53		6.5	
	Employee turnover by age									
	Below 30 years old	Persons	0	0	5	0	1	0	3	1
		%	0	0	4.55	0	0.78	0	1.97	0.66
	30-50 years old	Persons	3	1	6	1	5	3	1	0
		%	2.97	0.99	5.45	0.91	3.88	2.33	0.66	0
	Over 50 years old	Persons	0	0	0	0	2	0	0	0
		%	0	0	0	0	1.55	0	0	0
	Turnover by management level									
	WHA Utilities and Power	Persons	0	0	0	0	1	0	0	0
		%	0	0	0	0	0.79	0	0	0
	Percentage of open positions filled by internal candidates (internal hires)									
	WHA Utilities and Power	Persons	1	1	1	0	1	0	0	3
		%	0.19	0.19	0.18	0.00	0.17	0.00	0.00	0.49

GRI STANDARD	PERFORMANCE	Unit	2018		2019		2020		2021	
			Male	Female	Male	Female	Male	Female	Male	Female
404-1	Employee training									
	Total number of training hours provided to employees	Hours	1,474.10	121.90	1,346.50	408.00	2,187.00	276.00	3,144.93	725.86
			1,596.00		1,754.50		2,463.00		3,870.79	
	Average training hours		17.76	6.77	14.64	22.67	20.63	12.00	25.99	23.41
			15.80		15.95		32.63		49.40	
	Average hours of training by employee category									
	Number of executives	Persons	7		7		8		7	
	Number of training hours provided to executives	Hours	470		280		306		28	
	Average hours of training for executives	Hours	67.14		40		38.25		4	
	Number of middle management	Persons	14		17		19		28	
	Number of training hours provided to middle management	Hours	140		58		62		668.5	
	Average hours of training for middle management	Hours	10.00		3.41		3.26		23.88	
	Number of staff	Persons	80		86		102		117	
	Number of training hours provided to staffs	Hours	1063		1258		2463		1672.5	
	Average hours of training for staffs	Hours	13.29		14.63		24.15		14.29	
	Percentage of employee received performance review by level									
	Executives	%	100		100		100		100	
	Middle man-agement		100		100		100		100	
	Staff		100		100		100		100	
404-3	Percentage of employee received performance review by level									
	Number of employees	persons	83	18	92	18	106	23	121	31
	Number of employees receiving regular performance and career development reviews by gender	persons	83	18	92	18	106	23	121	31
	Performance review									
	Number of executives who received regular performance and career development reviews	Persons	7		7		8		7	
	Number of middle management who received regular performance and career development reviews	Persons	14		17		19		28	
	Percentage of middle management who received regular performance and career development reviews	%	100		100		100		100	
	Total number of staffs who received regular performance and career development reviews	Persons	80		86		102		117	
	Percentage of staffs who received regular performance and career development reviews	%	100		100		100		100	
	405-1	Diversity of Director to executives level by age								
Below 30 years old		Persons	0		0		0		0	
30-50 years old			3		3		5		4	
Over 50 years old			4		4		2		3	

Labor Practice Indicators

GRI Standard	Performance	Unit	2018		2019		2020		2021	
			Male	Female	Male	Female	Male	Female	Male	Female
405-1	Total number of governance bodies members	Persons	83	18	92	18	106	23	121	31
	Diversity of governance bodies by gender	%	100	100	100	100	100	100	100	100
	Diversity of governance bodies by age group									
	<30	%	0		0		0		0	
	30-50		3		3		5		4	
	>50		4		4		3		3	
	Total workforce by Age group									
	Below 30 years old	Person	22	5	22	3	32	8	38	12
		% FTEs	0	0	0	0	0	0	0	0
	30-50	Person	53	12	55	14	61	14	70	18
		% FTEs	0	0	0	0	0	0	0	0
	>50	Person	8	1	15	1	13	1	13	1
		% FTEs	0	0	0	0	0	0	0	0
	Share of women in total workforce									
	Share of women in total workforce	Person					106	23	121	31
	Share of women in total workforce	% of total force					82.17	17.83	79.61	20.39
	Target (Target year)									
	Share of women in all management positions, including junior, middle and top management	Person					17	7	22	9
	Share of women in all management positions, including junior, middle and top management	% of total management positions					70.83	29.17	70.97	29.03
	Share of women in junior management positions, i.e. first level of management	Person					5	1	7	1
	Share of women in junior management positions, i.e. first level of management	% of total junior management positions					83.33	16.67	87.5	12.50
	Share of women in top management positions, i.e. maximum two levels away from the CEO or comparable positions	Person					6	1	6	1
	Share of women in top management positions, i.e. maximum two levels away from the CEO or comparable positions	As % of total top management positions					85.71	14.29	85.71	14.29
	Share of women in management positions in revenue-generating functions (e.g. sales)	Person					5	3	9	4
	Share of women in management positions in revenue-generating functions (e.g. sales)	% of all such managers (i.e. excluding support functions such as HR, IT, Legal,etc)					62.50	37.50	69.23	30.77
	Share of women in STEM-related positions	Person					0	0	0	0

GRI Standard	Performance	Unit	2018		2019		2020		2021	
			Male	Female	Male	Female	Male	Female	Male	Female
405-1	Share of women in STEM-related positions	% of total STEM positions					0	0	0	0
	Breakdown based on Nationality: Thailand									
	Share in total workforce	Person					105	23	120	31
	Share in total workforce	% of total workforce					99.06	100.00	99.17	100.00
	Share in all management positions, including junior, middle and senior management	Person					16	7	21	9
	Share in all management positions, including junior, middle and senior management	% of total workforce					15.09	30.43	17.36	29.03
	Breakdown based on Nationality: Others									
	Share in total workforce	Person					1	0	1	0
	Share in total workforce	% of total workforce					16	100	21	100
	Share in all management positions, including junior, middle and senior management	Person					1	0	1	0
	Share in all management positions, including junior, middle and senior management	As % of total management workforce					100	0	100	0
405-2	Ratio of basic salary and remuneration of women to men									
	Average pay for executives	Baht			453,867	269,333	421,250	268,750	526,500	300,000
	Average pay for middle management	Baht			143,840	133,067	149,600	144,267	145,200	151,200
	Average pay for staffs	Baht			28,867	47,093	31,467	42,533	48,267	47,733
	Equal pay analysis									
	Executive level (base salary only)	Baht			340,400	202,000	337,000	215,000	421,200	240,000
	Management level (base salary only)	Baht			107,880	99,800	112,200	108,200	108,900	113,400
	Non-Management level (base salary only)	Baht			21,650	35,320	23,600	31,900	36,200	35,800

Community Engagement

GRI Standard	Performance	Unit	2018	2019	2020	2021
413-1	Operations with community engagement					
	Total percentage of reporting operations involved with local community engagement	%	100	100	100	100
	Revenue	Million Baht	3,755.70	3,738.37	2,564.23	2,498.16
	Economic value distributed					
	Operating cost	Million Baht	1,088.31	1,127.08	1,150.69	1,421.21
	Employee wages and benefits	Million Baht	91.63	106.37	111.02	128.73
	Economic value retained	Million Baht	1,731.67	1,279.19	266.36	(74.74)
	Type of Philanthropic Activities					
	A) Charitable Donations	% of total costs			7.55	7.69
	B) Community investment	% of total costs			3.49	5.41
	C) Community initiatives	% of total costs			14.79	8.76
413-1	Philanthropic Contributions					
	amount of Cash contributions	Baht		36.4	22.78	14.47
	amount of Time: employee volunteering during paid working hours	Baht		181,545.00	335,366.67	245,833.33
	amount of Inkind giving: product or services donations, projects/partnerships or similar	Baht	2,000,000.00			
	amount of Management overheads	Baht		1,361,587.50	2,288,708.33	1,592,500.00

Occupational Health and Safety

GRI Standard	Performance	Unit	2018	2019	2020	2021
403-9	The number of hours worked					
	Employee	Hours	197,152	213,840	333,189	320,746
	Contractor		397,200	616,000	386,174	391,993
	Lost time injury frequency rate (LTIFR)					
	Employee	Case per 1,000,000 hours worked	0	4.68	0	0.58
	Contractor		0	0	0.93	0
	Number of high consequence work related injuries					
	Employee	Case per 1,000,000 hours worked	0	0	0	0
	Contractor		0	0	0	0
	Number of recordable work related injuries					
	Employee	Case	0	1	0	1
	Contractor		0	0	0	1
	Fatalities					
	Employee	Persons	0	0	0	0
	Contractor		0	0	0	0

ENVIRONMENT PERFORMANCE

Materials

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
301-1	Total renewable materials used					
	Water	m ³	15,989,684	21,180,880	46,879,806	39,131,671.77
301-2	Recycled input materials used					
	Percentage of recycled water used to manufacture the organization's primary products and services	%	4.99	3.89	10.56	6.62

Waste

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
306-3	Waste composition					
	Total waste	Tons	4,061.23	4,905.25	7,949.39	7,576.59
	- Hazardous waste		7.17	6.93	8.24	8.69
	- Non-hazardous waste		4,054.06	4,898.32	7,941.15	7,567.90
306-4	Hazardous waste diverted from disposal by recovery option					
	Total	Tons	5.53	5.93	8.24	8.69
	- Preparation for reuse		-	-	-	0
	- Recycling		-	-	-	0
	- On-site storage		5.53	5.93	7.41	7.02
	Non-hazardous waste diverted from disposal by recovery option					
	Total	Tons	1,674.06	487.12	8,428.27	7,567.90
	- Preparation for reuse		0	0	2,000.00	0
	- Recycling		0	0	23.94	4,319.12
	- On-site storage		1,674.06	487.12	1,708.18	1,319.62
	Waste prevented					
	Waste prevented	Tons	1,679.59	493.05	3,739.53	5,645.76
306-5	Hazardous waste directed to disposal by disposal operation					
	Total	Tons	1.64	1.00	0.83	1.67
	- Incineration (with energy re-covery)		-	-	-	0
	- Incineration (without energy recovery)		0	0	0.83	1.67
	- Landfilling		1.64	1.00	0	0
	- Other disposal operations		-	-	-	0
	Non-hazardous waste directed to disposal by disposal operation					
	Total	Tons	2,380.00	4,411.20	4,696.15	1,929.16
	- Incineration (with energy re-covery)		-	-	-	0
	- Incineration (without energy recovery)		-	-	-	0
	- Landfilling		2,380.00	4,411.20	4,696.15	1,929.16
	- Other disposal operations		-	-	-	0

Energy

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
302-1	Energy consumption from non-renewable sources					
	Diesel generator	Liters	44,164.35	32,967.27	92,897.30	56,853.96
	Grid electricity consumption	KWh	25,354,446.78	27,022,963.95	27,112,722.66	29,561,163.47
	Energy consumption from renewable source					
	Solar power	KWh	0	180,365.05	313,810.46	491,458.00

Ghg Emission

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
305-1	Scope 1 emissions					
	Total scope 1 emissions	ton CO ₂ e	119.60	89.27	251.57	274
305-2	Scope 2 emissions					
	Total scope 2 emissions	ton CO ₂ e	14,758.82	15,730.07	15,782.32	13,458

Note: 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 and Effluents

GRI STANDARD	PERFORMANCE	UNIT	2018	2019	2020	2021
303-3	Water withdrawal by source					
	Total water withdrawal	m³	64,943,944	67,343,639	64,830,392	69,233,390
	- Surface water		7,369,516	3,811,909	15,555,500	9,245,490
	- Third party water		57,574,428	63,531,730	49,274,890	59,987,900
303-4	Water discharge by destination					
	Total water discharge	m³	48,954,260	46,162,759	17,950,586	30,101,720
	- Surface water		47,185,818	44,292,549	16,117,382	23,292,010
	- Seawater		1,768,442	1,870,210	1,833,204	6,809,710
	Water discharge by category					
	Freshwater (≤ 1,000 mg/L Total Dissolved Solids)	m³	47,185,818	44,292,549	16,117,382	23,292,010
	Other water (≤ 1,000 mg/L Total Dissolved Solids)		1,768,442	1,870,210	1,833,204	6,809,710

Effluents Quality

GRI Standard	Performance	Unit	Standard	2018	2019	2020	2021
306-1	Water discharge by quality and location*						
	WHA CIE1						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	13.00	11.00	8.75	8.50
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	44.00	44.00	37	37.64
	Suspended Solid (SS)	mg/L	≤ 50	16.00	12.00	9	7.43
	WHA CIE 2						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	3.00	5.00	3.3	3.83
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	27.00	51.00	26	33.25
	Suspended Solid (SS)	mg/L	≤ 50	11.0	12.00	14.3	13.83
	ESIE Phase 1						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	6	3	4	6.4
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	49	44	31	51.25
	Suspended Solid (SS)	mg/L	≤ 50	12	10	<5	7.5
	ESIE Phase 2B						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	7	5	4	4.6
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	35	45	24	30
	Suspended Solid (SS)	mg/L	≤ 50	12	9	11	10
	WHA ESIE 1 Phase 1						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	11	10.16	6.80	4.3
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	40.75	50.26	30.00	31.67
	Suspended Solid (SS)	mg/L	≤ 50	10.9	17.16	12.16	10
	WHA ESIE 1 Phase 3						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	8.40	8.10	5.80	5.8
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	39.25	49.17	33.00	38.70
	Suspended Solid (SS)	mg/L	≤ 50	10.83	8.70	7.60	6.8
	WHA ESIE 2						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	8	5	5.59	4.7
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	31	52	35.50	41.45
	Suspended Solid (SS)	mg/L	≤ 50	15	17	15.32	15.45
	WHA ESIE 4						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	NA	4 – 13	5	4.8
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	NA	19 – 64	37	34.1
	Suspended Solid (SS)	mg/L	≤ 50	NA	6 - 50	21	17.5
	WHA EIE						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	6	2	4	4.00
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	45	49	20	42.58
	Suspended Solid (SS)	mg/L	≤ 50	26	22	17	11.6
	WHA RIL						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	12	8	8	7.83
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	36	49	37	37.16
	Suspended Solid (SS)	mg/L	≤ 50	11	10	11	10.83
	WHA SIL						
	Biochemical Oxygen Demand (BOD)	mg/L	≤ 20	4	3	3	3
	Chemical Oxygen Demand (COD)	mg/L	≤ 120	45	41	40	35
	Suspended Solid (SS)	mg/L	≤ 50	13	11	12	10.6

Note: WHAUP is responsible for water discharge quality of all WHA Industrial Estates, therefore, the data are reported by industrial estate locations.

Note: NA = Not applicable; Na = Not analyzed; ND = Not detected

Air Emission

GRI Standard	Performance	Unit	Standard	2018	2019	2020	2021
305-7	Ambient air quality monitoring by industrial estate operation*						
	WHA ESIE						
	Location 1: Chompon Chao Phraya Temple						
	Particles with aerody-namic diameter less than 100 micron (TSP) for 24 Hours Average)	mg/m ³	≤ 0.33				0.062
							0.065
							0.064
	Particles with aerody-namic diameter less than 10 micron (PM-10) for 24 Hours Average	mg/m ³	≤ 0.12				0.030
							0.033
							0.032

Biodiversity

GRI Standard	Performance	Unit	2018	2019	2020	2021
304-1	Number of industrial estate located near protected areas	Operation	2	2	2	2
	Number of industrial estate located near high biodiversity value area		2	2	2	2
	Number of industrial estate that conducts biodiversity value assessment		2	3	3	3
	Number of industrial estate required biodiversity management plan		2	3	3	3
	Number of industrial estate implemented biodiversity management plan		2	3	3	3

Note: WHAUP is operated within WHA Industrial Estates, therefore, the data are reported by the number of industrial estates.

Environmental Compliance

GRI Standard	Performance	Unit	2018	2019	2020	2021
307-1	Non-compliance with environmental laws and regulations					
	Total number of violations of legal obligations/regulations	Cases	0	0	0	0
	- Significant fines	Baht	0	0	0	0
	- Non-monetary sanctions	Cases	0	0	0	0
	- Case brought through dispute resolution mechanisms	Cases	0	0	0	0

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LRQA INDEPENDENT ASSURANCE STATEMENT

Relating to WHA Utilities and Power Public Company Limited's GHG assertion for the calendar year 2021

This Assurance Statement has been prepared for WHA Utilities and Power Public Company Limited in accordance with our contract but is intended for the readers of this Report.

TERMS OF ENGAGEMENT

LRQA (Thailand) Limited was commissioned by WHA Utilities and Power Public Company Limited (WHAUP) to provide independent assurance on its sustainability report ("the report") against the AccountAbility's AA1000AS v3 assurance criteria to a moderate level of assurance for the GRI specific standard disclosures listed below and materiality level of the professional judgement of the verifier is applied, where the scope was a Type 2 engagement.

Our assurance engagement covered WHAUP's financial control in Thailand only and specifically the following requirements:

- Evaluating the reliability of data and information for only the selected environmental indicators listed below:
 - GRI 305-1: Direct GHG emissions (Scope 1)²
 - GRI 305-2: Energy indirect GHG emissions (Scope 2)

Our assurance engagement excluded the data and information of WHAUP's operations and activities outside Thailand, as well as suppliers, contractors and any third parties mentioned in the report.

LRQA's responsibility is only to WHAUP. LRQA disclaims any liability or responsibility to others as explained in the end footnote. WHAUPs' responsibility is for collecting, aggregating, analysing and presenting all the data and information within the Assertion and for maintaining effective internal controls over the systems from which the Assertion is derived. Ultimately, the Assertion has been approved by, and remains the responsibility of WHAUP.

LRQA'S OPINION

Based on LRQA's approach nothing has come to our attention that would cause us to believe that WHAUP has not, in all material respects:

- Met the requirements above
- Disclosed reliable performance data and information as no errors or omissions were detected

The opinion expressed is formed on the basis of a moderate level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a moderate level of assurance engagement is less than for a moderate level of assurance engagement. Moderate assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a moderate assurance engagement is substantially lower than the assurance that would have been obtained had a moderate assurance engagement been performed.

¹ <https://www.globalreporting.org>

² GHG quantification is subject to inherent uncertainty.

LRQA'S APPROACH

LRQA's assurance engagements are carried out assurance using AA1000AS v3. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Auditing WHAUP's data management systems to confirm that there were no significant errors, material mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions, and systems, including those for internal verification. We also spoke with those key people responsible for compiling the data and drafting the report.
- Sampling of evidence during remote verification from facilities level, only the selected indicators to confirm its reliability.

OBSERVATIONS

Further observations and findings, made during the assurance engagement, is:

- Reliability: Data management systems are properly defined for the selected environmental indicators. However, should consider interim verification to further improve the reliability and timeliness of its disclosed data and information

LRQA'S STANDARDS, COMPETENCE AND INDEPENDENCE

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

This verification is the only works undertaken by LRQA for WHA Utilities and Power Public Company Limited and as such does not compromise our independence or impartiality.

Dated: 21 March 2022

Opart Charuratana

LRQA Lead Verifier

On behalf of LRQA (Thailand) Limited

22nd Floor, Sirinrat Building, 3388/78 Rama IV Road Klongton, Klongtoey, Bangkok 10110 Thailand

LRQA reference: BGK406131B

TABLE 1. SUMMARY OF WHA UTILITIES AND POWER PUBLIC COMPANY LIMITED, GHG ASSERTION 2021

SCOPE OF CO2 EMISSIONS	CY 2021 01 JAN – 31 DEC 2021
GRI 305-1: Direct GHG emissions (Scope 1). Biogenic emissions.	274 23
GRI 305-2: Energy indirect GHG emissions (Scope 2).	13,458
Notes: Data is presented in tonnes of CO2 equivalent. CY2021 is an organization selected base year.	

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WHA UTILITIES AND POWER PUBLIC COMPANY LIMITED

HEAD OFFICE

777 WHA TOWER, 22ND FLOOR, UNIT 2203-2205,
MOO 13, DEBARATNA ROAD (BANGNA-TRAD) KM.7,
BANG KAE0, BANG PHLI SAMUT PRAKARN
TEL 0-2719-9559 FAX 0-2719-9558



WWW.WHA-UP.COM