WHAUP

WHA UTILITIES AND POWER PCL

SET AWARDS :
SUSTAINABILITY EXCELLENCE 2025

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WHA Utilities & Power

I. INTRODUCTION

II. KEY CHALLENGES AND RESPONSES

III. OUR PERFORMANCE

IV. APPENDIX

INTRODUCING SPEAKER & TEAM

Speaker

Mr. Akarin Prathuangsit

Deputy Chief Executive Officer and Chief Operating Officer

Team

Mr. Prapon Chinudomsub

Chief Financial Officer

Ms. Montika Charoenyingwattana

Sustainability Office

Vice President

Ms. Pathathai Tonsuwonnont

Power Business Development

Deputy Director

Ms. Tanyarat Sangsuwan

Utilities Business Development

Senior Manager

WHAUP AS A GLANCE

WHAUP is the flagship company in utilities & power business of WHA Group

- #1 Logistics developers, with more than 3.16 million sqm under owned and managed
- Built-to-Suit (BTS): Providing the premium and world-class logistic facilities and factories for lease that match requirements in terms of location, design, and expansion of clients' businesses
- Warehouse Farm: Combination of Built-to-Suit and Ready-Built Projects in the same strategic location.
- Built-to-Own (BTO): Warehouse or factory customized to client's special needs then transfer the asset to the client
- Potential geographical expansion in cross-border provinces and overseas investment

- #1 Industrial Estate Developer
- 16 Industrial Estates in Thailand's and Vietnam's most strategic industrial locations
- Total land sales 2,350 rai.
- Total land area of 87,500 rai.
- Ready-Built factory & warehouse in IEs and logistic park
- Potential geographical expansion i cross-border provinces and overseas investment

Utilities & Power

- Exclusive utilities provider in the industrial estates with high margin products and steady growth
- Active power investor with strategic partnership with reputable partners.
- 80 mm utility sales & management volume in Thailand and Vietnam in 6M'25
- Total Secured capacity of 991 equity MW (706 equity MW under operation and 285 equity MW under developing

* As of 30 June 2025

- To be one-stop service for Data Center developer and provider by way of business collaboration with reputable partners
- Be part of the Government Initiative to promote digital economy
- >40 Digital transformation Projects
- 12 AI transformation Projects

- Officially introduced MOBILIX, Thailand's first green logistics solution developed under the concept of "Driving Sustainability in Motion" with a comprehensive electric vehicle ecosystem
- 6 Current Charging Location (Map Thaput, Wangnoi, Lat Krabang, WHA ESIE 1 Plaza, WHA Tower, and SJ Tower.)
- 539 leased vehicle and 53 chargers installed.

Remark: *The data is as of 30 June 2025*
/1 Including 19 million m3 water sales and treatment volume from Vietnam

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BUSINESS CHALLENGES

MACROECONOMIC & GEOPOLITICAL UNCERTAINTY

- *Slower global economic growth*
- *Geopolitical tensions (US–China rivalry, conflicts in Europe and the Middle East) disrupting global supply chains.*
- *From Globalization to geoeconomic fragmentation (trade protectionism)*

SHIFTS IN CONSUMER BEHAVIOR

- *Stronger preference for sustainable, ethical, and personalized products/services.*
- *Rising digital consumption and e-commerce dominance.*
- *Growing health and wellness consciousness shaping demand.*

CLIMATE CHANGE & SUSTAINABILITY PRESSURE

- *Stricter climate-related regulations, carbon pricing, and disclosure requirements.*
- *Rising demand for renewable energy, water management, and circular economy solutions.*
- *Increasing stakeholder expectations for ESG performance and transparency.*

TALENT & WORKFORCE CHALLENGES

- *Intensifying competition for skilled talent, especially in technology and green sectors.*
- *Managing hybrid work environments while maintaining productivity and engagement.*
- *Employee expectations around purpose, sustainability, and work–life balance.*

TECHNOLOGICAL DISRUPTION

- *Rapid adoption of AI, automation, and digitalization transforming business models.*
- *Cybersecurity threats intensifying as digital ecosystems expand.*
- *Need for upskilling and reskilling workforce to adapt to AI-driven workplaces.*
- *Increase business efficiency, productivity, and competitive edge over the competitor.*

SUPPLY CHAIN & RESOURCE RISKS

- *Vulnerability to disruptions from geopolitical shocks or climate-related events.*
- *Rising raw material and energy costs.*
- *Pressure to adopt resilient, transparent, and sustainable supply chains.*

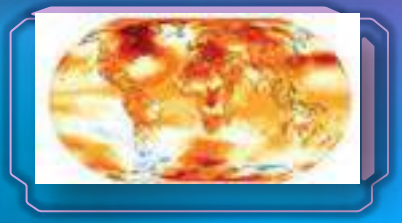
PHYSICAL AND TRANSITION RISKS RELATED TO CLIMATE CHANGES

PHYSICAL RISKS

FLOODING AND EXTREME WEATHER
The increasing volatility and severity of weather patterns, including the occurrence of natural disasters, pose significant risks to the company's operational areas

DROUGHT
The increasingly severe and frequent fluctuations in weather conditions, including droughts, pose a risk to the operational areas of the company

STROMS AND LIGHTING RISK
Increasingly severe and unpredictable weather conditions, including storms, thunderstorms, and lightning.



AIR TEMPERATURE
The increased in severity of extreme weather events, relating to air temperature

TRANSITION RISKS

POLICY AND LEGAL
Legal and regulation changes relating to GHG reduction, such as enforcing the use of construction materials with no GHG emission.

NEW TECHNOLOGY
New low-carbon technologies often require significant upfront capital.

MARKET
Customer Preference Shift to Low-Carbon Products and Services

REPUTATION
Limitation to access capital

OUR STRATEGIC DIRECTIONS – FROM CHALLENGES TO OPPORTUNITIES

Total Solution Partner in Sustainability

Strengthening our position as a leading provider of integrated utilities and sustainable energy, enabling customers to optimize costs and grow confidently.

Innovation and Technology

Driving smarter, more efficient operations through advanced technologies and innovative solutions to provide customer the most reliable green products that fuel their business further.

Enhance Prominence on Green and Sustainability

Commit to achieve net zero mission of Green House Gas by 2050

Build High-Performance Organization

Digital transformation and Human development

Environment Protection

Promoting sustainable water management through reuse, recycling, and advanced treatment, while ensuring resilience to climate change and protecting natural ecosystems.

ECONOMIC HEADWINDS DRIVE NEW OPPORTUNITIES

Customers' demand

Relocate Manufacturing Base
Companies are relocating production bases to diversify risks and ensure supply chain resilience.

Regulation Compliance
Seek solutions that help them comply with strict environmental and regulations.

Minimize operating cost
Seek lower operating costs (e.g. electricity tariff) or outsource non-core activities

Reduce Energy Consumption & Require Green Energy
Customers demand energy efficiency and clean power

Reduce Carbon / Water Footprint and Waste
Use less energy/water, generate fewer emission/waste and consider carbon offset

Opportunities for WHAUP

Strong Connectivity and Efficient Supply Chains
Thailand offers strong connectivity in ASEAN, with access to key markets and efficient logistics networks.

Offering Innovative & Sustainable Products
Develop and provide eco-friendly and energy-efficient utility solutions that meet customer needs, reduce environmental impact.

Integrated Solutions for Customers
With integrated utilities and energy services, WHAUP helps customers avoid large upfront investments while ensuring reliable, efficient, and sustainable operations.

Cost Optimization
Through cost-efficient utilities and renewable energy solutions, WHAUP reduces operating expenses such as electricity and water, enabling customers to improve competitiveness

Utilities & Power Expertise
With expertise in utilities and energy management, WHAUP provides reliable operations and maintenance, allowing customers to outsource with confidence and focus on their core business.

WHAT SOLUTION / INNOVATION WE PROVIDE TO CUSTOMERS

Carbon Footprint

Measure and reduce emissions through solar, BESS, and REC to support customers' Net Zero goals.

CO2 zero

Solar Solution

Water Footprint

Enable water reclamation and reuse to minimize freshwater consumption and improve efficiency.

Reclamation Project

WHAUP's wastewater management and reclamation projects, producing demineralized water and premium clarified water, enhance sustainability, reduce industrial costs, and improve community water quality.

Water Protection

Adopt natural-based treatment such as constructed wetlands to safeguard ecosystems and water quality.

Reservoir

Constructed Wet Land

Driving "Clean Water for Planet," a community initiative that strengthens both social and economic sustainability around its industrial estates.

Waste Management

Convert waste into energy with WTE solutions, supporting circular economy and cleaner operations.

Waste-to-Energy

Reduce waste were diverted from landfilling 120,913 tons, and converted into electricity, generating a total of 54,823 MWh in 2024.

Waste Management

WHAUP Circular Innovation

More than 40 initiatives are identified under 5 Circular Economy Business Models along our value chain

MANAGING CLIMATE-RELATED PHYSICAL RISKS

Managing Droughts Risk

Results

- Customers **always have** water service available.
- Help nearby **communities access water**

- **Constructed additional ponds** and reservoirs to ensure an adequate water supply in the WHA SIL industrial zone. A new reservoir will be built in the WHA SIL area, increasing the water capacity from 416,671 cubic meters to 800,271 cubic meters. In addition, floating pumps will be installed to maximize the water pumping capability up to the minimum capacity level of the reservoir, which is 998,798 cubic meters.
- **Implementing a water reclamation system,** which helps reduce reliance on natural water sources. This system enables the reuse of wastewater and reduces the volume of discharged water into public water sources. The project not only reduces the cost of sourcing raw water but also avoids potential conflicts arising from shared resources with the local community.
- **Implement the Natural Water SCADA project** to efficiently manage the utilization of water from natural sources. This includes installing water level monitoring devices in water storage reservoirs and an automated control system for water pumping equipment to closely monitor water levels.

Managing Strom Risk

Results

- **Zero incidents** of lightning-related damage
- Solar panels **have never been damaged by lightning**

- **Selecting construction materials** and equipment that meet high standards to ensure durability and withstand severe weather conditions.
- **Studying and developing innovative materials** and equipment used in the construction of solar power generation projects to reduce temperatures, prevent overheating and lightning strikes.
- **Inspecting the installations thoroughly** to ensure compliance with the design standards for mounting systems that can withstand wind speeds of 25 meters per second (equivalent to a tropical storm)
- **Monitoring the weather conditions** and changes closely through various news channels and notifying customers to be prepared.
- **Regularly assessing the changes** of the environment and surrounding areas in each project.

ACTION PLANS TO REDUCE THE IMPACTS OF CLIMATE CHANGE

WHAUP recognizes climate change as a key business issue and has set strategies to reduce GHG emissions. Our action plans align with the Net Zero 2050 target, with short-term, medium-term, and long-term goals.

Increase Renewable Energy Production and Consumption

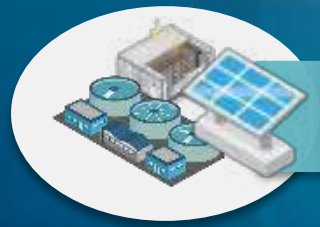
Focus on increasing the share of renewable energy production and consumption across all operations to reduce reliance on fossil fuels and promote environmentally friendly energy use, thereby lowering greenhouse gas emissions and supporting long-term sustainability

Improve and transform business processes to enhance energy efficiency

Improving business processes is another vital strategy to enhance energy efficiency in every aspect, from production to transportation, by adopting advanced technologies that reduce energy consumption and increase productivity.

Increase the share of green portfolio

Expand the share of green portfolio, which includes products and services that reduce environmental impacts. Investing in low-impact assets and activities supports growth of socially and environmentally responsible businesses.



Reducing GHG Emissions Across the Value Chain

Develop and offer products or services that can reduce GHG emissions throughout the entire value chain, ensuring sustainability at every stage, from raw material sourcing and production to consumption and recycling.

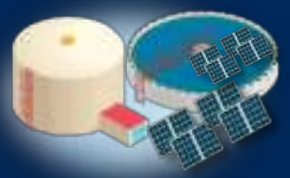
Raising Awareness on Energy and Climate Issues

Raise awareness of energy conservation and climate change as a key strategy to engage all parties, including employees, partners, and stakeholders, collectively in driving sustainable change within the organization and society.

Promote reforestation and green spaces to absorb CO_2 naturally

Conduct reforestation and forest management projects to increase green areas, using natural methods to absorb carbon dioxide from the atmosphere, which helps mitigating climate change impacts

DECARBONIZATION SOLUTIONS: SOLAR ENERGY FOR OUR OWN OPERATIONS



2024

Installed Capacity
1.2 MW
Cost Saving
3.9 mn THB / Year

2025 Target

Installed Capacity
1.6 MW
Cost Saving
6.2 mn THB / Year

Solar Rooftop, Floating Solar and Solar Farm for Water Treatment Facilities

WHA EIE

ESIE

WHA ESIE1

Floating Solar at ESIE (RO)

WHA ESIE1

WHA ESIE4

WHA RY36

Battery Energy Storage System (BESS) at ESIE

Solar Installation in Other Facilities

ESIE Plaza 1

ESIE Plaza 2

ESIE Office

WHA ESIE4 Office

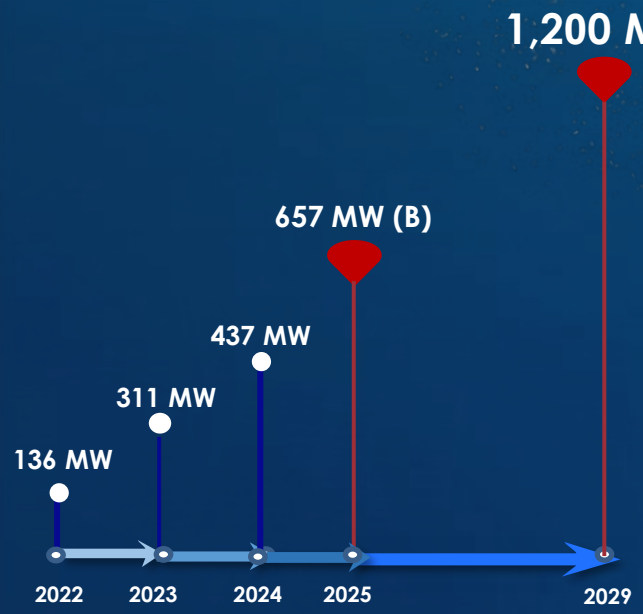
DECARBONIZATION SOLUTIONS: PROVIDING SOLAR ENERGY TO OUR CUSTOMERS

Enabling Our Customers with Clean Energy

Provides a comprehensive solar rooftop service package for customers in Thailand, covering everything from permitting, design, and engineering to construction, installation, and ongoing operation and maintenance throughout the contract duration.

Commit to a long-term goal of delivering renewable energy

with a cumulative target of signing power purchase agreements for 657 MW by 2025 and 1,200 MW by 2029, **contributing to CO2e GHG emissions**



Cumulative Target Signed PPA

Environmental Savings

Year	GHG Emission Offset from Grid Electricity Consumption Per year
2022	31,600 tCO2e
2023	51,500 tCO2e
2024	61,808 tCO2e
2025	160,000 tCO2e
2029	683,000 tCO2e

WATER MANAGEMENT

Ensuring Water Resilience and Efficiency

Ensuring water resilience and efficiency helps WHAUP mitigate risks from water shortages, control costs, prevent production disruptions, and protect both community relations and business reputation

Risks

Natural resource shortages
Water scarcity threatens human life, ecosystems, and industrial operations.

Operational risk
Lack of water can disrupt production, increase costs, and reduce competitiveness.

Regulatory pressure
Stricter water usage and wastewater treatment laws require compliance and infrastructure investment.

WHAUP's Solutions

1 Digital & Smart Technologies

Smart meters and AI monitor water quality, predict usage, and minimize losses.

2 Water Circular Economy

Water Reuse, Recycling, and Reclamation integrated into industrial and utility systems.

3 Infrastructure for Resilience

Water reservoirs and storage reduce reliance on natural sources and mitigate climate risks

CLEAN WATER FOR PLANET: POWERING INDUSTRY, SUSTAINING LIFE

The Clean Water for Planet initiative aims to maximize the value and efficiency of water resources, making sustainable water management a core driver of economic and social development in today's world.

WHA Clean Water for Planet

1 Raw Water Sources

- Ground water from rainfall
- Surface water in reservoir

2 Water Treatment Plant

Total Product Capacity

- Industrial Water: 312,600 m3/day
- RO Water: 8,400 m3/day

3 Customers

- Use the water in the production process according to the needs of each industry.

4 Wastewater Treatment Plant

Method for Wastewater Treatment

- Rotation Biological Contractor
- Activated Sludge
- Aerated Lagoon
- Constructed Wetland

5 Reclamation System

WHAUP has developed a water reclamation system to improve the efficiency of water resource utilization.

6 Environment

Positive Impacts

- Reduce wastewater discharge
- Decrease in government investment for developing water system
- Mitigate conflicts between communities and industries

WATER CYCLE

WATER CONSERVATION PROGRAMS

Focusing on Water Reuse, Establishing Reservoirs, and Minimizing Water Loss

Develop Water Reservoirs

Establish water reservoirs in the WHAID's area as natural water reserve

Water Reuse

Reuse treated wastewater for cleaning and landscaping

Smart Water Solutions

- ***Automated Process***
- ***Remote Monitoring and Control***
- ***Reduce Water Loss***

Commercialize Smart Water Solutions in 2025

Smart Meter (OCR)

Smart Meter Reporting Screen

GIS & Hydraulic Model

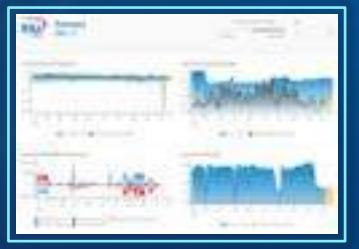
HydroXS

Smart Water Solutions

SCADA & UOC

Screen at UOC

WHAUP's Smart Meter Web Application



AI for RO Performance Forecasting

CONSTRUCTED WETLAND TO COMMUNITY

Sustainable Wastewater Treatment System "Constructed Wetland Project"

In 2022, wetland projects were delivered to the Pluak Daeng Sub-district Administrative Organization in Rayong Province and Wang Tanot, Nong Khla Subdistrict in Chantaburi Province and WHA provided training on wastewater management and treatment. After the training period, the staff will be able to effectively manage wastewater systems in a sustainable way.

Sustainable Wastewater Treatment System
Clean Water for Planet for Community

Pluak Daeng Constructed Wetland Project

In 2024, the project successfully diverted a total of **102,190 cubic meters** of wastewater from community water sources and returned over 100,000 cubic meters of treated water (equivalent to the amount of incoming wastewater) back to the community.
The project benefited more than 480 households, or over 1,200 resident.

Wang Tanod, Nong Khla Constructed Wetland Project

In 2024, the project successfully treated approximately **142,400 cubic meters** of community wastewater, **benefiting over 2,000 households** by improving both health and quality of life through enhanced water management and environmental conservation.

KNOWLEDGE SHARING ON WATER/WASTEWATER MANAGEMENT

Training courses for students and knowledge sharing with local organizations

With the collaboration with various academic institutions to develop curricula focused on water resource conservation and wastewater management. University students are given the opportunity to participate in internship programs each year to enhance their knowledge and skills in water and wastewater management through guidance from field experts.

1 Internship Program

In 2024, students from Suranaree University of Technology, King Mongkut's University of Technology North Bangkok, and Mahasarakham Rajabhat University joined the internship program.

2 Site Visit

Site visit and observed WHA Group's expertise in wastewater treatment at the constructed wetland project.

3 Environmental Detectives Project

882 Students across 8 schools in 2024 around the industrial estate were trained about the importance of water and water resource conservation

SUSTAINABILITY FOR THE NEXT GENERATION

Shine Brighter with WHA Project

WHA Group Joins Dr. Somyos Anantaprayoon Foundation to Support Solar Rooftops Installation for School in Rayong Province Under the Shine Brighter with WHA Project.

WHAUP and WHA Group joined in delivering Solar Rooftop and sports equipment to Nikhom Sang Ton Eng School Rayong Province 9 under the Shine Brighter with WHA project to promote the use of clean energy and reduce the school's utility costs so that the education budget can be allocated to teaching and learning more efficiently.

Forestation

Tree planting projects under the concept "LET'S ZERO TOGETHER"

WHAUP, together with WHA Group, the Industrial Estate Authority of Thailand, and ***over 500 participants from 70 companies****, organized a large-scale tree-planting activity at WHA Eastern Seaboard Industrial Estate 2 and Map Ta Phut. Using an ecological forestation approach with 2–3 local tree species per square meter,* ***a total of 15,555 trees were planted over 11 rai, absorbing 15.20 tCO_2e per rai per year.*** *This initiative supports WHAUP's efforts to mitigate climate change and promote greener, healthier industrial environments.*

WATER RECLAMTION PROJECTS

Ensuring Sustainable Water Use and Business Resilience

WHAUP introduced innovation in producing high-quality water for industrial use through the Reclamation Water Project. This project involves reusing treated wastewater to produce high-quality water for customers within WHA's industrial estates

Key Benefits:

- ***Reuse Treated Wastewater***

  By reusing treated wastewater, the project minimizes reliance on natural water sources. This approach helps conserve freshwater resources, ensuring availability for both industrial and community needs in the long term.

- ***Environmental Protection and Waste Reduction***

  The project decreases wastewater discharge into public canals by **7.6 million m³ per year** or **Saving is equivalent to the water usage of 215,000 people**, reducing environmental impact and protecting surrounding ecosystems from water pollution.

- ***High-Quality and Flexible Water Supply***

  With a production capacity of 20,919 m³ per day or **7.63 million m³ per year**, reclaimed water can be further treated into demineralized or high-grade water. This ensures industries within WHA's estates receive reliable, high-quality water tailored to their specific requirements.

- ***Sustainable Water Security and Community Benefit***

  The initiative strengthens long-term water security by reducing competition for natural water between industries and nearby communities, supporting fair and sustainable access to clean and high-quality water for all stakeholders.

Reclamation Water Target

7.6
Million m3 Water sales & managed volume
Save cost of raw water by 86 MB per year
Or equivalent to water usage of **204,000** People
2024

8.0
Million m3 Water sales & managed volume
Save cost of raw water by 91 MB per year.
Or equivalent to water usage of **215,000** People
2025 Target

25.0
Million m3 Water sales & managed volume
Save cost of raw water by 290 MB per year
Or equivalent to water usage of **685,000** People
2029 Target

DEMINERALIZED RECLAIMED WATER

The Real Sustainable Resource for Future

WHAUP has invested in the Demineralized Reclaimed Water project to produce demineralized water with the aim of enhancing the quality of water treated from wastewater systems, enabling it to be reused as high-quality industrial water effectively, with reduced costs and environmentally friendly processes. This project addresses the demand for industrial water in a wide range of sectors.

Key Benefits:

- Lower wastewater discharge to the environment
- Reduce government spending on water infrastructure
- Minimize community–industry water conflicts
- Provide industries with high-quality water at competitive costs
- Offer comprehensive utilities and diverse products within WHAUP

Production facilities:

1 At WHA EIE (Map Ta Phut) (Own Operation)

A Demineralized Reclaimed Water plant at WHA Eastern Industrial Estate (Map Ta Phut) (WHA EIE) with a production capacity of ***12,000 cubic meters per day***

2 At ASIE Industrial Estate (A Joint venture with AIE)

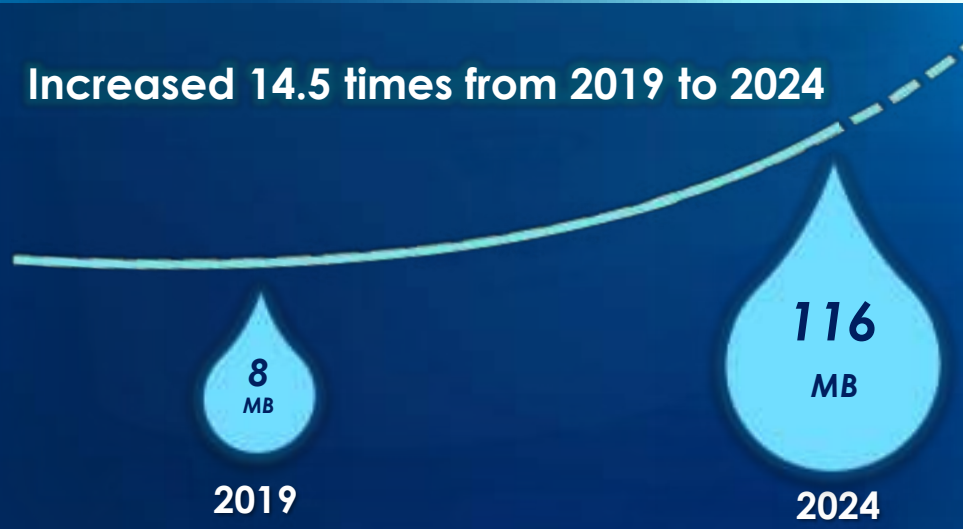
A joint venture with Asia Industrial Estate, with a production capacity of ***2,200 cubic meters per day***

Together, these two projects have a total production capacity of ***14,200 cubic meters per day, covering 3%*** *of the total industrial water production capacity.*

Received SET Outstanding Innovation Award 2021

Revenue from Demineralized Water

Increased 14.5 times from 2019 to 2024



2025 TECH-DRIVEN ORGANIZATION

WHAUP together with WHA Group, is driving full-scale digital transformation under the "Mission To The Sun" project. This initiative integrates innovative technology into all business sectors, leveraging platform technology along with the organization's strong infrastructure. As such, WHAUP is progressing towards becoming a tech company and aims to be a tech-driven organization by 2025 together with WHA Group with the goal to become a leading utilities and power services provider in the region.

Digital Transformation

Utilize digital technology to reach new levels of operations reliability and efficiency to empower core business and lead to superiority over industrial competitors

2021

Innovative Workplace

Build Innovation Culture, Workplace and Workforce to create new revenue streams, innovative products making WHA superior to competitors.

2022

Data Driven Organization

Turn data asset into a competitive advantage with a data insights through:

- Manage digital assets
- Innovate with data
- Data monetization

2023

TURNED TO TECH COMPANY

2024

TECH-DRIVEN ORGANIZATION

2025

KEY MILESTONES

12 AI TRANSFORMATION PROJECTS

Computer Vision

Generative AI

AI/ML Data Insights

AI Cybersecurity

3 Key Focus of Tech-Driven Organization 2025

1
Data First
We will utilize data to generate tangible value

2
AI Transformation
AI is an integral part of the business, not an experimental project

3
Digital Culture
Technology is a part of everyone, not just IT or specific groups

BUILDING DIGITAL CULTURE

Innovation Bootcamp

Core Program

In order to validate pain points, create prototypes and test, we offer intensive innovation bootcamp driven by human-centric approach. The program aims to enhance internal team capability and equip innovative toolset and skillset for innovation creation

Data Hackathon

"From Data to The Sun"

- To transform WHA into a technology-focused company driven by data
- leveraging the data to uncover valuable insights and provide visualization comprehensively for decision-making across various aspects

Data Driven Organization

1 Data Clinic

- Promoting data-driven decision-making and strategy
- Employee discussion on data and AI utilization within the organization
- Opportunity to improve data handling and gain valuable insights
- Evaluating readiness for data-driven practices

2 Data Driven The Series

WHAPPY Talk

Unlocking The Potential of AI & Generative AI

- *The Era of AI & Generative AI*
- *Unleashing the Power of Generative AI*
- *Responsible AI in Action*

Data Driven The Series Season 1-2

- *Road to data driven organization*
- *Digital transformation with data analytics*
- *Storytelling with data*
- *Era of Data Science*
- *The Fellowship of Data*

AI IMPLEMENTATIONS

In 2024, WHAUP and WHA Group implemented over 40 employee-driven technology projects worth more than 241 million baht, enhancing efficiency, productivity, and cost savings while creating new business opportunities.

Computer Vision

Drone Inspection

Drone technology inspects roofs for defects, while AI and machine learning analyze the imagery to compile a detailed defect report.

Generative AI

Generative AI: Legal

Automating document creation and simplifying legal processes.

Generative AI: Procurement

Streamlines Q&A processes, tracks PR/PO, and generates insightful procurement reports.

Generative AI: Corporate Marketing

Improve content and segmentation with AI for speed and diversity

Generative AI: HR (Yoda)

Improve Yoda's HR replies for higher satisfaction and less workload

Generative AI: Accounting (Yoda)

Boost Yoda for instant, accurate accounting replies, easing team effort

AI/ML Data Insight

Solar

Boost solar efficiency with anomaly detection and forecasting

Water

Cleaning-in-Place Efficient and proactive maintenance of motors and pumps.

Revenue & Debt Management

Improve debt collection with AI for better efficiency and decision-making

Cost Estimation

Use machine learning to find key cost drivers and forecast expenses with AI models

AI Note Taker

AI Note Taker

Automate meeting transcription for team efficiency and privacy

AI Cybersecurity

AI Cybersecurity

Deploy AI for fast cyber threat detection and response

THE APPLICATION OF AI TECHNOLOGY IN WATER BUSINESS

- ***Maintenance cost saving***
- ***Reduce water loss***

RO Performance Forecasting

- **RO Performance Prediction:** AI monitors and predicts membrane fouling, **cutting maintenance costs by up to 20%**
- **Pipeline Leak Detection:** EPANET software detects leaks and monitors pipelines to minimize water loss.
- **Optimized Water Management:** Enhances efficiency in water resource management

GIS/Hydraulic Map Project

- **Enhanced Monitoring:** Tracks water usage behavior and improves data accuracy.
- **Efficiency & Loss Reduction:** Increases water management efficiency and reduces system losses.
- **Sustainable Planning:** Supports long-term, sustainable water resource management.

Smart Natural Water Management

- **Intelligent Sensors:** Real-time monitoring of reservoir inflow and outflow.
- **Maximized Water Usage:** Supports precise management to meet future demand.
- **Risk Mitigation:** Prevents flooding and water shortages, protecting nearby communities.

THE APPLICATION OF AI TECHNOLOGY IN SOLAR BUSINESS

Availability 100%

Solar Forecasting

AI analyzes solar data to enhance energy output and cut costs.

Expected Outcome

- Maximize Revenue
- Effective Maintenance Planning
- Operational Efficiency

Solar Monitoring Platform

The solar energy performance monitoring platform is designed for ease of use and accessibility from anywhere, allowing convenient and efficient oversight of solar energy systems.

Solar Anomaly Detection

AI solutions are transforming solar energy generation and management.

Expected Outcome

- Increase Plant Availability
- Maintenance Cost Saving
- Proactive Maintenance

I. INTRODUCTION

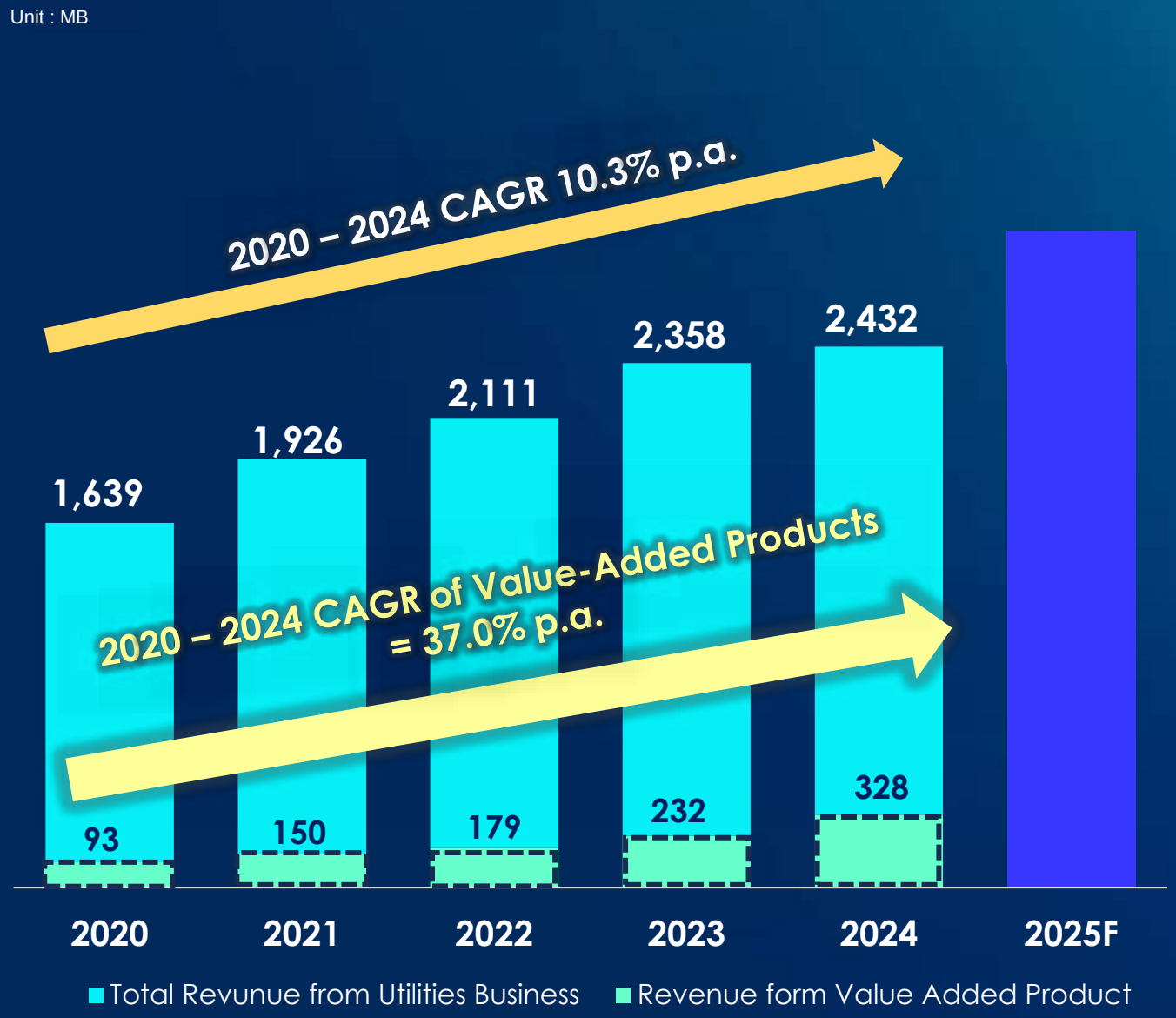
II. KEY CHALLENGES AND RESPONSES

III. OUR PERFORMANCE

IV. APPENDIX

CONTINUOUS GROWTH OF REVENUE FROM UTILITIES BUSINESS

Total revenue from water sales and value-added product sales have shown continuous growth.



Providing water services to approximately 1,200 customers

New Utilities contracts in 1H'25

Total new contracted capacity

27.7 Million m3 per year

- *Industrial Water **20.6** million m3*
- *Wastewater **7.1** million m3*

Total contract value of 600-700 MB per year

*Proactively Sourcing Water **for Data Center** Clients' Future Needs*

Need 12-16x of Water Usage compared to normal customers

CONTINOUS EXPANSION IN WATER BUSINESS

Continue to invest to capture demand growth in industrial estates.

Construction of Water Plants

Total 24.8 million m3 is being developed

Upcoming Projects

WHA ESIE 2.1
Project in Pipeline
Total Capacity of **7.1 million m3/yr**
Expected COD in 2025-2026

Upcoming Projects

WHA ESIE 5
Project in Pipeline
Total Capacity of **8.2 million m3/yr**
Expected COD in 2026

WHA RY36
Expansion of Water & wastewater treatment
Total Capacity of **0.7 million m3/yr**
COD in 2024

Completed In 2024

Upcoming Projects

WHA ESIE 3.1
Project in Pipeline
Total Capacity of **9.5 million m3/yr**
Expected COD in 2025-2026

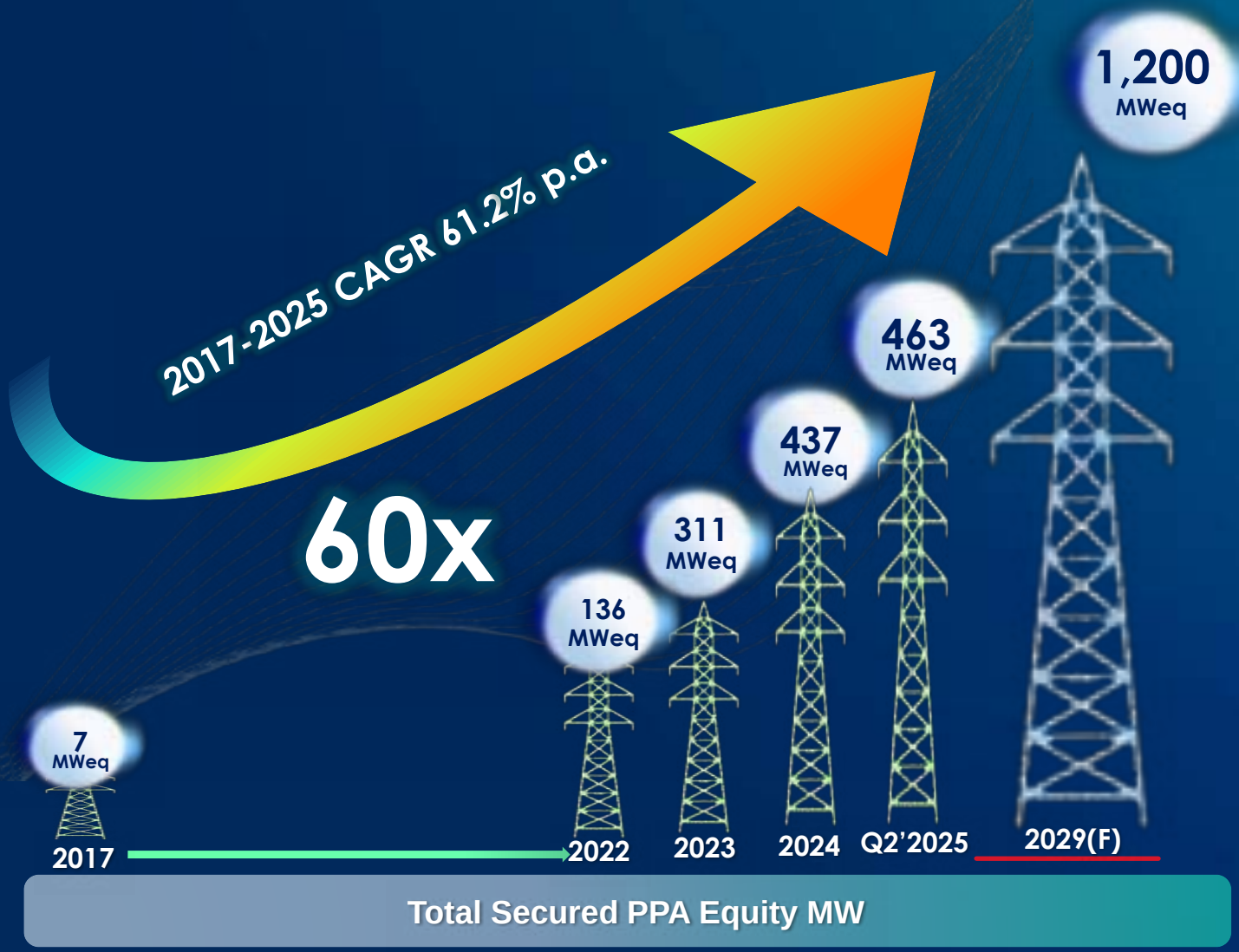
WHA IER
Additional Water Supply & Wastewater Management
Total Capacity of **4.9 million m3/yr**
COD in 2024

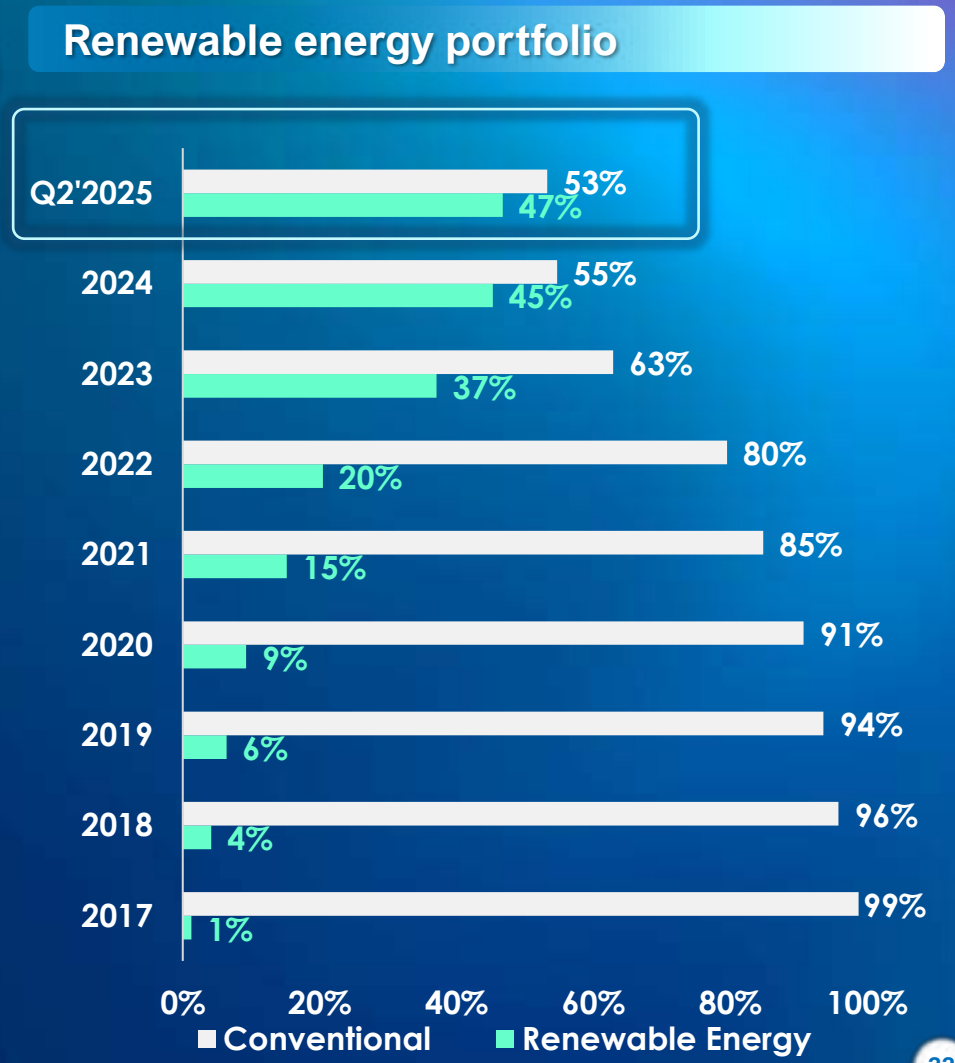
Completed In 2024

DRIVING CONTINUOUS GROWTH IN RENEWABLE ENERGY

Renewable Energy Portfolio Growing Strongly, Boosting Renewable Energy Proportion

Our clean energy portfolio has grown steadily each year, with renewable energy taking an increasingly larger share, reflecting both business growth and sustainability goals.

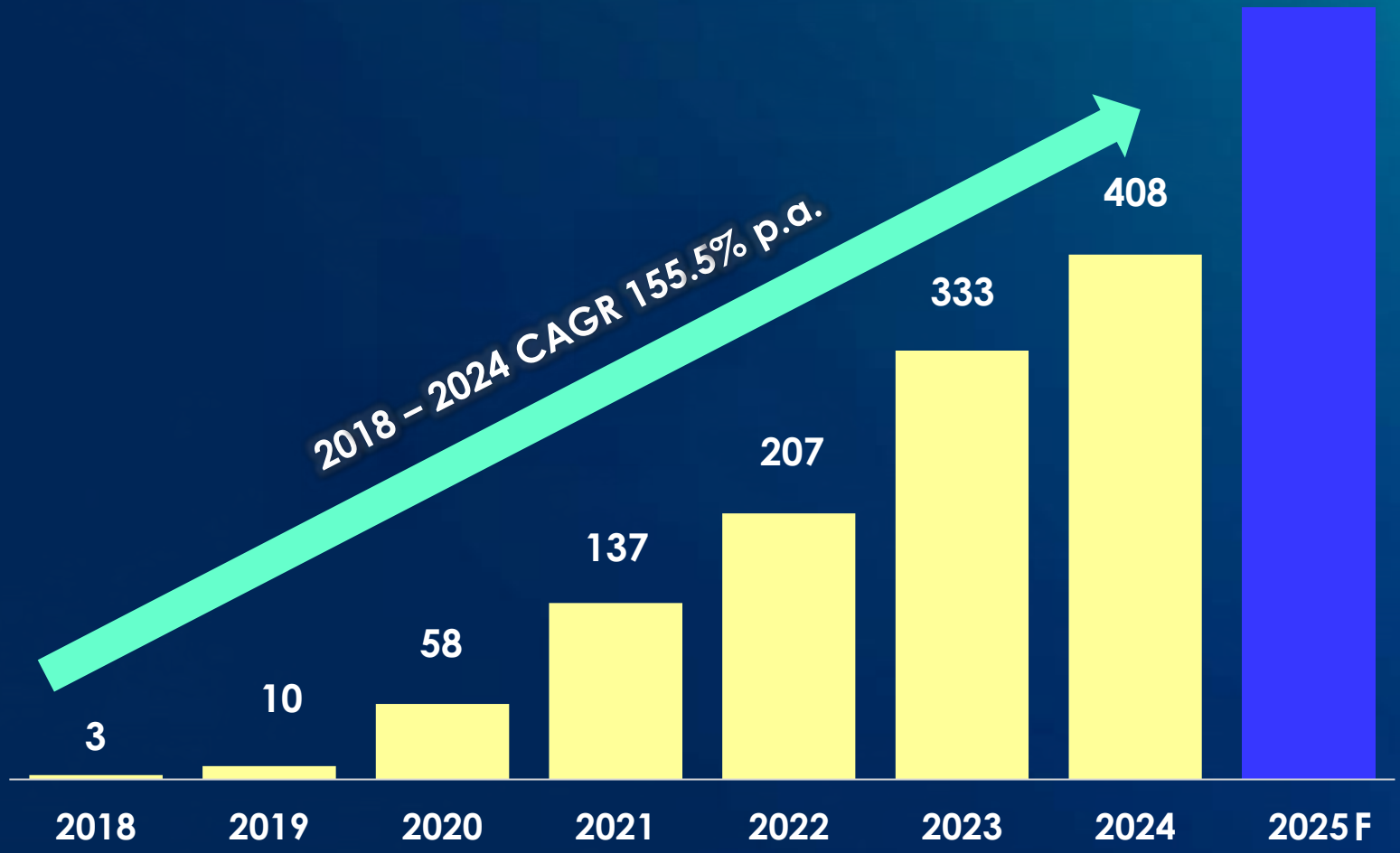




EXPONENTIAL GROWTH OF REVENUE FROM SOLAR ENERGY BUSINESS

Revenue from Solar business increased by 136 times since 2018

Unit : MB



After 2029, with 1,200 MW PPAs of renewable energy fully operated, there will be;

- Revenue generation of **5,600** MB per year
- Customer savings on electricity costs of **1,860** MB per year

2029 KEY SUSTAINABILITY TARGETS AND GOALS

ESG

SUSTAINABLE DEVELOPMENT

GHG Emissions Reduction

NET ZERO 2050

Reduce absolute emission
scope 1 and 2
from base year 2021
by **37%** by **2029**
and by 42% by 2030 per SBTi

WHAUP achieved carbon neutrality since 2021

Renewable Energy

1,200 MW equity in **Renewable Energy**,
contributing to a reduction of
683,000 Tons Co2 Equivalent / Year

100% of Water Plants' Capacity Requirements (MW) matched with **Renewable Energy** supplies

Water Resources

Reduce the usage of water from nature
25,000,000 m^3 / Year
Save cost on raw water by
THB 290 Million / Year

Equivalent to water usage of
685,000
People

Waste Management

Zero Waste to landfill and incineration without energy recovery

KEY TAKEAWAY

1 Business Challenges

Despite various challenges, including the prevailing **Economic Slowdown**, WHAUP remains confident in its ability to pursue sustainable growth by delivering a diverse range of products and services designed to meet the evolving needs of its customers.

2 Climate Change

WHAUP acknowledges the significant effects of **Climate Change** and focus on adhering to the Net Zero emission target by embracing the decarbonization roadmap including the expansion of renewable energy projects and promotion of various measure to reduce GHG emission covering a wide range of stakeholders.

3 Water Management

WHAUP recognizes the critical importance of water as a key resource that influences business success, environmental health, and social equity. Accordingly, we place strong emphasis on efficient **Water Management** with our flagship project "Clean Water for Planet" to ensure long-term sustainability.

4 AI Technology

With the goal of becoming a Tech-Driven Organization by 2025, WHAUP has placed a strong emphasis on integrating technology and innovation into the provision of utilities and power services.

AI technology has been applied in various areas to enhance operational efficiency and support innovation development within the organization.

Q&A

WHAUP: WE SHAPE THE FUTURE

WHA Utilities & Power

APPENDIX

COMPANY INFORMATION

VISION

"To be Asia's leader in Utilities and Power providing total solutions to partners with good corporate governance as well as environmentally and socially friendly operations"

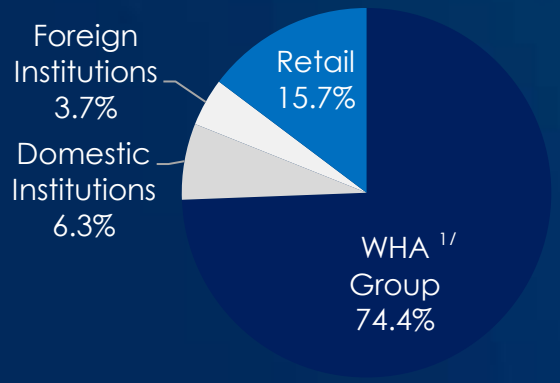
MISSION

- To develop world class utilities and power solutions fitting customer's needs
- To vertically integrate solutions in utilities and power businesses and expand market segment in Thailand and other SoutheastAsia Countries (CLMV Countries)
- To continuously develop human resources competencies to build talent and experience to enhance organizational core competency including encouraging workplace environment for employee wellbeing
- To nurture an innovative culture in the organization
- To add value to communities and the environment with good corporate governance and sustainable development strategies

AAA SET ESG Ratings	Listed on the SET100 index	ESG100 Ranking	5-Star CGR Rating	CAC Membership Certification	AGM Scoring 100% scoring

SHAREHOLDER AND MANAGEMENT STRUCTURE

Shareholding Structure



Remark /1 WHA Group covers (i) WHA Industrial Development Plc (ii) WHA Ventures Holding (iii) WHA Industrial Development International (SG) Pte. Ltd (iv) Miss Jareeporn Jarukornsakul and (v) Miss Chatchamol Anantaprayoon

Shareholders	No. of shares	%
WHA Industrial Development Public Company Limited	2,694,852,570	70.5%
Thai NVDR Company Limited	125,038,058	3.3%
Ms. Jareeporn Jarukornsakul	73,836,600	1.9%
Bangkok Life Assurance Public Company Limited	73,239,500	1.9%
WHA Industrial Development International (SG) PTE. LTD.	43,500,010	1.1%
Ms. Chatchamol Anantaprayoon	33,363,478	0.9%
South East Life Insurance	28,025,800	0.7%
Mr. Chaiwat Phupisut	26,684,956	0.7%
Ms. Supitchaya Phupisut	26,540,006	0.7%
Abrdn Small-Mid Cap Fund	14,649,900	0.4%
Others	685,269,122	17.9%
Total	**3,825,000,000**	**100.0%**

Note : As of 30 June 2025

Board of Directors

Ms. Jareeporn Jarukornsakul
Chairman of Board of Directors

Dr. Luxmon Attapich
Independent Director and Audit Committee

Professor Dr.Kamphol Panyagometh
Independent Director and Audit Committee

Mr. Numchai Lowattanakul
Independent Director

Mr. Sek Wannamethee
Director

Dr. Somsak Pratomsrimek
Independent Director and Audit Committee

Mr. Vivat Jiratikarnsakul
Director

Mr. Somkiat Masunthasuwun
Director and Chief Executive Officer

Mr. Krailuck Aswachatroj
Director

Mr. Natthapatt Tanboon-ek
Director

BUSINESS STRATEGY

WHA Utilities

Provide Extensive Utility Products & Capture Opportunities

Expand and diversify utility solutions, including Reclamation Water, Demineralized Water, and Industrial Water, to meet growing industrial demand, strengthen customer relationships.

Digitalization through Smart Water Platform

Leverage smart meters, sensors, and AI to monitor water usage, forecast demand, reduce losses, and enhance operational efficiency across industrial estates.

Offer Innovative & Sustainable Products

Develop and provide eco-friendly and energy-efficient utility solutions that meet customer needs, reduce environmental impact, and support long-term sustainability goals.

WHA Power

Enlarge Portfolio

Expand WHAUP's power customer base to capture new opportunities, diversify revenue, and strengthen long-term growth in Thailand's energy sector.

Pursue New S-Curve Business

Focus on developing high-growth, innovative business to create new revenue and secure long-term strategic growth.

Embrace Innovative and Sustainable Practices

Implement innovative, eco-friendly solutions to improve efficiency, reduce environmental impact, and drive long-term sustainable growth.

COMPANY OVERVIEW – UTILITIES BUSINESS

Sole provider of utilities to manufacturers/ factories in leading industrial estates with a concrete plan to capture increasing demand from heavy users and expansion outside i.e. other IEs, non-IE area and international

ASSET LOCATION

Thailand

- **15** Industrial Estates (Operating & Under Development)
- **+1** Upcoming IEs

Vietnam

- **1** Industrial Zone
- **2** Investments (Cua Lo & SDWTP)
- **+2** Upcoming IZs

WATER SALE AND MANAGEMENT VOLUME

POWER BUSINESS – POWER PORTFOLIO

Active power provider and investor with strategic partnership with leading Thai and international power companies

Conventional

528 MWeq

Waste to Energy

3 MWeq

Solar

441 MWeq

Natural Gas

Hydro

19 MWeq

Total Secured Capacity

991

MWeq

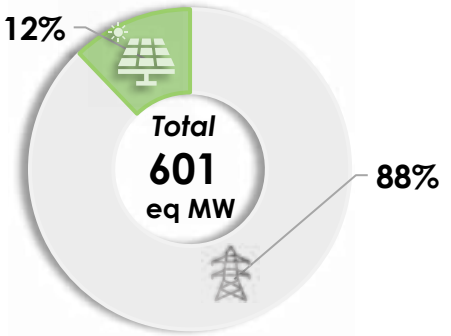
706 Equity MW under Operation
+ 285 Equity MW under developing

Our Strategic Partner

- Partnership with GPSC, Gulf, B.Grimm, Veolia, Gunkul, etc.

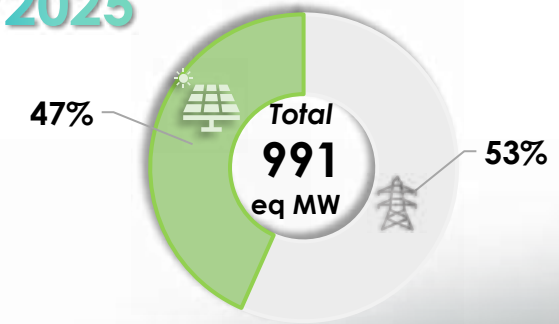
Renewable energy portfolio

2020



Renewable **12%**
Solar, Waste-to-Energy)
73 MW

Q2'2025



Renewable **46%**
Solar, Waste-to-Energy)
463 MW