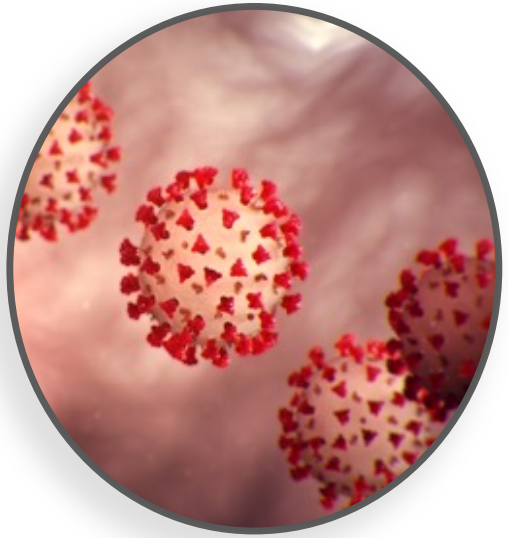
Tomorrow Water Project

Critical Challenges

Driving Transformation



COVID-19

Sanitation

Wastewater Treatment

CLIMATE CHANGE

Renewable Energy

Greenhouse Gas Emissions

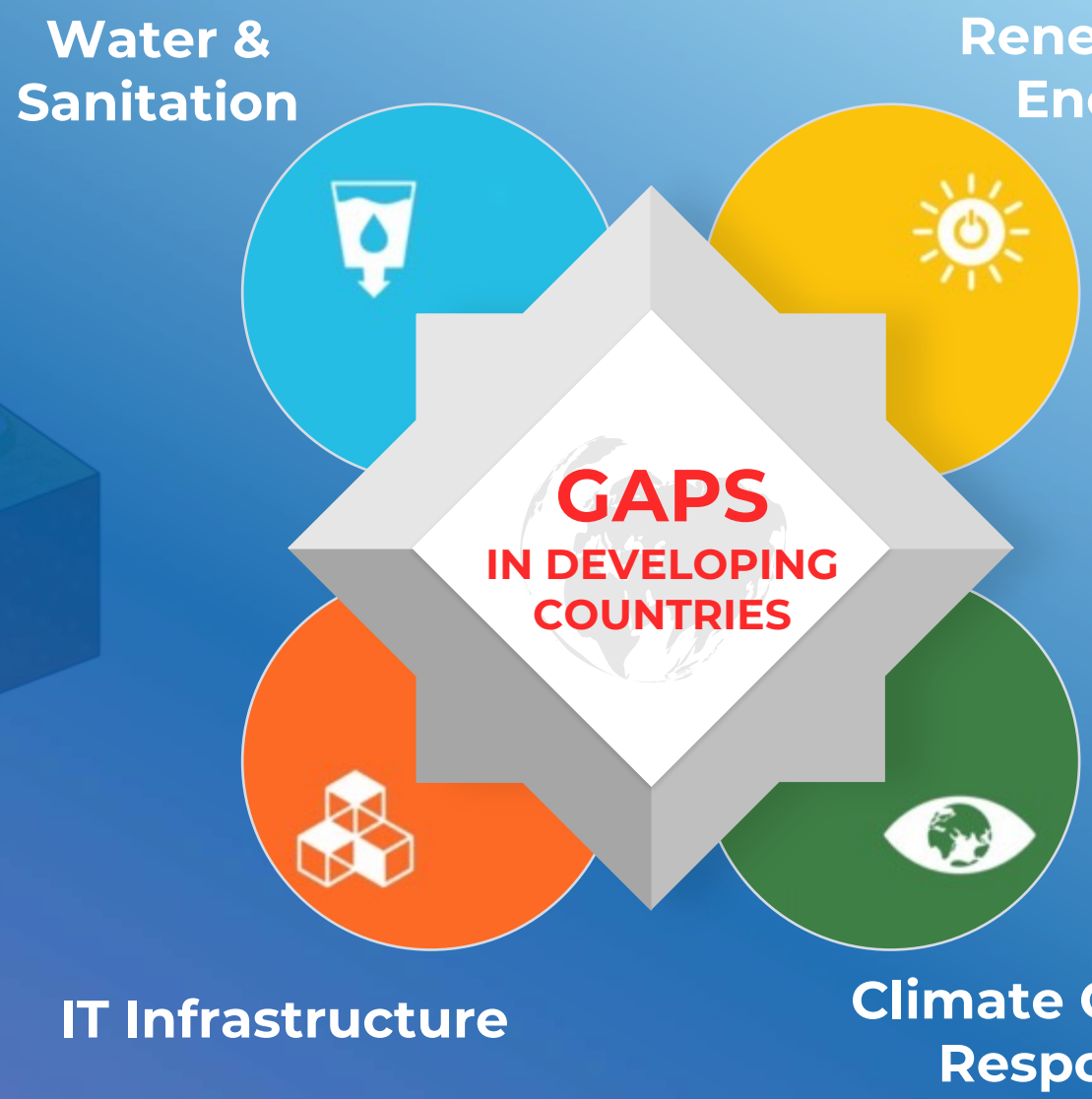
DIGITAL TRANSFORMATION

Industry 4.0 Paradigm Shift

IT Infrastructure

Why Tomorrow Water Project?

TOMORROW WATER



BIOGAS PLANT
RENEWABLE ENERGY

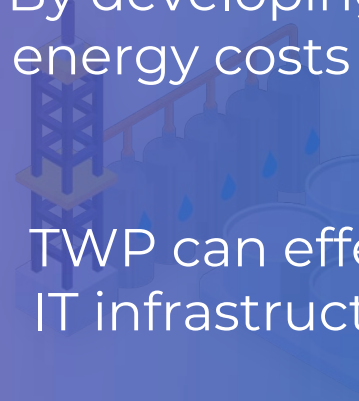
Tomorrow Water Project

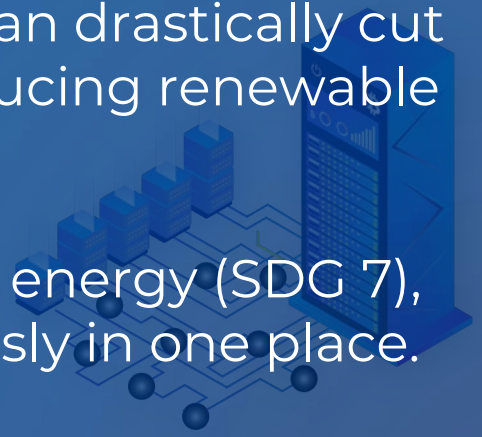
A New Sewage Treatment Model

Tomorrow Water Project (TWP) is a comprehensive system integrating a sewage treatment plant, biogas plant, and data center together while leveraging water AI to increase the efficiency throughout the entire value-chain.

By developing these systems in conjunction with one another, we can drastically cut energy costs in wastewater treatment and data centers, while producing renewable energy from the biogas plant.

TWP can effectively manage water & sanitation (SDG 6), renewable energy (SDG 7), IT infrastructure (SDG 9), and climate change (SDG 13) simultaneously in one place.





WWTP
WATER & SANITATION

DATA CENTER
IT INFRASTRUCTURE

TWP

All in One Place

7 AFFORDABLE AND CLEAN ENERGY

BIOGAS PLANT
RENEWABLE ENERGY

Energy

6 CLEAN WATER AND SANITATION

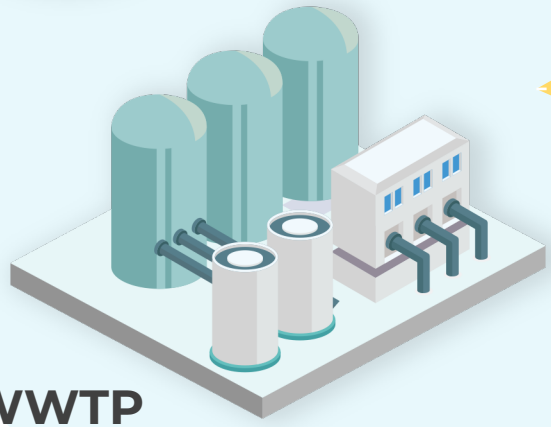
Organic Waste

Integrated treatment of sludge & organic waste

Energy

13 CLIMATE ACTION

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Cooling Water

Circulate DC generated heat to sewage treatment plants where heat is required

Heat

WWTP
WATER & SANITATION

DATA CENTER
IT INFRASTRUCTURE

TWP

What Technologies?

BIOGAS PLANT
RENEWABLE ENERGY

Removes organic matter and SS from one reactor at the same time and then removes nitrogen through MS AMX (modularization)

PROTEUS

AMX
Anammox

IN DEVELOPMENT

DRACO

AAD
Activated Anaerobic Digestion

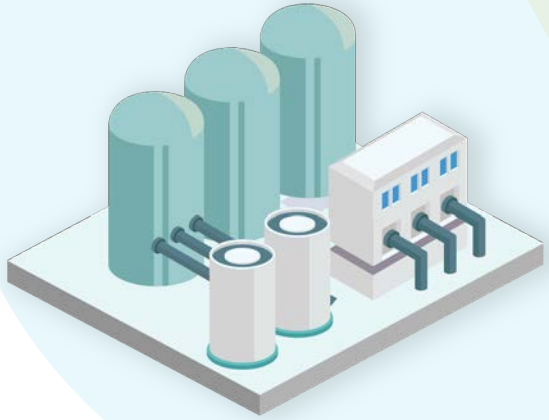
Integrated management of sludge & organic waste to prevent GHG emissions & landfill waste, while producing renewable energy

WAI-based design & operations to reduce the total value of the value-chain (maximization of economy)

WAI DESIGN

WAI OPERATION

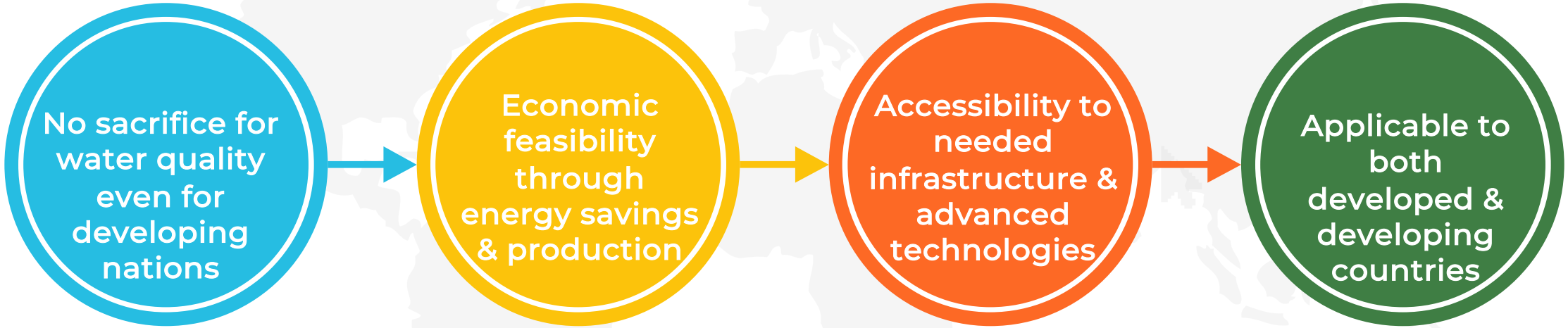
IN DEVELOPMENT



WWTP
WATER & SANITATION

Co-flow

DATA CENTER
IT INFRASTRUCTURE



SUSTAINABLE DEVELOPMENT GOALS

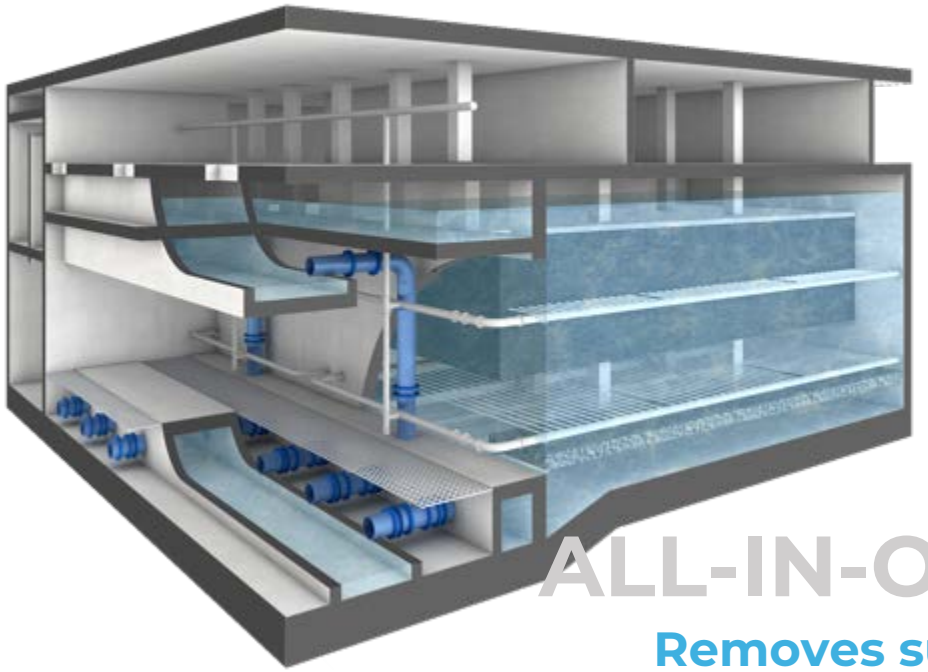
Tomorrow Water Project

Technology Details

PROTEUS+

Can be applied remediation of polluted rivers and surface drainage systems , pretreatment of for drinking water purification, sewage treatment, wet weather flow, or replacement for primary sedimentation basins to reclaim

Can be applied for Wet weather flows in climate-impacted regions.



CALIFORNIA Water Boards

Title 22 Certification

LIFT©

ALL-IN-ONE REACTOR

Removes suspended solids & organic material simultaneously IN ONE VESSEL IN ONE HOUR

(SS< 30ppm, BOD < 30 ppm)

GCDC Demonstration Michigan, USA

Jung-Nang WWTP
Seoul, Korea (1st WWTP in Korea)
66 MGD (250,000 m^3/d)

Seo-Nam WWTP
Seoul, Korea (Largest WWTP in Korea)
190 MGD (720,000 m3/d)

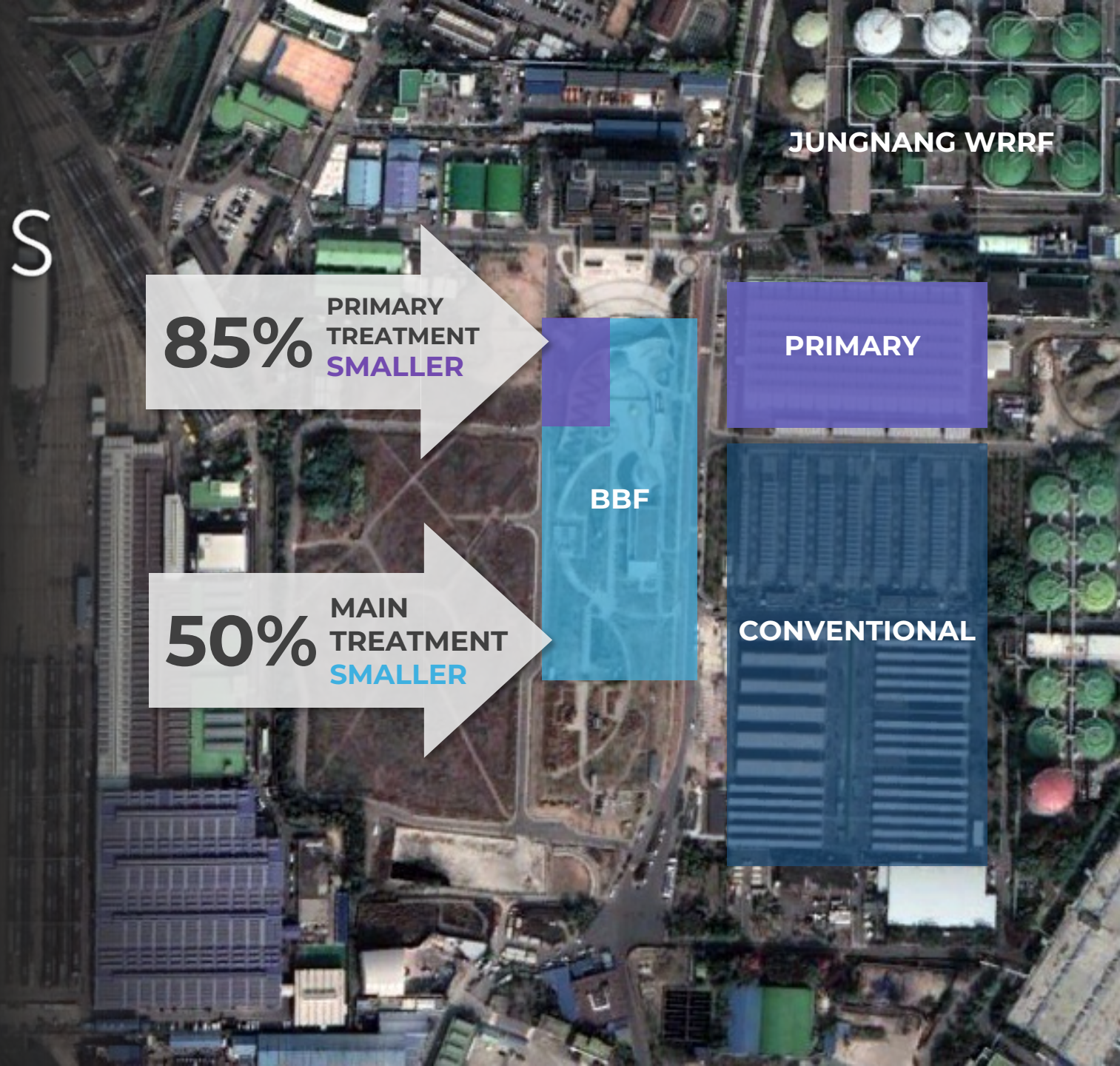
BBF
Bio-Filtration

PROTEUS

Eliminate Existing Clarifiers & Create New Space

Applied in sewage treatment, pretreatment of water purification, WWF, replacement for primary sedimentation basin

Proven in Seoul, Korea (66 MGD)

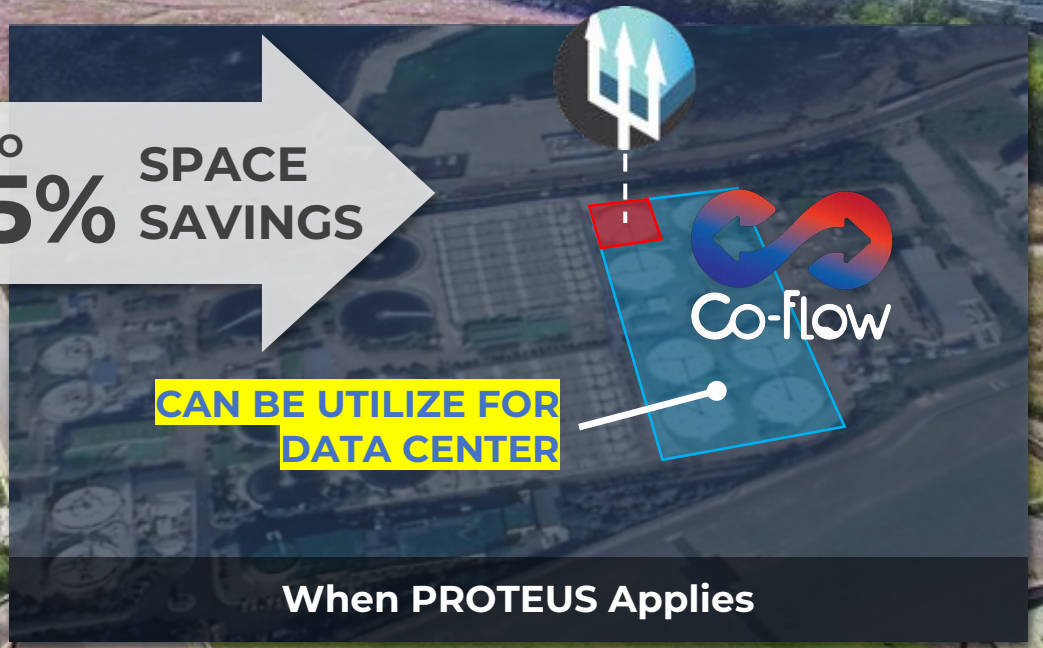


Co-flow

Digital Transformation

Conventional Gravity Based Primary Clarifier

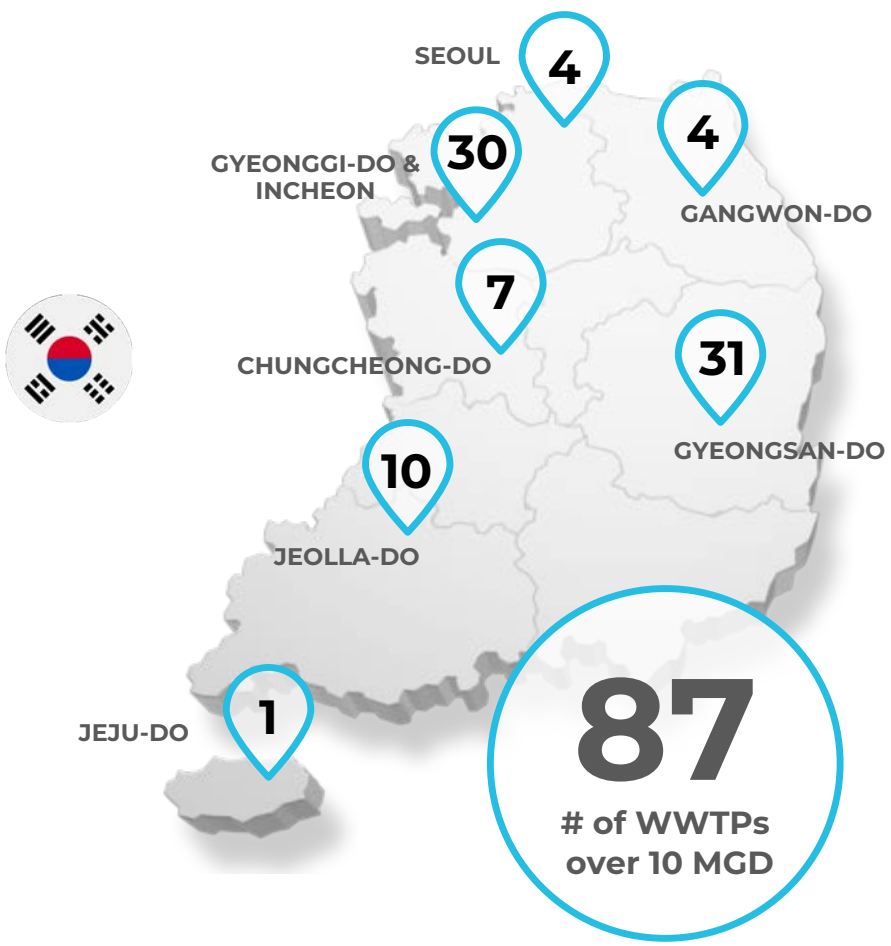
UP TO **85%** SPACE SAVINGS



When PROTEUS Applies

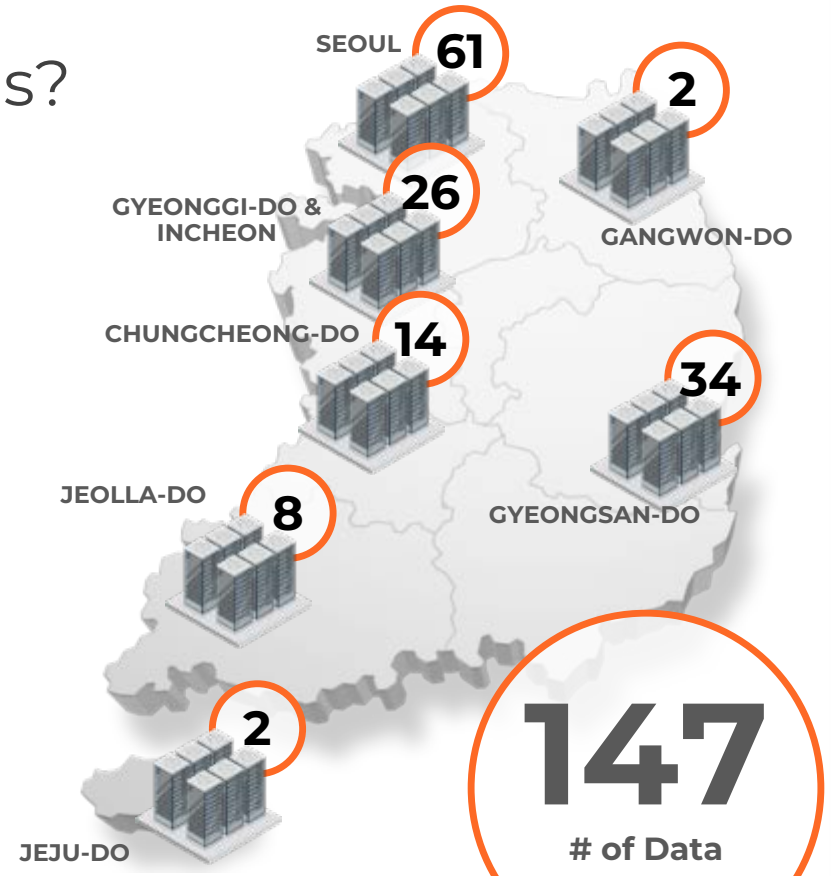
How Many

Data Centers Can Be Established at Existing WWTPs?



87

# of WWTPs over 10 MGD



147

# of Data Centers

Based on the Gwangju NHN data center
(Occupied area: 3,424 yd²)

873

Estimated # of WWTP (>10 MGD) in 2032
(source: EPA)

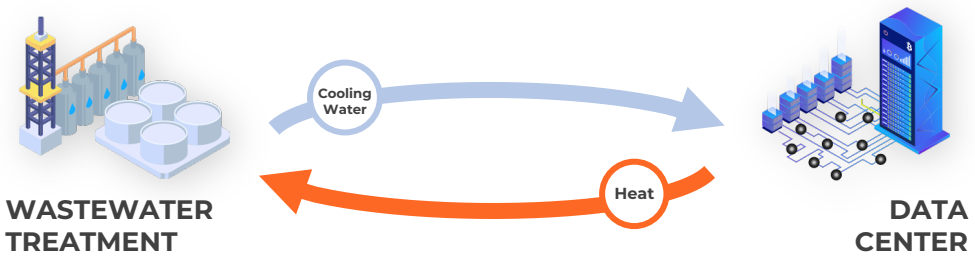
1475

Estimated # of Data Centers

based off 3,424 yd² of occupied area

Co-flow

Data Center + WWTP
Heat Exchange Diagram



Air
Water

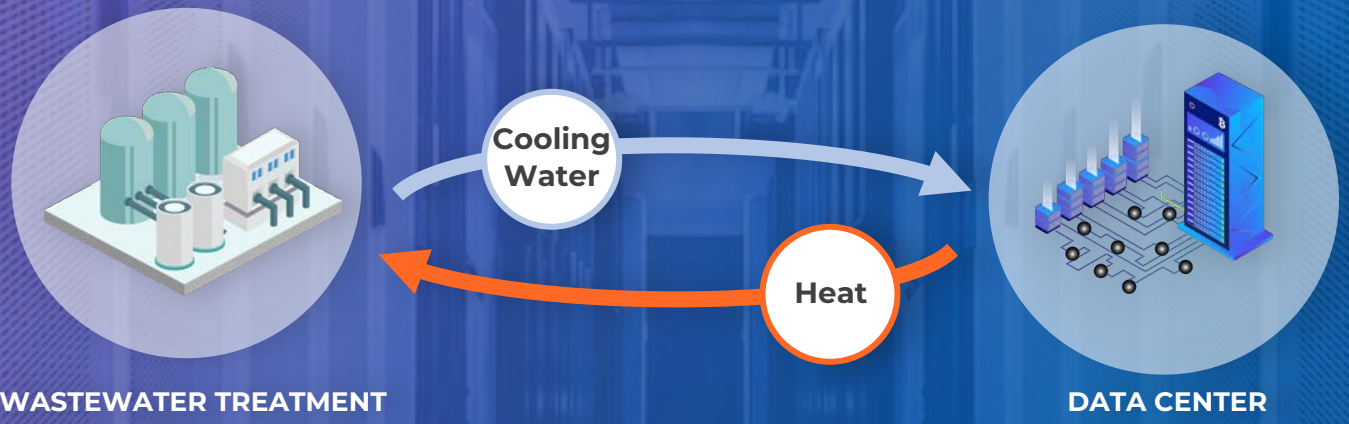
Co-flow

DESIGN
OPERATION

Sprinkler
Sprayer
Blower
Hot/Warm Air
Data Center
Atmoshpere
Pump
Blowdown
Reactor
Advanced treatment
Municiapal Wastewater
Effluent
Dryer
Sludge

Co-flow

Digital Transformation
of Water Industry

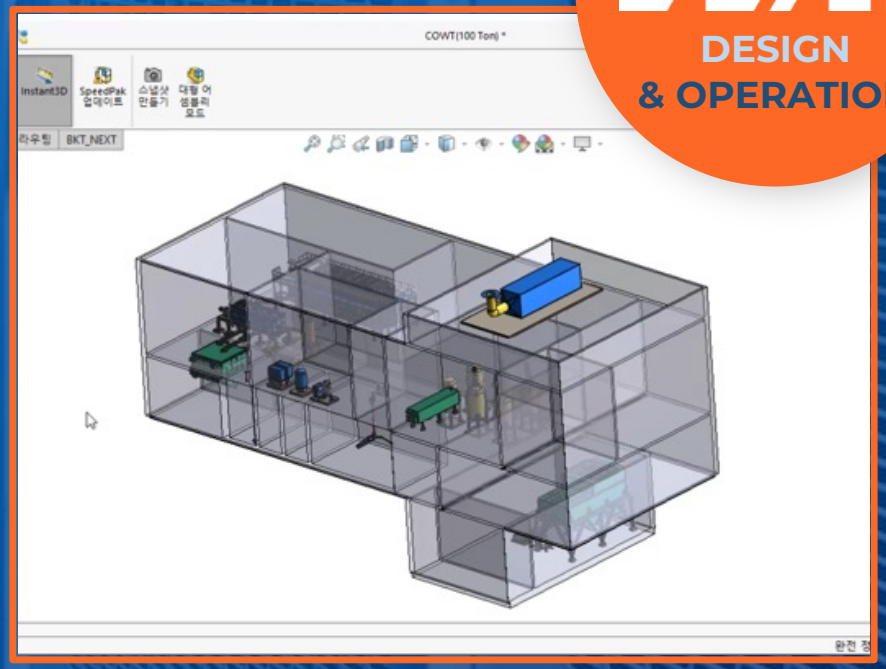


Wastewater Treatment Facility Space Saving
→ Utilize for other purposes (data center)

Treated water become cooling water for data center, Heated water from data center can boost WWTP Energy saving → Climate change

PATENTED PROCESS

WAI
DESIGN & OPERATION



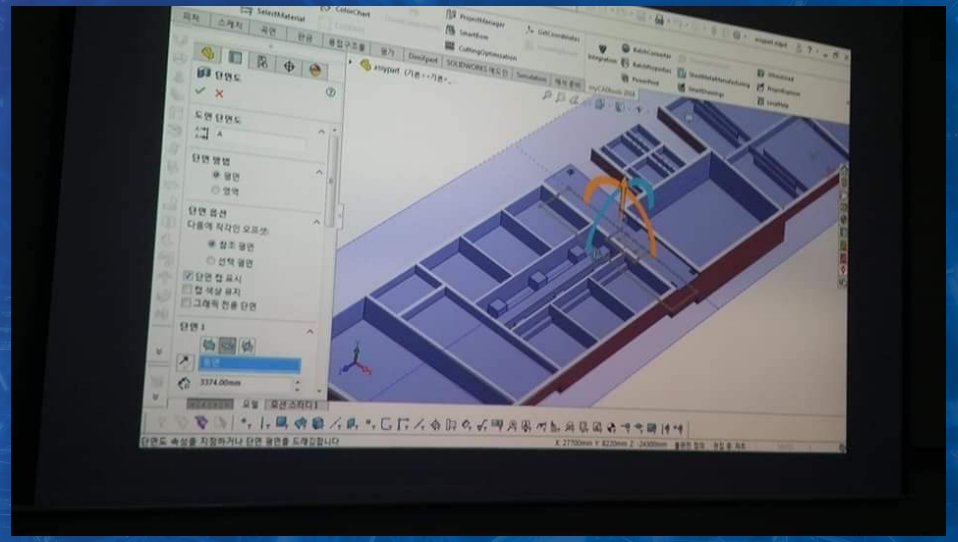
AI-based WWTP

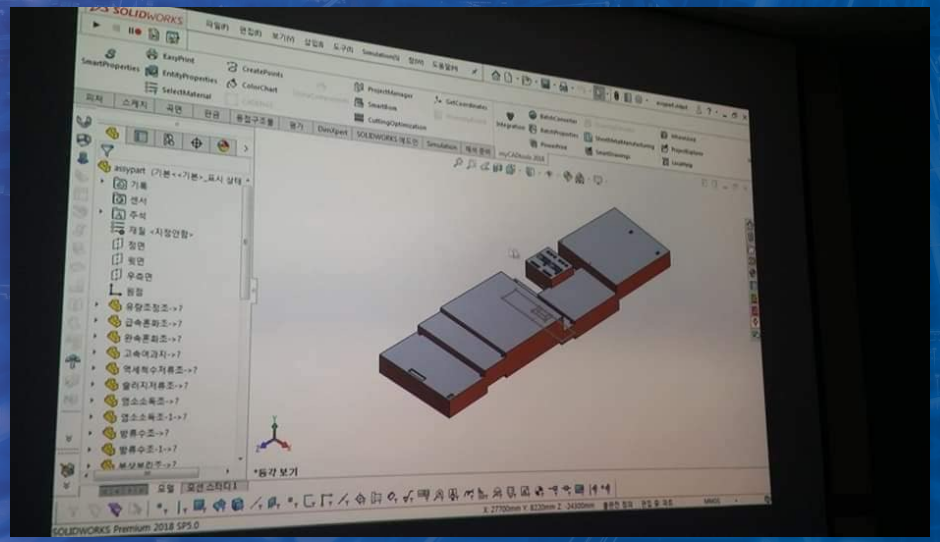
Integrating AI Into Wastewater Treatment Value Chain

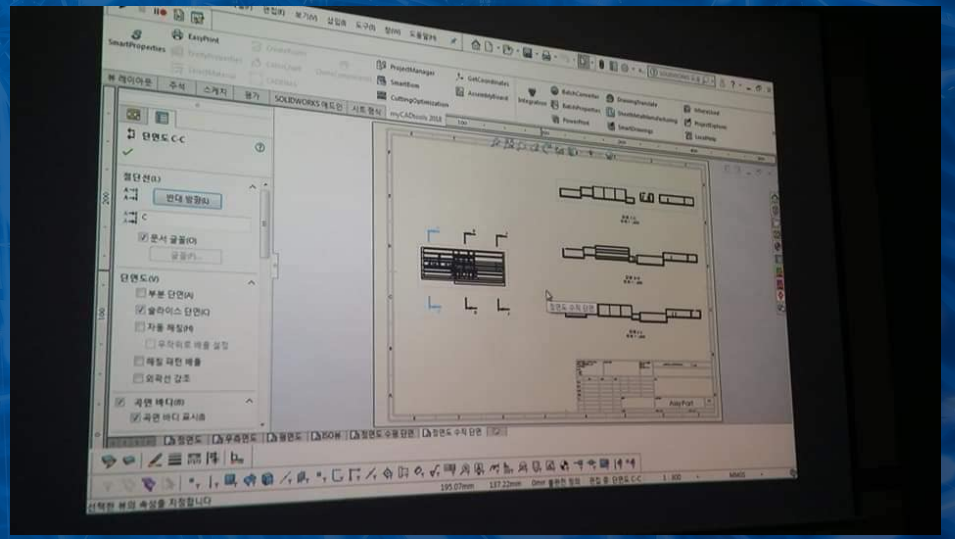
(Engineering, Design & Operation)
Energy Savings for WWTP Based **on AI**

WAI

DESIGN
& OPERATION







Activated Anaerobic Digestion

Biogas - Renewable Energy

Application	Client	Capacity (m^3/d)	Capacity (MGD)
Organic Waste Treatment (Livestock Manure)	GWANGJU WWTP	30	0.01
Organic Waste Treatment (Livestock Manure)	ULJIN WWTP	60	0.02
Organic Waste Treatment (Sewage Sludge)	JINJU WWTP	755	0.20
Organic Waste Treatment (Livestock Manure + Food Waste)	NONSAN WWTP	150	0.04
Organic Waste Treatment (Livestock Manure + Food Waste)	MILYANG WWTP	100	0.03
Organic Waste Treatment (Livestock Manure + Food Waste)	HONGCHEON WWTP	100	0.03
Organic Waste Treatment (Livestock manure + Food Waste)	GIMHAE WWTP	200	0.05

Hongcheon
Eco-friendly Town

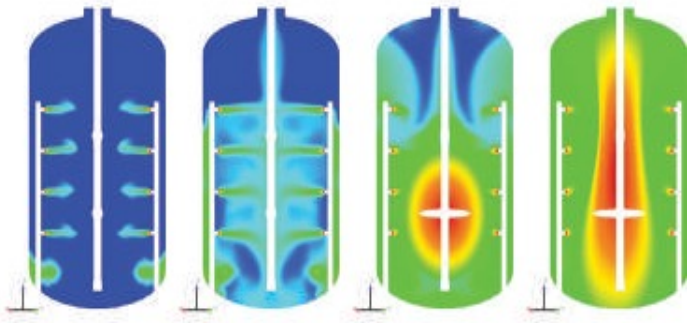
Gimhae
Livestock Wastewater Treatment Plant

Junju
Sewage Wastewater Treatment Plant

DRACO

Thermal Hydrolysis for Sludge Volume Reduction & Energy Production

vCyclic Organic Waste Thermal Treatment

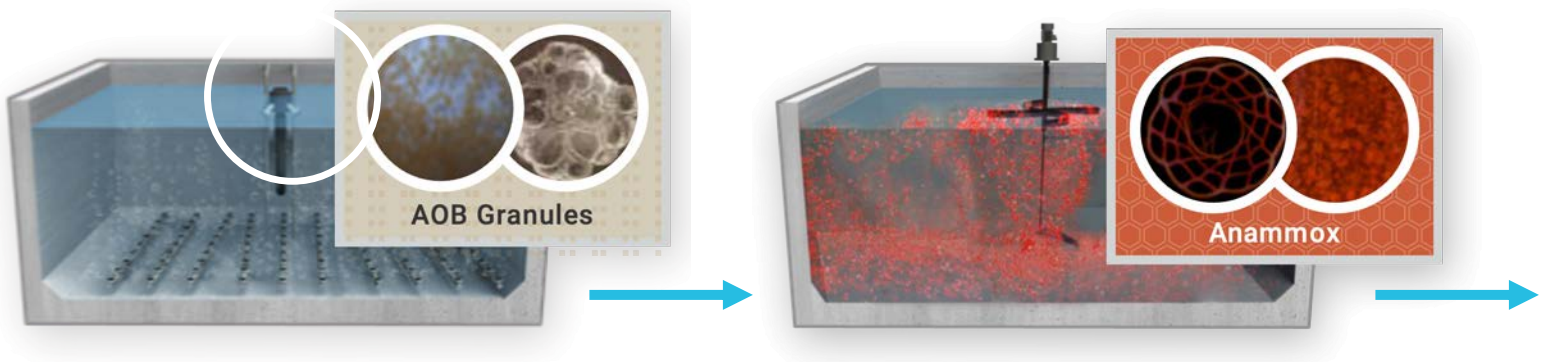


Direct heat transfer using patented
multipoint spargers and patented mixing systems.

Unique thermal hydrolysis system design allows processing sludge, animal remains and high-solids feed stocks (TS=25%), allowing for more cost-effective and efficient installations.

AMX 2-Stage Anammox

Mainstream AMX (under development)



Partial Nitration (MBBR)

AMX Anammox

Energy saving, economical, carbon addition free, nitrogen removal process for secondary treatment.

After secondary treatment, the treated water can be reused.

About Us

Tomorrow Water & BKT

Tomorrow Water
Anaheim, USA
2008

Global Marketing
R&D Hub – AI, Upcycling

BKT Korea
Daejeon, Korea
1995

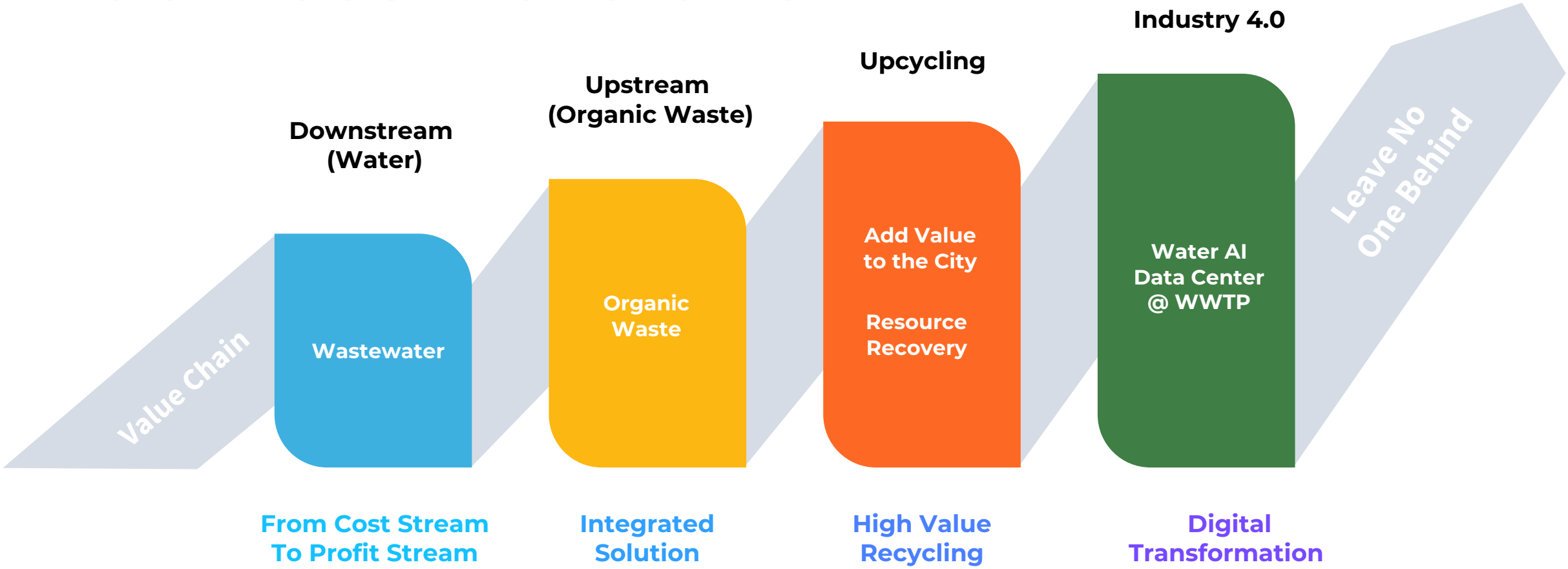
Headquarters
R&D Hub

BKT Vietnam
Hanoi, Vietnam
2014

Manufacturing Hub

TOMORROW WATER

Business Portfolio



Revolutionize Value Chain

Engineering · Construction · Operations

UN SDGs Platform – Initiative Registration

PARTNERSHIP EXCHANGE

Officially registered in 2016 as the
Tomorrow Water Initiative (#12177)

Accepted 2016 UN ECOSOC High-Level Segment

UNITED NATIONS

ECOSOC
United Nations

For example, we are working on the water treatment project with BKT, an international wastewater treatment business. BKT's independent technologies to treat livestock excretions that are high density wastewater, sewerage and groundwater are contributing heavily to the water environment improvement. Especially this water treatment system enables to convert wastewater to nitrogen and phosphorus which are usable as fertilizer and organic material, an important source of energy with clean water.

This world-class technology does not only contribute to improvement of energy efficiency but also to mitigation of environmental problems. As such, ASD is struggling to widen opportunities for the enterprises with eco friendly technology like BKT to practically participate in the SDGs, and make changes in policy making process to facilitate the implementation of the SDGs.

SUSTAINABLE DEVELOPMENT TRACK RECORD

2016

UN ECOSOC
High-Level Segment
Registration
2016

2017

UN SDG Global
Business Index
Best Company
2017

2018

UN SDG Global
Business Index
Best Company
2018

2019

Global
Sustainable Leader
100 for “Innovative”
2019

2020

Global
Sustainable Leader
100 for Innovation
2020

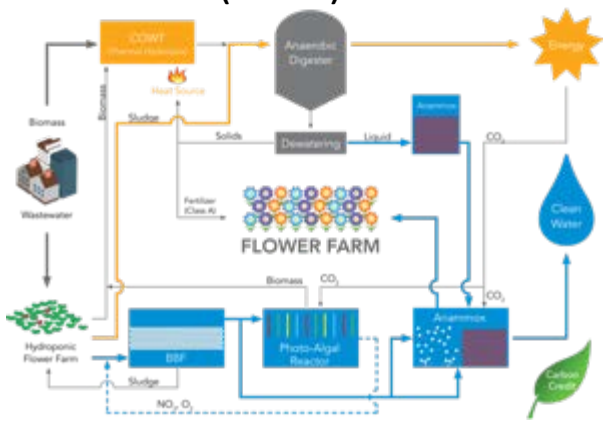
UN SDG Global
Business0 Index
Best Company
2020

2021

UN SDG Global
Business Index
Best Company
2019

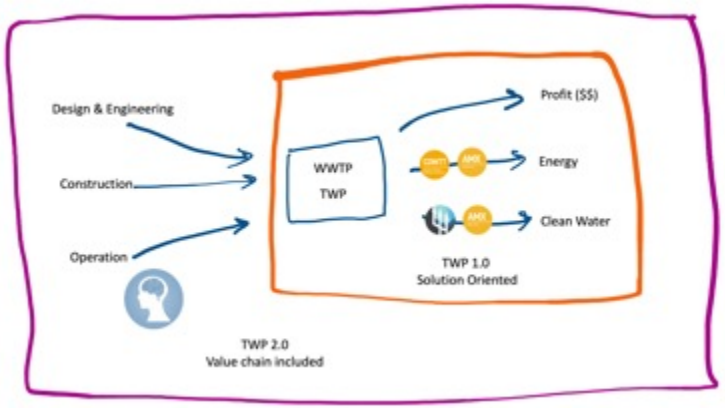
Past, Present and the Future

TWP 1.0
(2016)



Process oriented solution
Conceptual diagram

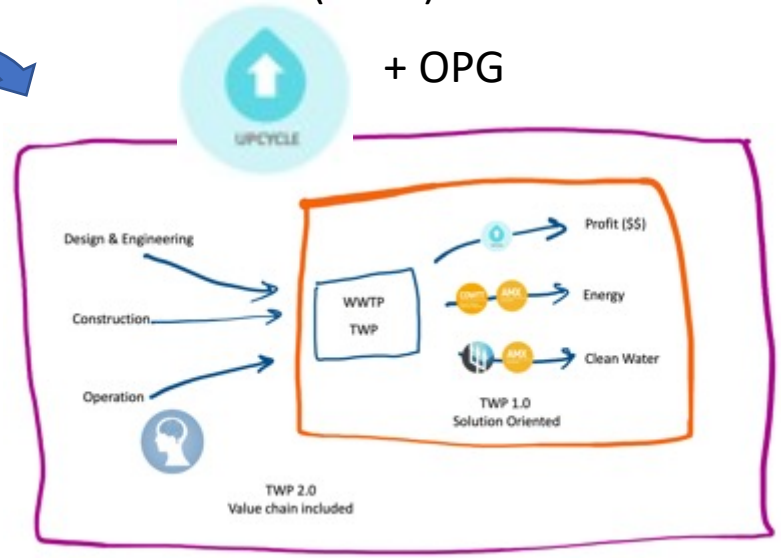
TWP 2.0
(2021)



Value chain added on top of Process
- Process is completed 75%
- Mainstream AMX under development
- WaterAI under development

TWP 3.0
(2028)

+ OPG



High-value added Upcycling will be added
- Process will be completed
- Value chain innovation will be completed
- Water AI operation will be completed