

NAVIGATING DECARBONISATION OF WATER SERVICES INDUSTRY

Opportunities & Challenges

Stakeholder Spotlight : Suruhanjaya Perkhidmatan Air Negara
(SPAN)

12 June 2024

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CHALLENGES OF
LCOS**

WATER SUPPLY GOVERNANCE

01



National Water Council (Majlis Air Negara, MAN) – Establish national water management and development policies, directions, and approaches.

02



Kementerian Peralihan Tenaga & Reformasi Air (PETRA) – Water and sewerage policy makers

03



State Government – Water resource management, water resource abstraction, and water catchment management

04



SPAN – regulate water supply and sewerage services in Peninsular Malaysia and WP Labuan

ESTABLISHMENT OF SPAN



2005

1. Constitution

- Amendment to the Federal Constitution
- Matters relating to water supply services in Peninsular Malaysia and W.P Labuan are made a Common List in the Constitution
- Does not involve water sources

2006

2. Gazettement

- National Water Services Commission Act 2006 (Act 654)
- Water Services Industry Act 2006 (Act 655)

2007

3. Act 654

- An act to establish the National Water Services Commission to supervise, regulate, and enforce water supply and sewerage laws and related matters
- Enforced on 1st Feb 2007
- SPAN established on 1st April 2007

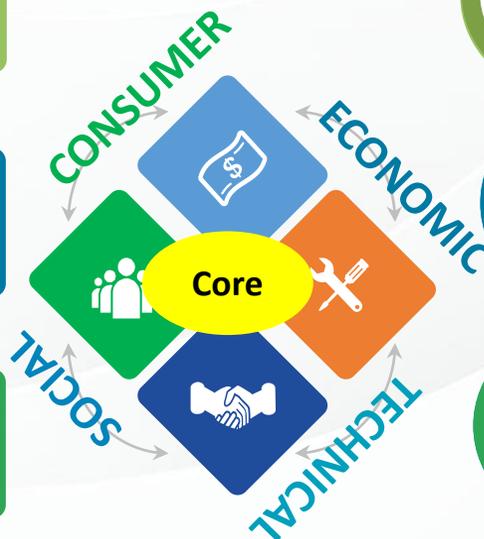
2008

4. Act 655

- An act to provide and regulate water supply and sewerage services.
- Enforced on 1st Jan 2008

OUR CORE FUNCTION

- 1 REGULATORY BODY**
Regulate the water services industry in accordance with the provisions of Acts 654 and 655
- 2 ADVISING MINISTER**
In terms of national policy related to water supply and sewerage; i.e. tariff
- 3 PERFORMANCE MONITORING**
Monitor and evaluate the performance of service and facility licensees. Development of Policies, Regulations, Rules, Technical Standards.
- 4 NON-REVENUE WATER (NRW)**
Advising the ministries on NRW matters and monitoring and evaluating NRW management programs of water operators



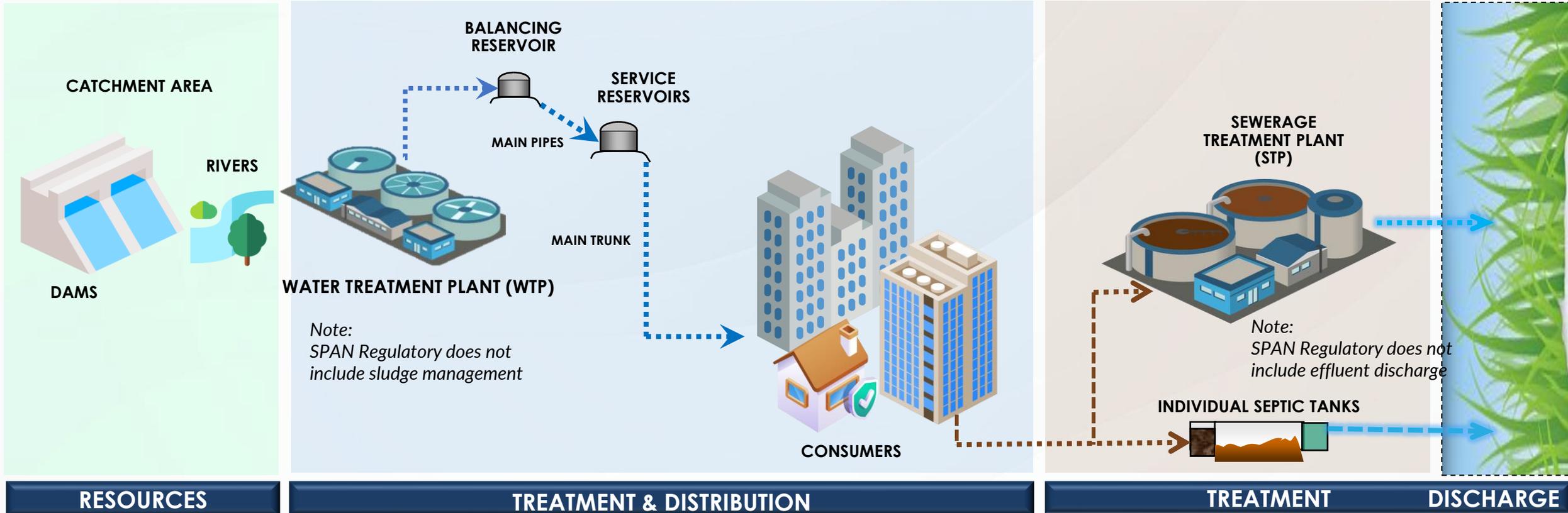
- 5 ACCESS TO WATER SUPPLIES**
Ascertain that coverage and access to water supply are met – supporting SDGs
- 6 BUSINESS PLAN**
Review of Rolling / Business Plans, proposed development and projections and related financing – Pla to achieve full cost recovery
- 7 WATER QUALITY**
Assure the continuous access to safe drinking water supply and sewerage services. Sewerage Catchment Plan.
- 8 OTHERS**
Carry out other duties as assigned by other written laws

REGULATORY REGIME

SPAN regulatory scope encompasses the entire loop and landscape of the water services industry from the raw water resources intake to distribution then the sewerage services.

WATER SUPPLY SYSTEM

SEWERAGE SYSTEM



- State Government/
- Federal Government

SPAN

DOE
(ENVIRONMENTAL
QUALITY ACT
1974 - EUSR)

SPAN ESG

SPAN ESG Unit is established in July 2023 and operates under the Strategic Planning Division.

ESG Unit, its framework and activities are generated through an Internal ESG Committee in SPAN.

ESG framework and planned initiatives are approved internally by the Commission and is now in the verge to be communicated to the industry.

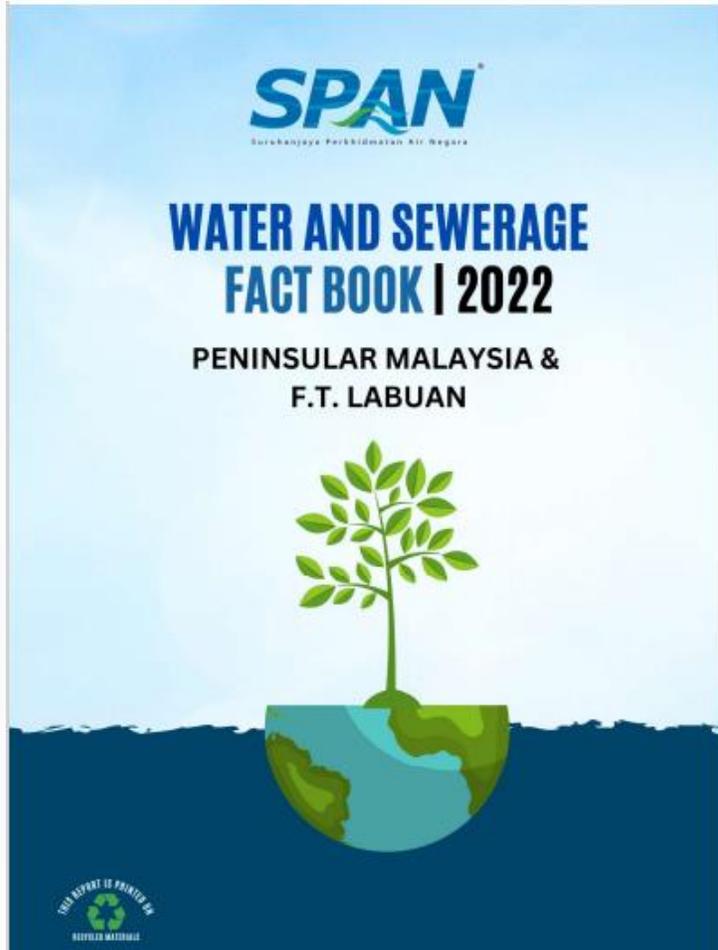




OPERATIONAL CHALLENGES OF WATER SERVICES INDUSTRY

Access to clean, 24/7 water supply is a basic human right. Water security must be addressed urgently and innovatively to respond to dynamic global pressures like climate change & systematically resolve local challenges within the industry.

THE SCALE OF WATER SERVICES INDUSTRY



12
WATER
OPERATOR

7.5 MIL.
ACCOUNTS

RM1.37
AVERAGE TARIFF PER M³
AVERAGE COST RM 1.68 PER M³

98.7%
SURFACE WATER RESOURCE
RIVER = 81.9% | DAM = 16.8%

Sewerage
Industry

COVERAGE

97%
Urban = 97%
Rural = 96.9%

PIPE LENGTH

133,827KM
30.1% Asbestos Cement (AC)

NON-REVENUE WATER

33.4%
5,042 MLD
~ RM 2 B


7,413
Sewage
Treatment Plants


1,432
Network
Pump Stations


20,691km
Pipelines
Length


1
Water Reclamation
Plant

WATER CONSUMPTION

244
LITER / CAPITA / DAY

**WATER TREATMENT
PLANT**

331
18,030 MLD Design Capacity
15,090 MLD Water Demand

WATER QUALITY

5/5

RESERVE MARGIN

16.3%

WATER SERVICES INDUSTRY MAIN CHALLENGES

01

LOW WATER TARIFF

Revenue is insufficient to cover OPEX and CAPEX.

02

HIGH NRW

NRW losses amounted to an estimated RM 2.18 billion in 2022, or RM 8.05 billion from 2018 to 2022.

03

LOW RESERVE MARGIN

Recommended reserved margin 15%. Six states is below recommended reserve margin

04

WATER SOURCE POLLUTION

452 water treatment plant shutdown due to pollution in 2023. Kedah, Pahang and Negri Sembilan are top 3 affected states.

05

LOW PROPERTY CONNECTION

- Existing regional sewerage systems not fully utilized
- Property connection – Connection to regional STP need to be carried out.

06

POINT SOURCE POLLUTION

- About 1.3 million septic tanks need to be desludged at least once in 2 years.
- STPs need to be upgraded to meet DOE's effluent standard.



Memorandum of Cooperation



MALAYSIAN GREEN
TECHNOLOGY &
CLIMATE CHANGE
COOPERATION

GHG MANAGEMENT



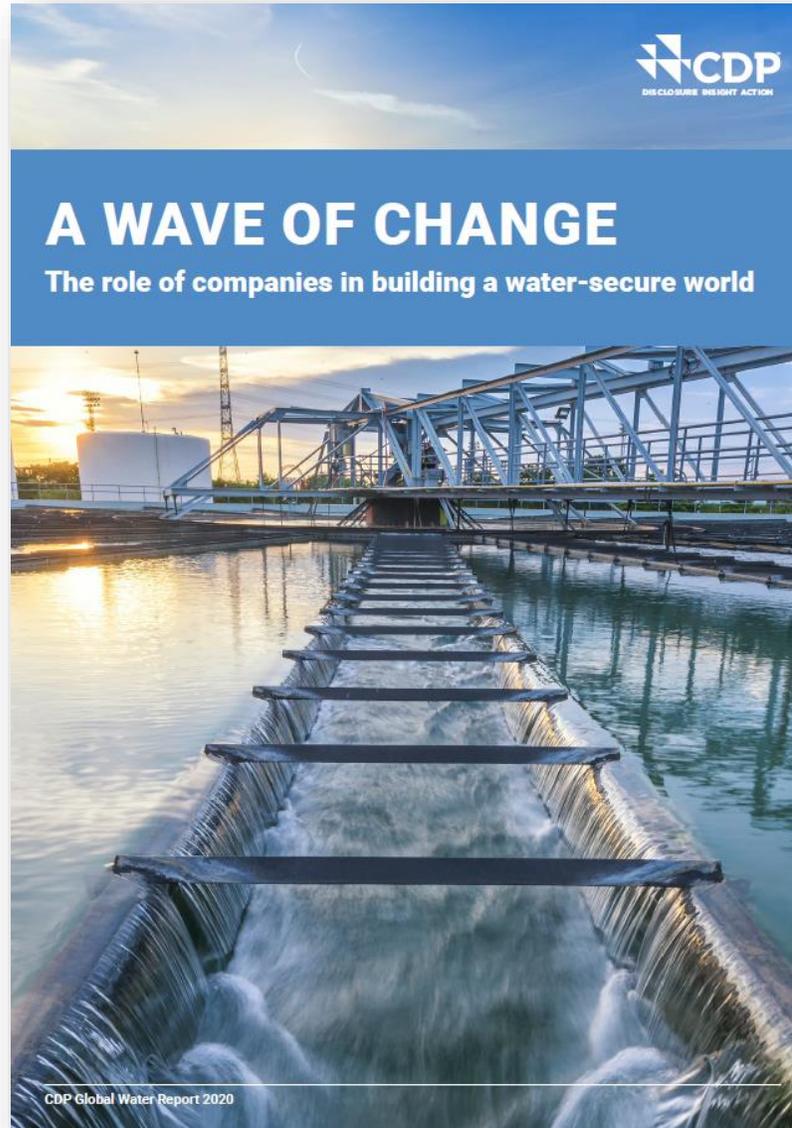
Suruhanjaya Perkhidmatan Air Negara

WHAT INSPIRED SPAN

- To support and accelerate the Malaysian National Net Zero Carbon Aspirations by 2050;
- One of the main indicators of E within ESG is premised upon GHG management.
- Water Services Industry is an '*energy intensive*' industry and therefore appropriate measures must be taken;
- SPAN as the regulator must be the industry lead in proactively promoting ESG and GHG management efforts within the Industry.



WHAT INSPIRED SPAN



“The use, storage, distribution and treatment of water and wastewater together contribute to about 10 per cent of global greenhouse gas emissions.”

Source: [CDP Global Water Report 2020](#)

WHAT INSPIRED SPAN

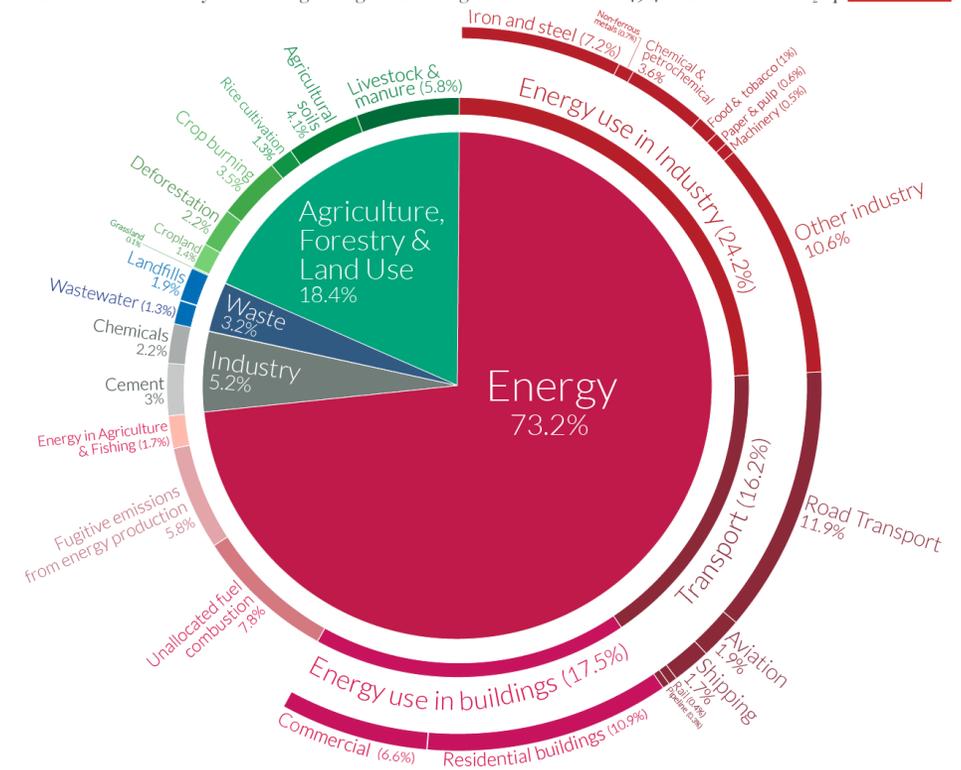
DID YOU KNOW?

Wastewater
generates nearly
as much emissions
as the aviation
industry.



We need to future proof the operations of the water and wastewater services against the emerging risks.

Global greenhouse gas emissions by sector 
This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO₂eq.



OurWorldinData.org – Research and data to make progress against the world's largest problems.
Source: Climate Watch, the World Resources Institute (2020). Licensed under CC-BY by the author Hannah Ritchie (2020).

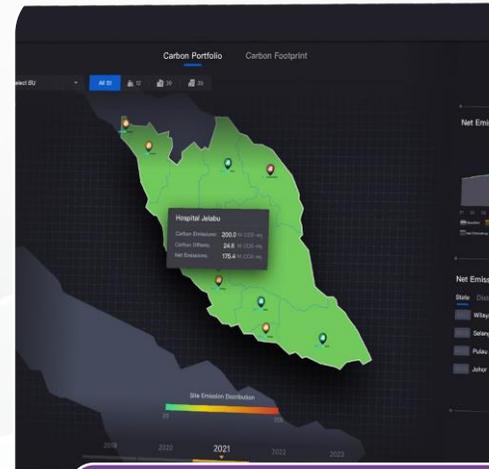
EFFORTS ON ENERGY TRANSITION & DECARBONISING WATER SERVICES INDUSTRY



MOC signing between SPAN and MGTC on 6th October 2023 – IGEM



Capacity Building through GHG Awareness Training for Water Industry – Joint effort of SPAN & MGTC – 2 sessions completed



GHG Accounting & Management through LCOS for Water Services Industry



Exploring Incentives, Financing opportunities and green technologies for the Industry



WHY LOW CARBON OPERATING SYSTEM (LCOS)



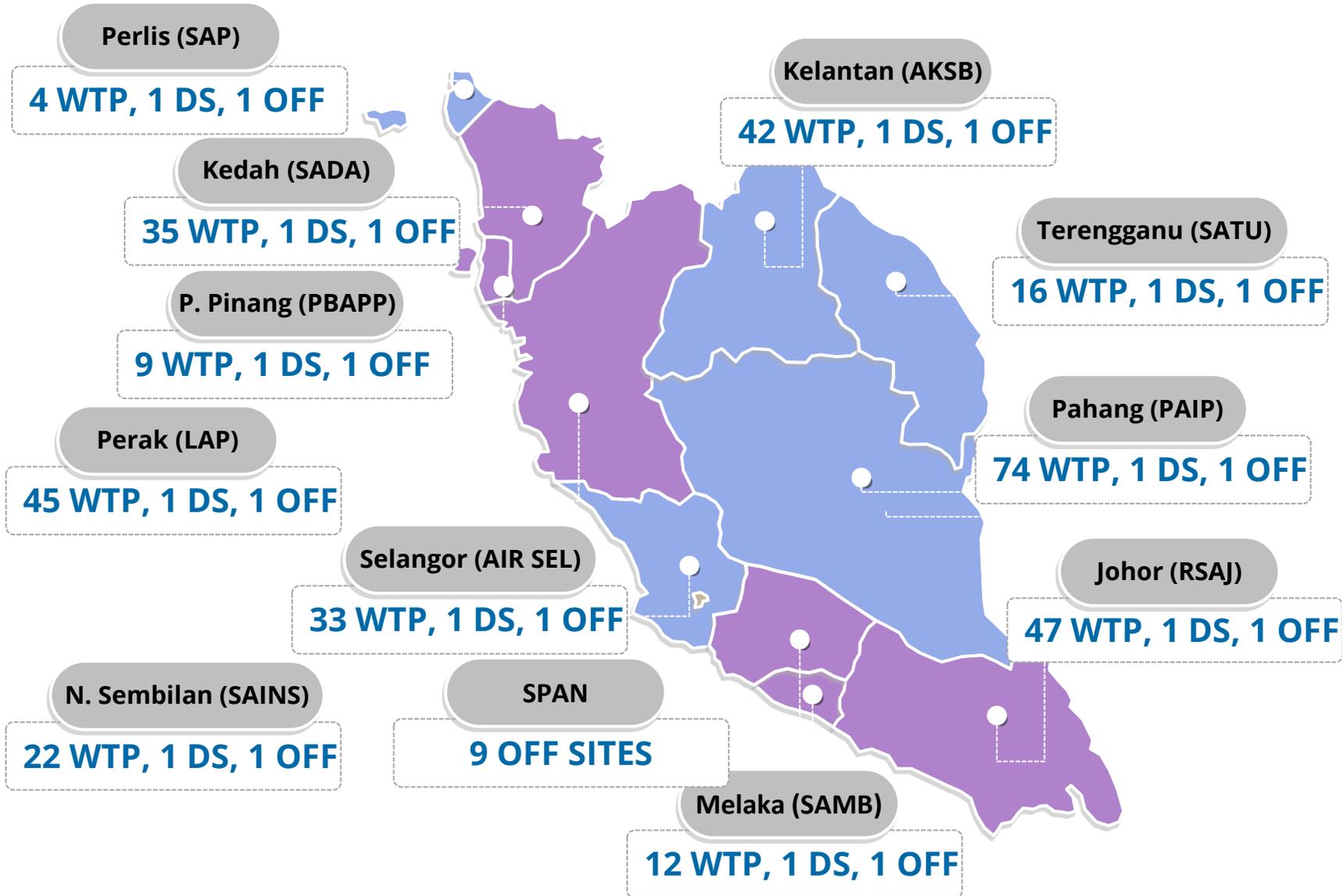
- 01.** LCOS is a cloud-based carbon management platform which is aligned with globally recognized standards; **GHG Protocol and ISO14064**
- 02.** Subscription of LCOS for Water Industry includes continuous support and advisory and training and 1 time verification of data.
- 03.** LCOS not only measures the emission but also **plan and monitors abatement initiatives** including cost benefit analysis of each solution
- 04.** The success of the system is proven, as off August 2023, there are approximately 300 companies using LCOS which includes CIMB Bank and OCBC Bank
- 05.** LCOS uses the **Science-Based Targets (SBTi)** that are in-line with 1.5°C limit, this will realize our national aspirations on NDC's. The system also meets data security and data privacy standards; ISO27001, PDPA, GDPR.
- 06.** LCOS is preconfigured with locally and international approved emissions factors. tool to embark on the journey to measure, manage and mitigate GHG emissions for the water services industry in totality. All 9 SPAN offices and 12 water services operators as well as IWK has embarked on this journey together.

TIMELINES

SPAN – MGTC : LCOS Collaboration : October 2023 – 31 December 2025



'SITES' IN WATER SERVICES INDUSTRY-LCOS



W.P. Labuan (BBAL)
3 WTP, 1 DS, 1 OFF

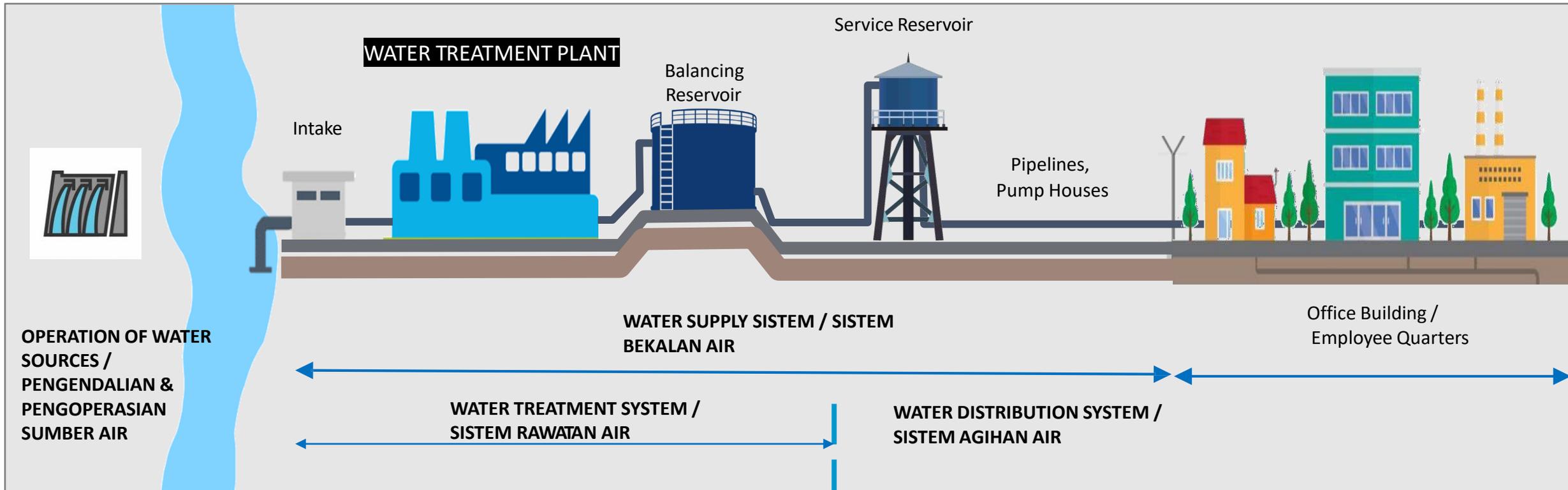
IWK : 5 SITES

TOTAL OF 380 SITES

DS : Distribution System
 OFF : Office Building

PROPOSED CALCULATION BOUNDARIES

Organizational / Operational



- Calculation in LCOS System uses Water Treatment Plant as the main 'SITE'. Associated water source operations, dam operations, emission at intake points and emission of distribution system / employee quarters to be included either in WTP, OFF or DS
- A specific 'SITE' is registered for the Office Building and 1 for Distribution System - All standalone office building to be included under this site

LOW CARBON OPERATING SYSTEM (LCOS) **SPAN**



LCOS

CarbonPlus

Dashboard

Dashboard SPAN

Emissions

Entity Management

Data Entry

Document Manag...

Carbon Footprint

SPAN

2022-01 → 2022-12

tCO2e

Operational Control 2024-03-19 17:55:38

Configuration

SPAN

Baseline: 148,770.17

Emission: 148,770.17

Offset: --

Net Emission: --

IBU PEJABAT SADA

Syarikat Air Negeri S...

Perbadanan Bekalan ...

Lembaga Air Perak

Syarikat Air Terengga...

PENOURUSAN AIR S...

Rahbit SAJ

BAHAJIAN BEKALAN...

Suruhanjaya Perhid...

Syarikat air perlo sdi...

Air Kelantan sdn Bhd

PENOURUSAN AIR P...

Syarikat Air Melaka S...

STATUS UPDATE ON GHG ACCOUNTING

Scope 1 & 2 : SPAN Offices



SYSTEM ENHANCEMENT

- CarbonPlus
- Dashboard
- Emissions
- Target Management
- Abatement
- Reporting
- ESG Dashboard
- Settings
- References
- Map View

Suruhanjaya Perkhidmatan Air Nega... 2023

Updates to latest emission factor for Scope 2

Total Emissions

0,859,34

YoY ▲ 4.08%

MoM

Base Year ▲ 4.08%

Scope 1 & 2	Scope 1, 2 & 3
Scope 1	YoY ▲ 4.08%
60,890,85	Base Year ▲ 4.08%
Scope 2	YoY ▲ 21.74%
1,112.03 tC	Base Year ▲ 21.7%

BEI

59.63 kWh/m2

Intensity

0.562 kg/CO₂ m³

▼ 0.024 kg/CO₂ m³

Equivalence



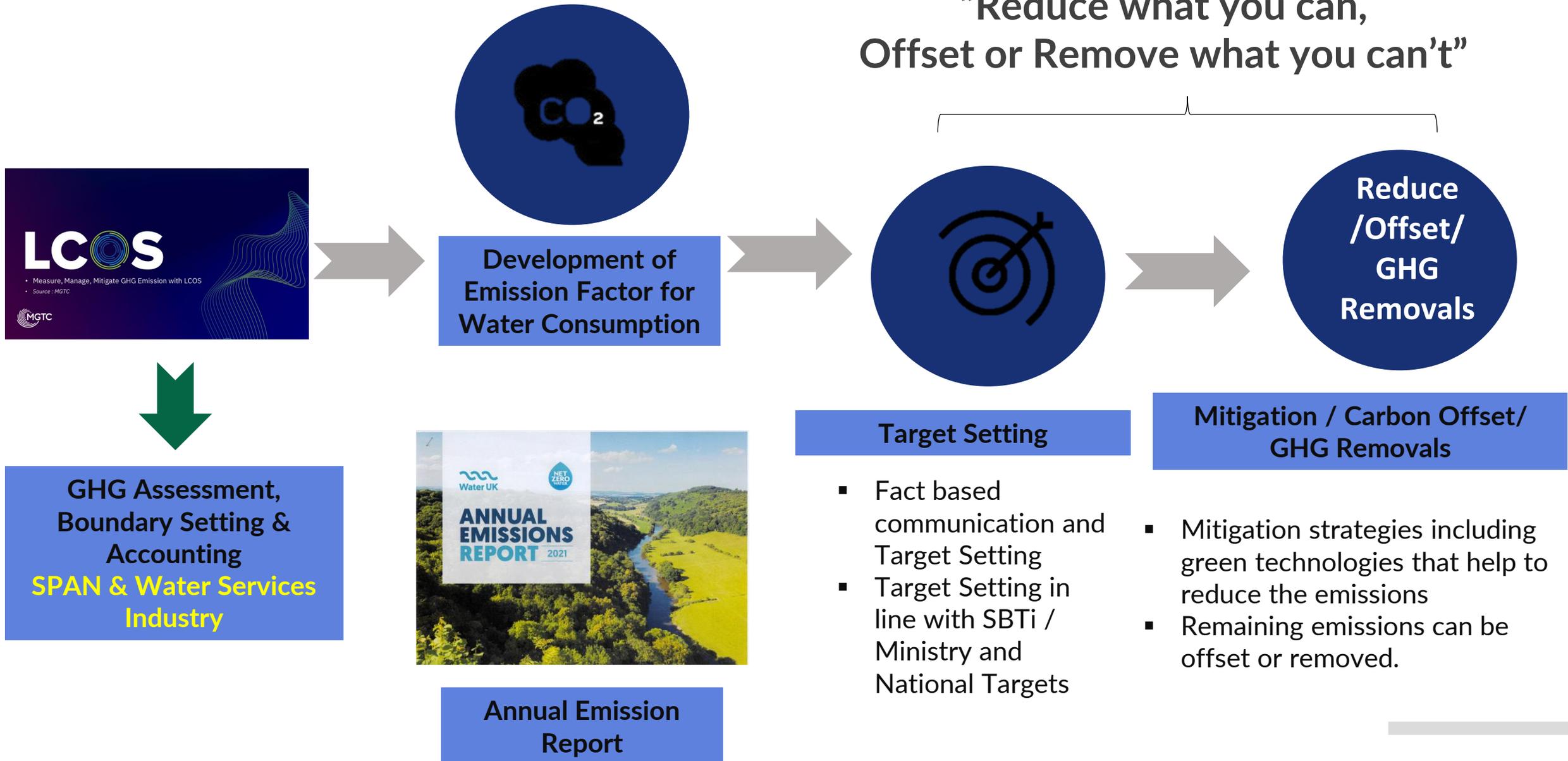
,271,483,5

Development of Advanced Template to ease data entry of Sewerage Facilities

GHG MANAGEMENT OF WATER SERVICES INDUSTRY **SPAN**

Suruhanjaya Perkhidmatan Air Negara

“Reduce what you can,
Offset or Remove what you can’t”





OPPURTUNITIES & CHALLENGES FOR WATER SERVICES INDUSTRY

OPPORTUNITIES & CHALLENGES FOR WATER SERVICES INDUSTRY



Leveraging Digitalization

Digitalization example is use of LCOS and Innovation in calculation of GHG emissions or ESG reporting as this consolidates the green efforts into the business model for SPAN and the industry.



Continuous Capacity Building

Leveraging on this platform both SPAN and our stakeholders, the water supply and sewerage companies are leaning from MGTC. While MGTC and system developer is also learning about the industry.



Improve Efficiency

The water services industry players / utilities consist of varying capacity in terms of workforce and funding. Therefore, GHG accounting and management is made much easier through LCOS.



Manage Risk

Identify and manage water-related calculation scopes for the whole industry, understand and setting the boundaries of calculating for SPAN and the industry with the various set up and practices poses risk.



Reduce Reporting Burden

The water sector provides essential reporting to improve investor metrics. By aligning towards the development of water consumption EF, companies can streamline their efforts and reduce the reporting burden.

THANK YOU

If we want our children to have the best in life... if we want future generations to have enough water... let's start by not wasting the water we have today. Because every drop used, is a drop less for tomorrow.

Every drop used is a drop taken from our children



USE
WATER
WISELY

SPAN
Suruhanjaya Perkhidmatan Air Negara
Your Water, Our Priority.
span.gov.my

