



SUKUK KELESTARIAN

2023 - 2024 IMPACT REPORT



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ABOUT THIS REPORT

Pengurusan Air Selangor Sdn. Bhd. (Air Selangor or the Company) is pleased to present our third Sukuk Kelestarian Air Selangor Impact Report 2023 – 2024. This report outlines the information about the allocation of the Company’s SRI Sukuk Kelestarian Air Selangor (Sukuk Kelestarian) proceeds to eligible projects and the impact of these projects. The reporting of both qualitative and quantitative data and indicators for the period between 1 October 2023 to 30 September 2024 is based on the Air Selangor Sustainable Development Sukuk Kelestarian Framework (Sukuk Kelestarian Framework or the Framework).

Some data which indicate increments or reductions are shown in comparison to data of the same period last year i.e. 1 January to 30 September 2024 against 1 January to 30 September 2023. This has been indicated in the section on Allocation of Proceeds.



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CEO NOTES

Dear Stakeholders,

I am honoured to present to you Air Selangor’s third Sukuk Kelestarian Impact Report which provides updates on the utilisation progress and projects funded by our Sukuk Kelestarian. The Sukuk Kelestarian reflects our ongoing commitment to achieving sustainability and financial resilience and represents a significant component of Air Selangor’s Sukuk Murabahah Programme which was first established in December 2020.

At Air Selangor, we recognise the critical role we play in ensuring the sustainability of water services, a vital resource for communities, businesses, and ecosystems. Our efforts align with the United Nations Sustainable Development Goals (SDGs). As of September 2024, Air Selangor has successfully issued seven tranches of Sukuk Murabahah under our Sukuk Murabahah Programme, of which six tranches are Sukuk Kelestarian totalling RM4.33 billion which are being deployed towards projects that create meaningful environmental and social impact.

This Sukuk Kelestarian Impact Report represents not just a milestone for Air Selangor, but a bold statement of our vision for the future—one where financial sustainability and environmental stewardship go hand in hand in building the foundation of responsibility and create lasting value for all.

Driving Sustainable Growth Through Sukuk Kelestarian

The Sukuk Kelestarian aligns with international Sustainability Bond Principles and contributes to the advancement of Air Selangor’s priority SDGs. By raising capital through this innovative financing mechanism, we are enabling projects that support:

- **Infrastructure Improvement:** Developing, enhancing and upgrading water supply systems to ensure consistent access to clean, safe water.
- **Climate Resilience:** Strengthening our ability to manage and mitigate the impacts of climate change on water resources and infrastructure.
- **Energy Efficiency:** Investing in renewable energy and technologies that reduce greenhouse gas emissions.
- **Sustainable Innovation:** Advancements that support sustainable and resilient water services and increase operational efficiency.

These projects not only address critical needs but also advance our long-term sustainability strategy, helping to future-proof our operations against emerging risks.



Commitment to Financial Sustainability and Integrity

Financial sustainability remains a cornerstone of our strategy. The Sukuk Kelestarian reflects our disciplined approach to capital management, ensuring that resources are allocated efficiently and responsibly. Our transparent allocation process includes:

- Comprehensive project evaluation by the Sukuk Kelestarian Working Group, comprising senior officers from Sustainability and Water Conservation Section, and Finance and Strategy Department.
- Rigorous oversight from our Board of Directors and the regulator, Suruhanjaya Perkhidmatan Air Negara (SPAN), ensuring alignment with regulatory frameworks and operational priorities.
- Alignment with Air Selangor’s strategic objectives, focusing on performance enhancement, environmental stewardship, and community well-being.

Equally important, we are fully committed to maintaining transparency and accountability in the management of our Sukuk Kelestarian proceeds. Our impact reporting demonstrates this commitment, providing clear insights into the allocation and utilisation of funds. Each report includes disclosures of eligible projects funded and select case studies that highlight the environmental and social impacts achieved. This approach reinforces the trust of our investors, stakeholders, and the communities we serve, ensuring that every ringgit contributes to meaningful outcomes.

Progress Update

The Sukuk Kelestarian forms an important part of Air Selangor’s Sukuk Murabahah Programme, established since December 2020. As of 30 September 2024, Air Selangor has issued a total of seven tranches of Sukuk Murabahah under our Sukuk Murabahah Programme, of which six tranches comprise of Sukuk Kelestarian totalling RM4.33 billion which are raised to finance a series of sustainable water supply and sustainable water management projects, as well as to expand our renewable energy utilisation.

The Renewable Energy for Water (RENEW) programme, aimed at achieving net-zero carbon emissions by 2040, has successfully installed 61.3 MWP of solar capacity across key facilities. This has resulted in the generation of 12,630 MWh of renewable energy and the estimated avoidance of 11,619 tCO² in greenhouse gas emissions, equivalent to the annual emissions of 1,638 electricity-powered homes, in the period of January 2024 to September 2024. The programme has also led to a savings of RM1.28 million in electricity costs, further strengthening our financial sustainability.

In terms of operational innovation, our Hydraulic Modelling and Digital Twin technology initiatives have seen good progress, with 21.7% completion of the online network modelling for our trunk mains and distribution pipelines. This technological advancement has significantly enhanced our ability to monitor and manage the water distribution system in real time, improving operational control and reducing unplanned downtime. The Digital Twin project, a first in Southeast Asia, provides pre-emptive maintenance capabilities that ensure optimal asset utilisation and prevent costly failures.

In addition, the Reactivation and Rehabilitation of Reservoirs and Pumphouses initiative is progressing well, with 47 out of 198 inactive reservoirs and pumphouses reactivated, completing 23.7% of the projects planned. This initiative ensures that our aging infrastructure meets current and future demands, improving water delivery reliability and operational efficiency. Through these efforts, we are on track to rehabilitate all 144 reservoirs and 54 pumphouses by 2030, strengthening our capacity to provide a stable water supply to the communities we serve.

As of September 2024,

6 tranches of Sukuk Kelestarian issued with **RM4.33** billion being deployed to finance a series of eligible projects.

Hydraulic Modelling and Digital Twin technology progression

21.7% completion of the trunk main online network modelling.

A Vision for the Future

As the challenges of climate change and resource scarcity grow, we are determined to lead the way in sustainable water management. Our focus on innovation, resilience, and accountability positions Air Selangor to drive positive change while securing long-term value for our stakeholders. Through the period of 2023-2024, Air Selangor has achieved quantifiable progress in terms of reducing our environmental impact, increasing service effectiveness, and fostering meaningful relationships with our stakeholders. These initiatives, supported by our Sukuk Kelestarian, demonstrate our commitment to incorporating sustainability into all aspects of our business operations.

On behalf of Air Selangor, I would like to extend my heartfelt gratitude to our regulators, investors, and partners for your continued trust and support. Together, we are shaping a sustainable future where water remains a catalyst for progress and prosperity.

ADAM SAFFIAN GHAZALI
Chief Executive Officer

ABOUT AIR SELANGOR

With a dedication to providing over 9.6 million consumers with safe, dependable, and high-quality water, Air Selangor is the largest water services provider in Malaysia. In Selangor, Kuala Lumpur, and Putrajaya, we guarantee effective water distribution through a strong infrastructure network and cutting-edge management techniques. Ensuring the long-term supply of clean water resources for everyone is Air Selangor's mission, which is guided by the values of integrity, service excellence, and sustainable growth.



VISION

We will be the leading water services provider in Asia by 2030

MISSION

We deliver the best experience to our customers

OUR BUSINESS PLAN

Air Selangor operates according to its regulatory business plan, that includes the seven (7) Strategic Plans and Initiatives (SPIs) and eight (8) Key Result Areas (KRAs), which have been approved by SPAN for its current operating period.

Over the next 30 years, Air Selangor has allocated a budget through its Capital Expenditure (CAPEX) Programme with projected investments surpassing RM35 billion to be utilised for construction of new water assets, upgrading current water infrastructure, enhancing operational efficiency and exploring new water resources. The business plan undergo periodic revisions to align with and meet the changing dynamics of the water services industry.



SPI 1
WATER FOREVER
Towards a Sustainable Water Future

- i. Ensure sustainable water supply for the future.
- ii. Mitigate potential effects of climate change and raw water pollution.
- iii. Design interventions and initiatives that ensure water supply is in tandem with water demand. These actions include reducing system water loss, optimising customer water use and identifying and developing new sources of water.

7 STRATEGIC PLANS & INITIATIVES



SPI 4
TOWARDS BEST CUSTOMER EXPERIENCE
Drinkable Water from Tap by 2028 and Best Customer Service

- i. Improve our service delivery and exceed customer expectations in terms of reliability, responsiveness and quality continuously.



SPI 5
NON REVENUE WATER REDUCTION
NRW Reduction to 27.5% by 2025, 25% by 2030

- i. Reduce water loss throughout our operations, targeting to achieve 27.5% by 2025 and 25% by 2030.
- ii. Optimise operational costs and increase our revenue.



SPI 2
IMPROVEMENT IN ASSET RELIABILITY AND RESILIENCE
 Towards Resilient Water Future

- i. Optimise management and maintenance of our assets.
- ii. Ensure uninterrupted water supply to our customers.
- iii. Rehabilitate, replace and upgrade our assets.
- iv. Improve water storage capacity.



SPI 3
IMPROVING OPERATIONAL EFFICIENCY
 Digital Utility of the Future

- i. Leverage the growth of digital connectivity and big data to become the Digital Utility of the Future.
- ii. Ensure effective use of resources across our operations, namely production, distribution, asset inventory and maintenance, and customer management.



SPI 6
CREATING A CONDUCTIVE WORKING ENVIRONMENT
 World-Class Water Service Provider

- i. Position Air Selangor as an employer of choice by creating a safe and conducive work environment.
- ii. Develop and grow talent within our Company to ensure a sustainable pipeline of leaders and achievers.



SPI 7
ENVIRONMENTAL STEWARDSHIP
 Waste Zero Environment

- i. Operate responsibly, minimising our impact on the environment and adhering to regulations.
- ii. Towards a zero-waste environment, optimising resource use and reducing our carbon emissions.

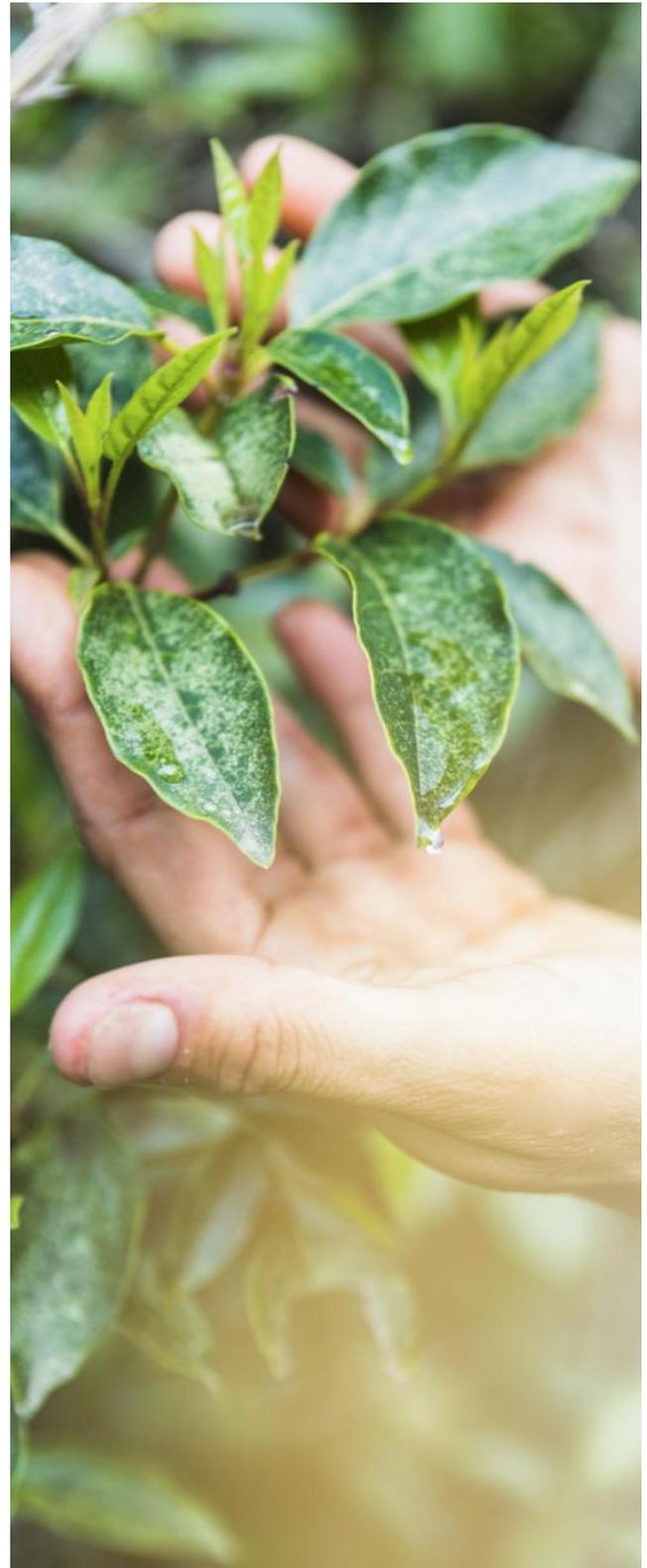
SUSTAINABILITY STRATEGY 2030

In 2024, Air Selangor undertook a review of its operating period two (OP2) Sustainability Strategy and conducted a comprehensive reassessment of the identified material matters from 2022. This process involved the consideration of various policies, standards, frameworks, best practices and future trends within the water industry, as well as aligning with Air Selangor’s business plan as a primary reference.

The input from internal and external stakeholders was also considered through one-to-one engagements, focus group discussions, online meetings, workshop, surveys and feedback to align the current business requirement and direction, identifying emerging sustainability opportunities and risks and revisiting the material sustainability matters. These sessions aimed to identify action plans and realign our business goals, whilst validating the current initiatives and measures undertaken that would support Air Selangor’s sustainability goals.

After several thorough discussions, the Sustainability Strategy 2030 has been reviewed and revised, focusing on six main pillars, as shown in the diagram below, capturing the 14 material sustainability matters, categorising and mapping to ten SDGs and Air Selangor’s seven SPIs.

We are in the progress of finalising the revised materiality sustainability matters for our Sustainability Reporting 2024, concurrently validating the current sustainability strategies and incorporating new action plans in accordance with the six sustainability pillars and ten SDGs. We target to complete this by first quarter of 2025.



Our Impact on SDGs

We have assessed that 10 of the 17 SDGs are material to our business system and tasks.



SUSTAINABILITY PILLARS

MAPPING OF SUSTAINABILITY PILLARS, MATERIALITY MATTERS, SDGs & SPIs

Sustainability Strategy Pillars	Material Sustainability Matters	Linkage to SDGs	Related SPIs
Pillar 1			
Strengthening Governance and Increasing Transparency	<ul style="list-style-type: none"> Excellent Ethics, Governance, Risk & Integrity Tariff & Pricing Environmental Compliance Transparency in Procurement & Supply Chain 	 	 SPI 6
Pillar 2			
Reducing the Impact of Climate Change	<ul style="list-style-type: none"> Environmental Management (Energy, Emissions, Waste & Water) Optimising Business Operations 	   	 SPI 1  SPI 5  SPI 7
Pillar 3			
Prioritising Employee Health, Safety, Competency and Diversity	<ul style="list-style-type: none"> Health & Safety Talent Development & Workplace Diversity Employee Benefits & Engagement 	  	 SPI 6
Pillar 4			
Delivering Customer Service Excellence	<ul style="list-style-type: none"> Water Quality Customer Service Excellence 	  	 SPI 1  SPI 4
Pillar 5			
Leveraging Digitalisation to Support a Circular Economy	<ul style="list-style-type: none"> Business Innovation & Digitalisation 	 	 SPI 2  SPI 3
Pillar 6			
Giving Back to Community	<ul style="list-style-type: none"> Engagement programmes Strategic Community Investments 		 SPI 1  SPI 3

SUKUK KELESTARIAN FRAMEWORK

Air Selangor’s Sukuk Kelestarian Framework was developed to ensure transparency, disclosure, and integrity in the issuance of a sustainable and responsible investment Sukuk known as the Sukuk Kelestarian.

This Framework is aligned with the below Sustainability Bond Principles :

<p>The International Capital Market Association’s (ICMA) 2018 Green Bond Principles, 2018 Social Bond Principles, and 2018 Sustainability Bond Guidelines</p>	<p>The ASEAN Capital Markets Forum’s (ACMF) 2018 Green Bond Standards, 2018 Social Bond Standards, and 2018 Sustainability Bond Standards</p>	<p>The Securities Commission Malaysia’s (SC) SRI Sukuk Framework (SC SRI Sukuk Framework)</p>
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The core components of this Framework provide guidelines for Air Selangor to achieve important sustainability goals while maintaining the highest standards of integrity and transparency by disclosing yearly allocation and impact reports to the public.

SUKUK KELESTARIAN GOVERNANCE

The Sukuk Kelestarian Framework details out the information on how the funds raised can be utilised to finance, refinance or invest in eligible projects that are aligned with Air Selangor’s business plan, Sustainability Strategy 2030 and priority SDGs as indicated in the following four categories:



SUSTAINABLE WATER SUPPLY

RELATED SPIs



LINKAGE TO SDGs



SUSTAINABLE WATER MANAGEMENT

RELATED SPIs



LINKAGE TO SDGs



RENEWABLE ENERGY

RELATED SPIs



LINKAGE TO SDGs



GREEN BUILDING / ASSETS

RELATED SPIs



LINKAGE TO SDGs



Eligible projects must adhere to strict criteria as outlined in the Framework. These projects are evaluated and selected by the Sukuk Kelestarian Working Group, a dedicated team composed of senior officers from Air Selangor’s Sustainability and Water Conservation Section, and Finance and Strategy Department. The group conducts evaluations during the annual capital expenditure budgeting process or on an ad-hoc basis when necessary. This systematic approach ensures that only projects that align with Air Selangor’s sustainability priorities are considered for funding under the Sukuk Kelestarian Framework.

The budget is subject to a robust and multi-layered review process, reflecting the Company’s commitment to financial and operational excellence. It undergoes scrutiny and approval by Air Selangor’s Board of Directors before submission to SPAN—the regulator responsible for water services in Peninsular Malaysia and the Federal Territory of Labuan—for final approval.

Each project is assessed based on several critical factors, including:

- Alignment with Strategic Goals: Projects must contribute directly to Air Selangor’s long-term strategic objectives and sustainability initiatives.
- Performance Commitments: They must enhance the Company’s operational efficiency and deliver on key performance indicators.
- Health, Safety, Environmental, and Social Considerations: Projects are evaluated for their ability to meet high standards in these areas, ensuring they contribute to a sustainable and responsible water management system.
- Feasibility and Cost-Effectiveness: The economic viability and practicality of the projects are also carefully reviewed, balancing sustainability impacts with financial responsibility.

SUKUK KELESTARIAN

AIR SELANGOR CORE ELEMENTS

As of 30 September 2024, Air Selangor has issued seven tranches of Sukuk Murabahah under our Sukuk Murabahah Programme, of which six tranches comprise of Sukuk Kelestarian amounting to RM4,330.0 million in total proceeds, at a weighted average yield of 4.70%.

In the period under review, an additional RM2,200.0 million in Sukuk Kelestarian was issued, comprising of Tranche 6 of RM1,000.0 million which was issued on 11 October 2023 and Tranche 7 of RM1,200.0 million which was issued on 19 August 2024. The issuances were completed at a weighted average yield of 4.73% and 4.12%, respectively.

Issuance from October 2023 to September 2024:

Tranche (Tr)	Tr6	Tr6	Tr6	Tr6	Tr6	Tr7	Tr7	Tr7	Tr7
Series (S)	S1	S2	S3	S4	S5	S1	S2	S3	S4
Currency	MYR								
ISIN	MYBVK 2304247	MYBVN 2304233	MYBVS 2304224	MYBVX 2304216	MYBVZ 2304203	MYBVN 2402136	MYBVS 2402127	MYBVX 2402119	MYBVZ 2402106
Size (RM mil)	200.0	100.0	300.0	200.0	200.0	200.0	250.0	400.0	350.0
Net Proceeds (RM mil)	200.0	100.0	300.0	200.0	200.0	200.0	250.0	400.0	350.0
Issue Date	11 Oct '23	19 Aug '24	19 Aug '24	19 Aug '24	19 Aug '24				
Maturity Date	11 Oct '30	11 Oct '33	11 Oct '38	9 Oct '43	9 Oct '48	18 Aug '34	19 Aug '39	19 Aug '44	19 Aug '49
Coupon	4.40%	4.48%	4.74%	4.92%	5.00%	3.85%	4.02%	4.20%	4.26%

ALLOCATION OF PROCEEDS

Of the RM4,330.0 million Sukuk Kelestarian raised, Air Selangor has allocated and utilised 66.9% of the total proceeds, amounting to RM2,894.8 million to finance eligible CAPEX and operating expenditure (OPEX). The remaining 33.1% or RM1,435.2 million of unallocated / unutilised proceeds are invested in Shariah-compliant money market instruments or fixed deposits.

Of the RM2,894.8 million allocated / utilised, RM1,884.7 million or 65.1% was allocated / utilised to finance CAPEX, whilst RM1,010.1 million or 34.9% was allocated / utilised to finance OPEX.

Purpose/Projects	CAPEX	OPEX	TOTAL	
RM mil	Financing	Financing	RM mil	%
Sustainable Water Supply	1,350.0	989.4	2,339.4	54.0%
Sustainable Water Management	534.7	14.1	548.8	12.7%
Renewable Energy	-	6.6	6.6	0.2%
Allocated/Utilised (RM mil)	1,884.7	1,010.1	2,894.8	66.9%
Unallocated/Unutilised			1,435.2	33.1%
TOTAL			4,330.0	100.0%



Category	Examples of Key Projects Funded	Total Allocation and Utilisation (RM mil)	Reporting Indicators (1 January 2024 to 30 September 2024)
Sustainable Water Supply	<ul style="list-style-type: none"> Development of new water treatment facilities Upgrading, rehabilitation, refurbishment and/or maintenance of water treatment facilities, including dams and off-river storage (ORS) Connecting, expanding, improving, rehabilitating, refurbishing, replacing and/or maintenance of distribution network or systems 	2,339.4	<ul style="list-style-type: none"> Million cubic metres of clean water produced: 5,302 MLD Water quality compliance: 99.92% Number of new household water connections: 63,746 accounts Additional distributable capacity in development: 2,730 MLD Additional water supply capacity from alternative water source (reclaimed water) developed: 4 MLD
Sustainable Water Management	<ul style="list-style-type: none"> Pipe replacement programme Physical loss reduction programme Commercial loss reduction programme Construction, upgrading, and/or rehabilitation of reservoirs and pumphouses Construction, expansion and/or rehabilitation of residual treatment facilities and residual disposal areas Initiatives to improve pollution detection and management, and enhance laboratory services to improve water quality and reduce service disruptions Digital, automation and IT initiatives to enhance network communication and network management to reduce service disruptions 	548.8	<ul style="list-style-type: none"> Length of pipe replaced: 117km Energy consumption per cubic meter of water produced: 0.3726 MJ CO²/m³ *Billed volume carbon intensity reduction: 16.28% *Billed volume energy intensity reduction: 16.43% Pipe Burst Index Reduction (no./100km/year): 0.6 Non-revenue water reduction: 0.4% Amount of water saved from NRW initiatives: 206.44 MLD Number of pollution incidences detected and prevented: 54 cases prevented out of total 61 cases detected Percentage of water treatment residual treated: 49.2%
Renewable Energy	<ul style="list-style-type: none"> Renewable Energy for Water (RENEW) 	6.6	<ul style="list-style-type: none"> 14 accounts with total cumulative solar energy usage of 12.63 GWh equivalent to 11,619.6 tCO² reduced

***Note**

Data comparison between 1 January 2023 to 30 September 2023 and 1 January 2024 to 30 September 2024.

A total of RM2,339.4 mil was allocated towards Sustainable Water Supply projects, largely to finance the ongoing development of the new Rasau Water Supply Scheme Stage 1, the development of the Labohan Dagang Phase 1 distribution network, the refurbishment of existing water treatment plants, and maintenance and improvement works for the existing distribution network. For Sustainable Water Management projects, a total of RM548.8 million was allocated towards, amongst others, NRW reduction programmes which include pipe replacements, rehabilitation and reactivation of reservoirs and pump houses, development of Air Selangor’s hydraulic modelling and digital twin capabilities, and big data analytics and digitalisation projects. As part of Air Selangor’s Net Zero Energy Vision 2040, RM6.6 million was allocated / utilised to increase renewable energy consumption in its operations.

CASE STUDY

RENEWABLE ENERGY

RELATED SPIs



LINKAGE TO SDGs



The Renewable Energy for Water (RENEW) programme is a landmark collaborative initiative to drive the organisation’s ambition to achieve net-zero carbon emission by year 2040. In order to achieve this goal, Air Selangor is collaborating with Heliosel Sdn. Bhd. for the installation of solar panels at suitable areas within the vicinity of its operating assets, with a view towards maximising utilisation and achieving net zero across all assets by 2040. Currently, electricity forms close to 98% of the energy consumption of Air Selangor.

In the period of January 2024 to September 2024, renewable energy utilised from generating solar facilities stands at

12,630 MWh



A factor that is often overlooked is the fact that the production of water is an energy intensive and costly process. This is only magnified by the high-water demand within Air Selangor’s distribution area. The use of renewable energy allows Air Selangor to optimise its energy mix, reduce electricity cost and channel excess funds into other initiatives to improve operations.

The RENEW programme is implemented in stages at Air Selangor’s water treatment plants (WTP), water intakes, pump houses and offices. Solar panels are installed on-site within the water facility’s compound. On-site energy generation allows Air Selangor to have consistent and long-term energy supply. It also allows Air Selangor to fully utilise available real estate within the water facility’s compound without the need for additional land acquisition.

In the period of January 2024 to September 2024, renewable energy utilised from generating solar facilities stands at 12,630 MWh. This translates to an estimated Greenhouse Gas (GHG) emissions avoidance of 11,619.6 tCO², which is equivalent to emissions released by 1,638 electricity-powered homes for one year, according to the United States Environmental Protection Agency GHG Equivalencies calculator. In terms of cost, Air Selangor has managed to save RM1.28 million in electricity cost during the reporting period.

CASE STUDY

HYDRAULIC MODELLING & DIGITAL TWIN

RELATED SPIs



LINKAGE TO SDGs



Hydraulic Modelling offers a sophisticated and dynamic view of the water supply network. This advanced modelling tool is designed to vividly illustrate the impact of varying conditions on the system, enabling an in-depth analysis of hydraulic behavior and the simulation of numerous scenarios within the network.

By providing detailed insights into the functioning of pipes, pumps, valves, flow rates, and pressure levels, the system not only enhances our understanding of the current operational status but also empowers proactive management. It transforms complex data into clear, actionable information, ensuring that all critical aspects of the distribution system are comprehensively monitored and optimised.

This level of clarity is crucial for maintaining efficiency and reliability in the delivery of water across the region. As of September 2024, the overall progress for the online hydraulic model at the Sungai Semenyih, Sungai Langat and Sungai Selangor Phase 1, 2 & 3 trunk main, distribution main and reticulation pipe has been completed, with 21.7% or 2,911 km of the 13,387 km pipeline network successfully modelled online.

Digital Twin in WTPs is one of Air Selangor’s digitalisation initiatives. The first use case of Air Selangor’s Digital Twin project is at the Semenyih 2 WTP in Jenderam Hilir, Dengkil. This initiative employs advanced predictive analytics to spot early signs of potential breakdowns before they happen. By analysing data through the Digital Twin system, it identifies patterns and warning signs that signal possible issues, enabling proactive maintenance and ensuring smoother operations.

By prioritising sensitive components and implementing preventive measures, Air Selangor aims to minimise disruptions, reduce planned and unplanned shutdowns, and ensure an efficient water supply system.

This project marks a significant milestone as the first such initiative in Southeast Asia, positioning Air Selangor as a leader in adopting cutting-edge technology in the region for water industry. As Air Selangor continues to be the primary provider of treated water to a vast and diverse population of over 9 million residents in Selangor, Kuala Lumpur, and Putrajaya, this project serves as a benchmark for best practices in the industry, showcasing the potential of digital innovations in water management.



3 KEY SUCCESS INDICATORS TO THE IMPLEMENTATION OF DIGITAL TWIN AT WTPs ARE:

- **Reduction in Unplanned Downtime:** Minimising unexpected shutdowns by predicting potential failures and enabling pre-emptive maintenance.
- **Improvement in Asset Utilisation:** Increasing asset efficiency and operational readiness.
- **Cost Savings from Preventive Maintenance:** Reducing maintenance costs by preventing failures.

CASE STUDY

REACTIVATION & REHABILITATION OF RESERVOIRS AND PUMPHOUSES

RELATED SPIs



LINKAGE TO SDGs



To enhance water supply resilience and sustainability, Air Selangor continuously invests in the rehabilitation and refurbishment of existing reservoirs and pump houses, as well as reactivation of unused reservoirs and pump houses to improve water pressure and storage in its distribution areas. This initiative addresses the dual challenges of an aging infrastructure and a steadily growing demand for water in the region. It aims to secure a consistent and reliable water supply while meeting regulatory standards and minimising impact to consumers during water disruptions.

The core objectives of this initiative include:

<p>Enhanced Water Delivery Reliability</p> <p>Ensures reservoirs and pump houses are updated to meet current and future demand. Increases active reservoirs and pump houses to overcome low pressure and improve supply to water stressed areas.</p>	<p>Increased Capacity</p> <p>Expands storage and pumping capacity to maintain a stable supply during high-demand periods or emergencies.</p>
<p>Improved Operational Efficiency</p> <p>Reduces energy consumption and operational costs while maintaining optimal flow and pressure.</p>	<p>Extended Infrastructure Lifespan</p> <p>Reduces the need for frequent maintenance and new infrastructure investments.</p>

Compliance with regulatory standards is a critical component of the rehabilitation / reactivation effort. Modernising infrastructure enables Air Selangor to better meet the latest safety, environmental, and operational regulations set by SPAN and other relevant authorities. This initiative also supports Air Selangor’s environmental objectives by incorporating energy-efficient solutions and eco-friendly technologies, minimising the ecological footprint of water operations.

As of September 2024, Air Selangor’s initiative to rehabilitate and reactivate unused reservoirs and pump houses has achieved notable progress, with the following metrics:

<p>Total Projects Planned up to 2030:</p> <p>198 (144 reservoirs and 54 pumphouses)</p>	<p>Completed Projects:</p> <p>47 (37 reservoirs and 10 pumphouses) marking an overall progress of 23.7%.</p>	<p>Remaining Projects:</p> <p>107 reservoirs 44 pumphouses</p>
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Air Selangor has implemented a structured project plan and is on track to meet its long-term goal of rehabilitating 144 reservoirs and 54 pumphouses by 2030. The initiative is essential to ensuring resilient, sustainable water infrastructure capable of meeting the region’s water demands.

Head Office

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