Arab Academy for Science, Technology & Maritime Transport

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Report 2023 / 2024

SDG 6

Our Aim in 2023 -2024

In 2023–2024, AASTMT advanced its commitment to SDG 6 by strengthening water efficiency, enhancing sustainable water management systems, and expanding its role in local and regional water initiatives. Key achievements included major upgrades to on-campus water infrastructure, advanced monitoring and extraction systems for groundwater, and the adoption of solar-powered pumping and nanofiltration technologies. AASTMT also played an active role in international projects and community engagement events focused on wastewater treatment, irrigation efficiency, pollution control, and resilient agri-food systems. Together, these efforts contributed to improved water quality, optimized water use, and enhanced resilience across campuses and partner communities.

THE Impact Ranking Scores 2022-2023

SDG 6

CLEAN WATER AND SANITATION

6 CLEAN WATER AND SANITATION

Key Milestones in 2023-2024

AASTMT Supports SDG 6 Through Sanitary Landfills and Pollution Control Across Egypt

In line with SDG 6, the AASTMT has successfully overseen the construction and commissioning of 23 sanitary landfills for solid waste management across 16 Egyptian governorates. These projects play a vital role in pollution control, preventing the leakage of waste into groundwater and surface water sources, thereby protecting drinking water quality, reducing water contamination, and improving sanitation services. By implementing safe waste disposal practices and strengthening local capacity, the initiative contributes to the sustainability of water resources management and ensures that communities are shielded from the risks of water pollution and public health hazards. This effort reflects AASTMT's commitment to supporting integrated waste and water management systems, advancing environmental sustainability, and fostering solutions that safeguard water quality, mitigate climate change impacts, and uphold Egypt's Vision 2030.

https://www.dostor.org/4566217
AASTMT Supports SDG 6 Through Sanitary Landfills and Pollution Control Across Egypt

Updates for Mobilizing new Areas of Investments and Together Aiming to increase Quality of life for All MAIA TAQA Funded Project (2019- 2024)

The MAIA-TAQA (Mobilizing new Areas of Investments And Together Aiming to increase the Quality of life for All) project, funded by the EU under the ENI CBC Med Programme, promotes resource efficiency, renewable energy, wastewater treatment, and sustainable water management across the Mediterranean. With key partners including AASTMT (Egypt), CEEBA (Egypt), the Industrial Research Institute (Lebanon), and the Jordan Chamber of Commerce, the project has introduced innovative eco-friendly solutions to address regional sustainability challenges.

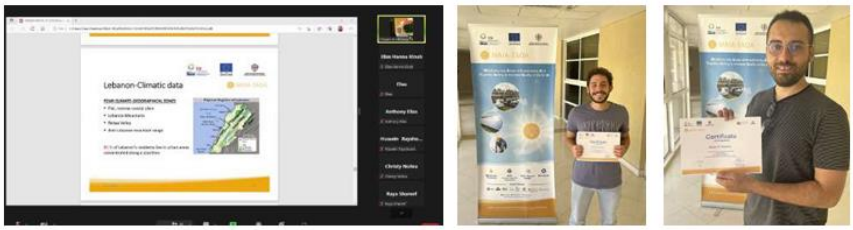
- **2019–2020:** Identification of pilot areas and stakeholders in Egypt, Lebanon, and Jordan, alongside the design of innovative water and energy solutions.
- **2021:** Pilot implementation of a wastewater treatment plant in Lebanon (Industrial Research Institute, Hadat) and a 100 kWp photovoltaic system at El-Ameria Wholesale Market in Alexandria, Egypt.

- **2022–2023:** Operationalization of pilots with emphasis on treated wastewater reuse for irrigation and expanded solar energy deployment, reducing water pollution, supporting reuse, and cutting emissions.
- **2023–2024:**
  The final phase focused on scaling and consolidating results:
  - **Innovation One-Stop-Shops (IOSS):** Launched in Egypt, Lebanon, and Jordan to provide SMEs with access to resource efficiency services, renewable energy expertise, and innovation vouchers.
  - **SME Innovation Vouchers:** Six SMEs in Egypt and Lebanon were supported with up to €20,000 each to develop projects in solar thermal desalination, wastewater management, and sustainable construction materials.
  - **Capacity Building:** More than a dozen training programs and B2B events engaged over 200 SMEs and professionals, strengthening skills in wastewater treatment, building-integrated photovoltaics (BIPV), and solar cooling.
  - **Pilot Outcomes:**
    - In Egypt, the El-Ameria PV system delivered cleaner energy, reduced grid pressure, and cut CO_2 emissions.
    - In Jordan, a solar thermal cooling system in Aqaba saved significant energy and reduced emissions.
    - In Lebanon, a solar-powered MBBR wastewater treatment plant enabled irrigation reuse while avoiding diesel use and reducing 12 tons of CO_2 annually.

The AASTMT played a central role by hosting and supporting activities in Egypt, from piloting renewable energy at El-Ameria Market to launching the Innovation One-Stop-Shop, underlining its commitment to sustainability, energy efficiency, clean water, and resource management in the region.

The MAIA-TAQA project developed a Three Courses program on Sustainable Technologies:

- **Wastewater Management in Lebanon:** This course is designed to educate participants on innovative wastewater treatment and management techniques, promoting environmental sustainability and resource conservation.
- **Building-Integrated Photovoltaics (BIPV) in Egypt:** Participants in this course gained expertise in the integration of photovoltaic systems within building structures, harnessing solar energy for sustainable power generation and architectural solutions.
- **Solar Cooling in Jordan:** Focusing on the use of solar energy for cooling applications, this course empowered participants to explore efficient and eco-friendly cooling solutions in a region with high energy demands.



MAIA-TAQA Project

For the full report of the project:
https://south.euneighbours.eu/publication/eu-maia-taqas-final-report/
Mobilizing new Areas of Investments and Together Aiming to increase Quality of life for All MAIA TAQA Funded Project (2019- present)

AASTMT Colleges of Engineering and Pharmacy Launch "Every Drop Counts" Water Conservation Campaign

In support of SDG 6, the AASTMT has launched the "Every Drop Counts" campaign across the College of Engineering and the College of Pharmacy laboratories to promote responsible water use and sustainable practices among students and staff. Awareness posters were displayed throughout teaching laboratories, reminding students to conserve water during experiments and daily activities. Faculty members and lab instructors highlighted the importance of leak prevention, efficient water use, and environmental responsibility as part of hands-on learning. This initiative reflects AASTMT's ongoing commitment to fostering a sustainability culture within academic environments, ensuring that future engineers, pharmacists, and researchers contribute to a water-conscious and environmentally responsible future.

College of Engineering & Technology

College of Pharmacy

https://aast.edu/en/sdg/news-details.php?language=1&view=1&unit_id=1206&news_id=486105544&event_type_id=1

AquaVET — Knowledge Exchange in Aquatic Animals Medicine and Ecosystem Health in the Mediterranean and sub-Saharan Regions (2024- 2027)

The AquaVET is an Erasmus + project that addresses the growing challenges in aquaculture and aquatic veterinary medicine in Egypt and Nigeria by establishing an interdisciplinary MSc program in "Aquatic Animals Medicine and Ecosystem Health" (AQAMEH). The program aims to bridge the gap between aquaculture and veterinary sciences, ensuring a new generation of highly skilled professionals. The Egyptian and Nigerian aquaculture sectors face major challenges, including:

- High fish mortality rates due to disease outbreaks.
- Environmental pollution from agricultural and industrial activities.
- Limited research in aquatic veterinary medicine.
- Lack of trained specialists in fish health and ecosystem management.

AquaVet Project

https://www.croris.hr/projekti/projekt/11618
https://aast.edu/en/sdg/news-details.php?language=1&view=1&unit_id=1206&news_id=486105483&event_type_id=1

UPDATES RESILINK Increasing Resilience of Smallholders with Multi-Platforms Linking Localized Resource Sharing (2021-2026)

The RESILINK Project is a PRIMA Section II funded project, that enhances smallholder resilience by strengthening local agri-food value chains and reducing dependence on distant resources. Through IoT, AI, and decision-support systems, it enables real-time resource management and adaptive supply chains. A digital resource platform will connect farmers to nearby suppliers and services using mobile and open-source tools, ensuring accessibility and sustainability. Using a Living-Lab approach, RESILINK will pilot and refine its technologies to boost adoption, while ensuring interoperability with other agri-food platforms. The project promotes efficient water use, sustainable agriculture, and digital innovation, supporting SDG 6 (Clean Water and Sanitation) and SDG 12 (Responsible Consumption and Production).

- **2022:** Project launched under PRIMA to promote sustainable water management and resilient agri-food systems. Built partnerships to enhance efficient resource use and local water governance.

- **2023:** Developed prototype digital tools for real-time water monitoring and resource sharing. Promoted water-smart agriculture using IoT and AI technologies.

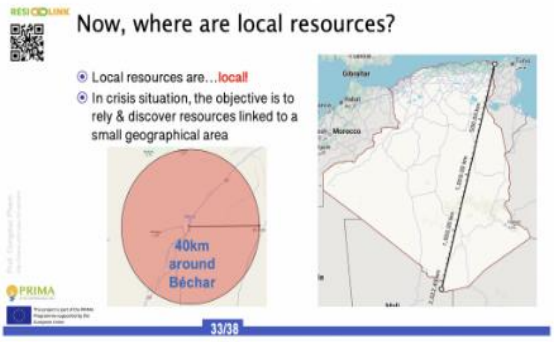
- **2024:** Released RESILINK mobile app and digital platform for sustainable irrigation and waste-water reuse. Began Living-Lab pilots to improve water efficiency and climate resilience among smallholders. Many training sessions took place for farmers and stakeholders.

Community Engagement

Promoting Water Efficiency and Resilient Agri-Food Systems through the RESILINK Project

As an active partner in the RESILINK Project, the AAST contributed to advancing water-efficient, climate-resilient, and sustainable agri-food systems in alignment with SDG 6: Clean Water and Sanitation. On May 16th, 2024, Prof. C. Pham delivered a keynote speech at the 1st Mediterranean Fruit Symposium: Hub for Innovation, highlighting the RESILINK project's contribution to sustainable water and resource management in agri-food systems. The presentation emphasized how digital platforms and smart technologies—key elements of RESILINK—can enhance water efficiency, local innovation, and smallholder resilience, supporting SDG 6 (Clean Water and Sanitation) by promoting sustainable agricultural practices and optimized water use in the agro-food value chain.

On November 5th, 2024, Prof. Congduc Pham, coordinator of the RESILINK project from UPPA, delivered a keynote at the Smart Farming Workshop held during the IEEE EDiS 2024 International Conference on Embedded and Distributed Systems in Béchar, Algeria. His talk, titled *"Transdisciplinary Research for Sustainable Development: Illustration with PRIMA INTEL-IRRIS and PRIMA RESILINK,"* showcased how RESILINK integrates digital innovation, water-efficient technologies, and sustainable farming practices to address smallholder farmers' needs. The presentation emphasized the project's contribution to SDG 6 through optimized irrigation, resource-efficient systems, and sustainable agri-food solutions.



Events

AASTMT and German Partners Hold Workshop on Waste Management, Sanitation, and Water Sustainability

Dr. Manal Awad, Minister of Local Development, and Vice Admiral Ahmed Khaled, Governor of Alexandria, participated in a workshop hosted by the in cooperation with German partners to discuss new approaches in waste management, wastewater treatment, and sanitation services. The event focused on applying Extended Producer Responsibility (EPR) standards, advancing solid waste and sludge management, and implementing integrated projects in stormwater control, wastewater reuse, and pollution reduction. Examples included Alexandria's integrated stormwater management strategy, the Nile sanitary landfill, and the sludge reduction project using anaerobic digestion to enhance treatment efficiency. Dr. Awad noted that since 2019, over 25 billion EGP has been invested nationwide in solid waste and sanitation infrastructure, alongside efforts to improve human capacity and introduce innovative solutions such as the Smart Waste Tool, already applied in Alexandria and Dakahlia. The workshop highlighted the importance of international cooperation, technology transfer, and research partnerships in achieving sustainable water resource management, sanitation, and climate change resilience.

AASTMT and German Partners Hold Workshop on Waste Management, Sanitation, and Water Sustainability

AASTMT Supports Conference on Sustainability of the National Industry to Achieve SDG 6

The Governor of Alexandria and the Deputy Minister of Housing for Infrastructure Affairs inaugurated the Conference on Sustainability of the National Water and Wastewater Industry in Alexandria, with the participation of the EU Delegation, national water and sanitation authorities, and private sector partners. The AASTMT took part in the event, showcasing its contributions to water resource management, wastewater treatment, desalination, and sanitation services. AASTMT emphasized its commitment to capacity building, research, and training programs that equip professionals with the skills needed to address water pollution, safe wastewater reuse, and sustainable sanitation practices in line with SDG 6. The conference highlighted Egypt's progress in expanding desalination capacity, scaling up wastewater treatment plants to 18.8 million m^3/day, and promoting reuse of treated water for irrigation, alongside efforts to reduce water losses and improve efficiency. These steps are central to achieving sustainable and resilient water and sanitation systems under Egypt Vision 2030.

https://www.elbalad.news/6123167

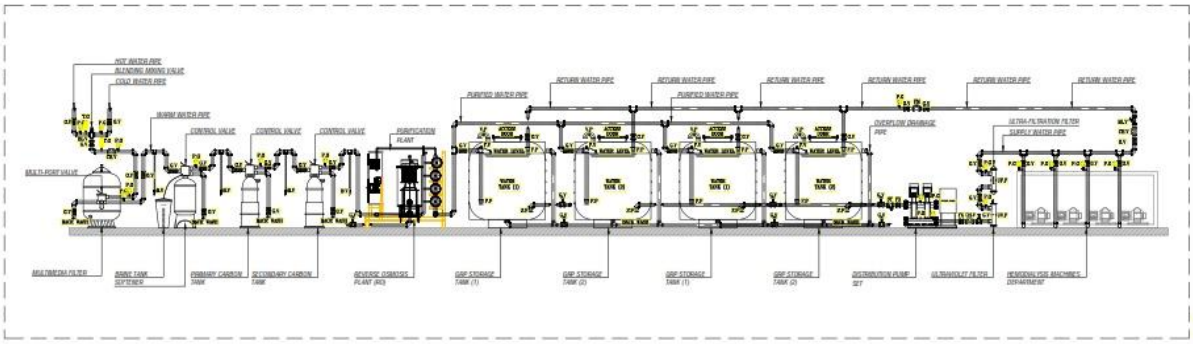
Campus Upgrades for Waste Water Treatment

AASTMT – Alamein Campus has established a specialized wastewater treatment system serving its medical and laboratory facilities, ensuring that all discharged water is safely treated and reused while preventing pollution of natural water bodies. This advanced medical wastewater treatment unit is designed to remove biological, chemical, and physical contaminants, providing safe effluent that complies with environmental health standards. The system plays a vital role in protecting both human health and the surrounding ecosystem by minimizing the risks associated with untreated medical effluents.

System Components and Process:

- **Collection Network:** Gathers wastewater from medical laboratories, clinics, and sanitary facilities through sealed pipelines to prevent leakage or contamination.
- Screening and Sedimentation Units: Remove large particles, suspended solids, and organic matter to prepare the water for further treatment.
- **Biological Treatment Unit:** Uses aerobic bacteria to break down organic pollutants and reduce biochemical oxygen demand (BOD).
- **Chemical Disinfection Stage:** Employs chlorine dosing and UV sterilization to eliminate pathogens, bacteria, and viruses, ensuring hygienic safety.
- **Filtration and Reverse Osmosis (RO):** Advanced filtration membranes remove dissolved salts, heavy metals, and chemical residues, producing high-quality treated water.

- **Reuse and Recycling Loop:** The treated water is safely reused for non-potable applications such as irrigation, flushing, and cleaning operations, thereby reducing water consumption and supporting sustainable resource management.



Wastewater Treatment for Alamain Campus Hospital

https://aast.edu/en/sdg/news-details.php?language=1&view=1&unit_id=1206&news_id=486105543&event_type_id=1
https://hospital.aast.edu/ar/index.php#AASTClinics