



SDG 6 Our Aim in 2021-2022

Enhance the AASTMT community's participation by actively engaging with the local community to support those in need of increased water resources and improved waste management. Additionally, raise awareness about water conservation, advocate for mindful water usage, and collaborate with stakeholders to address water security concerns. Furthermore, apply scientific research to enhance the quality of campus groundwater, specifically for irrigation purposes.

SDG 6

CLEAN WATER AND SANITATION

THE Impact Ranking Scores 2020-2021







Our Progress through 2021-2022

In 2021-2022, AASTMT contributed to SDG6 through its commitment to advancing education, research, and capacity-building in the water sector. This has been carried out through conducting internally funded (by AASTMT) research initiatives and international projects with relevant stakeholders related to water resources management and the implementation of integrated water resources management strategies. In addition, AASTMT focused on community involvement, both on a local and international scale, to increase awareness regarding water resources management, waste management, and sanitation.

Internally Funded Research Initiatives and Projects related to Water Resources Management

Monitoring, Assessment, and Innovative Treatment Technology to Enhance Groundwater Quality for Irrigation Toward Climate Change Adaptation

The project at AASTMT - AbuQuir Campus addresses growing concerns about increasing pollution in aquatic resources and climate change affecting freshwater quality. This is particularly crucial for drinking, the food industry, and irrigation. Focusing on groundwater as a potential solution, especially in arid regions where it is the primary source, the project aims to enhance the irrigation and drinking water quality from 13 borehole ground wells at Abu Qir Campus, near Alexandria City's eastern shore. The project involves collecting and analyzing physical, chemical, and biological water samples to assess pollution regionally and temporally, correlating findings with environmental and climatic conditions. Nanotechnology will be employed to improve water quality. The AASTMT has fully funded the project, emphasizing the main objective of enhancing water quality through seasonal water sampling and subsequent improvements. The main objective of the project is:

- 1. Evaluate the groundwater quality in 13 selected borehole wells at Abu Qir campus, Alexandria, specifically for its suitability for irrigation purposes.
- 2. Investigate the influence of various physical, chemical, and climatic factors on groundwater quality.
- 3. Determine the spatial and temporal variations in the physical, chemical, and microbiological parameters of groundwater in the study area, correlating them with environmental and climatic factors.
- 4. Explore advanced treatment options to improve groundwater quality for irrigation, utilizing new technologies and materials.
- 5. Design an innovative water treatment unit featuring an Activated Carbon (AC) biofilm system supported by silver Nano particles (Ag NPs) as a continuous treatment system. The goal is to ensure and maintain high water quality suitable for irrigation purposes.









Beside the College of

Pharmacy Building

С



The Beginning of the Football Court

In Front of the Hotel B

Study Area (A) and Locations of the Borehole Wells and Sampling Sites (B & C)

The quality of water for irrigation is determined by the concentration and composition of dissolved elements. Assessing salinity or alkali conditions in irrigated regions requires careful evaluation of water quality. Key factors influencing the quality of irrigated water include total soluble salts (TDS), sodium adsorption ratio (SAR), chemical concentrations of potentially toxic elements like Na+ and Cl-, and the presence of residual sodium carbonate or residual alkalinity (RSC or RA). Posttreatment results indicate a significant improvement in water quality, making it suitable for irrigation purposes.

Currently, a renewable, innovative & integrated water treatment unit is being developed to power a three-phase pump, serving the dual function of lifting water from a well and subsequently channeling it through a state-of-the-art four-stage nano-filtration system, thereby ensuring its purity and suitability for various applications, including cultivation and drinking.











SDG AASTMT Report 2021/2022



Monitoring, Assessment and Innovative Treatment Technology to Enhance Groundwater Quality for Irrigation Toward Climate Change Adaptation on AASTMT webpage.

Aquaculture Research Center (2010- present)

The Aquaculture Research Center aims to pioneer new development projects in aquaculture by addressing scientific problems and providing tailored solutions. The center focuses on three integrated tasks: water, energy, and food.

- **Biodiesel Production from Waste:** The center has developed a 1000-liter capacity mixer reactor for biodiesel production using the transesterification process. Waste cooking oil, obtained from kitchen waste on the main campus and local restaurants, is used for biodiesel production. The generated biodiesel is utilized to produce electricity via a diesel generator, supporting the general activities of the Aquaculture Research Center.
- Hyonic System for Food Production: The center employs hyonics, a soil-less plant cultivation method. Flowers, herbs, and vegetables are grown in inert growing media supplied with nutrient-rich solutions, oxygen, and water. This system promotes rapid growth, higher yields, and superior quality compared to traditional soil cultivation. The hyonic system reduces water usage by 95% and increases plant production threefold.
- Rainwater Harvesting for Hyonic System: Given Alexandria's heavy rainy seasons, the center collects rainwater from greenhouse roofs in 10 tanks, each with a 500-liter capacity. This harvested rainwater is utilized in the hyonic system and fertilizer production units year-round.
- **Composting of Organic Waste:** The center addresses organic waste from landscape areas and kitchen scraps by converting them into soluble organic fertilizers. These fertilizers are used in the Earthworm production unit, producing vermi-compost as organic fertilizer for the hyonic system plant production and worms for experiments in animal feed production.





Aquaculture Research Center (2010- present) on AASTMT webpage

Environmental Research Facilities at AASTMT

The Environmental Monitoring, Modelling and Training Research Facilities at AASTMT are advanced and fully- equipped facilities dedicated for comprehensive study of environmental, energy and climate change research parameters. Underground, postgraduate Students and faculty researchers conduct rigorous research in the sampling, analysis, and data interpretation. It fosters collaboration with national and international research institutions, government bodies, and industry stakeholder to encourage information exchange, generate solutions to global environmental issues and promote sustainable practices within and beyond the AASTMT community. They carry out all environmental research studies and consultations as well as training. Sustainability has been at the heart of the Arab for a very long time. Our 2021-2026 strategic plan has dedicated one of its four main goals to sustainability, where The AASTMT commits to fulfil its societal responsibility and to align itself to the SDGs. The research facilities supports waste water analysis and water quality studies.



Environmental Research Facilities at AASTMT on AASTMT webpage



Implementing New Irrigation Systems

President Professor Dr. Ismail Abdel Ghaffar Ismail Farag visited the agricultural plant nursery at the main campus of the Academy in Abu Qir to assess progress and recent developments. During the visit, he inspected newly added plants, as well as new irrigation systems implemented in the general area and new agricultural greenhouses. The President commended the nursery team for their efforts, especially in adopting modern agricultural and irrigation techniques. He expressed hope for continued efficiency and adherence to modern methods in their work.





Community Engagement

In its strategy for the period 2021-2022, the AASTMT aimed to increase public engagement to assist people with water-related issues and waste management. The academy actively participated in infrastructure projects in collaboration with the government and local authorities. AASTMT focused on supporting initiatives addressing water and waste challenges, playing a proactive role in improving the local environment and enhancing the quality of life for communities. This strategy reflects the AASTMT's commitment to sustainable development and active involvement in environmental and water conservation support.

Cooperations with Government & Local Authorities to implement Large Scale Projects

A Committee To Examine The Problem Of Groundwater In The Villages Of Al-Jaafara And Al-Qaftia In Aswan

Major General Ashraf Attia, Governor of Aswan, assigned Assistant Secretary General Major General Ayman Reda to head a technical and field committee that includes



consultants and specialists from the Faculty of Engineering at ASWAN University and the Arab Academy for Science, Technology and Maritime Transport to examine the problem of high groundwater levels in the villages of Al-Jaafara and Al-Qaftia in Daraw Center.

This is within the framework of serious endeavor to interact with public issues and demands, and in the presence of officials of the executive authorities from the National Authority, the Drinking Water, Sanitation and Housing Company, and the head of the local unit of the center and city of Daraw.



A Committee to Examine The Problem Of Groundwater In The Villages Of Al-Jaafara And Al-Qaftia In Aswan on Youm 7 newspaper page A Committee to Examine The Problem Of Groundwater In The Villages Of Al-Jaafara And Al-Qaftia In Aswan on El balad News newspaper page

AASTMT Helps in Solving Groundwater Problem In 'Drao' Streets

Governor Ashraf Attia has appointed a technical committee, led by Assistant General Secretary Major General Ayman Reda, to investigate water accumulation issues in Al-Khor and Al-Shatb Qebli areas in Daraw. The committee, consisting of experts from the Faculty of Engineering and AASTMT, along with officials from various authorities, is focusing on an urgent solution. Water suction vehicles have been deployed to drain accumulated water around social housing buildings, and the committee aims to review, clean, and unclog sewage networks within three days. Additionally, the committee recommends the rapid maintenance and operation of four inactive wells to address groundwater concerns. The detailed report, including causes and solutions, will be presented to the governor for comprehensive implementation.





AASTMT Helps in Solving Groundwater Problem In 'Drao' Streets on AASTMT webpage

A Scientific Committee In Aswan For Studying Water Treatment (2020-Present)

Governor Ashraf Attia of Aswan convened with members of the House of Representatives, the Senate, and community leaders from Nasr Al-Nuba and Al-Ja'afra villages. During the meeting, the governor decided to form a high-level scientific committee to evaluate a citizen's proposal for an alternative pipeline to transfer treated water from the Blana Triple Treatment Plant. The committee, comprising experts from the Faculty of Engineering at Aswan University and the Arab Academy for Science and Technology, aims to ensure the safety of citizens and protect against potential catastrophes. Governor Attia emphasized the urgency, highlighting the risk of collapse of earth bridges that could lead to a serious threat to lives, properties, homes, and crops in over 7 villages in Nasr Al-Nuba. The governor also emphasized the importance of the Blana Treatment Plant, costing over 187 million Egyptian pounds, and its readiness to produce pure water under the supervision of regulatory entities for citizens' health and safety.



<u>A Scientific Committee in Aswan For Studying Water Treatment (2020- Present)</u> on Almsaey Akhbar Elyom newspaper page



Local & Regional Cooperation

A scientific protocol between the Alexandria Drinking Water Company and the Arab Academy for Science and Technology





A scientific protocol between the Alexandria Drinking Water Company and the Arab Academy for Science and Technology on the Holding Company for Water and Waste water webpage

A scientific protocol between the Alexandria Drinking Water Company and the Arab Academy for Science and Technology on AASTMT page

Protocol Signing Between the Arab Academy For Science, Technology And Maritime Transport And The Drinking Water And Sanitation Company In Aswan

The AASTMT College of Engineering and Technology in the South Valley Branch (Aswan), organized the inaugural meeting of the Advisory Council for Industry. This event, held on October 6, 2021, included key stakeholders such as the President of the Syndicate of Engineers in Aswan, directors of companies, and sector leaders from various bodies in Upper Egypt. The Dean of the Faculty, Prof. Dr. Mohamed Fahmy Shehadeh, highlighted the capabilities of the College, and department heads outlined expertise within each department. The council facilitated discussions, providing opportunities for industry support, consultations, and mutual training with South Valley industrialists. Some companies offered over 100 training opportunities in the



region. Additionally, a cooperation protocol was signed between the Arab Academy and a water company in Aswan, focusing on drinking and sanitation.



Protocol Signing Between the Arab Academy For Science, Technology And Maritime Transport And The Drinking Water And Sanitation Company In Aswan on AASTMT page

International Cooperation

AASTMT Member in The Global Water Operators' Partnerships Alliance (GWOPA)

The Global Water Operators' Partnerships Alliance (GWOPA), led by UN-Habitat, was established in 2009 to facilitate Water Operator's Partnerships (WOPs) — collaborative initiatives between water and sanitation operators to enhance capacity and performance in line with the Sustainable Development Goals (SDG) for universal access to water and sanitation. Key actions and contributions of GWOPA include:

- Capacity Building: GWOPA supports water and sanitation operators through capacity-building initiatives, offering training, technical assistance, and knowledge-sharing platforms to strengthen their ability to manage resources and improve service delivery.
- **Knowledge Exchange:** The alliance promotes the exchange of best practices and experiences among water operators through peer-to-peer learning and knowledge-sharing events, facilitating cross-regional learning.
- Partnerships and Networking: GWOPA fosters partnerships among water operators, governments, NGOs, and the private sector. By creating a collaborative network, the alliance enhances coordination and cooperation to address common challenges in the water and sanitation sector.
- Advocacy and Awareness: GWOPA advocates for the significance of water and sanitation services in achieving sustainable development. The alliance raises awareness and promotes the value of water services, contributing to increased support and investment in the water sector.



- Support for Public Water Utilities: Recognizing the vital role of public water utilities, GWOPA focuses on supporting them in delivering sustainable and equitable water services, emphasizing their importance in achieving universal access.
- Inclusive and Participatory Approaches: GWOPA encourages inclusive and participatory approaches in water governance by involving local communities, vulnerable groups, and stakeholders in decision-making processes to promote sustainable and equitable access to water and sanitation services.



AASTMT Member in The Global Water Operators' Partnerships Alliance (GWOPA) on GWOPA website page

Mediterranean Quadruple Helix Approach to Digitalization Funded Project (2020- present)

The MED-QUAD project aims to address the innovation and growth challenges faced by micro enterprises in Mediterranean regions by fostering cooperation among universities in six countries. Focused on the Quadruple Innovation Helix, the project involves universities acting as "civic universities" in collaboration with cities, socioeconomic stakeholders, and citizens. Two cross-border Living Labs will be established implement pilot activities for technological transfer and to research commercialization, utilizing ICT and Key Enabling Technologies. The project will focus on Smart Water Use Applications (SWUAP) for water optimization and Applied Research for Cultural Heritage Exploitation (ARCHEO) for cultural heritage promotion. MED-QUAD aims to enhance institutional capacities through a toolkit, facilitating collaboration between businesses, cities, and universities on both sides of the Mediterranean for inclusive development. Consortium countries are Greece, Italy, Egypt, Jordan, Palestine, Tunisia.









Mediterranean Quadruple Helix Approach to Digitalization Funded Project (2020- present) on ENICBCMED page



Events

Workshops and Training Programs

"Water Quality Measurements and Laboratory Techniques" Workshop (free)

A <u>free</u> 2-day training sessions on Water Quality Measurements and Laboratory Techniques for young water engineers, technicians and professionals organized between AASTMT and Alexandria Water Company (AWCo). The activity was planned to contribute to SDG 6, SDG 13 and SDG 15.



Water Quality Measurements and Laboratory Techniques Workshop on AASTMT webpage

External Visits to Implement Sustainable Development Goals for The Industrial Technical Secondary School For Water Supply And Sanitation For Boys In Alexandria (free)

Under the supervision of Mr. Jaber Mustafa, the school's principal, the school had the honor of receiving a visit from a committee representing the School's Cooperation Protocol with the AASTMT. The purpose of the visit was to develop the school in the field of sustainable development, with a focus on energy conservation. The committee expressed their admiration for the school, its students, and the modern educational facilities. They were accompanied by several engineers from the company to exchange experiences regarding electricity consumption reduction, as the school is known for its expertise in water conservation among leading schools.





External Visits to Implement Sustainable Development Goals for The Industrial Technical Secondary School For Water Supply And Sanitation For Boys In Alexandria on AASTMT webpage

Seminar for Pathway to Water Security in Egypt through Reverse Osmosis Desalination

As part of the participation of the College of Engineering and Technology at the main campus of the AASTMT in Abu Qir in celebrating Egypt's hosting of the 27th session of the international climate conference COP27 in November 2022 in Sharm El-Sheikh, the Department of Mechanical Engineering is pleased to invite students of the "Power Mechanics" division within the department to attend a lecture on: "The Path to Water Security in Egypt through Reverse Osmosis Desalination." Desalination of seawater is considered an important tool for safeguarding the future of water resources in the Arab Republic of Egypt as a form of renewable energy.



<u>Seminar for Pathway to Water Security in Egypt through Reverse Osmosis Desalination</u> seminar on AASTMT webpage

Participating of a Number of Responsibility Centers and Students in Port Said Governorate To Raise Awareness Of The Sustainable Development Goals In Presence of Cooperation Parties Of Common Interest

The AASTMT is committed to fulfilling its social responsibility by engaging with the community and creating a positive impact. Various responsibility centers, including department heads in architecture, environmental design, and construction



engineering from the Faculty of Engineering and Technology in the Port Said Branch, along with students, participated in a significant event at the Port Said Governorate Diwan. This free event involved collaboration with relevant government entities, such as the Ministry of Planning and Economic Development, Ministry of Communication and Information Technology, Port Said Governorate, Civil Society Organizations, as well as industrialists and businessmen from the Industrial Zone in Port Said.

During the event, the participants presented environmentally friendly projects focused on the agricultural sector, a key element in achieving food self-sufficiency. They also discussed projects related to food waste recycling and raising awareness among Egyptian farmers about the threats of climate change, including issues like land erosion, desertification, soil salinity, and reduced crop productivity. The input of local farmers was considered to address their specific needs and priorities.



Participating of a Number of Responsibility Centers and Students in Port Said Governorate To Raise Awareness Of The Sustainable Development Goals In Presence of Cooperation Parties Of Common Interest on AASTMT webpage

Conferences

College Of Engineering And Technology, Arab Academy For Science And Technology Participation In COP27 (free)

College of Engineering and Technology, Arab Academy for Science and Technology participated in the Climate Conference COP27, which is being held in Sharm El Sheikh during the month of November, Dr. Both in the field of energy and environment. The lectures dealt with different topics such renewable energy, climate changes, water security and sustainable cities.





<u>College Of Engineering And Technology, Arab Academy For Science And Technology</u> <u>Participation In COP27</u> on AASTMT webpage

The Fourth Edition of the Arab Week for Sustainable Development

H.E Prof. Dr. Ismail Abdel Ghafar Ismail Farag – President of the AASTMT participated in the activities of the Fourth Edition of the Arab Week for Sustainable Development that was organized by the League of Arab States, the Ministry of Planning and Economic Development in Egypt, the United Nations, the European Union and the World Bank, during the period from 13 - 15 February 2022, under the theme "Together for Sustainable Recovery", as to probe ways of alleviating repercussions and negative impacts of coronavirus to help achieve sustainable development goals in Arab countries.



The Fourth Edition of the Arab Week for Sustainable Development on AASTMT webpage

34th Annual Water Treatment Technology Conference, Abu Qir Fertilizers Company

Abu Qir Fertilizers Company organized a three-day conference on water treatment technology at the Four Seasons Hotel in San Stefano, Alexandria. The event, attended by local and foreign industrial companies, as well as water specialists from Egyptian universities like the AASTMT, Alexandria University, and the Egyptian Japanese University, focused on discussing water problems in Egypt and exploring treatment solutions. The conference facilitated collaboration among experts and engineers to address challenges related to rationalizing water use across various industries, including petrochemicals, petroleum refining, fertilizer production, and natural gas. Numerous Egyptian companies from diverse sectors were invited to participate, contributing to the comprehensive discussion on water treatment technologies.





Resourcing the world **OVEOLIA**



34th Annual Water Treatment Technology Conference

We cordially invite you to attend the 34th Annual. Water Treatment Technology Conference from March 29th to 31th in the FOUR SEASONS HOTEL. San Stefano , Alexandria, Egypt.

On Wednesday, March 30th, at 1045 Luca Ouadri, Deputy Sales Manager, Veolia Water Technologies ANOXKALDNES TECHNOLOGIES will conduct a presentation on Biological Solutions for Treatment of Complex Industrial Wastewaters.

Looking forward to meeting you all there.

<u>34th Annual Water Treatment Technology Conference, Abu Qir Fertilizers Company</u> on AASTMT webpage

Initiatives

AASTIANS Go Green (2020- Present)

From the headquarters of the Academy at the Smart Village, AASTIANS Go Green is an initiative that started in 2020 till present which exhibited a series of awareness and activities events with AAST and the community serving all SDG goals. This initiative is part of the Academy's social responsibility and in line with the cooperation agreement signed with His Excellency Major General Mahmoud Shaarawy, the Minister of Local Development, and His Excellency Professor Dr. Ismail Abdel Ghaffar Ismail, the President of the Arab Academy for Science, Technology, and Maritime Transport, regarding the planning and implementation of the "GO Green" campaign.



The launch of the Green Project for Arab Youth at the Arab Academy in Smart Village on El Dostor newspaper page The launch of the Green Project for Arab Youth at the Arab Academy in Smart Village on Al Masry Al Youm newspaper page The launch of the Green Project for Arab Youth at the Arab Academy in Smart Village on El Watan News newspaper page



"Towards a Green Sustainable Future" (2022- Present)

The Committee for the implementation of Sustainable Development Goals (SDGs) at the Arab Academy for Science, Technology and Maritime Transport (AASTMT) has launched an initiative in order to educate teachers and school students at different levels of the development of the SDGs set by the United Nations. This is within the framework of the Academy's social responsibility and its positive impact on the surrounding environment. This initiative can be summarized in three main stages:

- 1. Addressing 7 schools in Alexandria as a first stage this year to join training workshops for teachers and students to raise awareness of the SDGs.
- 2. Following up with the schools on the implementation of what has been learned in the workshops at the school level and supporting these schools financially and logistically to implement initiatives to save energy and water as a first stage.
- 3. Holding a competition among these schools at the Academy's headquarters in order to identify the schools that succeeded first in developing their institutional performance after implementing the SDGs and presenting success stories in each.

The initiative includes several axes and goals for sustainable development and aims to implement them in the schools participating in the initiative and with the participation of more than one group of society. First, the initiative improves the quality of education in schools, introduces smart component and supports the application of students' ideas. Secondly, the ideas proposed and developed by the participating schools include water and energy fields, which are included in SDG 6 and SDG 7. Third, the initiative works on these two axes and applies them as this will have a great impact on reducing the risks of climate change and achieving sustainability in participating cities and communities, which is in line with SDG 11 and Goal 13. Finally, participation in cooperation between the AASTMT and various schools and institutions contributes to achieving and developing partnership with them and is directly related to SDG 17.







"Towards a Green Sustainable Future" (2022- Present) on AASTMT webpage

Aswan Youth Forum Kicks Off Under the Slogan "Its Youth Build Its Future"

Major General Ashraf Attia, Governor of Aswan, inaugurated the first Aswan Youth Forum in December 2022, with the theme "Its youth... Its future is being built," featuring the participation of around 750 young men and women. The opening ceremony was attended by various dignitaries, including Dr. Ghada Abu Zeid, Deputy Governor, Dr. Louay Saad El-Din, Vice President of Aswan University, and other officials. The forum, organized by the Directorate of Youth and Sports, included an open dialogue led by the governor on various development aspects, addressing topics such as infrastructure replacement, renewal projects, development and beautification, service vehicle modernization, comprehensive health insurance, and initiatives for slum development. The governor also announced the launch of stalled projects, emphasizing development axes, roads, bridges, investment initiatives, and youth employment.

> انطلاق فعاليات ملتقى شباب أسوان تحت شعار شبابها يبني مستقبلها



🏼 أسوان محمود على 💿 الإلتين 05/ديسمبر/2022 - 10:13 ص أخف للمفضلة 🔲 شارك <

افتتح اللواء أشرف عطية **محافظ أسوان** فعاليات ملتقى شباب آسوان الأول ديسمبر 2022 تحت شعار شبابها... يبنى مستقبلها، وذلك وسط مشاركة حوالى 750 شاب وفتاة.

حضر الافتتاح الدكتورة غادة أبو زيد نائب المحافظ، والدكتور لؤي سعد الدين، نائب رئيس جامعة أسوان، واللواء أشرف فؤاد السكرتير العام للمحافظة، والمهندسة فاطمة إبراهيم السكرتير العام المساعد، وأيضًا الدكتور الفيصل عبد الحميد ممتلًا عن الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري، بجانب الدكتور عبد الله على عبد الله عميد المعهد العالي للخدمة الاجتماعية بأسوان، بالإضافة إلى القيادات التنفيذية والعسكرية والأمنية.





Aswan Youth Forum Kicks Off Under the Slogan "Its Youth Build Its Future" on Cairo 24 newspaper page Aswan Youth Forum Kicks Off Under the Slogan "Its Youth Build Its Future" on Al Masry Al Youm newspaper page Aswan Youth Forum Kicks Off Under the Slogan "Its Youth Build Its Future" on AASTMT webpage