Arab Academy for Science, Technology & Maritime Transport

Arab Academy
for Science, Technology & Maritime Transport

Report 2022 / 2023

SDG 14

Our Aim in 2022 -2023

AASTMT aimed to our aim for the academic year 2022-2023 was to reinforce our commitment to achieving **Sustainable Development Goal 14 (SDG 14)**: *Life Below Water*. Recognizing the critical role that oceans and marine resources play in global sustainability, we dedicated ourselves to fostering innovative research, impactful education, and community engagement initiatives to promote marine conservation, sustainable fisheries, and the reduction of marine pollution.

THE Impact Ranking Scores 2021-2022

SDG 14

LIFE BELOW WATER

Key Milestones in 2022-2023

The Arab Academy for Science, Technology, and Maritime Transport (AASTMT) demonstrates its steadfast commitment to Sustainable Development Goal 14 (SDG 14) by familiarizing its students with it and including the necessary knowledge within the related educational programs, Curricula, and specialized courses. Although SDG14 is supported widely within the AASTMT maritime educational sector, AASTMT firmly believes that SDG14 is not limited to the maritime sector and promoting it to all AASTMTs' campuses and colleges. This dedication fosters a motivated and professional workforce, aligning with SDG 14's principles:

Fisheries Technology program (Undergrad)

Program Description

The department is a pioneer in the education of fishing vessels navigation and designing of fishing equipment that qualifies graduates to work on fishing vessels as alternate officers, to be responsible for navigational surveillance (after completion of ministerial requirements for practicing the profession) or fisheries observers on fishing vessels, also as fishery managers in fishing ports. The program is designed in accordance with the requirements of the STCW-F international conventions of 1978, amendments to STCW-F for 1995, and the requirements of the International Maritime Organization (IMO). Students receive marine uniforms and marine exercises can be conducted in regional and international waters.

College of Fisheries Technology & Aquaculture Technology (aast.edu)

Master of Science Degree in Sustainable Management of Fisheries and Aquaculture (SMFA), Funded by the EU (Erasmus+ project) (Postgrad)

Program Description

Master of Science Degree in Sustainable Management of Fisheries and Aquaculture (SMFA), Funded by the EU (Erasmus+). The M.Sc. students have accomplished the program of student mobility and exchange within the framework of the EU-funded project FishAqu of Erasmus+. The students visited the University of Aveiro and the University of Palermo throughout the period from 8 to 17 May 2022. Note: The project started on 15 November 2019 and will last until 15 November 2022.

College of Fisheries Technology & Aquaculture Technology (aast.edu)
https://m.facebook.com/story.php?story_fbid=pfbid05W3bY6AH2Kme6e2jH4kS8h2MDftrr9z2eMHHsvRHnPGkVjpdURVok7opmtNgtwiJl&id=994247483960425&sfnsn=scwspwa&mibextid=2JQ9oc
https://aast.edu/en/sdg/goals.php?unit_item=1214&page_id=121400009

Directing the Graduation Project Topics in the Relevant Specializations

The College of Fisheries and Aquaculture Technology at the Arab Academy for Science, Technology, and Maritime Transport participated in the activities of the Academy's Industry

Advisory Council at the main headquarters in Abu Qir under the theme: "Artificial Intelligence and the Future of National Industry", held on Tuesday, May 16, 2023. Students from the college took part in presenting their graduation project entitled: “Potential application of chitosan nanoparticles extracted from marine shrimp shells as preservatives for fishery products”. It is worth mentioning that they also publish a paper from their graduation project entitled: “Potential Application of Chitosan Nanoparticles as Preservative Agent for Fishery Products”.

Potential Application of Chitosan Nanoparticles as Preservative Agent for Fishery Products

ARTICLE INFO

ABSTRACT

INTRODUCTION

College of Fisheries and Aquaculture Technology-Alexandria | AASTMTarticle_312602_ec61a5e93ab6215d15bccd25ce942310.pdf

Representing Egypt in the working groups on stock assessment (WGSA) of demersal species (WGSAD) and small-pelagic species (WGSASP) that are organized by the General Fisheries Commission for the Mediterranean (GFCM), Food and Agriculture Organization of the United Nations.

Since 2019, The recommendations of the WGSAs are being submitted to the Scientific Advisory Committee on Fisheries (SAC), which collects and assesses information on catches, fishing efforts, fleet capacity, and other data relevant to the conservation and management of fisheries.

Then, the SAC adopts the assessment of the status and trends of relevant populations of living marine resources, ecosystems, and fisheries-related human components, using the

appropriate indicators and in relation to agreed biological and/or management reference points. In addition, A provision of independent advice made by the SAC to facilitate the adoption of recommendations concerning the sustainable management of fisheries and ecosystems at the regional and subregional levels, including relevant biological, environmental, social, and economic aspects, the ecosystem approach to fisheries, the impact of IUU fishing and the assessment of biological and ecological implications under different management scenarios.

Links to the last three meetings:
https://gfcm.sharepoint.com/EG/Report%20v2/Forms/AllItems.aspx?id=%2FEG%2FReport%20v2%2F2023%2FSRC%2DEM%2FGFCM%5FSRC%2DEM%5F2023%5FReport%2Epdf&parent=%2FEG%2FReport%20v2%2F2023%2FSRC%2DEM&p=true&ga=1
https://gfcm.sharepoint.com/EG/Report%20v2/Forms/AllItems.aspx?id=%2FEG%2FReport%20v2%2F2022%2FWGSAD%2FDecember%5F2022%2FGFCM%5FWGSAD%5FDec22%5FReport%2Epdf&parent=%2FEG%2FReport%20v2%2F2022%2FWGSAD%2FDecember%5F2022&p=true&ga=1

TouMaLi research project (2021-2025)

Reducing Tourism Marine Litter in Northern Africa through the Contribution of a Sustainable Waste Management System (Algeria, Egypt, Morocco, and Tunisia) and to recycle and reuse the unavoidable waste to reduce overall marine and beach littering sustainably. Primary activities are the development and implementation of a coastal monitoring program; the definition of a pollution baseline as well as marine litter pollution assessments; the evaluation of solid waste management and current mitigation measures; the analysis, implementation, and monitoring of legal, organizational, financial, and technical solutions and measures with local, regional and national actors; and the provision of capacity building and awareness raising in the regions. In August 2021, the University of Rostock and the Leibniz Institute for Baltic Sea Research Warnemünde (IOW), together with the Arab Academy for Science, Technology and Maritime Transport (AASTMT) and other partners including think tanks as well as universities and ministries from the project region, started a research project on Marine Litter caused by the tourism industry in Egypt, Morocco, Tunisia and Algeria called TouMaLi. Arab Academy for Science, Technology, and Maritime Transport (AASTMT) participated in this

research as the local project partner in Egypt. Complimentary Egyptian Ministries for Environment, Local Development, and Tourism are involved. The project aims to develop and establish sustainable waste management solutions in the tourism sector to protect the marine ecosystems of the Middle East and North African (MENA) region. The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) is funding the project with about 4.2 million euros from the "Funding Programme against Marine Litter". “Zukunft – Umwelt – Gesellschaft (ZUG) gGmbH“ supports the Federal Ministry in implementing its funding policy aims.

The project, led by the University of Rostock and supported by a consortium of eight other institutions from academia, think tanks and businesses, as well as local political partners, aims to significantly reduce marine litter until 2025 through the following measures: baseline assessment of marine litter pollution, development of an overall strategy for waste management, awareness raising, and capacity building as well as knowledge transfer to key stakeholders in the target region, such as hotels and communities.

In March and April 2022, the Arab Academy and the IOW teams, supported by several local students and volunteers, surveyed several beaches around Alexandria and Marsa Matrouh. The beaches sampled were a mix of private and public beaches. Furthermore, marinas were also examined to gain more knowledge about the overall pollution status and to assess litter emissions. Regarding beach pollution, more than 25.000 litter pieces were collected and analyzed. A preliminary assessment of the sources of pollution indicates that many of the plastic bags, candy wrappers, straws, and food packaging originate from tourism and beach users.

https://toumali.org/en/partners
https://toumali.org/sites/toumali.org/files/documents/toumali_factsheet_eng.pdf
https://toumali.org/en

https://aast.edu/en/scientific-research/projects/news.php?page=2&unit_id=1218&language=1&event=2&get_event_type=1
https://toumali.org/en/node/126
https://toumali.org/en
https://toumali.org/system/files/document/TouMaLi_Factsheet%20Eng_4.pdf

AASTMT Research Catalogue 2022-2023

https://aast.edu/getData/pdf_retreivefileNew_open.php?unit=473&filename=/mediafiles/473/Document/160247.pdf

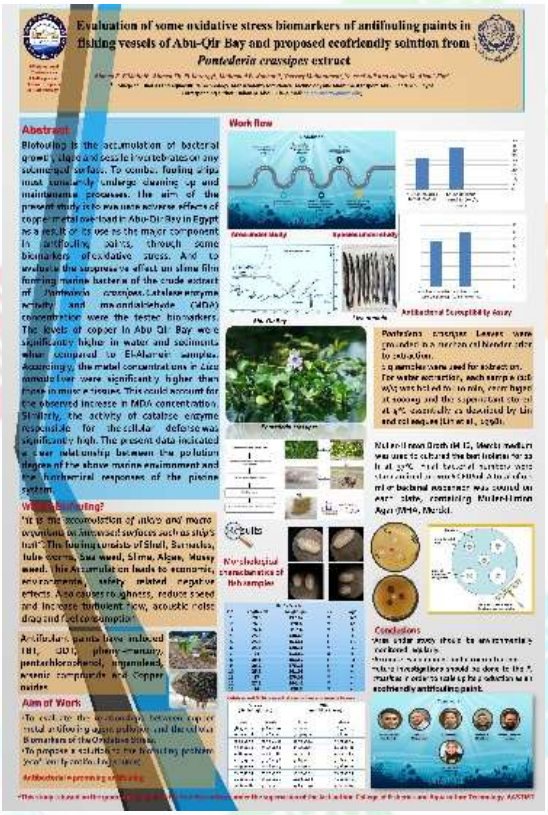
AASTMT funds research projects serving SDG14, like “Project: Carbon Stock Assessment of Mangrove Forests along the Red Sea Coast of Egypt: Towards Climate Change Mitigation”, which started in March 2021 October 2022

Coastal ecosystems are critical to maintaining human well-being and global biodiversity. In particular, mangrove forests provide numerous benefits and services that are essential for climate adaptation and resilience, where they help mitigate climate change by sequestering and storing significant amounts of carbon (blue carbon) from the atmosphere and oceans. To explicitly address the role of blue carbon ecosystems in climate change mitigation and human wellbeing through policy, regulatory, finance, or other mechanisms, the carbon stock in these ecosystems and the current or potential carbon emissions from changes to those ecosystems must be quantified. In light of the limited studies in the literature that connects the recent reliable estimates of carbon emissions and their relation to the mangroves on the Egyptian Red Sea coast, the overall objective of this project is to facilitate development in the area, restore mangrove ecosystems, enhance ecosystem services (including carbon sequestration), promote sustainable mangrove related income, and act as a model for future projects. This project aims to create a carbon inventory for mangrove beds at selected locations along the Red Sea coast of Egypt.

https://aast.edu/en/scientific-research/projects/project.php?uid=16&proj_id=2116

Initiative scientific output (the First International Conference of the Institute of Genetic Engineering Research "Challenges and New Prospects in Biotechnology Sciences" at the City of Scientific Research and Technological Applications)

Students at the College of Fisheries and Aquaculture Technology have participated in the First International Conference of the Institute of Genetic Engineering Research "Challenges and New Prospects in Biotechnology Sciences" at the City of Scientific Research and Technological Applications. That was evaluated as the best poster presented at the conference.



College of Fisheries Technology & Aquaculture Technology-Alexandria | AASTMT

Participation of College Students in The Workshop and Competition of The Climate Protection Initiative

Students at the College of Fisheries and Aquaculture Technology won the first three places in the Climate Protection Initiative competition. 27-28 Feb. 20

Participation of College Students In The Workshop And Competition Of The Climate Protection Initiative on AASTMT webpage

AASTMT Recycling Program

Since 2019, AASTMT perceives the unfavorable effect of plastic waste, from creation through to removal. Plastic contamination can destructively affect Aquatic life, and the College is looking to diminish plastic use and wastage nearby. The accompanying activities have been received to advance this point with staff and understudies:

Single-use plastics in catering (food bundling, dispensable coffee cups, cutlery) have been supplanted with compostable catering supplies in all College food outlets to lessen plastic waste nearby.
Reusable cups are given to AASTMT staff during staff acceptances to decrease single-utilize dispensable cup wastage. These can likewise be bought from grounds retail outlets, and limits are offered to clients when reusable cups are used. Single-use cups cause an extra charge to urge a transition to reusable cups.
Conferencing and Occasions use reusable crystals to serve water, killing waste from recently used plastic-filtered water. The group also produces cleaned water nearby, further diminishing waste by evading the need to purchase indispensable water bundling. Water stations have been introduced all through the grounds for use by understudies and staff to support bottle reuse.

AASTMT intends to keep diminishing waste by investigating new items and administrations to help decrease plastic utilization and waste. To achieve this, AASTMT adopted a garbage segregation strategy and has distributed categorized trash bins on all its campuses; the following pictures are from the Abu-Qir Campus.

AASTMT Recycling Program on AASTMT webpage

AASTMT represents the IAMU at the 82nd of the MEPC in London

The Arab Academy for Science, Technology and Maritime Transport (AASTMT) is an effective participant in the International Association of Maritime Universities (IAMU), so the AASTMT has represented the IAMU in the Marine Environmental Protection Committee (MEPC) in its 82nd round, held between 30 September and 4 October 2024 in London, UK.

The IAMU's representative from the AASTMT was Senior lecturer Mohamed Elbawab, one of AASTMT's SDG workforce for the SDG14 team.

Several crucial environmental issues have been addressed, like

- Harmful aquatic organisms in ballast water.
- Air pollution prevention.
- Energy efficiency of ships.
- Reduction of GHG emissions from ships.
- Follow-up work emanating from the Action Plan to address marine plastic litter from ships.
- Reduction of underwater radiated noise from commercial shipping.
- Pollution prevention and response.
- Identification and protection of Special Areas, ECAs, and PSSAs.

The committee's final report can be found in the following link for whom has an active IMODOCS account: MEPC 82/WP.1/Rev.1 (15 October 2014)

https://docs.imo.org/Category.aspx?cid=47&session=82&dtid=18

Integration of Sustainable Development Goals in Universities for Better Climate Change Management "INVOLVE (Erasmus+) Project

INVOLVE_AASTMT_ERASMUS Day.pdf

Waste Recirculating (Water/solids)

The agricultural wastes and water produced from the landscape activities on the main campus as well as the main kitchen of the students in the Arab Academy are considered a great source of waste. The Aquaculture Research Center (ARC) on the main campus is responsible for recycling these wastes. The recycling system consists of 2 paths. In the first one, these wastes are collected and introduced to the earthworm composting pens. The produced vermicompost is then used back as an organic fertilizer used in landscape activities. On the other hand, the sexual production of the worms leads to an increase in their number (3 folds). Part of the produced worms is then used in the fish culture activities in the ARC. In the second path, the wastes are used to produce bio-gas and soluble fertilizers. The produced biogas is used in the different ARC actives as an alternative source of energy.

Aquaculture research center Waste Recirculating.pdf (aast.edu)

Community Engagement

In the 2022-2023 academic year, the Arab Academy for Science, Technology and Maritime Transport (AASTMT) prioritized impactful community engagement initiatives to address challenges related to **SDG 14: Life Below Water**. These efforts focused on raising awareness, fostering collaboration, and empowering local communities to contribute to marine conservation and sustainable development. Below are the key community-focused initiatives undertaken:

Overfishing Community Awareness

One of the main causes of the reductions in maritime wildlife populations is fishing. Fishing is not intrinsically harmful to the ocean, except fishing vessels overfish, which occurs when they take fish faster than the stocks can recover. Globally, the number of overfished stocks has risen

in the last 50 years, and the Food and Agriculture Organization of the United Nations estimates that a third of the world's assessed fisheries are currently overfished biologically. Bycatch, or the undesirable marine life caught when fishing for a different species, is directly related to overfishing. This is another major marine concern that kills hundreds of thousands of sea turtles, cetaceans, and billions of fish. The harm caused by overfishing extends outside of the maritime domain. Fish is the primary source of nourishment for billions of people worldwide, and for millions more, fishing is their main source of income. A significant number of individuals who earn a living from fishing are striving to enhance global ocean resource management and conservation efforts. In order to improve fisheries management internationally, WWF collaborates with a wide range of stakeholders, emphasizing sustainable methods that preserve ecosystems while preserving livelihoods and guaranteeing food security.

For the previously mentioned, In January 2023, AASTMT as a leading university within the region; represented by the College of Fisheries and Aquaculture Technology, took the initiative to familiarize the local fishermen with the threats and adverse effects of overfishing.

https://cms.aast.edu/contenttemp.php?page_id=121400026

Initiative: Antifouling Paints:Environmental Hazards and Alternatives (Abu-Qir Bay Fishermen Community Outreach Workshop)

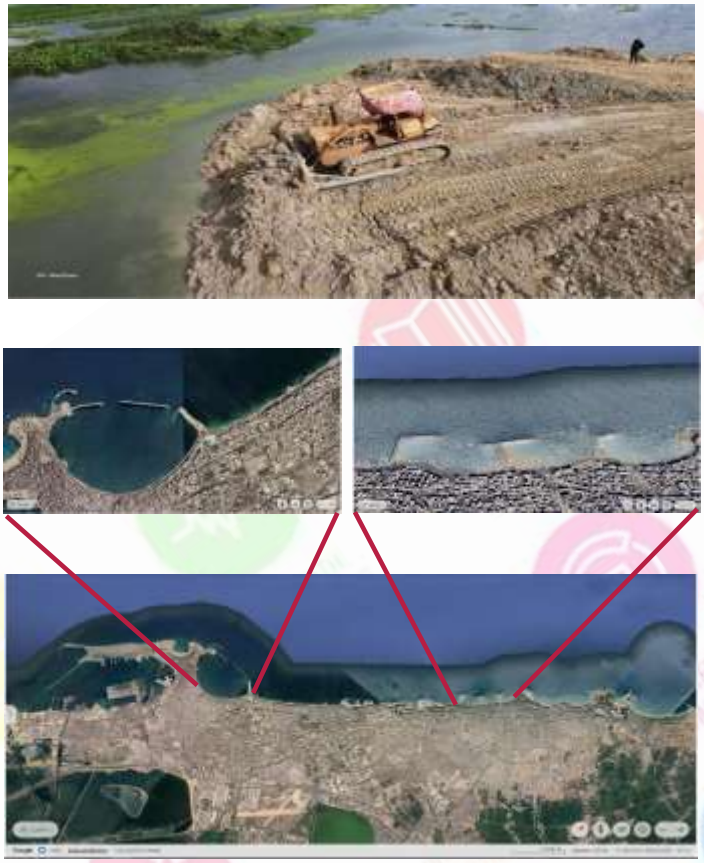
Biofouling is the accumulation of bacterial growth, algae, and sessile invertebrates on any submerged surface. To combat fouling ships must constantly undergo cleaning up and maintenance processes. Protecting boat hulls against biofouling is a compelling necessity, not only to prevent material corrosion and degradation but also to maintain the proper maneuverability of the boats, thereby ensuring safety at sea. Antifouling paints are widely used to counteract this problem, using toxic substances such as copper-containing paints, which negatively impact marine organisms. Raising the awareness of fishermen about this problem and encouraging them to use eco-friendly antifouling paints is of great importance; environmentally and economically.

Initiative: Antifouling Paints: Environmental Hazards and Alternatives (Abu-Qir Bay Fishermen Community Outreach Workshop) on AASTMT webpage

Initiative: "Existence of Harmful Algal Blooms along Alexandria Coast: A Mitigation Strategy"

Since 1998, the Alexandrian coast has undergone a series of engineering modifications. These changes have had an impact on the marine water quality, phytoplankton productivity, and diversity, in addition to the topography of the coast. In order to prevent erosion and build new beaches, preventive wave breakers were constructed in 1998. Shallow, somewhat big, semi-closed lagoons formed as a result. These lagoons become an ideal habitat for algal blooms because of their shallow depth and partial stagnation of their waters. Around 2010, the corrective strategy was subsequently implemented to lessen the negative consequences of the earlier coastal alterations. Over the course of the two periods, the phytoplankton's standing crop and composition completely changed. Internal tourism suffered financial losses due to this bloom.

A major problem along the Alexandria shoreline is beach erosion. Accordingly, the coast was subjected to coastal engineering modifications in order to reduce erosion and establish new recreational beaches. The coastal modifications were done without a preliminary impact assessment and led to negative effects. Semi-closed artificial lagoons were established, and a green tide was formed for the first time along these lagoons due to their shallowness and increase in nutrient concentrations. Corrective measures had to be taken to mitigate the negative effects. In 2021, a mitigation strategy were preliminary put to overcome this critical environmental crisis, in an action plan undertaken in the period 2021 – 2024.



https://cms.aast.edu/contenttemp.php?page_id=121400028

Events

Throughout the 2022-2023 academic year, the Arab Academy for Science, Technology and Maritime Transport (AASTMT) hosted and participated in a range of impactful events aligned with **SDG 14: Life Below Water**. These events were designed to raise awareness, foster collaboration, and drive actionable change in marine sustainability. Below is an overview of the key events and their outcomes:

Scientific Conferences such as MARLOG 12. 12th-14th March 2023

The world is facing continuous and different types of challenges, either natural crises such as climate change and other natural hazards that exacerbate climate change or manmade challenges such as conflicts between nations and countries, conflicts in interests between stakeholders, and the rapid changes in types and sizes of vessels and products and size of trading between countries. These challenges are growing and accelerating with time and driving the world to go through critical stages in the global economy in general and port and supply chains, which drives strongly to search for innovative and effective solutions to face the challenges and ensure the continuity of maritime transport and port productivity and competitiveness. The crises and challenges during the last few decades led to negative consequences on the global economy and particularly a huge impact on supply chains, logistics, and ports, which emphasize the importance of adopting integrated solutions and applying effective measures to adapt to such challenges and rational risk management.

Furthermore, the challenges facing the world reflect the significance of implementing resilient strategies that ensure the ability to sustain logistics business and port services efficiency. The mitigation of different crises can be achieved through different aspects and one of these aspects is modern technologies and promoting innovation. Relying on modern technologies and promoting innovation are the key drivers for achieving a resilient future for ports and the logistics industry. This requires synergies between decision-makers, academic researchers, stakeholders and the whole port and logistics community. It also requires effective communication, exchange of knowledge and best practices.

MARLOG 12 sheds light on the importance of innovation, modern technologies, and their role in a sustainable, resilient future for the port community and maritime industry.

https://marlog.aast.edu/archive/2023/en/introduction.html

MoU between AASTMT and the World Fish Center, Jun 3, 2022

On the sidelines of the fourth AASTMT's Advisory Council for Industry, On Jun 3, 2022, his excellency Professor Ismail Abdel Ghafar, president of the Academy, has signed an MoU with the WorldFish Center, represented by Dr. Ahmed Nasrallah, the Center's Regional Director. The agreement, set to last for five years, aims to foster collaboration in the areas of aquaculture, fisheries management, and capacity building. Both institutions will work together to promote sustainable fisheries and aquaculture practices in the region."

https://cms.aast.edu/contenttemp.php?page_id=121400030

Upcoming Goals

In the upcoming year, the Arab Academy for Science, Technology and Maritime Transport (AASTMT) aims to build on its commitment to **SDG 14: Life Below Water** by advancing impactful projects, forging new partnerships, and expanding its educational and research initiatives. Our future goals include:

1. Expanding Marine Research

- Launching a **Marine Biodiversity Monitoring Program** to assess and protect critical marine habitats along Egypt's Mediterranean and Red Sea coasts.
- Establishing an **Ocean Innovation Lab** to foster interdisciplinary research on sustainable aquaculture, marine pollution mitigation, and ecosystem restoration.

2. Strengthening Educational Programs

- Introducing new certificate programs in **Marine Conservation and Climate Resilience**, designed to equip students and professionals with the skills needed to address pressing marine challenges.
- Enhancing experiential learning opportunities by expanding fieldwork and internships with local and international marine research organizations.

3. Community-Centered Initiatives

- Scaling up the **"Save Our Shores" coastal clean-up campaign**, aiming to remove at least **5 tons of marine debris** in collaboration with local communities and NGOs.
- Launching the **"Blue Futures" Initiative**, which will provide workshops and funding opportunities for community-led projects focused on sustainable fisheries and marine protection.

4. Partnership Development

- Strengthening collaborations with global organizations such as **UNESCO-IOC** and **WWF** to align efforts with international marine sustainability standards.
- Establishing new partnerships with private sector stakeholders to develop eco-friendly technologies for aquaculture and waste reduction.

5. Innovative Technology Integration

- Developing a **Marine Data Platform** to collect, analyze, and share real-time data on marine ecosystems, providing critical insights for policymakers and researchers.
- Exploring the use of **AI and satellite imaging** for monitoring marine pollution and tracking biodiversity changes.

6. Policy and Advocacy Efforts

- Hosting an **International Marine Sustainability Forum** to bring together policymakers, scientists, and industry leaders to discuss solutions for marine resource management.
- Contributing to national and regional policies on marine conservation by providing scientific advice and research-based recommendations.

7. Measurable Impact Goals

- Engage **1,000+ volunteers** in marine conservation efforts.
- Remove at least **10 tons of marine waste** from coastal areas.
- Publish **15+ research articles** addressing marine sustainability challenges.

With these initiatives, AASTMT is poised to further its impact on marine conservation and sustainable development, ensuring that the oceans and marine resources are preserved for future generations.