



## SDG14: Life Below Water

### Annual report (2023)

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Details via web link: <https://www.aun.edu.eg/AUIRO/index.php/en/sdg14>

Assiut University has made considerable progress regarding this goal, that focuses on the preservation and sustainable use of aquatic ecosystems.

Through research, education, and community involvement, the university has committed to protecting aquatic life.

### 1. Supporting Aquatic Ecosystems through Education

- **Educational Programs on Freshwater Ecosystems:**

Assiut University provides educational programs on freshwater ecosystems, covering water irrigation practices, water management, and conservation techniques for local and national communities. These initiatives, presented by the Department of Geology at the Faculty of Science, aim to build community awareness and capacity for water resource management.

- **Sustainable Fisheries and Aquaculture Programs:**

Fish biology and fish farming are among the undergraduate and graduate courses offered by the university.



Faculty of veterinary medicine has an “**Aquatic Animals Medicine and Management Unit**” actively contributes to sustainable fisheries management by offering training in fish farming, aquaculture, and molecular biology, helping students and local communities engaging sustainable practices.

## 2. Supporting Aquatic Ecosystems through Action

- **Conservation and Sustainable Use of Aquatic Resources:**

Assiut University actively supports sustainable utilization of aquatic resources through events and initiatives, particularly in marine and freshwater ecosystems. The Aquatic Animals Medicine and Management Unit regularly holds seminars and educational activities about sustainable practices in water resource management, emphasizing the importance of conservation.

- **Research and Contributing to Maintain Ecosystem Biodiversity:**

Assiut University conducts extensive research to maintain and enhance biodiversity, particularly in ecosystems under threat. Notable research proposals include studying environmental influences on species abundance and assessing the effects of pollutants on aquatic ecosystems, such as the impact of microplastics and heavy metals on marine environments.



- **Industry Collaboration to Minimize Environmental Impacts:**

The Faculty of Science has conducted research on the environmental impacts of marine and freshwater industries, including studies on pollution, habitat degradation, and the impacts of chemicals on aquatic species. Research findings guide practices that minimize environmental harm.

Research or project title
Impact of multiple environmental factors on species abundance in various forest layers using an integrative modeling approach
PHYTOHORMONES PRODUCTION BY FUNGI POLLUTED ONION (ALLIUM CEPA L.) AND MAIZE (ZEA MAYS L.) PLANTS.
Impact of atrazine and nitrate on liver and kidney of Egyptian toad <i>Sclerophrys regularis</i> : bioindicator alarming on ecosystem
Oxidative degradation of sulfafurazole drug by chromium trioxide in different acidic media: a kinetic and mechanistic study for treating human diseases, they became harmful to the ecosystem if they reach to the environment. Due to or degradation of antibiotics to save the humans and ecosystem.
Effect of Manure and Compost on the Phytostabilization Potential of Heavy Metals by the Halophytic Plant Wavy-Leaved Saltbush
Responses of Marine Fungi to Heavy Metal Contamination
Linking Effects of Microplastics to Ecological Impacts in Marine Environments
Microplastic distribution, abundance, and composition in the sediments, water, and fishes of the Red and Mediterranean seas
Exposure to pyrogallol impacts the hemato-biochemical endpoints in catfish ( <i>Clarias gariepinus</i> )
Oxidative stress, antioxidant defense responses, and histopathology: Biomarkers for monitoring exposure to pyrogallol in <i>Clarias gariepinus</i>



Distribution, abundance, and composition of microplastics in market fishes from the Red and Mediterranean seas in Egypt
A simple approach to water and plankton sampling for water microbiological and physicochemical characterizations at various depths in aquatic ecosystems
-Nonylphenol induced morphological and histopathological malformations in Bufo regularis tadpoles
Toxicity of co-exposure of microplastics and lead in African catfish (Clarias gariepinus)
Nonylphenol induced morphological and histopathological malformations in Bufo regularis tadpoles
Microplastics (MPs) are an emerging threat to freshwater ecosystems with several ecotoxicological ramifications for ... metals on their surfaces and increase their availability to aquatic organisms
Bioremediation of Hydrocarbons Compounds (Crude Oil) by Microorganisms in Aquatic Ecosystem

### 3. Sustainable Water Management and Pollution Prevention

- Water Quality Standards for Waste Disposal:**

Assiut University recently put guidelines for water quality standards to protect ecosystems, wildlife, and human health. The university monitors water quality in local water bodies to ensure that discharges meet environmental standards, minimizing pollution from campus activities.

#### **Reducing Plastic Waste on Campus:**

The university presented an action plan to reduce plastic waste, allowing reusable and biodegradable alternatives to decrease plastic pollution.

#### **Plastic Waste generated at Assiut University**



- **Sources:** Single-use plastic bottles, packaging, plastic bags, food containers, and lab supplies (such as disposable gloves and test tubes).
- **Estimate:** the campus likely produces 200–400 grams of plastic waste per person per week.
- **Total:** For an estimated 100,000 people (students, faculty, and staff combined), the annual plastic waste would range between 1,000–2,000 tons.
- **Treated Plastic Waste:** From the estimated 1,000–2,000 tons of plastic waste, about 200–800 tons treated.

- **Prevention of Marine Pollution:**

Assiut University's policy on preventing marine pollution focuses on reducing waste from land-based activities that could harm aquatic ecosystems. The policy highlights sustainable waste management, recycling, and proper disposal of hazardous materials to reduce pollutants entering water systems.

#### 4. Community Involvement and Stewardship

- **Aquatic Ecosystem Stewardship Programs:**

Assiut University has developed programs to encourage good stewardship practices for aquatic ecosystems. Objectives include organizing volunteer cleanup efforts, monitoring water quality, and recognizing contributions to aquatic conservation. Additionally, the university offers grants for research in marine biology and environmental science, promoting continued study in ecosystem preservation.



- **Community Partnerships to Maintain Aquatic Ecosystems:**

The university collaborates with the local community and partners with environmental organizations to protect shared water ecosystems. These partnerships facilitate joint conservation initiatives, education on pollution prevention, and habitat preservation.

## **5. Monitoring and Research on Aquatic Ecosystems**

- **Ecosystem Health Monitoring:**

Through faculties and research centers, Assiut University monitors the health of local aquatic ecosystems. Research projects focus on analyzing water quality, studying the effects of environmental stressors on biodiversity, and implementing conservation strategies for aquatic ecosystems.

- **Scientific DAAD project concerned with using green environmental analysis methods to protect water resources.**

- **Research on Watershed Management:**

Although the university does not have a specific watershed management strategy, it conducts research that indirectly supports watershed preservation by studying groundwater management and aquatic biodiversity in local environments at the department of Geology, faculty of science.