جامعة تونس المنار
UNIVERSITE DE TUNIS EL MANAR

REPORT 7

7 AFFORDABLE AND CLEAN ENERGY

2025

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Ambassadors of SDG 7

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Advancing Clean Energy Research and Innovation at UTM

Driven by its commitment to sustainability, the University of Tunis El Manar (UTM) supports a range of initiatives dedicated to clean and renewable energy, spearheaded by institutions such as the National Engineering School of Tunis (ENIT) and the Higher Institute of Applied Biological Sciences of Tunis (ISSBAT).

- Within ISSBAT, the BIOTEC H2 International Joint Laboratory, launched in March 2022, focuses on producing and storing biohydrogen and methane from fermentable agri-food by-products. This collaborative effort brings together Tunisian institutions (ISSBAT, INRAP, FSB) and French partners (MIO, TBI) to develop efficient bioprocesses that convert organic waste into clean energy carriers. Equipped with advanced fermentation systems, ISSBAT contributes significantly to innovations in renewable bioenergy production.
- At ENIT, Professor Chiheb Bouden and the Materials, Optimization, and Energy for Sustainability Laboratory have co-developed a professional Master's program with the Technical University of Munich (TUM), MEDREC, STEG, ANME, and GIZ. This program enhances professional training and applied research in sustainable energy.
- ENIT also hosts the Tunisian-Bavarian Hub on Green Hydrogen, a collaborative platform promoting H_2 technologies and academia–industry partnerships. The hub contributes to shaping Tunisia's strategy for becoming a regional frontrunner in green hydrogen and leveraging its renewable energy resources for long-term sustainability.

Solar Energy Transition and Photovoltaic Installations at UTM

In its pursuit of sustainability and energy independence, the University of Tunis El Manar (UTM) is actively engaged in a clean energy transition program through its key institutions, notably the Higher Institute of Applied Biological Sciences of Tunis (ISSBAT) and the National Engineering School of Tunis (ENIT).

7 AFFORDABLE AND CLEAN ENERGY

This initiative focuses on installing photovoltaic (PV) solar stations across university facilities to enable self-sufficient electricity production and to integrate energy efficiency measures that significantly reduce both consumption and operational costs. By combining renewable energy generation with responsible resource management, UTM demonstrates its leadership in sustainable infrastructure development and reinforces its role as an academic contributor to the United Nations Sustainable Development Goals (SDGs), particularly those promoting affordable and clean energy and climate action.

UTM Student Entrepreneur Hub: Fostering Innovation for Sustainable Energy

The Student Entrepreneur Hub of the University of Tunis El Manar (UTM) plays a key role in advancing the Sustainable Development Goals (SDGs), with a strong focus on SDG 7: Affordable and Clean Energy. The hub nurtures entrepreneurial initiatives that drive sustainability and energy efficiency through innovation and technology. Among its standout projects is Optinergie, developed by Eya Touzi, which offers a comprehensive solution for optimizing energy consumption via intelligent supervision. The system integrates real-time monitoring, predictive analytics, and remote management to identify inefficiencies, anticipate energy needs, and minimize waste. Through features such as smart forecasting, user engagement, and automated energy control, Optinergie enables businesses to reduce their carbon footprint, cut operational costs, and actively participate in the transition toward a sustainable energy future.

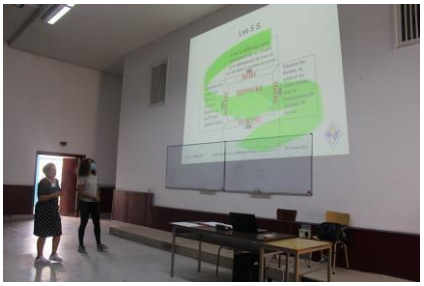
Commitment to Environmental Responsibility and Sustainable Development

Since its founding, the National Engineering School of Tunis (ENIT) has upheld a strong commitment to social and environmental responsibility. Beyond its recognized excellence in engineering education, ENIT has distinguished itself as a pioneer in embedding sustainability and environmental awareness into its strategic vision. Its ongoing initiatives and projects reflect a deep dedication to addressing sustainable development challenges and promoting environmentally conscious innovation within the academic and industrial spheres.

Energy Efficiency and Environmental Awareness at ENIT

The National School of Engineers of Tunis (ENIT) is at the forefront of promoting energy efficiency and environmental responsibility within the University of Tunis El Manar. Through multiple initiatives and awareness programs, ENIT actively contributes to sustainability and the national energy transition.

7 AFFORDABLE AND CLEAN ENERGY



As part of the MEDREC project, a 71 kWc photovoltaic solar power plant was installed on the roof of the Osman El Bahri Tower, marking a key milestone in renewable energy adoption. Additionally, ENIT joined the Energy Transition in Public Institutions (TEEP) project, led by the National Agency for Energy Conservation (ANME). Within this framework, 146 kWc of solar panels were installed in 2024, now providing nearly 48% of ENIT's electricity needs. Upcoming measures under the TEEP project include the replacement of halogen and fluorescent lighting with LED systems and the upgrade of old air conditioners to high-efficiency class 1 models.

Beyond technical efforts, ENIT fosters a culture of environmental awareness through flagship events such as:

- LABEL ENIT – a day dedicated to aesthetics, cleanliness, and environmental stewardship on campus.
- GreENIT – an annual event highlighting the ecological importance of trees and green spaces.

These combined actions underscore ENIT's commitment to sustainable development, energy conservation, and environmental education within the academic community.

Advancing Clean and Renewable Energy through Interdisciplinary Research

The University of Tunis El Manar (UTM) supports the development of clean and affordable energy through interdisciplinary research, scientific exchange, and international partnerships across its constituent institutions.

In line with this commitment, the National Engineering School of Tunis (ENIT) in partnership with the UNESCO Chair on Water, Waste and Energy, organized the International Multidisciplinary Colloquium "Science & Villes."

The colloquium addressed sustainable urban development through an integrated and systemic approach, focusing on:

- Urban energy systems and the energy transition,
- Low-carbon and resilient urban solutions,
- The Water–Waste–Energy nexus as a framework for sustainable cities.

Discussions emphasized urban sustainability as a complex system requiring coordinated action supported by scientific research, policy-making, and local stakeholders. The multidisciplinary nature of the event and its engagement with researchers, students, policymakers, and practitioners demonstrated UTM's capacity to convene high-level scientific forums aligned with global sustainability objectives and clean energy priorities.

7 AFFORDABLE AND CLEAN ENERGY

Innovation, Digital Technologies, and Climate–Energy Solutions

The University of Tunis El Manar (UTM) actively fosters innovation at the convergence of clean energy, climate adaptation, and digital technologies. Students and young innovators from the university participated in **ClimAdapt Hack 2025**, a nationwide innovation event that brought together participants from across the country.

The hackathon focused on developing real-world solutions by leveraging geospatial data and artificial intelligence (AI) to address critical challenges related to:

- **Energy resilience and smart grid management**, optimizing renewable energy integration and distribution.
- **Climate-smart infrastructure**, designing adaptive urban systems that respond to environmental risks.
- **Sustainable territorial and urban planning**, using data-driven tools to enhance land use, transportation, and resource allocation in line with climate goals.

Through an intensive program of collaborative problem-solving, expert mentoring, and iterative prototyping, this initiative enhanced participants' technical, creative, and project-development skills.

By bridging disciplines such as engineering, data science, environmental science, and urban design, UTM's engagement in ClimAdapt Hack 2025 reinforced its role in cultivating the next generation of innovators equipped to build sustainable, resilient, and digitally-enabled energy systems for the future.