7.4.5 University provide assistance for start-ups that foster and support a low-carbon economy/technology

Alexandria University Technology Incubator for Smart Systems nurtures innovation and entrepreneurship, linking university research with Egypt's Vision 2030 and the UN SDGs. It supports startups in smart systems, energy, agriculture, health, and education, providing technical, business, and commercialization guidance. The Energy Conservation Advisory Group assesses energy use and efficiency, while the Air Pollution Advisory Group monitors emissions and advises industries to improve air quality. Together, they advance sustainable technologies and environmental stewardship in Alexandria and beyond.

- Alexandria University has established a comprehensive portfolio of 26 innovative programs and projects that promote renewable energy, energy efficiency, climate change mitigation, and sustainable resource management. These initiatives integrate education, research, infrastructure, and community engagement through renewable energy centers, solar and wind power systems, green building technologies, biofuel research, circular economy projects, and international academic partnerships. The University operates renewable energy centers at the Faculty of Agriculture, Faculty of Science, and Faculty of Engineering, where hybrid solar–wind systems, photovoltaic installations, and Building-Integrated Photovoltaic (BIPV) technologies support both campus operations and applied research. In addition, Alexandria University offers specialized postgraduate programs in climate change, sustainable fisheries, natural resource sustainability, and the blue economy through Erasmus+ and other international collaborations. Campus sustainability projects, including the Green Cycle initiative, greywater recycling, energy-efficient buildings, solar power stations, and plastic recycling laboratories, further demonstrate the University's commitment to reducing carbon emissions, improving resource efficiency, and preparing graduates to address global environmental challenges.

- Alexandria University actively empowers students to lead sustainability initiatives that foster environmental awareness, innovation, community engagement, and social responsibility. During the reporting period, more than 30 sustainability activities were organized by student groups across the university, demonstrating active participation in advancing sustainable development goals. These activities included international conferences, scientific symposia, green chemistry campaigns, climate awareness events, water entrepreneurship bootcamps, research conferences, engineering competitions, workshops, exhibitions, and community outreach programs.

- Alexandria University continues to prepare graduates for careers that contribute to sustainable development and the green economy. The number of graduates employed in green jobs remained consistently high over the three academic years. In 2022/2023, 22,457 out of 37,669 graduates secured green jobs, representing 59.62% of total graduates. This proportion increased significantly to 65.7% in 2023/2024, with 22,534 graduates entering green employment out of 34,300 total graduates, and was maintained at 65.7% in 2024/2025. The sustained increase in the percentage of graduates employed in green sectors reflects the University's commitment to integrating sustainability into education, equipping students with the knowledge and skills required for

emerging green careers, and supporting the transition to a sustainable and low-carbon economy.

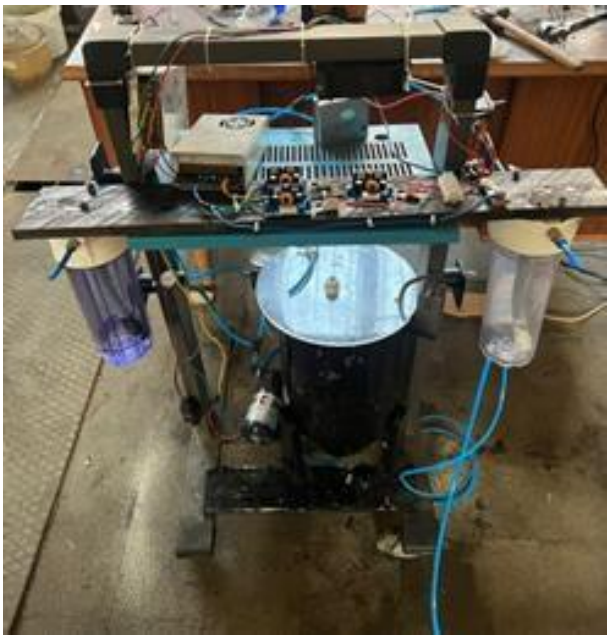
- Research and innovation form another pillar of the strategy. Alexandria University supports energy-driven research platforms, digital laboratories, business incubators, and entrepreneurship initiatives, alongside establishing specialized research centers and adopting international technology and governance frameworks. Applied examples include smart grid applications, solar energy and battery storage projects, renewable power systems, and interdisciplinary research in emerging technologies such as hydrogen production.

- **Renewable energy:**

1) **Solar Thermal Systems:** Solar collectors generate renewable thermal energy to support heating and hot water demands and complement building energy systems.
2) **Wind Energy:** Wind turbines convert wind energy into renewable electricity to support campus operations and reduce dependence on conventional energy sources.
3) **Biodiesel Production:** Biodiesel derived from biological feedstocks such as plant oils, used cooking oil, and other renewable organic materials serves as a cleaner alternative fuel for energy generation and operational activities.
4) **Green Hydrogen:** Hydrogen produced through water electrolysis using renewable electricity (e.g., solar or wind power) serves as a clean energy carrier that can support electricity generation, thermal applications, and future low-carbon energy systems, including CHP applications where implemented.
5) **Biomass Energy:** Biomass utilization includes advanced conversion technologies such as carbonization, torrefaction, gasification, pyrolysis, and biochar production, contributing to renewable energy generation and efficient resource utilization.
6) **Waste-to-Energy Systems:** Organic or biodegradable waste is converted into useful energy, with CHP applications enabling simultaneous production of electricity and recoverable heat.

Together, these renewable energy technologies contribute to increasing renewable energy production, improving energy efficiency, reducing greenhouse gas emissions, and supporting sustainable campus development and smart building implementation.

	
Automatically Controlled Biodiesel Production Unit. (Faculty of Engineering, Alexandria University)	Activated carbon cloth from biomass fibrous resources (Faculty of Engineering, Alexandria University)

	
Design and Fabrication of Biodiesel Burner test rig. (Faculty of Engineering, Alexandria University)	Green Hydrogen/Diesel Dual-Fuel Retrofit: A Scalable Pathway to Industrial Decarbonization (Faculty of Engineering, Alexandria University)
	
Design of Integrated Augmented Vertical Axis Wind Turbine (VAWT) With Solar Energy System for High Rise Urban Applications (Faculty of Engineering, Alexandria University)	Experimental and Simulation Study of Natural Gas–Hydrogen/Diesel RCCI for Engine Decarbonization (Faculty of Engineering, Alexandria University)

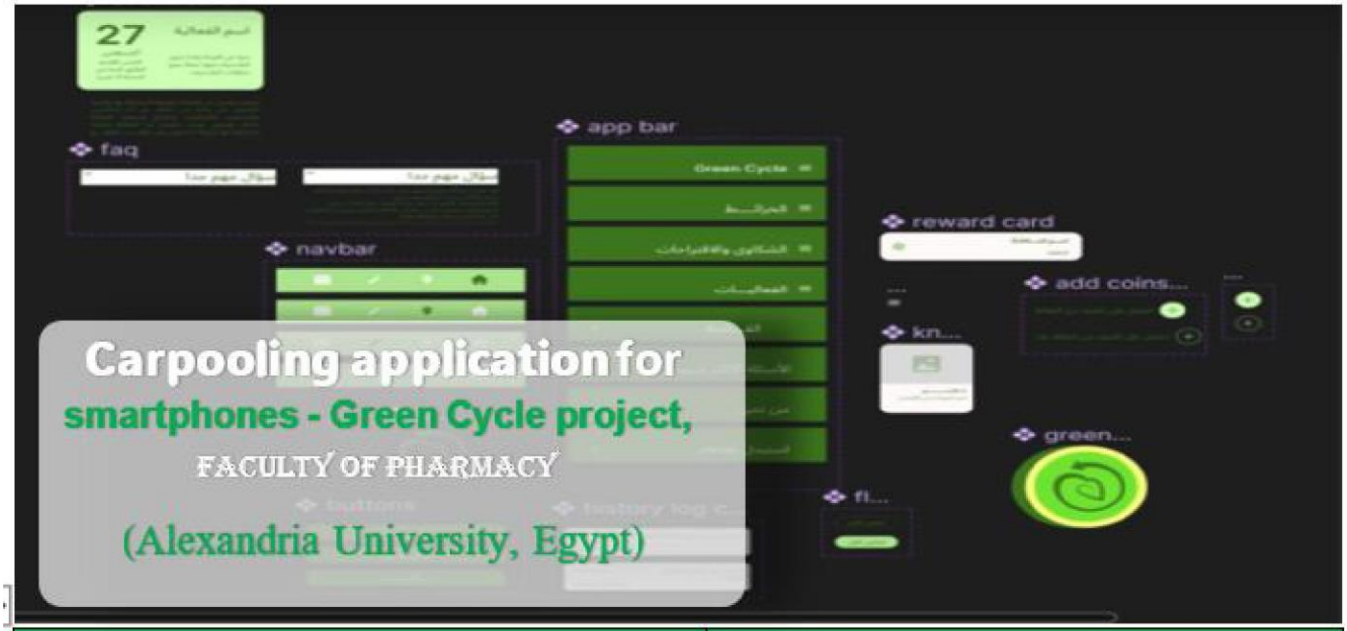


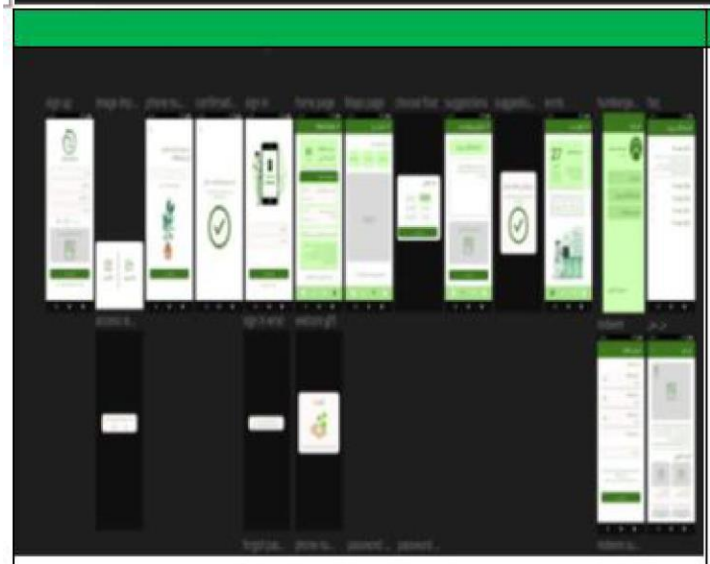
Solar Energy Center at the Faculty of Agriculture (Alexandria University)

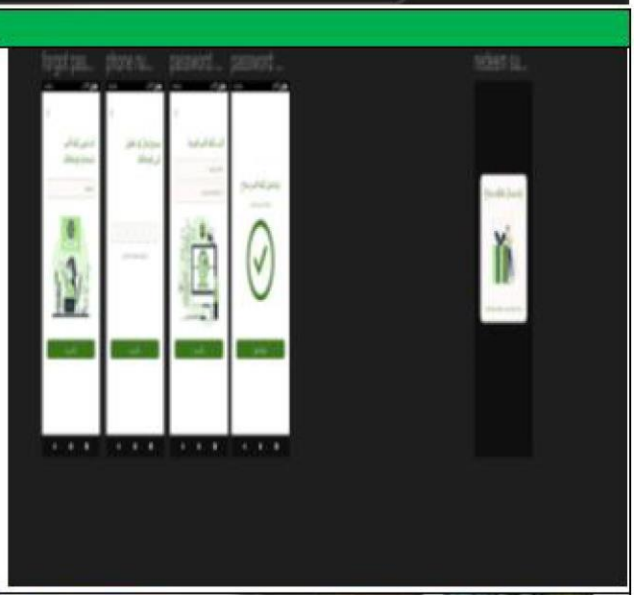


Windmill and Solar Panels (Solar Energy Center at the Faculty of Agriculture - Alexandria University)

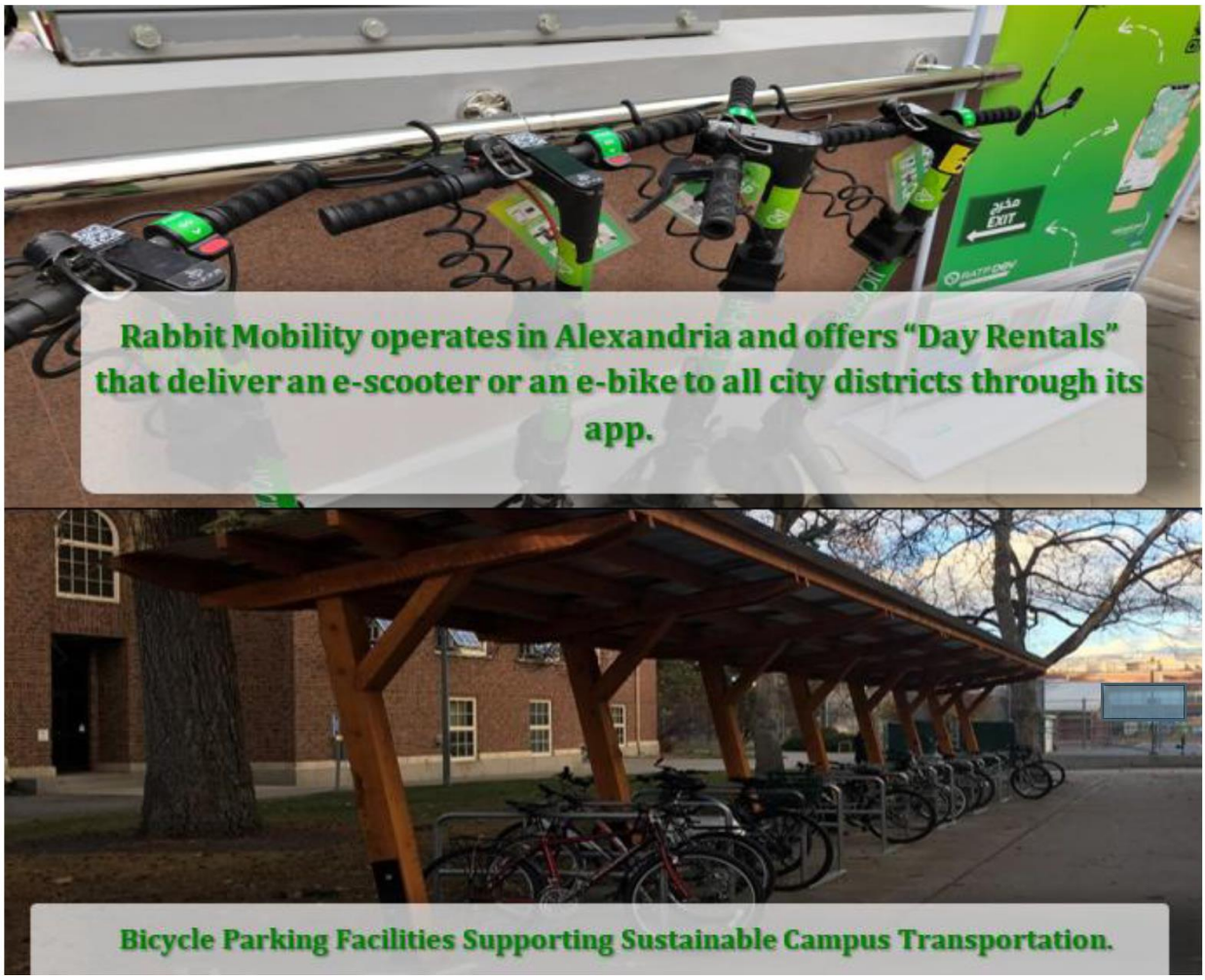
- The University has implemented 22 sustainable transportation initiatives designed to reduce private vehicle use and greenhouse gas emissions. These include shuttle services, carpooling programs, bicycle parking facilities, pedestrian-friendly campus design, awareness campaigns, sustainable mobility competitions, smart parking management, and incentives encouraging environmentally responsible travel. Together, these initiatives help decrease traffic congestion, improve campus safety, and enhance environmental quality.
- Alexandria University actively promotes zero-emission transportation by providing approximately 1,960 bicycles, e-bikes, and e-scooters across its campuses. Bicycle parking stations, cycling initiatives, the "Green Cycle" carpooling application, and collaborations with micromobility providers encourage students and staff to adopt clean transportation alternatives. The University is also preparing electric vehicle charging infrastructure and supports the gradual transition toward electric and low-emission campus transportation.


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Carpooling application for
smartphones - Green Cycle project,
FACULTY OF PHARMACY
(Alexandria University, Egypt)

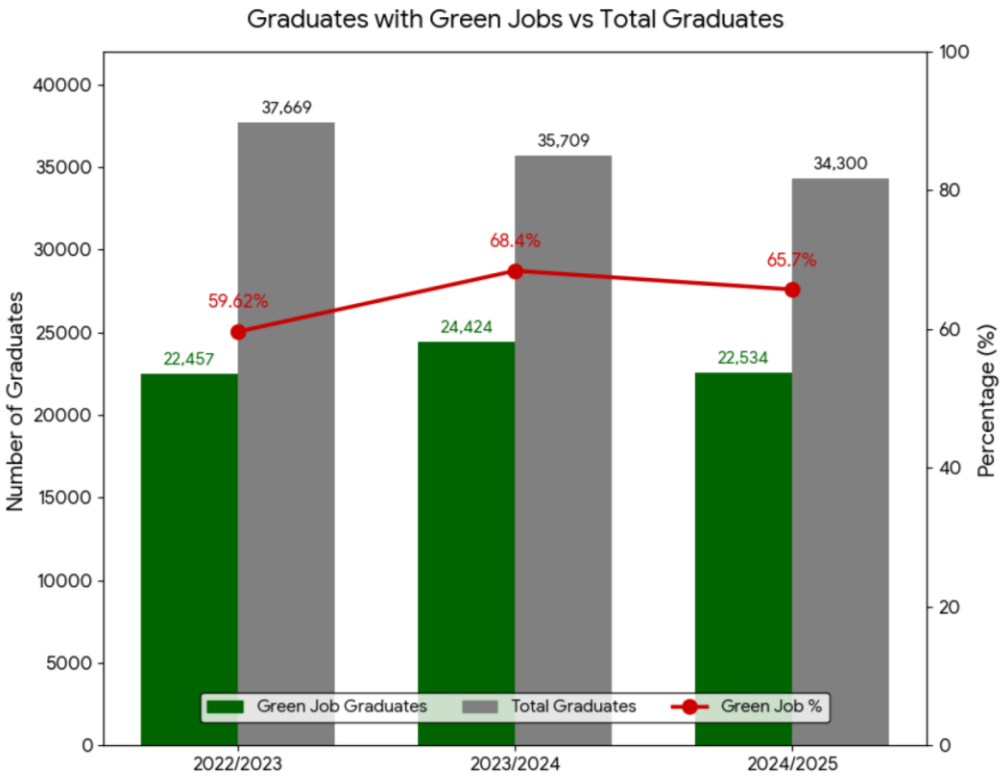





Hi, Alexandria
PromoCode
"Rabbit@Alex"



- Alexandria University continues to prepare graduates for careers that contribute to sustainable development and the green economy. As shown in the figure, the number of graduates employed in green jobs remained consistently high over the three academic years. In 2022/2023, 22,457 out of 37,669 graduates secured green jobs, representing 59.62% of total graduates. This proportion increased significantly to 65.7% in 2023/2024, with 22,534 graduates entering green employment out of 34,300 total graduates, and was maintained at 65.7% in 2024/2025. The sustained increase in the percentage of graduates employed in green sectors reflects the University's commitment to integrating sustainability into education, equipping students with the knowledge and skills required for emerging green careers, and supporting the transition to a sustainable and low-carbon economy.



- Alexandria University actively promotes sustainability-driven entrepreneurship through a dynamic innovation ecosystem that supported 46 sustainability-related startups during the reporting period. The University provides comprehensive incubation, mentoring, training, and commercialization support through initiatives such as the Artificial Intelligence Minds Incubator (AIM) and the Alexandria University Technology Incubator for Smart Systems (AUTISS), which foster innovative solutions in artificial intelligence, smart infrastructure, healthcare, agriculture, energy, and digital technologies. Student-led startups, including Samdha Company, develop environmentally friendly products by converting organic and agricultural waste into natural fertilizers and biodegradable materials, thereby reducing waste, supporting sustainable agriculture, and conserving water. In addition, entrepreneurship competitions such as the Startup Olympics and international programs, including the Bio-iChallenge and Hult Prize, encourage students and researchers to transform innovative ideas into market-ready businesses with significant environmental and social impact.



Alexandria University Technology Incubator for Smart Systems (AUTISS) Incubator (Faculty of Engineering, Alexandria University)



Agro-Food Industries Alliance Products



New partners

Agro-Food Industries Alliance Project

Startup name: "National Committee Sustainable Development"

Startup area in UI Greenmetric questionnaire (SI, EC, WS, WR, TR, ED)

Description: Proposed Mission: Striving to maximize the utilization of the outputs of education and scientific research with the sustainable development goals "Egypt Vision 2030", linking them with the United Nations goals for sustainable development together with developing a framework for the educational system governance aiming at achieving the well-being of society. It includes green, sustainable development and innovative incubators.



Samdha Company, founded by Musaad Darwish, a student in the Department of Civil and Environmental Engineering at the Faculty of Engineering

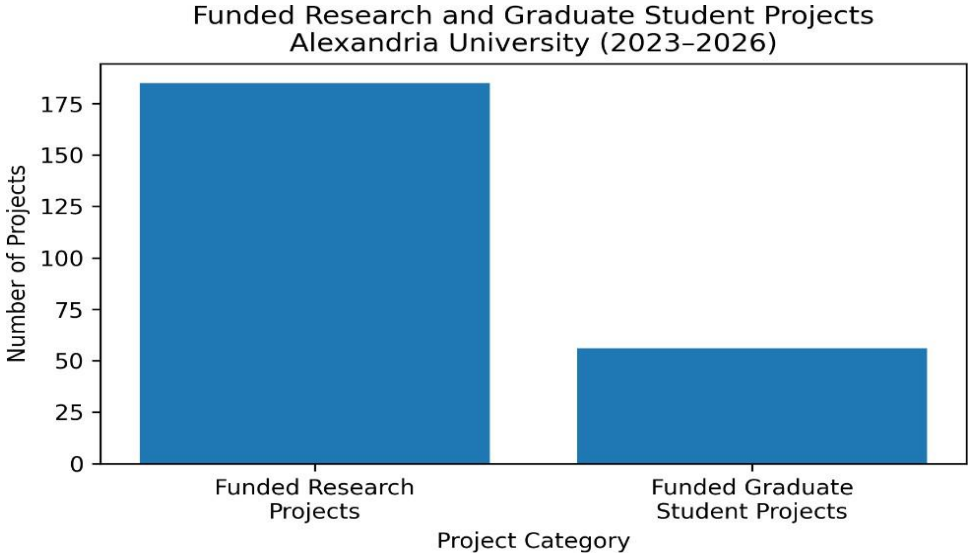




Samdha Company: The plants in the 2 photos on the left are planted in presence of natural organic fertilizers

- Alexandria University maintains a robust collection of twenty-six sustainable programs and projects focused on renewable energy, energy efficiency, climate change mitigation, and resource management. These endeavors unite education, research, infrastructure, and community engagement via renewable systems, solar energy, wind power, green technologies, biofuel studies, and global academic networks. The University runs energy centers within the Faculty of Agriculture, Faculty of Science, and Faculty of Engineering, where solar photovoltaic installations, wind power systems, and building technologies support operations and applied research. Furthermore, Alexandria University provides postgraduate education concerning climate change, sustainable fisheries, natural resources, and the blue economy through international partnerships. Campus projects, featuring the Green Cycle initiative, greywater treatment, efficient buildings, solar power

stations, and plastic laboratories, highlight the institution's dedication to reducing carbon emissions, optimizing resource efficiency, and training students to tackle global environmental challenges.

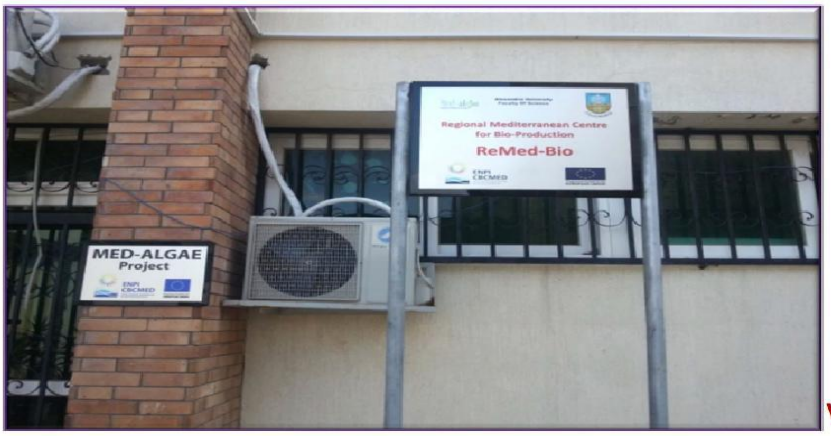


The number of funded research projects and funded graduate student projects at Alexandria University (2023-2026) 185:56



Natural Resources Sustainability for Land Development (Erasmus+ Project, European Union) in collaboration of Alexandria University (Egypt) with Aachen University (Germany)

Med-algae
Production of Biodiesel from Algae



Visitors, Stakeholders & Media
29 March 2014

Project funded by the EUROPEAN UNION

ENPI CBCMED

Production of Bio-Diesel from Algae in Selected Mediterranean Countries: Med-Algae Project, Faculty of Science, Alexandria University, Egypt. Fuded by CBCMED-ENPI (CROSS BORDER COOPERATION IN THE MEDITERRANEAN-European Neighborhood and Partnership Instrument)





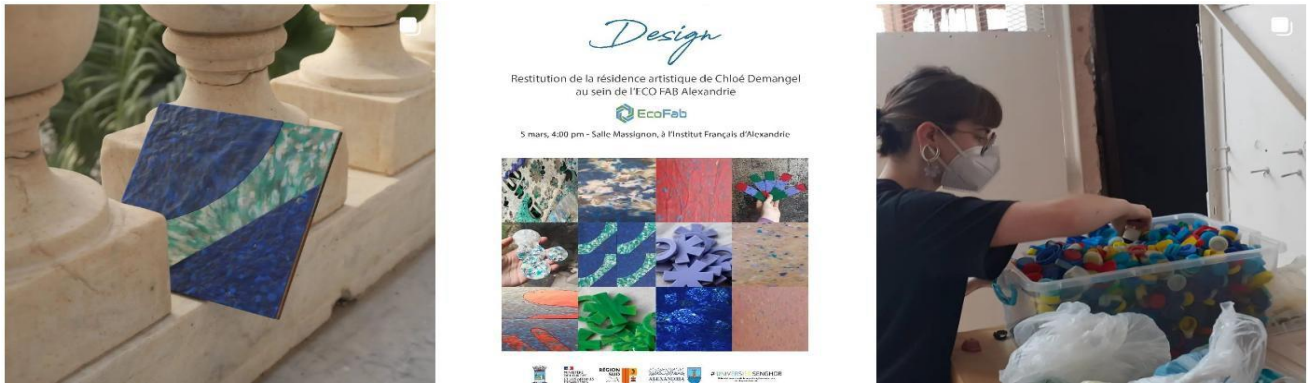
Smart Environmental Management of Climate Change in collaboration with Catania University, Italy. (AdapTm-Erasmus project) – Faculty of Science, Alexandria University, Egypt.



Sustainable Management of Fisheries and Aquaculture Science, in collaboration with University of Aveiro, Portugal (Erasmus+ Project, European Union) - Faculty of Science, Alexandria University, Egypt.



Alexandria University Center for Maritime Archaeology & Underwater Cultural Heritage was established as a European Union project under the EU-Tempus III Program



The Eco Fab is a fab lab dedicated to plastic recycling in Alexandria, Egypt and part of PECA project (Circular economy hub in alexandria).

- To promote a circular economy, Alexandria University has implemented source-separation programs for paper, plastic, glass, metal, organic waste, and aluminum cans across its campuses. Recyclable materials are collected through color-coded waste bins and processed in collaboration with recycling companies. The University also introduced the Green Cycle mobile application, which enables students to locate recycling stations, report recyclable waste using artificial intelligence, and earn reward points that encourage active participation in campus recycling programs. In parallel, a pilot partnership with **BekyaPay** has been launched to facilitate the collection and monetization of recyclable materials, strengthening resource recovery and sustainable waste management practices.
- The University's commitment to waste reduction extends beyond campus operations through research, innovation, and community engagement. Alexandria University established the **PECA Fab Lab** for recycling plastic waste into new products using digital manufacturing technologies, while students and researchers have developed innovative projects such as converting used cooking oil into environmentally friendly plasticizers. Community initiatives, including beach-cleaning campaigns, recycling workshops, environmental awareness programs, and partnerships with national and international organizations, further promote responsible consumption, environmental stewardship, and public participation in sustainability.



Institutional side-by-side comparison of plastic waste and paper waste alongside the cumulative Total Waste tonnage between last year and this year. Over a two-year tracking period, 2024/2025 and 2025/2026.





https://apps.apple.com/us/app/green-cycle/id6587549284
https://play.google.com/store/apps/details?id=net.alexpharmacy.green_cycle

The mobile app includes maps of the faculty that help students reach recycling bins more easily. Students can take pictures of the waste to be disposed of, and points are credited after verification using Al.



Alexandria University is exploring a partnership with BekyaPay, with implementation planned by 2027, to collect and monetize recyclable materials such as paper, plastic, and aluminum cans. A pilot has already been launched at the Faculty of Pharmacy, supporting circular economy practices and improving waste segregation.

- Alexandria University continues to strengthen its energy research ecosystem by securing substantial national and international funding that supports scientific innovation, renewable energy, and sustainable development. During the period 2023–2025, the University received an average annual research funding of USD 1.35 million, with total research funds amounting to USD 1.85 million in 2023, USD 0.98 million in 2024, and USD 1.20 million in 2025. While the value expressed in U.S. dollars declined in 2024 due to local currency changes, actual research funding allocated for power system optimization, solar energy, and battery storage increased, reflecting continued project investment. Funding levels recovered in 2025, demonstrating sustained commitment to high-quality energy technology research.
- The University benefits from diverse funding sources, including national agencies such as STDF and ASRT, as well as international partners supporting sustainable energy efficiency, smart grid technology, and power generation projects. Alexandria University also supports researchers through open-access publishing opportunities, experimental data management, and 39 scientific journals published in both Arabic and English, several of which offer free publication for University researchers.