7.2.1 University policy for ensuring all renovations / new builds are following energy efficiency standards

ALEXANDRIA UNIVERSITY

Policy on Energy and water sustainable use

Alexandria university is Committed to pursuing sustainable development within and through the university and to reassessing higher education and its role in the transition to more sustainable societies. This includes building synergies and collaboration in the search for effective and innovative approaches to solving today's as well as future sustainable development challenges.

The university ensures that all renovations and establishment of new buildings are following energy efficiency standards and water conservation strategies.

The university ensures divesting investments and purchases from Carbon-intensive energy industries particularly coal and oil.

The university through its faculties is committed to maximise water reuse across the university buildings and through all services provided in the process of education and research

The objective of this statement is Commitment to offering an open, interactive and collaborative forum for discussion and action, to raise awareness and advocate for changes needed changes in higher education to best serve the goals of sustainable development, (SDGs) as well as building international linkages and cooperation on the basis of core values of academic freedom, institutional autonomy and related local and global responsibilities to society.

Being uncompliant with the commitment to purse sustainable development issue will be regarded as interfering with personal development of the students, and the university administration will act accordingly

Policy created September 2019

Policy reviewed October 2022

Prof. Abdel Aziz Konsowa

University President

A. Konsowa

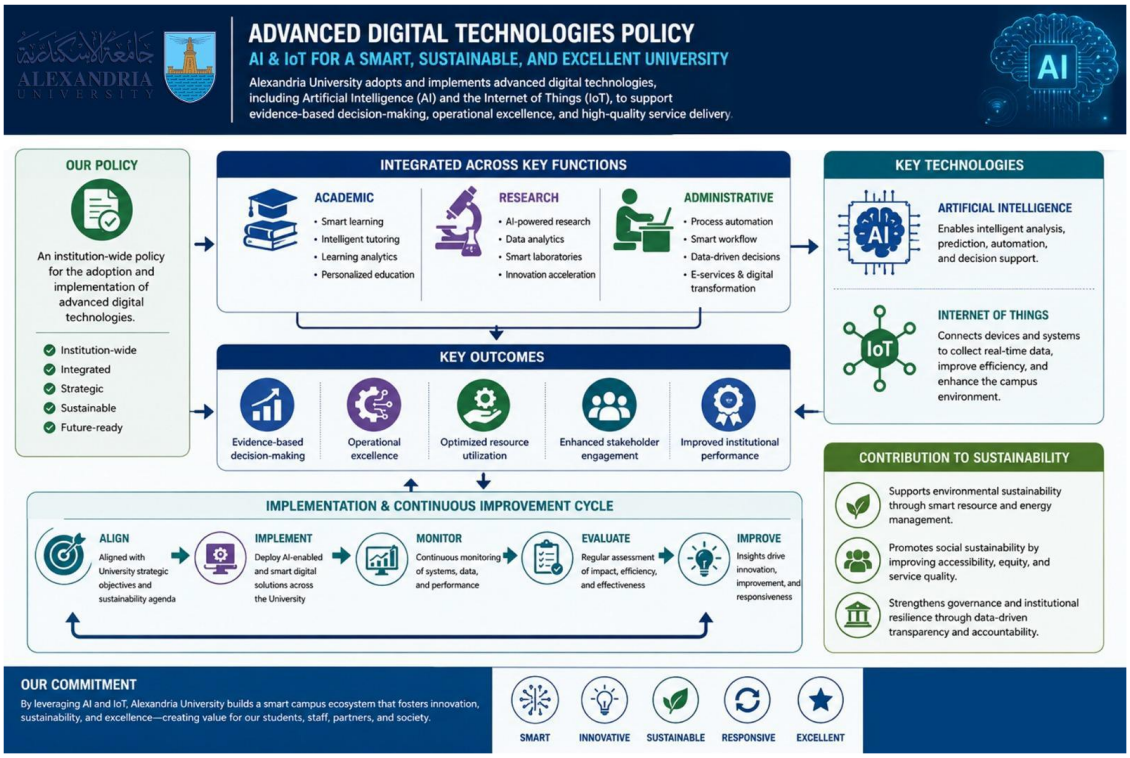
Alexandria University integration of solar cell, energy efficiency, and advanced simulation method reduce carbon dioxide emissions and boost performance. Through renewable energy system—featuring energy storage, wind power, and hydrogen technology—the university enhances energy conservation and environmental condition across construction and renovation. This approach utilizes sustainable materials, process, and innovation to fortify long-term sustainability and resource optimization on campus.

- Alexandria University assigns 137 staff members toward sustainability governance, incorporating university leadership, office personnel, vice deans, and faculty committees. Their ongoing activities span sustainability reporting, policy development, workshops, research collaboration, stakeholder engagement, and applied research projects focused heavily on energy, water, waste, and circular economy themes.

- The university campuses located in Alexandria, Egypt, span a total area of 13,982,352.9 square meters, with 8,090,641.9 square meters dedicated to planted vegetation. Beyond these green sectors, 3,460,144.6 square meters remain open spaces, while building structures account for just 2,431,566.4 square meters of the overall campus zone. This well-planned spatial distribution reflects the institution's dedication to restricting urban growth, safeguarding natural landscapes, and providing expansive outdoor settings that boost biodiversity, ecological health, and student well-being.

- Alexandria University continues to enhance energy efficiency via focused energy management programs and infrastructure updates. Compared to the 2022/2023 baseline, natural gas consumption dropped markedly by 34.79% in 2023/2024, 81.83% in 2024/2025, and 82.52% in 2025/2026. Electricity usage also fell by 2.33% in 2024/2025 and 2.86% in 2025/2026, following a temporary rise of 4.37% in 2023/2024. These outcomes reflect the institution's ongoing dedication to decreasing energy consumption, boosting operational performance, and cutting greenhouse gas emissions to support the Sustainable Development Goals alongside Egypt's Vision 2030.

- Alexandria University has established a broad institutional framework aiming to become an intelligent, eco-friendly, and digitally advanced campus, incorporating modern technologies—such as machine learning, artificial intelligence, cloud solutions, data analysis, IoT systems, and connected digital networks—across teaching, research, and general administrative tasks. This comprehensive policy applies campus-wide to back data-driven decisions, boost operational performance, maximize resource usage, and upgrade service delivery while maintaining steady monitoring and continuous advancement.



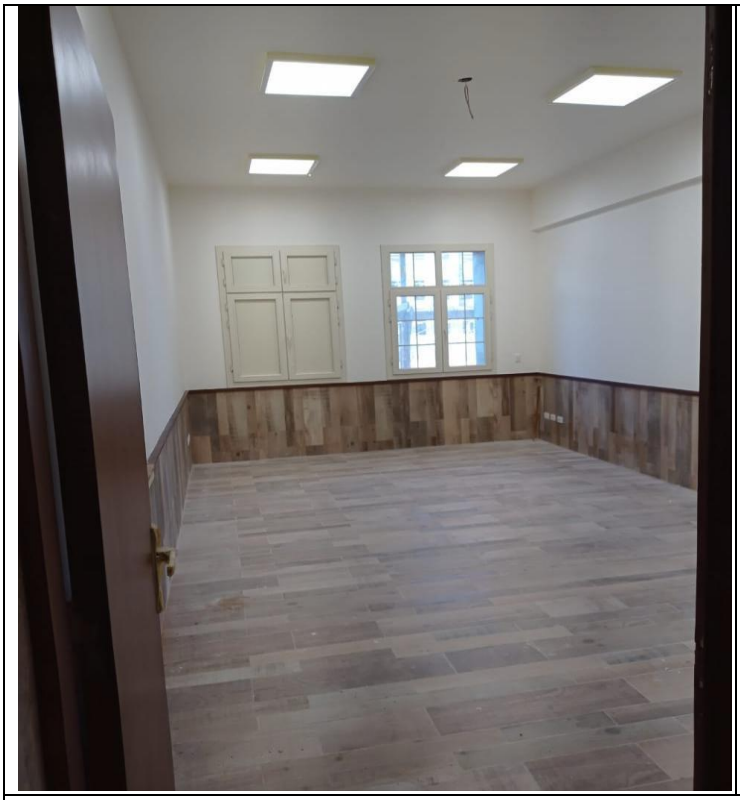
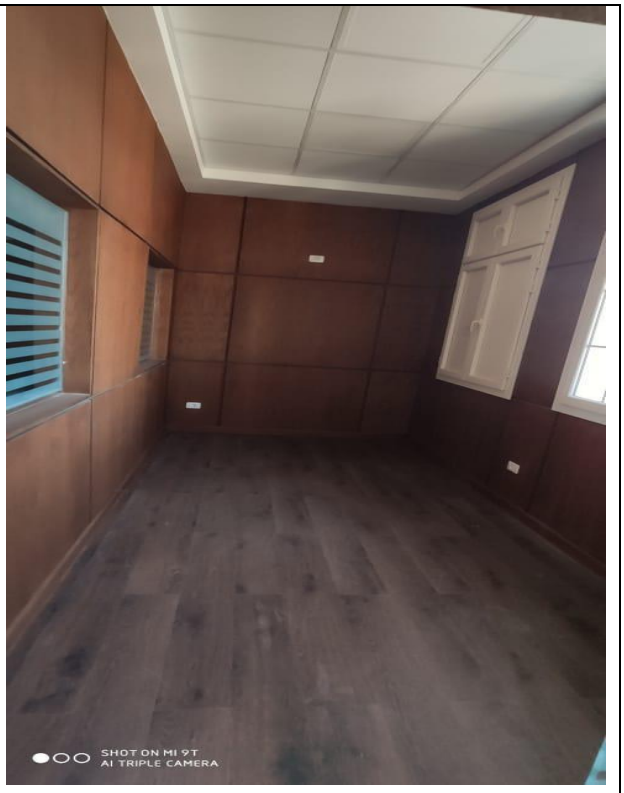
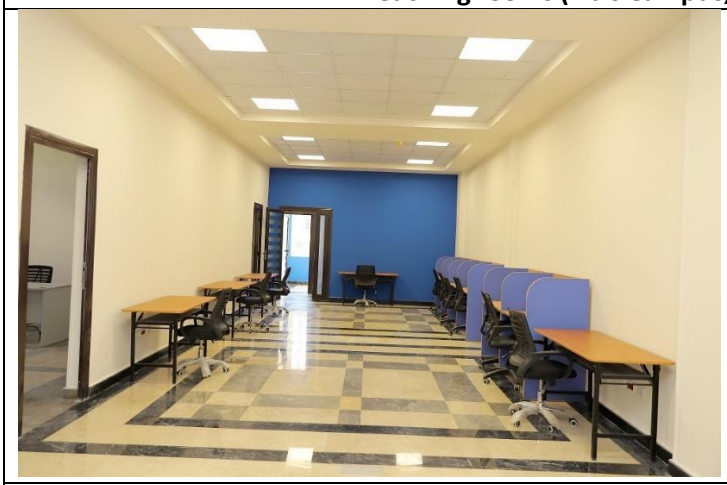
- To enhance campus transit, Alexandria University offers regular complimentary shuttle services linking colleges, student residences, research centers, and key transit terminals. This transport system runs along fixed schedules, providing safe, reliable, and accessible mobility for students, faculty, staff, and visitors while decreasing reliance on personal automobiles. The institution has also broadened shared transit alternatives via collaborations with transport companies and campus ride-sharing programs.

- Renewable energy sources and technologies supporting power generation and combined heat applications include:
  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, reduce greenhouse gas emissions, and supporting sustainable development and smart building implementation.

- 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.

- Driven by the University's keen commitment to transforming into an environmentally friendly institution dedicated to enhancing resource management and rationalizing energy consumption, the Department of Community Service Development launched a comprehensive project aimed at the total transformation of all used fluorescent lighting by replacing them with modern LED bulbs. These light-emitting diodes provide significantly higher efficiency, lower energy consumption, and extended operational lifespans compared to conventional fluorescent lamps. Initiated in 2019, the project has been systematically implemented in structured phases, beginning with a complete inventory of the total quantities required across all university faculties and institutes. During the first quarter, 30% of the necessary stock—covering specific 60 cm, 120 cm, and 9-watt bulb categories—was procured and installed. Concurrently, appropriate measures were executed to safely discard the decommissioned fluorescent lamps through specialized environmental disposal contractors. The second stage involved purchasing and transitioning 37% of the total university requirements, while the third stage accounted for another 25%. In the final phase, the complete transformation of all remaining LED units was successfully performed. The table below summarizes the total quantity of LED bulbs required for this total transition to a green energy source, detailing the replacement percentages achieved over the past four years.

<table>
<tr><td colspan="2"> 
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<tr><td colspan="2">Teaching rooms (Abis Campus, Alexandria University)</td></tr>
<tr><td></td><td></td></tr>
<tr><td>All teaching rooms contain well-equipped technological facilities (screens, data shows, and white boards).</td><td>Smart screens are used in all lecture halls</td></tr>
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Elements of Green Building Implementation as Reflected in all new construction and renovation policies:

Green building implementation in new construction and renovation policies focuses on several key elements designed to enhance sustainability, reduce environmental impact, and promote energy efficiency. These elements are typically reflected in guidelines and frameworks, such as LEED (Leadership in Energy and Environmental Design) or other local and international standards.

1. Energy Efficiency

- Integrating solar and wind energy sources into building design reduces reliance on non-renewable resources.
- Installing systems that optimize ventilation with minimal energy consumption.

- Automated lighting systems that respond to occupancy or time of day.
- As for energy, all the buildings have solar energy generation cells to provide part of the building's needs, which are estimated at about 45%, in addition to using energy-saving lamps (LED).
- The public site lighting poles are powered by solar energy.

2. **Sustainable Materials:** Incorporating materials like recycled steel, concrete, or reclaimed wood.

3. **Indoor Environmental Quality**
   - Maximizing the use of daylight to reduce artificial lighting and improve occupant well-being.
   - Ensuring adequate ventilation and using non-toxic building materials to maintain clean indoor air.
   - Designing spaces to maintain comfortable temperatures naturally through insulation and proper orientation.

4. **Site Selection and Sustainable Landscaping:** The area of the project is 160 acres (667,730.988 m^2), a general site for educational buildings, and 120 acres are complementary activities. The percentage of green areas and lake is about 52% in addition to 25% streets and lanes.

5. **Water Efficiency and Reduction**
   - Water-saving plots are used, which will reduce water consumption by about 30%. The sewage water will be treatedand reused in the irrigation of green areas in the project.
   - Rainwater is collected in the main lake and used for irrigation.
   - The use of plants with few water rationed plants to reduce irrigation needs in addition to absorbing quantities ofrainwater to reduce the severity of rain spells.
   - Air conditioning water collection and reuse unit in Faculty of Engineering.
   - Wastewater treatment unit at the Faculty of Engineering.
   - Reusing wastewater from sinks, showers, and laundry for irrigation or flushing toilets.
   - Using drip irrigation and other systems that minimize water use.

6. **Sustainable Transportation:** Proximity to Public Transport: Locating buildings near public transit hubs to reduce theneed for private vehicle use.

The University has reached 55.6% implementation of smart building technologies via the progressive integration of digital infrastructure and intelligent management systems across campus facilities. Major applications feature QR code-based smart attendance systems, automated monitoring and reporting platforms, fire alarm and smoke detection networks, video surveillance, and digital access and safety controls. Comprehensive training programs are executed to ensure effective system adoption and operation. These strategic initiatives drive improved operational efficiency, enhanced safety and security, reduced manual tasks, and the ongoing advancement of a connected, data-driven campus environment.

*Min. at least five requirements for each building

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m^2)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
1	University Alexandria; Abis Campus, Buildings 1-11	Alexandria, Egypt			X	X	X		X		X		X	X		X	X	X		X	667,730.988
2	University administration building	Alexandria, Egypt		X		X	X		X	X	X		X	X	X	X	X	X	X	X	1940
3	Faculty of Physical Education for Boys	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X		X	113311.93
4	Faculty of Physical Education for Girls	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X		X	2891
5	The medical complex	Alexandria, Egypt		X		X	X		X	X	X		X	X		X	X	X	X	X	91216
6	Faculty of Science in Shatby	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X	X	X	22197
7	Faculty of Science in Moharram Bek	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X	X	X	5485
8	Faculty of Engineering	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X	X	X	111034
9	Campus of Humanities and Social Sciences	Alexandria, Egypt		X		X	X		X	X	X		X	X		X	X	X	X	X	80707
10	Faculty of fine Arts	Alexandria, Egypt		X		X	X		X	X	X		X	X		X	X	X		X	2569
11	Faculty of Specific Education	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X	X	X	1194
12	Faculty of Early Childhood Education	Alexandria, Egypt		X		X	X		X	X	X		X	X		X	X	X		X	1407
13	Medical Research Institute (Horia Street - Smouha)	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X		X	2500
14	Higher Institute of Public Profession	Alexandria, Egypt		X		X	X		X	X	X	X	X	X		X	X	X		X	700
	University land in Smouha (College of Nursing - Children's	Alexandria, Egypt		X								X							X		

15	Hospital - Faculty members residences)					x	x		x	x	x		x	x		x	x	x		x	105218.22
16	Land of Mouwasat Hospital	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	20234.27
17	Institute of Graduate Studies and Research	Alexandria, Egypt		x		x	x		x	x	x		x	x		x	x	x	x	x	2764
18	Faculty of Agriculture Saba Pasha	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	144200.934
	Total																				1,377,300.34

———— Please compile one row for each building (or homogeneous part of it) by ticking with a "X" for each requirement ————

Applying green building concepts in the Faculty of Engineering.

The buildings of the Faculty of Engineering - Alexandria University were chosen to be the nucleus from which to implement green building concepts regarding the general vision for applying environmentally friendly green building requirements to the Faculty of Engineering buildings.

The faculty buildings were studied, and the summary of the report was as follows:

1. Mechanical Engineering Building: Complies with green building requirements (LEED) with the silver category.
2. Preparatory building: conforms to green building requirements (LEED) with the silver category.
3. Administration building: It does not currently comply with green building requirements (LEED), but it is possible with simple modifications to adopt it.
4. Electrical Engineering Building: It does not currently comply with green building requirements (LEED), but it is possible to adopt it with simple modifications.

After evaluating the Faculty of Engineering buildings, the elements of Green Building Implementation were considered in all building's maintenance activity and in the construction of new buildings.