جامعة الإسكندرية
ALEXANDRIA
UNIVERSITY

SDG7

Clean Energy

2022-2023

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

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 the need for private vehicle use.

Smart Building in Alexandria University

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	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	x	1940
3	Faculty of Physical Education for Boys	Alexandria, Egypt		x		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	x	2891
5	The medical complex	Alexandria, Egypt		x		x	x		x	x	x	x	x	x		x	x	x	x	x	91216
6	Faculty of Science in Horia Street	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	x	80707
10	Faculty of fine Arts	Alexandria, Egypt		x		x	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	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	x	2500

7.2.2 University plans to upgrade existing buildings to higher energy efficiency

Energy Efficient Appliances Usage

- Alexandria University intends to realize further energy savings by paying closeattention to energy management. All the faculties and institutes of the university realize their own energy-saving potential by means of LED lighting and the deployment of sustainable technology.
- Motion-Activated Lighting with PIR Sensors

PIR sensors have been installed in select faculties to enable motion-activated lighting by detecting changes in heat signatures. Gradual implementation of PIR sensors across all faculties and institutes of the university, as a future phase.

- Automated Lighting Systems

Install lighting systems that automatically adjust based on occupancy or time of day to enhance energy efficiency.

Alexandria University Project on using LEDs as Energy-Efficient Bulbs:

Within the framework of the University's keenness to transform into a green,environmentally friendly university that works to enhance its resources and rationalize energy consumption, the Department of Community Service Development has launched a project for the total transformation of the usedLED bulbs instead of the fluorescent ones. The light-emitting diode (LED) bulbs are more efficient, and energy-saving compared to fluorescent bulbs, with a relatively longer life span.

The project has been implemented in phases since 2019 based on the preparation of an inventory of the total numbers needed for all faculties and institutes of the university. The first quarter, the numbers required, which represents the typesof 60 cm, 120 cm and 9 watts' bulbs, has been spent and installed, which are almost 30%. In parallel, appropriate measures were taken to dispose of the lost fluorescent lamps through one of the companies concerned with safe disposal. The second step required the purchase and transformation of 37% of the total needs of the faculties and institutes of the university. The third step required the purchase and transformation of 25% of the total needs of the faculties and institutes of the university. During the last phase, the transformation of all remaining LED bulbs was performed.

Energy Efficient Appliances Usage: Use of LED lighting and lamps (New Abbes Campus, Alexandria University)

Alexandria University Program to reduce Electricity consumption from Air Conditioners and electric devices such as Computers, printers, photocopiers, surveillance cameras.

1.All newly purchased AC are inverter AC to reduce the electricity consumption

2.The new electric devices such as Computers, printers, photocopiers, and surveillance cameras are energy efficient devices.

3.All electronic devises must be shut down at night, when not used.

4.Passive Infrared (PIR) Sensors were implemented in some Faculties for motion-activated lighting to detect changes in heat signatures when someone or something moves within the sensor's range. These sensors will beimplemented in phases in for all faculties and institutes of the university.

5.Regular Maintenance of all devices.

6. The thermostats of the air conditioner are set at 25□C, and direct sunlight is avoided by using sun protection curtains.

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.

7.2.3 Process for carbon management and reducing carbon dioxide emissions

The European Union project to convert several buildings of Alexandria University into green buildings by reducing energyconsumption in addition to establishing solar-powered powerstations in 2023-2024

- After research and review, the specialized scientific programs will be developed in the Faculty of Engineering, the Faculty of Education building within the Literary faculties Complex, and the Manchester Building in the Faculty of Medicine, which were chosen due to the recent construction of these buildings and their ability to accommodate the proposed development in terms of the electrical load network and the development of air conditioning systems and water heating systems used in laboratories and bathrooms.
- These buildings were visited and their suitability for the project was evaluated. The current electricity consumption and the possibility of covering these loads with electricity generated from solar energy were studied. The roof areas facing south and suitable for establishing solar stations were inspected and raised. The available roof area in the Specialized Scientific Programs Building at the Faculty of Engineering, Alexandria University, was 2,400 square meters. It can be used to create a solar station with an area of 1,000 square meters with a capacity of **120 kilowatts**, so that the station will be able to generate **360 megawatt hours** of electricity annually. As for the Faculty of Education building, the total area of the building was 4,000 square meters, and the appropriate spaces for building the station accommodate 1,000 square meters of solar cells with a capacity of **120 kilowatts**, so that the station is capable of generating **360 megawatt hours** of electricity annually, and for the Manchester building at the Faculty of Medicine, 1,200 square meters is capable of accommodating a solar power station with an area of 800 square meters. With a capacity of **96 kilowatts**, the station is capable of generating **288 megawatt hours** of electricity annually. These stations also contribute to reducing carbon dioxide emissions by a total of approximately 214 tons annually. The total expected cost of the project is about 300,000 euros.

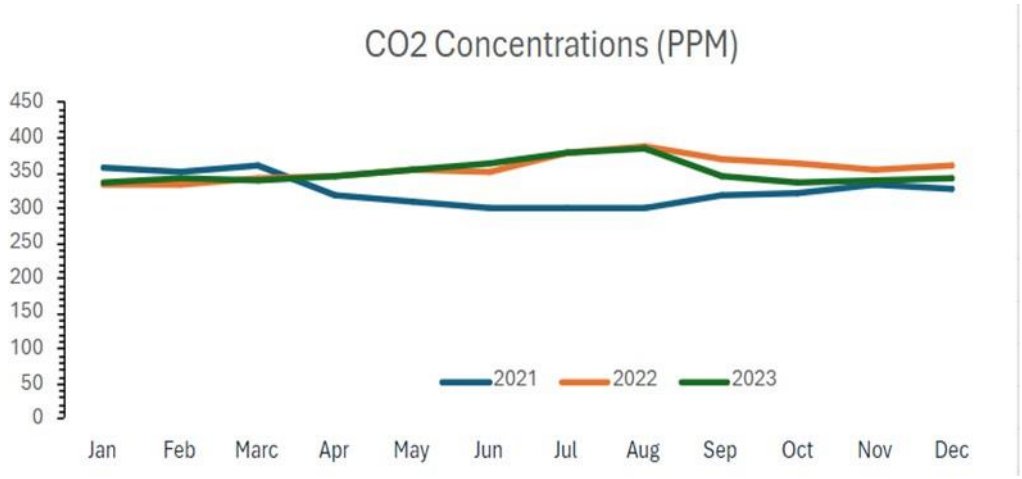
The European Union project to convert several buildings of Alexandria University into green buildings by reducing energy consumption in addition to establishing solar-powered power stations: the Specialized Scientific Programs Building at the Faculty of Engineering, the Faculty of Education Building within the Literary Colleges Complex, and the Manchester Building at the Faculty of Medicine.

- **Alexandria University** has the lead and leadership in establishing the environmental sector and community service, and it has an effective role in preserving the environment in Alexandria and the neighboring governorates. The university, with its various colleges and institutes, is committed to implementing Law No. 4 of 1994 and its regulations. The university has environmental records for most colleges and institutes, and it also conducts environmental impact assessment studies for all its projects by consultants accredited by the Ministry of Environment.

- The university is also environmentally friendly and disposes of waste in a safe manner, as it has contracts with transportation companies for hazardous, medical, non-hazardous, solid and liquid waste.

- The university also monitors greenhouse gases and suspended and inhaled solid particles. It is committed to preserving the environment from emissions that may lead to environmental pollution and then climate change. The monitoring is carried out by faculty members who hold consultant certificates for self-monitoring of facilities, as well as environmental measurements in laboratories accredited by the Environmental Affairs Agency.

- Carbon dioxide has been monitored in Faculty of Science building over the past three years for 24 hours a day and the monthly averages were presented in the following graph:



This figure shows the monthly average CO2 concentration over three years (2021-2023). It is noted that CO2 concentration decreased in the period from March to September 2021, as a result of the closure during the Corona pandemic. It is worth noting that carbon dioxide emissions during 2022 and 2023 were within the threshold limits permitted by Law 4 of 1994 due to the university's efforts to prevent burning and the use of natural gas and solar energy.

Alexandria University's Carbon Footprint (2023)

During the very few past years, the climate change and the global warming facing the entire universe have gained much more attention due to their direct effects on the human life on earth. As a result, countries, organizations, and people have noticed that it is now the time to face these challenges and as an initial step, we must first determine or calculate the amount of pollution that we cause to our planet, then we shall work on ourselves to minimize this pollution. One of the most famous methods to monitor the climate change is to determine what is known by Carbon Footprint.

The term "Carbon Footprint" is usually used as shorthand for the amount of emitted carbon (in tons) by an organization or country. This footprint is also an important component of the Ecological Footprint, since it is one competing demand for biologically productive space. Carbon emissions from burning fossil fuel usually accumulate in the atmosphere if there is not enough biocapacity dedicated to absorb these emissions. Therefore, when the carbon footprint is reported within the context of the total Ecological Footprint, the tons of carbon dioxide emissions are expressed as the amount of productive land area required to sequester those CO2 emissions, which tells us how much biocapacity is necessary to neutralize these emissions.

Measuring Carbon Footprint in a certain area just shows us how much biocapacity is needed to take care of our untreated carbon waste and to prevent carbon accumulation in the atmosphere, which as a consequent can enable us to address the climate change challenge in a clearer way. In fact, the climate problem emerges because the planet does not have enough biocapacity to neutralize all these emissions. Humanity's carbon Footprint has increased 11-fold since 1961. Reducing humanity's carbon Footprint is the most essential step we can take to end overshoot and live within the means of our planet.

The climate pact approved in Paris in December 2015 represented an important step in re-imagining a fossil-free future for our planet. Nearly 200 countries around the world, including Egypt, agreed to keep global temperature rise well below 2°C. According to the known data from (Intergovernmental Panel on Climate Change) IPCC's 2014 report that a concentration of greenhouse gases in the atmosphere of 450 ppm CO2 equivalent gives us a 66% chance to comply with the Paris Agreement's (2°C) goal. In contrast, the National Oceanic and Atmospheric Administration of the United States Department of Commerce (or NOAA) reports that in 2020 we were already at 504 ppm CO2 equivalent. This confirms that the problem is increasing and there is a critical demand to rapidly solve it. Although Egypt contributes with a small portion in the global emissions of greenhouse gases, but this small portion is growing with time. In addition, Egypt is also expected to suffer from shortage of water, decrease in agricultural crops, rising sea levels due to increase in temperature and change in rainfall patterns.

In the light of the above mentioned information and according to the "Sustainable Development Strategy: Egypt's Vision 2030", Alexandria University, as a very important educational institution, has took the first steps to work on reducing carbon emissions as one of the most important sources of greenhouse gases and has implemented a plan to monitor and calculate the "Carbon Footprint since the academic year 2018 / 2019" for all its faculties, institutes and its administrative buildings in order to aid in decision-making.

When calculating the Carbon Footprint for all Alexandria University buildings for the Academic year (2023/2024), the approximate amount of emitted CO2 was **4,284.13765 CO2e.**

The total carbon footprint of the Faculties and Institutes of Alexandria University (Ton CO_2e)

Faculty/Institute	2020/2021	2021/2022	2022/2023	2023/2024
University Administration Building	NA	186.330	257.8696	235.6893
Faculty of Arts	235.887	179.299	126.5596	174.3114
Faculty of Commerce	412.128	29.3102	134.991	128.3933
Faculty of Education	21.807	9.264	28.61872	12.7546
Faculty of Medicine	1817.232	433.984	528.7561	442.4181
Faculty of Dentistry	705.702	29.379	301.0882	250.8576
Faculty of Engineering	693.748	675.702	530.7443	543.4759
Faculty of Agriculture	1326.267	1066.346	743.709	739.2388
Faculty of Pharmacy	318.059	306.118	273.1078	205.75421
Faculty of Science	317.362	218.947	222.71091	148.0105
Faculty of Nursing	122.79	161.580	140.3059	169.1397
Faculty of Veterinary Medicine	186.221	172.431	144.0973	157.2076
Higher Institute of Public Health	12.646	59.204	51.1156	48.2525
Medical Research Institute	555.478	186.894	144.438	186.7957
Institute of Graduate Studies and Research	10.92	7.246	16.0455	14.9636
Faculty of Physical Education for girls	277.671	380.872	306.9452	309.61494
Faculty of Physical Education for boys	214.835	319.100	235.999	192.7736
Faculty of Specific Education	12.069	3.613	11.8411	11.8663
Saba Pasha Faculty of Agriculture	92.785	109.632	98.6493	80.0543

Faculty of Education for Early Childhood	**33.4747**	**4.745**	**19.0013**	**24.3051**
Faculty of Fine Arts	**22.654**	**19.541**	**20.6138**	**20.8157**
Faculty of Tourism and Hotels	**9.924**	**4.525**	**6.5065**	**3.9269**
Faculty of Law	**141.668**	**151.137**	**147.9066**	**183.5180**
Total	**7,541.33 CO_2e**	**4,715.1992 CO_2e**	**4,491.62033 CO_2e**	**4,284.13765 CO_2e**

This report came out as a result of the concerted efforts of the academic community of Alexandria University during the academic year 2023/2024 in collecting, analyzing and editing this report in accordance with international standards and controls for carbon footprint calculations.
In order to allocate the specific position of Alexandria University regarding the extent of its contribution to carbon emissions among similar institutions, it was necessary to compare these emissions with other universities around the world.
Conclusion:

According to the Carbon Footprint for all Alexandria University buildings for the Academic year (2023/2024), which is approximately 4,284.13765 CO2e, one can conclude that the sustainability program of Alexandria University was successful. The total electricity consumption of Alexandria University for the academic year 2023/2024 is 4519154.69 kilowatts per hour. Total electricity use increased slightly compared to 2023 (4329779.781 kilowatts per hour) the total electricity usage increased slightly compared to year 2022/2023. Which is not a significant increase. The total gas use on the Alexandria University campus in the year 2023/2024 is 8,784 m^3 (99,809 KWh), which decreased almost of 35% compared to the academic year2022/2023, where the total gas used was 13471 m^3 (153,066 kWh). On the main campus area of Alexandria University electricity is used for lighting, cooling, heating and laboratory appliances.

7.2.4 An energy efficiency plan to reduce overall energy consumption

Energy Efficient Appliances Usage

Alexandria University intends to realize further energy savings by paying close attention to energy management. All the faculties and institutes of the university realize their own energy-saving potential by means of LED lighting and the deployment of sustainable technology.

Alexandria University Project on using LEDs as Energy-Efficient Bulbs:

- Within the framework of the University's keenness to transform into a green, environmentally friendly university that works to enhance its resources and rationalize energy consumption, the Department of Community Service Development has launched a project for the total transformation of the used LED bulbs instead of the fluorescent ones.
- The light-emitting diode (LED) bulbs are more efficient, and energy-saving compared to fluorescent bulbs, with a relatively longer life span.
- The project has been implemented in phases since 2019 based on the preparation of an inventory of the total numbers needed for all faculties and institutes of the university. The first quarter, the numbers required, which represents the types of 60 cm, 120 cm and 9 watts' bulbs, has been spent and installed, which are almost 30%. In parallel, appropriate measures were taken to dispose of the lost fluorescent lamps through one of the companies concerned with safe disposal. The second step required the purchase and transformation of 37% of the total needs of the faculties and institutes of the university. The third step required the purchase and transformation of 25% of the total needs of

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11. Regular Maintenance of all devices.
12. The thermostats of the air conditioner are set at 25°C, and direct sunlight is avoided by using sun protection curtains.

Renewable Energy Sources in Campus

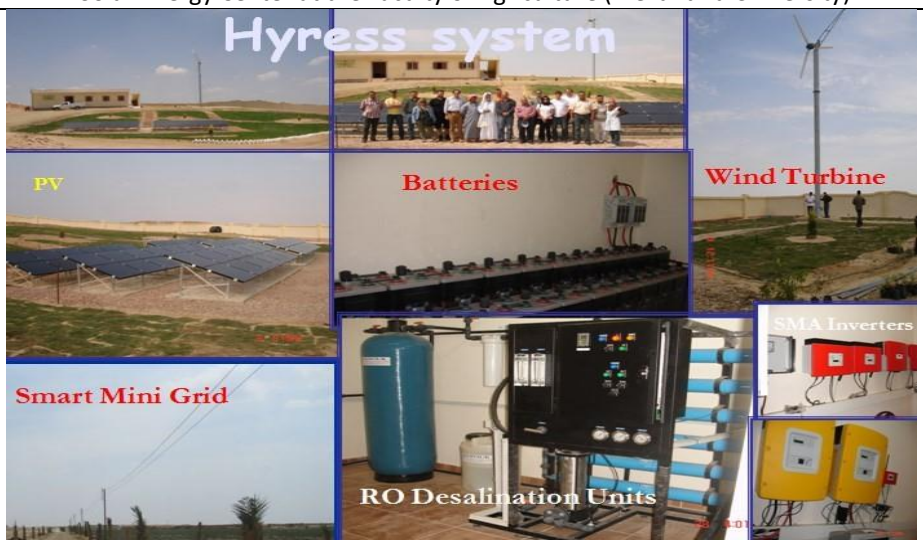
The Faculty of Agriculture has 2 renewable energy centers and on center at the main building of the University.

1) The renewable Energy Center in Wadi El-Natroon. There are two units from the network:
- 7 kw hybrid unit for photovoltaic cells and 5 kw for air turbine.
- 50 kw hybrid unit for photovoltaic cells and 50 kw for air turbines (under maintenance). They are all used in student training and research for graduate students and faculty members.

2) The renewable Energy Center at the Agriculture Research and Experiments Station in Abis Campus.
   - The capacity of the center is 130 kw/h connected to the electricity grid.

3) The renewable Energy Center at the main building of the University.
   - The capacity of the center is 20 kw/h connected to the electricity grid.

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



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

The Faculty of Science:

Research Project: Development and implementation of decentralized solar-energy-related innovative technologies for public buildings, in the Mediterranean Basin.

Environmental Benefits

BIPV façade brise-soleil	120	17.28	26350
BIPV garden pergola	90	8.1	23270
BIPV roof pergola	30	4.1	
	Total Power (kWh)		49,620

Life time CO_2 emission savings	556,935 kg
Life time SO_2 emission savings	2,004 kg
Life time NO_x emission savings	668.322 kg

University administration building

The project of "supplying, installing and operating the photovoltaic solar plant with a capacity of 20.1 kW above the administration building of Alexandria University in Shatby was launched by the Arab Renewable Energy Company, on 2/14/2020. The capacity of the station per month is 20.1 kW, while

Sy

BIPV Façade Brise-Soleil System
Solar Energy Project at the Faculty of Science (Alexandria University)

the capacity consumed from the building is 255 kW / month, meaning that the station provides within 8% of the total monthly consumption. Total Solar energy per year =**241.2 KWh**

Higher Institute of Public Profession

The Institute has two initiatives to exploit solar energy at the Institute through two units of photovoltaic cells (50 watts each) that are currently installed and are exploited to provide the electrical energy necessary to operate the Ultra- Filtration unit located in one of the laboratories of the Department of Materials Science for educational purpose.

Moreover, five units of photovoltaic cells (260 watts each) were installed to operate the discussion room at the Institute and to provide it with sufficient energy for lighting purposes and to operate its display device. Total Solar energy per year = **360 KWh**.

The Faculty of Engineering

The implantation of the new Solar Station is completed. The implementation of the solar photovoltaic panels was performed in December 2022 with a capacity of **220** kilowatts on the 2000 m^2 roof top of the building of the Mechanical Engineering Department at the Faculty of Engineering.

Alexandria University have generalized this initiative in some of the faculties of Alexandria University in gradual stages.

Solar photovoltaic with a capacity of 220 kilowatts on the 2000 m^2 roof top of the building of the Mechanical Engineering Department at the Faculty of Engineering

Green building implementation through the use of sun breakers in the SSP building at the Faculty of Engineering

Renewable energy production per year

No	Renewable Energy	Production (in kWh)
1	Solar panel	57,150 + 49,620 + 241.2 + 360 + 220 = 107,591.2
2	Windmill	55,000
	Total	162,591.2

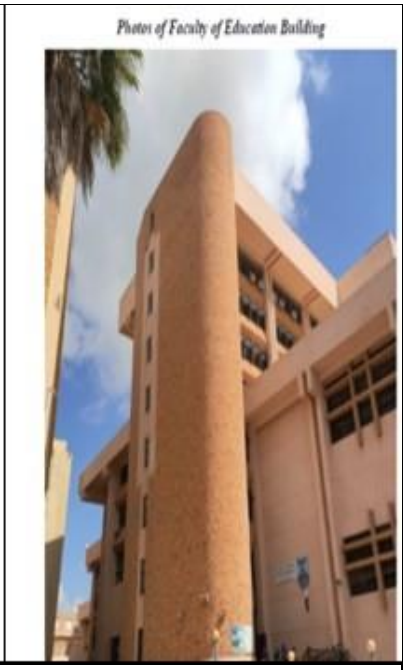
The European Union project to convert several buildings of Alexandria University into green buildings by reducing energy consumption in addition to establishing solar-powered power stations in 2023-2024

- In light of the keenness to rationalize energy consumption in university buildings and the general trend to increase the percentage of reliance on new and renewable sources in electricity production, and in cooperation with the European Union, the European Union funding was accepted for a project to transform some buildings of Alexandria University into green buildings by reducing energy consumption in addition to constructing Electrical power stations powered by solar energy on the roofs of some qualified faculty and institute buildings suitable for this purpose.

- Accordingly, three buildings belonging to the university's faculties were chosen as a first stage to study the

feasibility of applying the project to them in terms of the building's ability to bear the weight of solar stations to produce electricity, as well as studying the spaces available for building these stations and the extent of those spaces' exposure to solar radiation throughout the day. The opportunities available to reduce reliance on usual energy sources were also studied in terms of using more efficient lighting, increasing reliance on natural lighting during the day, and reducing the building's air conditioning loads.

- After research and review, the specialized scientific programs will be developed in the Faculty of Engineering, the Faculty of Education building within the Literary faculties Complex, and the Manchester Building in the Faculty of Medicine, which were chosen due to the recent construction of these buildings and their ability to accommodate the proposed development in terms of the electrical load network and the development of air conditioning systems and water heating systems used in laboratories and bathrooms.
- These buildings were visited and their suitability for the project was evaluated. The current electricity consumption and the possibility of covering these loads with electricity generated from solar energy were studied. The roof areas facing south and suitable for establishing solar stations were inspected and raised. The available roof area in the Specialized Scientific Programs Building at the Faculty of Engineering, Alexandria University, was 2,400 square meters. It can be used to create a solar station with an area of 1,000 square meters with a capacity of **120 kilowatts**, so that the station will be able to generate **360 megawatt hours** of electricity annually. As for the Faculty of Education building, the total area of the building was 4,000 square meters, and the appropriate spaces for building the station accommodate 1,000 square meters of solar cells with a capacity of **120 kilowatts**, so that the station is capable of generating **360 megawatt hours** of electricity annually, and for the Manchester building at the Faculty of Medicine, 1,200 square meters is capable of accommodating a solar power station with an area of 800 square meters. With a capacity of **96 kilowatts**, the station is capable of generating **288 megawatt hours** of electricity annually. These stations also contribute to reducing carbon dioxide emissions by a total of approximately 214 tons annually. The total expected cost of the project is about 300,000 euros.
- The time to recover the capital was estimated through providing the electricity consumed in the three buildings for approximately seven years from the date the stations entered service at full capacity, considering the periodic maintenance necessary to continue the station's operation with the greatest possible efficiency. Detailed reports were also prepared for each building and submitted to the general coordinator of the project, for review and to take the necessary steps to start this vital project, which is an important step in strengthening the efforts of the Egyptian state towards switching to renewable energy and reducing dependence on fossil fuels that have a negative impact on the environment



The European Union project to convert several buildings of Alexandria University into green buildings by reducing energy consumption in addition to establishing solar-powered power stations: the Specialized Scientific Programs Building at the Faculty of Engineering, the Faculty of Education Building within the Literary Colleges Complex, and the Manchester Building at the Faculty of Medicine.

New European Union Project for Renewable energy production (Solar panels)

No	Location	Production (in kWh)
1	Faculty of Engineering	360,000
2	Faculty of Education	360,000
3	Faculty of Medicine	288,000
	Total	1,008,000

The total Renewable energy production per year in Alexandria University after the implementation of the European Un project to convert several buildings of AlexandriaUniversity into green buildings

No	Renewable Energy	Production (in kWh)
1	Solar panel	57,150 + 49,620 + 241.2 + 360 + 220 = 107,591.2
2	Windmill	55,000
3	New Solar panels in 2023-2024	360,000 + 360,000 + 288,000
	Total	1,170,591.2

7.2.5 University undergo energy reviews to identify areas where energy wastage is highest

- Alexandria University has the lead and leadership in establishing the environmental sector and community service, and it has an effective role in preserving the environment in Alexandria and the neighboring governorates. The university, with its various colleges and institutes, is committed to implementing Law No. 4 of 1994 and its regulations. The university has environmental records for most colleges and institutes, and it also conducts environmental impact assessment studies for all its projects by consultants accredited by the Ministry of Environment.

- The university is also environmentally friendly and disposes of waste in a safe manner, as it has contracts with transportation companies for hazardous, medical, non-hazardous, solid and liquid waste.
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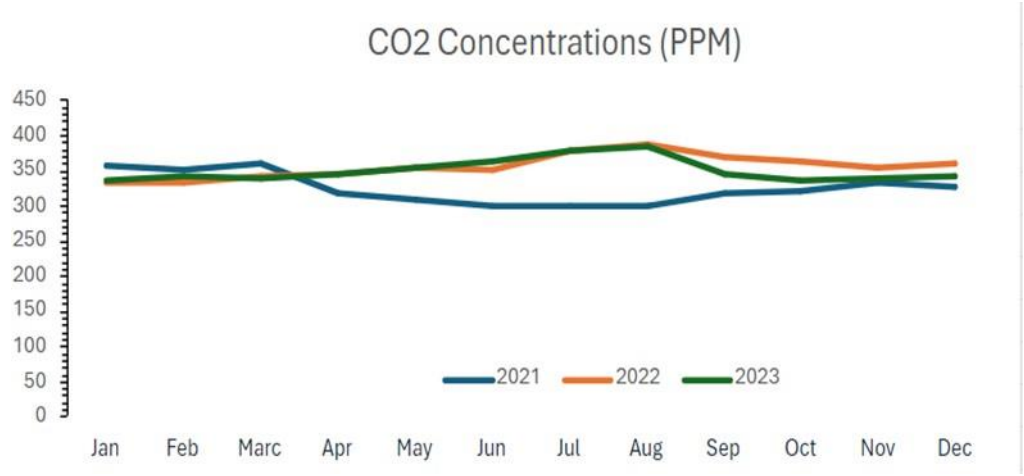
    - Carbon dioxide has been monitored in Faculty of Science building over the past three years for 24 hours a day and the monthly averages were presented in the following graph:



This figure shows the monthly average CO2 concentration over three years (2021-2023). It is noted that CO2 concentration decreased in the period from March to September 2021, as a result of the closure during the Corona pandemic. It is worth noting that carbon dioxide emissions during 2022 and 2023 were within the threshold limits permitted by Law 4 of 1994 due to the university's efforts to prevent burning and the use of natural gas and solar energy.

- Alexandria University began its serious efforts to develop processes in preparation for digitalization in 2017, when the Development, Monitoring, and Administrative Reform Committee was established to analyze processes, eliminate waste, and save the university's resources. The committee also reviewed the integration and unification of documents for the various processes at Alexandria University and its faculties.
- Alexandria University has took the first steps to work on reducing carbon emissions as one of the most important sources of greenhouse gases and has implemented a plan to monitor and calculate the "Carbon Footprint since the academic year 2018 / 2019" for all its faculties, institutes and its administrative buildings in order to aid in decision-making.
- According to the Carbon Footprint for all Alexandria University buildings for the Academic year (2023/2024), which is approximately 4,284.13765 CO2e, one can conclude that the sustainability program of Alexandria University was successful. The total electricity consumption of Alexandria University for the academic year 2023/2024 is 4519154.69 kilowatts per hour. Total electricity use increased slightly compared to 2023 (4329779.781 kilowatts per hour) the total electricity usage increased slightly compared to year 2022/2023. Which is not a significant increase. The total gas use on the Alexandria University campus in the year 2023/2024 is 8,784 m^3 (99,809 KWh), which decreased almost of 35% compared to the academic year2022/2023, where the total gas used was 13471 m^3 (153,066 kWh). On the main campus area of Alexandria University electricity is used for lighting, cooling, heating and laboratory appliances.
- On the other hand, a significant decrease in the consumption of paper packages is observed. The paper packages used in all Alexandria University buildings for the Academic year (2020/2021) was 84689 paper packages. While in the year (2021/2022) it was reduced to 47911 packages. In the academic year (2022/2023),

the consumed paper packages slightly increased to reach 55712 packages. In the academic year (2023/2024), the consumed paper packages reached 46876 packages.

- **Energy Conservation Advisory Group in Center for Graduate Studies and Research – Institute of Graduate Studies and Research – Alexandria University**

This group is concerned with reviewing energy in all its forms at all levels, such as measuring and analyzing exhaust gases in furnaces and boilers with the aim of improving combustion efficiency and reducing emissions, measuring and analyzing boiler water, in addition to tests of thermal insulation efficiency, lighting efficiency, electrical energy analysis, and compatibility with electrical loads. It also determines the power factor to increase efficiency. Rationalizing the energy used, reviewing energy use, radiation measurements and safety tests for radioactive sources. The group has a mobile laboratory that can visit sites and make environmental measurements related to energy as well as emissions and study energy consumption and the extent of thermal insulation in industrial sites.

7.2.6 A policy on divesting investments from carbon-intensive energy industries especially coal and oil

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

جامعة الإسكندرية
ALEXANDRIA
UNIVERSITY

Alexandria University Sustainable Investment policy.

A sustainable investment policy refers to the set of guidelines and principles that Alexandria University . The policy aims to align the organization's investment activities with its sustainability goals and values.

Implementing a sustainable investment policy align investments strategies of the university with sustainable development Goals, and promotes responsible investing practices, and contribute to the transition to a more sustainable and resilient economy. It also attracts socially and environmentally conscious investors and stakeholders who value sustainable investment practices.

Important elements include:

1. ESG Integration: The policy should emphasize the integration of ESG factors into the investment decision-making process. This involves considering environmental and social risks and opportunities, as well as governance practices of potential investments. ESG analysis can help identify companies or projects that demonstrate strong sustainability performance.
2. Sustainable objectives: The policy defines the university's sustainability objectives and priorities focusing on on specific ESG themes, such as climate change, renewable energy, social justice, or diversity and inclusion. Such objectives help guide investment strategies and ensure consistency with sustainability goals .
3. Engagement and Stewardship: The policy outlines the organization's commitment to active engagement with investee companies to encourage improved ESG practices. This includes voting on shareholder resolutions, engaging in dialogues, and exercising influence to promote positive change. Stewardship activities help drive sustainable behavior and align investee companies with sustainability goals.
4. Ongoing review and monitoring: The policy includes procedures for ongoing monitoring and review of investments to ensure they continue to meet sustainability criteria. Regular assessments of portfolio performance, ESG risks, and evolving sustainability trends help maintain alignment with the university's strategic objectives
5. Positive Impact investments: The policy ensures commitment to investing in projects that generate positive environmental and social impacts. This could include investing in renewable energy projects in new buildings of the universities and in the upgrade process taking place, , clean technologies in the use of energy and water, sustainable infrastructure with green areas .
6. Reporting and transparency: The policy encourages collaboration with the industry sector, and stakeholders to advance sustainable investment practices. This involves

sharing best practices, participating in initiatives, and supporting industry-wide efforts to promote sustainability.

Adopting this sustainable investment policy, the university contributes to positive social and environmental outcomes while generating financial returns. It demonstrates a commitment to responsible investing and can attract stakeholders who value sustainability.

Following this strategy, the university has established several investment projects e.g. technology park for incubation and acceleration, Alexandria National university, International university with two branches in Chad and south Sudan, as well as International Branch Campuses (IBC).

University president Endorsement

A. Konsowa

Prof. Abdel Aziz Konsowa

Alexandria University Sustainable Procurement/purchasing policy.

A sustainable procurement or purchasing policy refers to the set of guidelines and principles that Alexandria University follows when procuring goods, services, or works in a sustainable and socially responsible manner. It aims to minimize the negative environmental, social, and economic impacts associated with the procurement process and promote sustainable practices throughout the supply chain.

Implementing a sustainable procurement and purchasing policy brings several benefits including reduced environmental impact, enhanced reputation, cost savings through efficiency improvements, and increased social responsibility. The element of the policy are used as guidelines that the university follows when making decisions with a focus on environmental, social and governance (ESG) factors and ensure consistency with sustainability goals.

Below is the set of key elements included in the policy:

1. Environmental Considerations: prioritization of environmentally friendly products and services that have a reduced carbon footprint, conserve resources, promote energy efficiency, and minimize waste generation. This includes the use of renewable materials, promote recycling and waste reduction, and specify environmentally preferable conditions and standards.
2. Social and Labor Standards: The policy require suppliers to comply with social and labor standards, including fair wages, safe working conditions, and respect for human rights. Such a policy promotes the use of suppliers who have fair trade or responsible sourcing certifications and encourage diversity and inclusion
3. Ethical Sourcing: The policy addresses issues such as conflict minerals, child labor, and corruption. It requires suppliers to provide evidences of responsible sourcing practices and ensure that they do not engage in unethical or illegal activities.
4. Screening and Exclusions: The policy includes criteria for screening and excluding certain investments based on negative ESG factors. For example, it may exclude investments in companies involved in fossil fuel extraction or those with poor labor practices. This approach aims to align investments with ethical and sustainable principles
5. Supplier Evaluation and Selection: The policy outlines criteria for evaluating and selecting suppliers based on their sustainability performance. It considers factors such as environmental management systems, social responsibility practices, and adherence

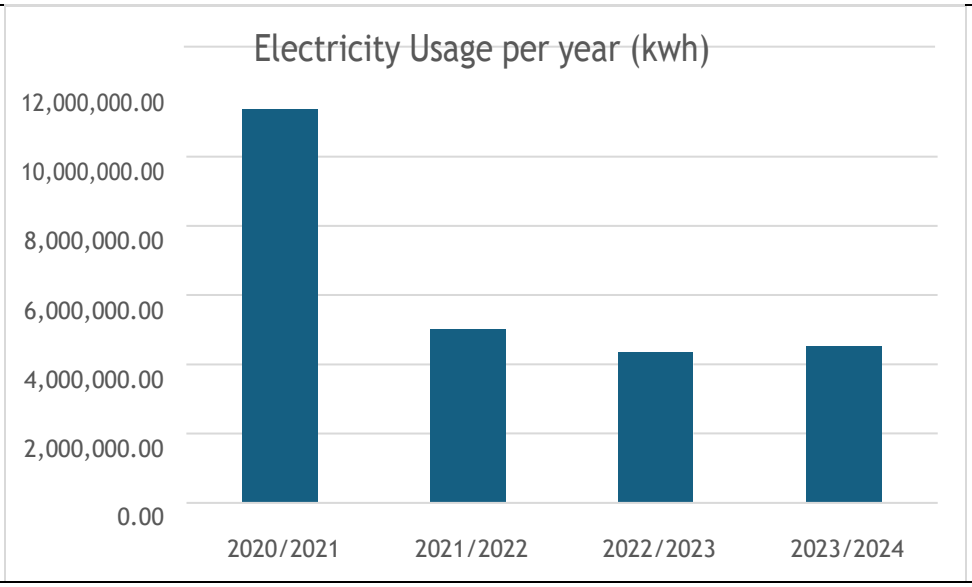
to relevant standards. The selection is based on companies or projects with strong ESG performance or those focused on sustainable solutions, such as renewable energy, clean technology, or social impact initiatives

6. Life Cycle Assessment: The policy may encourage the consideration of a product's life cycle impacts, including the extraction of raw materials, production processes, transportation, use, and disposal. This approach aims to select products that have a lower overall environmental impact throughout their life cycle.
7. Collaboration and Engagement: The policy emphasizes collaboration with suppliers, stakeholders, and industry groups to promote sustainability initiatives and innovation. It encourages wherever possible partnerships for knowledge sharing, and joint project.
8. Monitoring and Reporting: The policy establishes mechanisms to monitor and measure the effectiveness of sustainable procurement practices. Regular reporting is routinely carried out to track progress, identify areas for improvement, and communicate achievements.
9. Training and Awareness: The policy requires training programs as a must to educate staff and suppliers about sustainable procurement practices, and foster a culture of sustainability within the university

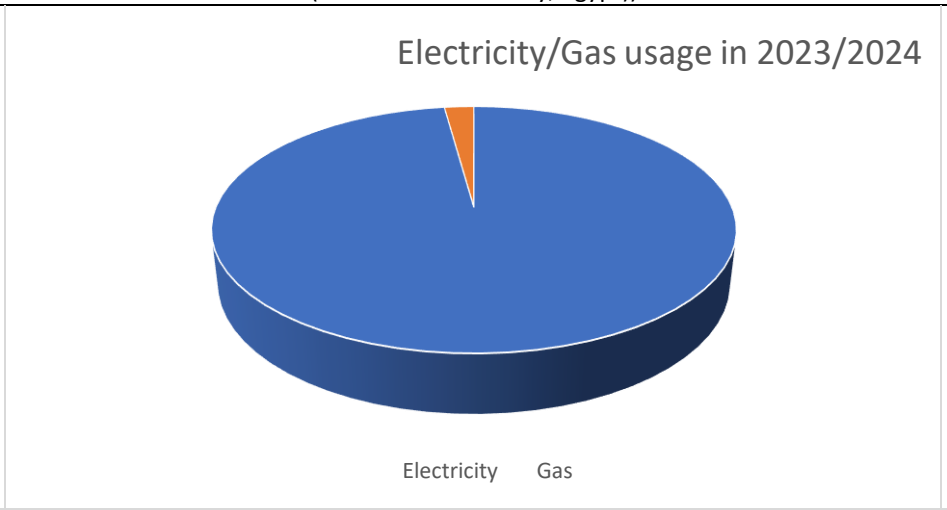
University president Endorsement

Prof. Abdel Aziz Konsowa

7.3.1 - Total energy used



Total Electricity Usage (All Campus Locations) in 2020/2021, 2021/2022, 2022/2023, 2023/2024 (Alexandria University, Egypt))



Total Electricity/Gas Usage ratio (All Campus Locations) in 2023/2024 (Alexandria University, Egypt))

The total electricity consumption of Alexandria University for the academic year 2023/2024 is 4519154.69 kilowatts ho
Total electricity use increased slightly compared to 2023 (4329779.781 kilowatts hour) the total electricity us
increased slightly by 1.0437% compared to year 2022/2023. Which is not a significant increase. The total gas use on
Alexandria University campus in the year 2023/2024 is 8,784 m^3 (99,809 KW/h), which decreased almost of 3
compared to the academic year2022/2023, where the total gas used was 13471 m^3 (153,066 kWh).

Renewable energy production per year

No	Renewable Energy	Production (in kWh)
1	Solar panel	57,150 + 49,620 + 241.2 + 360 + 220 = 107,591.2
2	Windmill	55,000
	Total	162,591.2

New European Union Project for Renewable energy production (Solar panels)

No	Location	Production (in kWh)
1	Faculty of Engineering	360,000
2	Faculty of Education	360,000
3	Faculty of Medicine	288,000
	Total	1,008,000

The total Renewable energy production per year in Alexandria University after the implementation of the European Union project to convert several buildings of Alexandria University into green buildings

No	Renewable Energy	Production (in kWh)
1	Solar panel	57,150 + 49,620 + 241.2 + 360 + 220 = 107,591.2
2	Windmill	55,000
3	New Solar panels in 2023-2024	360,000 + 360,000 + 288,000
	Total	1,170,591.2

4519154.69 kilowatts hour total electricity consumption + 99,809 KWh total gas use = 4,618,963.69 kilowatts hour + 1,170,591.2 kilowatts hour = 5,789,554.89 kilowatts hour * 0.0036 = 20,842.397604 GJ

7.3.2 University floor space

Total campus buildings area: 6795394.87 m^2
Total Campus ground floor area of buildings: 2385538.832 m^2

NO	Campus	Total campus building area in square meters	Total Campus ground floor area in square meters
1	University administration building	5820	1940
2	Faculty of Physical Education for Boys	52764	33993.579
3	Faculty of Physical Education for Girls	12264.65	867.3
4	The medical complex	35415.985	27364.8
5	Faculty of Science in Horia Street	21248	6659.1
6	Faculty of Science in Moharram Bek	17305	1645.5
7	Faculty of Engineering	564046.205	30152
8	Campus of Humanities and Social Sciences	106283	24212.1
9	Faculty of fine Arts	13068	770.7
10	Faculty of Specific Education	1972.92	1194
11	Faculty of Early Childhood Education	1370.25	422.1
12	Medical Research Institute (Horia Street - Smouha)	19200	2500

13	Higher Institute of Public Profession	2800	700
14	Community service center, printing press, club and garage - Smouha	3110	933
15	University Stadium (Student Service Center)	10149.51	10149.51
16	Youth Care	3000	450
17	Veterinarians Abis	42491.973	42491.973
18	Saba Basha Abis tenth farm	60702.816	60702.816
19	Bagushe	182108.45	54632.535
20	Burj Al Arab International Medicine	1420445.92	426133.776
21	Pigeon farm (affiliated with the Faculty of Agriculture)	1274759.16	382427.748
22	Earth of the globe	33386.55	10015.965
23	The farm land of the Faculty of Agriculture, Saba Basha, in the area of Khemisa, Siwa Oasis	121405.635	121405.635
24	University land in Smouha (College of Nursing - Children's Hospital - Faculty members residences)	105218.22	31565.466
25	Break of the Faculty of Science in the old Burj Al Arab	21475.95	6442.794
26	Land of Mouwasat Hospital	2023.27	6070.281
27	The land of Wadi Natrun		1363.5
28	Abis Campus	2225769.96	667730.988
29	Institute of Graduate Studies and Research	4146	829.2
30	Central Library	720	180
31	Student Activities Center	1362	681
32	Faculty of Agriculture Saba Pasha	2561.03	2561.03
33	Expatriate Student Housing Saba Pasha	866.64	216.66
34	International Media (Burj Al Arab)	426133.776	426133.776
	Total	6795394.9	2385538.8

University administration building	Faculty of Physical Education for Boys
	

Area: 5820 m^2, 1940 m^2	Area: 52764, 33993.579 m^2
Faculty of Physical Education for Girls	**The medical complex**
	
Area: 12264.65 m^2, 867.3 m^2	Area: 35415.985 m^2, 27364.8 m^2
Faculty of Science in Horia Street	**Faculty of Science in Moharram Bek**
	
Area: 21248 m^2, 6659.1 m^2	Area: 17305 m^2, 1645.5 m^2
Faculty of Engineering	**Campus of Humanities and Social Sciences**
	
Area: 564046.205 m^2, 33310.2 m^2	Area: 106283 m^2, 24212.1 m^2
Faculty of fine Arts	**Abis Campus**
	

Area: 13068 m^2, 770.7 m^2	Area: 2225769.96 m^2, 667730.988 m^2
Faculty of Early Childhood Education	**Medical Research Institute (Horia Street - Smouha)**
	
Area: 1370.25 m^2, 422.1 m^2	Area: 19200 m^2, 2500 m^2
Higher Institute of Public Profession	**Burj Al Arab International Medicine**
	
Area: 2800 m^2, 700 m^2	Area: 1420445.92 m^2, 426133.776 m^2
University land in Smouha (College of Nursing - Children's Hospital - Faculty members residences)	**Land of Mouwasat Hospital**
	
Area: 105218.22 m^2, 31565.466 m^2	Area: 2023.27 m^2, 6070.281 m^2
Saba Basha Abis tenth farm	**Youth Care**

	
Area: 60702.816 m^2, 60702.816 m^2	Area: 3000 m^2, 450 m^2

7.4.1 programmes for local community to learn about importance of energy efficiency and clean energy

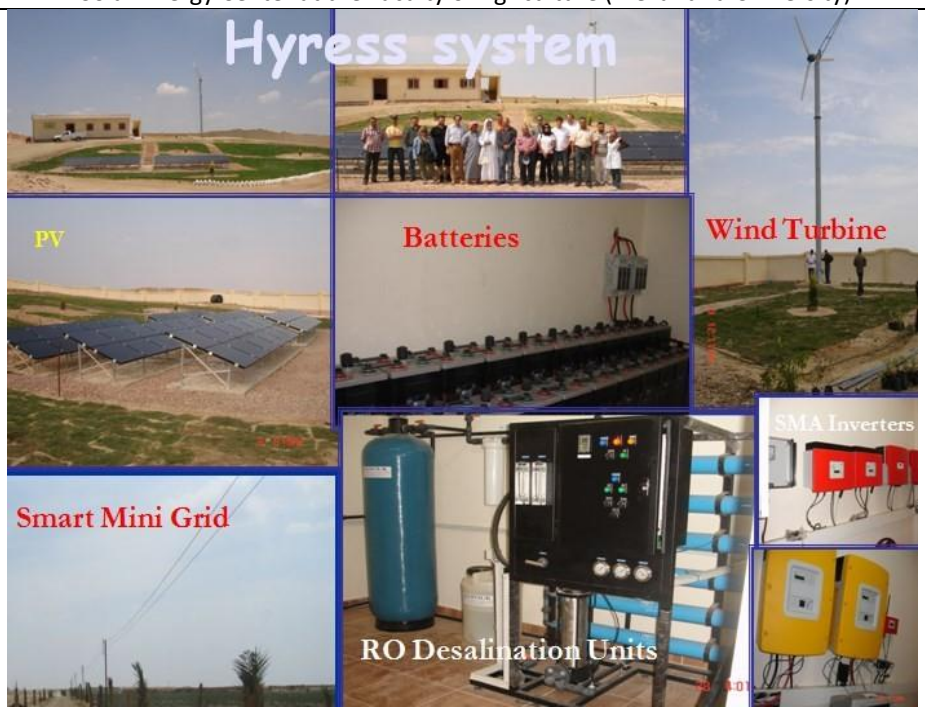
The services provided by the Solar Energy Center at the Faculty of Agriculture (Alexandria University):

1) **Research and development**: Encouraging applied research on renewable energy at AU and through collaborations with other national and international universities. Development of hybrid systems in renewable energy and its uses in water pumping and water desalination and development of remote and desert areas. Development of research in energy from biomass and waste. Development of thermal uses of solar energy.
2) **Consultations:** Various consultations in renewable energy systems, especially hybrid systems, drying and solar heating.
3) **Education and Training:** Supporting the renewable energy education at AU. Developing and delivering courses, e-learning, workshops, training courses, and conferences on various renewable energy systems.
4) Serving the Egyptian community by providing all renewable energy information to the public.

The Center Goals are to:

- Remove the knowledge barriers against the installation of RE systems in Egypt.
- Enhance the utilization of renewable energy.
- Develop educational and e-learning program about renewable energy.
- Educate students, graduates, public and key stakeholders in Egypt and the Arab world on the various sources of renewable energy and its successful applications.
- Build the infrastructure necessary to develop, install and maintain renewable energy applications.
- Present a show case or a model for the successful utilization of renewable energy in Egypt.
- Continue excellence in all of our educational programs.

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



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

Green Cycle project in the Faculty of Pharmacy - Alexandria University

Within the framework of the Faculty of Pharmacy's tireless endeavor to meet the needs of the community inside and outside the university and to contribute to solving contemporary health, social and economic

problems, in line with the vision of Alexandria University, which is based on the principles of comprehensive quality and continuous and sustainable development, in harmony with the state's development plan "Sustainable Development Strategy: Egypt Vision 2030": The college is advancing the "Green Circle" project, which is a non-profit project that seeks to keep the environment clean and green in a sustainable way by growing plants to increase green spaces, as well as separating waste for recycling and establishing charitable markets to benefit from used clothes and use electricity-saving alternatives such as energy saving lamps.

The GHG sources are reduced by Ride Share using the University Shuttle and Carpool, by the decrease of burning of fuels. In addition, the use of bicycles reduces the GHG source. An application was developed for smart phones, by the students at the Faculty of Pharmacy- Alexandria University that enables faculty members to share cars for transportation in a safe manner (Green Cycle project). In addition, regular vehicle maintenance is performed to reduce greenhouse gas emissions.

An application, prepared for smart phones, specific to Green Cycle project enables college members to share cars (car pooling) for transportation (Alexandria University)

Innovation and Technology Development for the Investment in Green Technologies:

There are also many research projects to reduce greenhouse gas emissions, including, for example:

1. Monitoring pollutants using satellites (a project funded by the Academy of Scientific Research and Technology 2021).
2. Confronting rampant heat waves and climate change (World Bank financing 2023).
3. Confronting severe air pollution and black cloud episodes (World Bank financing 2023-2024).
4. the research project entitled: Utilizing alternative feed materials to maximize milk and meat productivity and reducemethane production in ruminants, funded by the Science and Technology Fund STDF-DDP No. 18575
5. The research project entitled Safe milk and meat production and greenhouse gas emissions from ruminants fed withthe addition of nano-silt, funded by the Science and Technology Fund STDF- Innovation in the period from 2020-2023.
6. Construction of a Self-Charging Unit for Collecting Wasted Mechanical Energy from Basic Human Motion, (2023- 2025).

A list of 126 projects which have an impact on the reduction of greenhouse emission and climate change are listed

Fab Lab Project in the Faculty of Engineering - Alexandria University

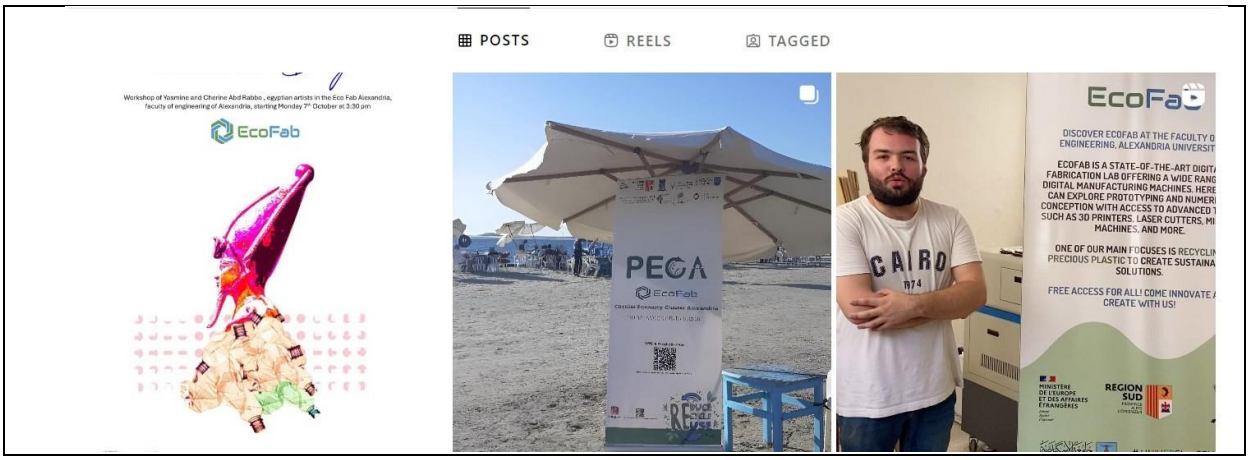
The overall goal of the project is to develop the circular and creative economy model by creating an innovation place equipped with machines Low Tech in Alexandria is hosted by Alexandria University. This place will play a role in creating local dynamism Transversal to become a crossroads between different audiences and actors from different backgrounds. To connect waste collection Plastic and its evaluation. Horizons Solidarités and the University of Corsica, in partnership with their peers in Alexandria, based on their experience in Fab Lab Corte, conduct experiments on recreating value for plastic in Alexandria. The goal is to connect all actors from assembly through training to development and dissemination.

The scope of work in the project

1- Environment, climate, and energy

2- Education, social aspect, and research

These goals will be implemented through the establishment of a FabLab within Alexandria University, which is a space for innovation. Derives place this innovation is energized by a generation that has innovative ideas in the fields of environment, citizenship, and culture. This revival is embodied in women and the men who are partners in the project. The high skills of Alexandria University and Senghor University, Francophone operator in Alexandria, ensures the long-term commitment of their students and the sustainability of the local dynamism. Implementation benefits from facilities Headquarters provided by Alexandria University Project Engine. VSI contributes to the unification of links between regions. Project depends on the Alexandria Business Association (ABA), a trade organization that invests in creating startups in the circular economy and selling finished products. A multi-representative consortium from both sides of the Mediterranean could be formed from these dynamics that will support the project over time.



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

In the frame of the webinar series, the Center of Excellence for Water organized the twenty first webinar with California Santa Cruz University and Zagazig, entitled: "Water Energy Food Nexus and its connectivity to SDGs"

Discussing ways of cooperation between Alexandria University and the Vice President of the Climate Group at the University of Cambridge in Britain and the official for international cooperation in the COP26 university network on the issue of climate change and ways to enhance academic and research relations and aspects of joint cooperation in preparation for the COP27 conference. The attendees gave a presentation on Alexandria University's projects in the field of environmental sustainability in preparation for the COP27 climate conference, and included projects on the production of green and grey hydrogen, the design and manufacture of electric vehicles, the establishment of the Alexandria University Company for Energy and Water Services, and the establishment of an electronic components manufacturing center, in addition to preparing studies on diversifying energy sources. Egypt's role as a regional energy center and the contributions of the Suez Canal to reducing carbon emissions at the international level.

Alexandria University held a symposium on “Climate Change and Green Transformation: The Vision of Alexandria University with several universities and scientific bodies to participate in the COP27 climate conference. These projects include the use of green hydrogen and green ammonia in the fertilizer industry in cooperation with the Egyptian Chemical Industries Company (Kima), the establishment of the Alexandria University Company for Energy and Water Services, the localization of the electric car industry inside Egypt through the design and manufacture of the electric bus and the electric car, the role of the Suez Canal in reducing carbon emissions on the global level, the establishmentof the Alexandria University Centre for the blue-green economy, the role of Egypt as a regional centre for Energy, the production of green and grey hydrogen, the establishment of the Electronic Components Manufacturing Centre, in addition to the establishment of the Alexandria University Centre for Sustainable Development, with the aim of achieving sustainable development goals within the Alexandria University campus in order to turn it into a green university.

The first activity of the Greener Blue Economy Center at Alexandria University, a workshop held under the title "Sustainable Blue Economy Issues in the Mediterranean Basin Countries", in the Conference Hall at the Faculty of Commerce, generating electricity from water energy, mining activities in the seas and oceans, marine tourism, fishing activities, extracting raw materials from the sea, and other forms of economic activity mainly related water resources.

Faculty of Pharmacy, in cooperation with the students of the Scientific Society of Faculty of Pharmacy, organized a sports marathon for walking and cycling under the title "Running for Green" within the framework of the preparations of Faculty of Pharmacy and University of Alexandria for the Climate Change Conference COP27 which was held in Sharm el-Sheikh in November 2022.

A cooperation agreement between Alexandria University and the Egyptian Chamber of Commerce in Alexandria to establish a solar energy station at the Faculty of Engineering. Under this agreement, the Faculty of Engineering - Alexandria University operates the station with solar energy within the framework of the MAIA-TAQA and SOLE projects funded by the European Union, within the framework of the Mediterranean Basin Cross-Border Cooperation Program EU ENI CBC Med.

It is worth noting that the “SOL” project, funded by the European Union, supports the energy rehabilitation of public buildings in an effective and economical manner, and ensures the consumption of clean, low-cost energy.

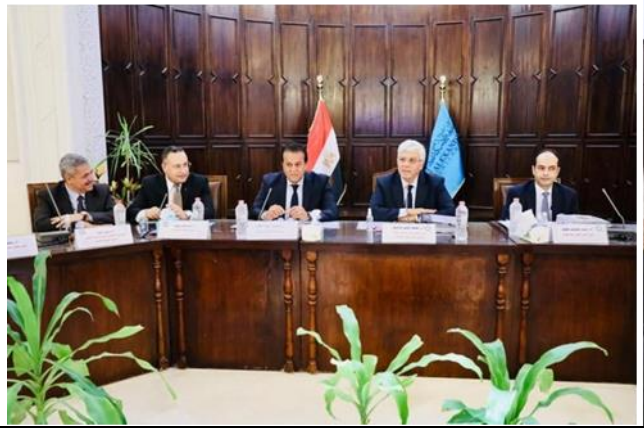
The preparatory webinar for the COP28 Climate Conference, which was organized by the International Committee for the Development of Dry Lands, the Regional Action for Climate Change Foundation in Japan, the “Nizami Ganjavi” International Centre, and the African Organization for Young Leaders, at the Conference Centre of the Faculty of Medicine. The webinar discussed many important topics, including climate change and dry lands, food security, biodiversity, energy and sustainable development, political will and human solidarity needed for change, adaptation, African youth's view of climate change, the Egyptian perspective on climate change, and funding requirements.

Alexandria University Wins First Place in Innovations & Patent Index Ranking and Silver Medal in New Energy Projects at 7th Cairo International Exhibition for Innovation Fair 2023

Professor Dr. Abdelaziz Konsowa, President of Alexandria University, met with Ambassador Yang Yi, the Chinese Consul General in Alexandria, to discuss enhancing cooperation between the university and Chinese institutions. The discussion, attended by various university officials, focused on establishing partnerships in areas such as clean energy, water desalination, artificial intelligence, and the study of Arabic and Chinese languages. Ambassador Yang proposed collaboration by sending Chinese professors to teach at the Faculty of Arts and facilitating student exchanges to study Chinese language and culture in China.

The European Union project to convert several buildings of Alexandria University into green buildings by reducing energy consumption in addition to establishing solar-powered power stations: the Specialized Scientific Programs Building at the Faculty of Engineering, the Faculty of Education Building within the Literary Colleges Complex, and the
Manchester Building at the Faculty of Medicine.


The Minister of Higher Education chairs the meeting of the Supreme Council of Universities at Alexandria University supporting the "**Egypt Digital Cubs" initiative organized by the Ministry of Communications and Information Technology, by allowing the use of electronic testing laboratories spread throughout all public universities**, to conduct admission tests for applicants, by activating a tripartite cooperation protocol between the Ministry of Higher Education and Scientific Research, the Ministry of Communications and Information Technology, and the presidents ofpublic universities**. The Ministry launched the green financing initiative for research, development and innovation to support applied projects that contribute to solving environmental problems, nature conservation, clean energy, waste recycling**, etc. They also reviewed the ongoing partnerships between the Ministry and various countries of the world, the Association of African Universities, and the Union of Arab Universities.




Faculty of Education Launches "Go Green" Initiative, part of Freshmen Activities to raise awareness of the importance of afforestation, waste recycling, and rationalization of food and energy consumption, to change the wrong behaviour, spread environmental awareness, and urge students to participate in preserving the environment, explaining that the students presented practical activities for some courses under the title "Go Green", where each student actively participated in planting trees in the faculty courtyard. The students actively took part in this initiative out of a sense of responsibility towards themselves, their faculty, their university, and the environment around them.

Alexandria University participated in the **Forum for Activities and Events of Egyptian Public Universities to Confront Climate Change 2022**, during the period from (September 22-23, 2022) at the Galala Tulip Hotel in Ain Sokhna with a group of research topics in the field of climate change and applied projects related to it included the uses of green hydrogen and green ammonia in the fertilizer industry, the establishment of an energy and water services company, the localization of the electric car industry within Egypt, the role of the Suez Canal in reducing carbon emissions at theglobal level, and the establishment of the Alexandria University Center. For the greener blue economy, Egypt's role asa regional energy center and the establishment of the Alexandria University Center for Sustainable Development

7.4.2 Public pledge toward 100% renewable energy (petitions, meetings, discussions, events) beyond the university


USAID
The American University in Cairo
Center of Excellence for Water

Webinar

Water-Energy-Food Nexus and its connectivity to SDGs

Tuesday, March 1st, 2022 at 6PM Cairo Local Time (CLT)

This webinar will focus on:

- Development of an Integrated water - Energy - Food (WEF) nexus system
- Developed Solar - agriculture greenhouse system that grows its own energy and irrigating water.
- Novel and green solution for food and water crisis in arid areas
- Importance of WEF Nexus
- Nexus Elements Integration and tools.
- WEF and its impact on SDGS

Speakers

Prof. Brent Haddad
Brent Haddad, MBA, Ph.D. is a Professor of Environmental Studies at the University of California, Santa Cruz. He is the founding director of UCSC's Center for Integrated Water Management.

Prof. Abdelazim Negm
A Professor of Hydraulics and (Water Resources) at Zagazig University and is very interested in sustainable water resources management and sustainability studies

Prof. Hassan Fath
A well-known MENA-GCC regional expert in Desalination and Energy Systems (DES) including Water-Energy-Food-Environment (WEFE) applications.

Register here:
https://bit.ly/3QLnUYj

Suggested Audience: Biogeophysical group

This webinar is organized by Washington State University

In the frame of the webinar series, the Center of Excellence for Water organized the twenty first webinar with California Santa Cruz University and Zagazig, entitled: "Water Energy Food Nexus and its connectivity to SDGs"

Discussing ways of cooperation between Alexandria University and the Vice President of the Climate Group at the University of Cambridge in Britain and the official for international cooperation in the COP26 university network on the issue of climate change and ways to enhance academic and research relations and aspects of joint cooperation in preparation for the COP27 conference. The attendees gave a presentation on Alexandria University's projects in the field of environmental sustainability in preparation for the COP27 climate conference, and included projects on the production of green and grey hydrogen, the design and manufacture of electric vehicles, the establishment of the Alexandria University Company for Energy and Water Services, and the establishment of an electronic components manufacturing center, in addition to preparing studies on diversifying energy sources. Egypt's role as a regional energy center and the contributions of the Suez Canal to reducing carbon emissions at the international level.

Alexandria University held a symposium on "Climate Change and Green Transformation: The Vision of Alexandria University with several universities and scientific bodies to participate in the COP27 climate conference. These projects include the use of green hydrogen and green ammonia in the fertilizer industry in cooperation with the Egyptian Chemical Industries Company (Kima), the establishment of the Alexandria University Company for Energy and Water Services, the localization of the electric car industry inside Egypt through the design and manufacture of the electric bus and the electric car, the role of the Suez Canal in reducing carbon emissions on the global level, the establishmentof the Alexandria University Centre for the blue-green economy, the role of Egypt as a regional centre for Energy, the production of green and grey hydrogen, the establishment of the Electronic Components Manufacturing Centre, in addition to the establishment of the Alexandria University Centre for Sustainable Development, with the aim of achieving sustainable development goals within the Alexandria University campus in order to turn it into a green university.


The first activity of the Greener Blue Economy Center at Alexandria University, a workshop held under the title "Sustainable Blue Economy Issues in the Mediterranean Basin Countries", in the Conference Hall at the Faculty of Commerce, generating electricity from water energy, mining activities in the seas and oceans, marine tourism, fishing activities, extracting raw materials from the sea, and other forms of economic activity mainly related water resources.

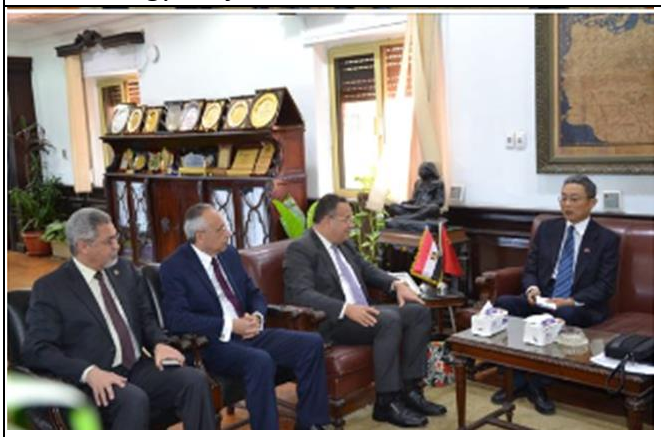
Faculty of Pharmacy, in cooperation with the students of the Scientific Society of Faculty of Pharmacy, organized a sports marathon for walking and cycling under the title "Running for Green" within the framework of the preparations of Faculty of Pharmacy and University of Alexandria for the Climate Change Conference COP27 which was held in Sharm el-Sheikh in November 2022.

A cooperation agreement between Alexandria University and the Egyptian Chamber of Commerce in Alexandria to establish a solar energy station at the Faculty of Engineering. Under this agreement, the Faculty of Engineering - Alexandria University operates the station with solar energy within the framework of the MAIA-TAQA and SOLE projects funded by the European Union, within the framework of the Mediterranean Basin Cross-Border Cooperation Program EU ENI CBC Med.

It is worth noting that the “SOL” project, funded by the European Union, supports the energy rehabilitation of public buildings in an effective and economical manner, and ensures the consumption of clean, low-cost energy.

The preparatory webinar for the COP28 Climate Conference, which was organized by the International Committee for the Development of Dry Lands, the Regional Action for Climate Change Foundation in Japan, the “Nizami Ganjavi” International Centre, and the African Organization for Young Leaders, at the Conference Centre of the Faculty of Medicine. The webinar discussed many important topics, including climate change and dry lands, food security, biodiversity, energy and sustainable development, political will and human solidarity needed for change, adaptation, African youth's view of climate change, the Egyptian perspective on climate change, and funding requirements.

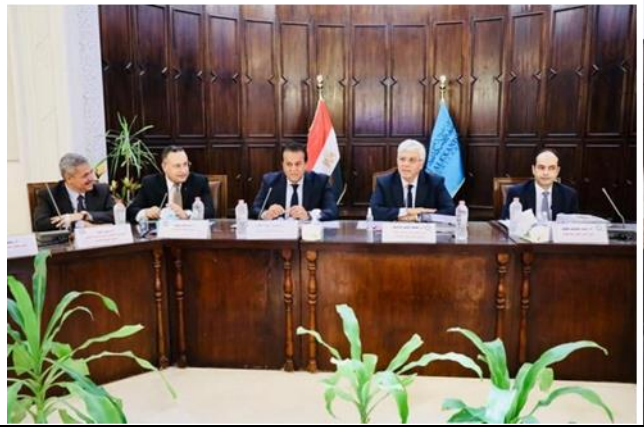
Alexandria University Wins First Place in Innovations & Patent Index Ranking and Silver Medal in New Energy Projects at 7th Cairo International Exhibition for Innovation Fair 2023



Professor Dr. Abdelaziz Konsowa, President of Alexandria University, met with Ambassador Yang Yi, the Chinese Consul General in Alexandria, to discuss enhancing cooperation between the university and Chinese institutions. The discussion, attended by various university officials, focused on establishing partnerships in areas such as clean energy, water desalination, artificial intelligence, and the study of Arabic and Chinese languages. Ambassador Yang proposed collaboration by sending Chinese professors to teach at the Faculty of Arts and facilitating student exchanges to study Chinese language and culture in China.

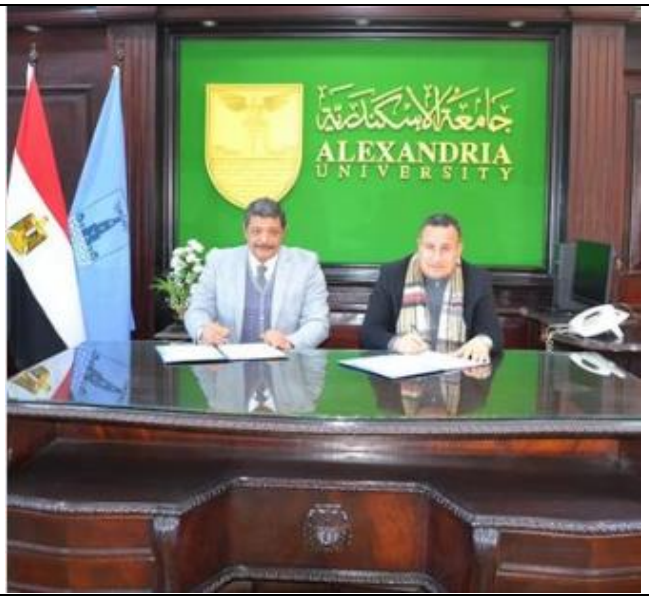
The European Union project to convert several buildings of Alexandria University into green buildings by reducing energy consumption in addition to establishing solar-powered power stations: the Specialized Scientific Programs Building at the Faculty of Engineering, the Faculty of Education Building within the Literary Colleges Complex, and the Manchester Building at the Faculty of Medicine.

The Minister of Higher Education chairs the meeting of the Supreme Council of Universities at Alexandria University supporting the "**Egypt Digital Cubs" initiative organized by the Ministry of Communications and Information Technology, by allowing the use of electronic testing laboratories spread throughout all public universities**, to conduct admission tests for applicants, by activating a tripartite cooperation protocol between the Ministry of Higher Education and Scientific Research, the Ministry of Communications and Information Technology, and the presidents ofpublic universities**. The Ministry launched the green financing initiative for research, development and innovation to support applied projects that contribute to solving environmental problems, nature conservation, clean energy, waste recycling**, etc. They also reviewed the ongoing partnerships between the Ministry and various countries of the world, the Association of African Universities, and the Union of Arab Universities.




Faculty of Education Launches “Go Green” Initiative, part of Freshmen Activities to raise awareness of the importance of afforestation, waste recycling, and rationalization of food and energy consumption, to change the wrong behaviour, spread environmental awareness, and urge students to participate in preserving the environment, explaining that the students presented practical activities for some courses under the title "Go Green", where each student actively participated in planting trees in the faculty courtyard. The students actively took part in this initiative out of a sense of responsibility towards themselves, their faculty, their university, and the environment around them.

Alexandria University participated in the **Forum for Activities and Events of Egyptian Public Universities to Confront Climate Change 2022**, during the period from (September 22-23, 2022) at the Galala Tulip Hotel in Ain Sokhna with a group of research topics in the field of climate change and applied projects related to it included the uses of green hydrogen and green ammonia in the fertilizer industry, the establishment of an energy and water services company, the localization of the electric car industry within Egypt, the role of the Suez Canal in reducing carbon emissions at theglobal level, and the establishment of the Alexandria University Center. For the greener blue economy, Egypt's role asa regional energy center and the establishment of the Alexandria University Center for Sustainable Development



Cooperation Protocol between Alexandria University and Atomic Energy Authority the signing of a protocol comes in line with the tasks and objectives of the Atomic Energy Authority, which focus on providing advanced research and service capabilities and facilities necessary to support and expand the area of peaceful uses of atomic energy, technology transfer, development and preparation of qualified and trained cadres who are able to keep abreast of developments in the fields of peaceful use of atomic energy and research and development, in order to apply nuclear and radiological technology in various fields of development in accordance with Egypt's Vision 2030 and the goals of sustainable development. The protocol includes participation in awareness campaigns on the peaceful applications of atomic energy, and participation in organizing scientific events, including training courses, seminars, scientific conferences, and workshops.

Alexandria University obtaining the first place in the ranking of the index of innovation production and patents, and the second place and the silver medal in new and renewable energy projects on the green hydrogen and green ammonia production project, at the conclusion of the activities of the Cairo International Innovation Fair 2023 in its seventh edition.

Saturday the 29th of October 2022, Alexandria University held a symposium on “Climate Change and Green Transformation: The Vision of Alexandria University” in Presence of Dr. Mahmoud MohieldinHigh-Level Climate Change Champion for the Egyptian Presidency to the United Nations Convention for Climate Change COP27 and the UN Special Envoy on Financing 2030 Sustainable Development Agenda. Dr. Konsowa also highlighted the cooperation between Alexandria University and many partners at the governmental, academic, and industrial levels regarding the issue of climate change, and he said that Alexandria University has prepared 9 projects in the field of environmental sustainability, in collaboration with several universities and scientific bodies to participate in the COP27 climate conference. These projects include the use of green hydrogen and green ammonia in the fertilizer industry in cooperation with the Egyptian Chemical Industries Company (Kima), the establishment of the Alexandria University Company for Energy and Water Services, the localization of the electric car industry inside Egypt through the design and manufacture of the electric bus and the electric car, the role of the Suez Canal in reducing carbon emissions on the global level, the establishment of the Alexandria University Centre for the blue-green economy, the role of Egypt as a regional centre for Energy, the production of green and grey hydrogen, the establishment of the Electronic Components Manufacturing Centre, in addition to the establishment of the Alexandria University Centre for Sustainable Development, with the aim of achieving sustainable development goals within the Alexandria University campus in order to turn it into a green university.

7.4.3 Direct services to local industry aimed at improving energy efficiency and clean energy (energy efficiency assessments, workshops, research renewable energy options)

Decarbonization and Sustainable Development through Synergy Between Academia, Industry and the Government : An Initiative by Alexandria University

An initiative is proposed by Alexandria University to adopt a synergetic approach towards achieving decarbonization and sustainable development. The synergy is established between the three key players who are responsible for developing solutions to the climate crisis, namely, academic institutions through research, innovation and consultation; governmental bodies through policies and procedures; and industrial entities through implementation. Within this synergetic framework, Alexandria University and its academic and industrial partners introduce six multidisciplinary projects that would be integrated to efficiently allocate our resources, hence positioning Egypt as an African gate of decarbonization to Europe, while accelerating the path towards net zero for Egypt. The projects include decarbonization of the Egyptian fertilizer industry, technology transfer and localization of electric vehicle manufacturing in Egypt, reduction of global emissions through the Suez Canal expansion and the provision of low carbon bunkering, energy and water efficiency initiatives through the founding of Alexandria water and energy services company, establishment of Egypt as a world hub for electronics design and manufacturing, and finally enhancement of the Egyptian energy mix and establishing Egypt as a regional energy hub.

Introduction

In ancient Egypt, Alexandria, through its library, played an important role as a center of knowledge and enlightenment for the whole world. In modern Egypt, through its university, it seeks to continue this role by proposing an effective approach towards the decarbonization and sustainable development of the country.

In recent years, the climate crisis has heavily impacted the lives of millions of people across the globe through the increased frequency and intensity of extreme weather events. Global warming and rising average global temperatures are causing alarming consequences on human life and on the sustainability of our planet. As such, urgent actions are necessary to address the climate crisis through collective efforts of all mankind.

An initiative is thus proposed by Alexandria University to adopt a synergetic approach towards achieving decarbonization and sustainable development. Three key players are responsible for developing solutions to the climate crisis, namely, academic institutions through research, innovation and consultation; governmental bodies through policies and procedures; and industrial entities through implementation. Through synergy between all three players, decarbonization and sustainable development is an attainable target.

Alexandria University is located in the city of Alexandria, the largest Egyptian port located on the Mediterranean Sea, and represents the first industrial center in Egypt which encompasses alternative industries such as the petroleum and petrochemicals industry, the fertilizer industry, the steel industry, the textile industry, and shipyard and marine engineering related industries, among others. As such, Alexandria University and the city of Alexandria are in prime position to take an essential role in positioning Egypt as an African gate of decarbonization to Europe, while accelerating the path towards net zero for Egypt through the following proposed set of six projects, integrated with an economic and anthropological approach to achieve efficient allocation of our resources in Egypt:

1. Decarbonization of the fertilizer industry through the production of green hydrogen and green ammonia.
2. Establishment of the electric vehicle (EV) manufacturing industry in Egypt.
3. Reduction of global emissions through the Suez Canal expansion and the provision of low carbon bunkering.
4. Energy and water efficiency initiatives through the founding of Alexandria water and energy services company (AWESCO).
5. Egypt as a world hub for electronics design and manufacturing.
6. Enhancement of the Egyptian energy mix and establishing Egypt as a regional energy hub.

Decarbonization of the Fertilizer Industry

Since the discovery of its synthesis from hydrogen and nitrogen at the beginning of the 20th century by Haber and Bosch in Germany, ammonia has had a profound impact on the global scale. Nowadays, the key role for ammonia is as the basic feedstock for the production of fertilizers that currently support food production for around half of the global population. Ammonia is also an efficient refrigerant that has been used extensively in industrial cold stores and in large-scale air-conditioning. It is also the main ingredient in the textile and pharmaceutical industries. Ammonia could also be used as a hydrogen carrier and future bunker for ships. Current global ammonia production is predominantly achieved through the steam reforming of methane to produce hydrogen to feed into ammonia synthesis. Ammonia production through this procedure is a highly energy intensive process, and along with cement, steel and ethylene production, represent the ‘big four’ industrial processes where a decarbonization plan must be developed and implemented to meet the net-zero carbon emissions.

As such, a consortium is being established between Alexandria University and the leading fertilizer manufacturing companies in Egypt, in which Alexandria University would provide the technical expertise necessary to develop green ammonia production plants for these companies.

Electric Vehicle Manufacturing

Transport is one of the major areas that contribute significantly to the amount of global carbon emissions. As more electric vehicles are manufactured and enter the local and global market, this would allow a seemingly smooth shift of energy demand from oil to electricity. Combined with decarbonization of electricity production plants, the infusion of electric vehicles into the market would result in a drastic reduction in carbon emissions.

Historically, reduction of CO2 emissions had been the main motive to move from gasoline/diesel engines into hybrid and electric transportation. The European commission estimates that greenhouse gas emissions from transportation in 2017 accounted for 25% of global greenhouse gas emissions versus 15% only in 1990. This percentage measured by the European Union is also confirmed in Egypt through the United Nations Development Program (UNDP) in Egypt which stated that in 2002/2003, the transport sector was responsible for 28 % of the final energy consumption in Egypt and for about 25 % of the energy related CO2 emissions and is the fastest growing source of CO2 emissions in the country. The total amount of greenhouse gas emissions from the transport sector in Egypt in 2002/2003 was estimated at 29 million tons of CO2. Public transportation represents a major part of transport, the UNDP project estimates the share of public transport (including buses, mini-buses, shared taxis, light rails and metro) to be around 75% of total emissions versus 25% for private cars in 2001.

As such, Alexandria University participated in an initiative with a group of academic and industrial partners, for the technology transfer and localization of electric vehicle manufacturing technology in Egypt. This is carried out through the design and manufacturing of an electric power train for a city bus. The project involves the design and manufacturing of an electric powertrain for city bus transport vehicles. The main objective of the project is to develop production-ready electronic control units (ECUs) that shape the bases of electric vehicle (EV) power train system. Specifically, the target category of electrical vehicles is the city bus transport vehicles. The project addresses the development of four ECUs, namely, the battery management system (BMS), the power train (PT), the inverter and the instrument cluster.

The project is sponsored by ITIDA – Egyptian Ministry of Communications through a 5 million Egyptian pound fund and also co-sponsored by 12 million Egyptian pounds from our industrial partner, Brightskies, a leading Egyptian company in the field of embedded software systems. It involves the design, manufacturing and testing of the battery package which includes modification of the existing brake system to support regenerative braking and involves the design of the best experience of vehicle dynamics, especially stability over curves, while adapting the suspension system to the new vehicle dynamics model. The developed powertrain will be demonstrated by converting a 12m bus (6-7 years old) into a fully electric bus.

Suez Canal Impact

Egypt has a distinctive geographical location, which is highly accessible by three continents; Europe, Africa and Asia. Bordered by the Mediterranean and the Red Sea, Egypt is primed as a central hub for different trade routes. Egypt has historically contributed with many projects that led to a faster and more economical path for connecting the corners of the world, which directly contributed to the boosting of the world economy. Such transport projects include the Suez Canal (SC) and SUMED oil transport pipeline.

Recently, Egypt is contributing through the Suez Canal Economic Zone (SCZ) to support the global supply chains and green ship bunkering. These faster and highly economical routes always had a great impact on the reduction of the fuel consumed and consequently the reduction in emissions which became lately the world's main point of concern.

During 2019, 18,880 vessels passed via SC with a total deadweight of about 1billion tons, which represents about 10% of the world's global trade. The distance saved reached about10,000 nautical miles (18,000 Km) on certain voyages which contributes to immense fuel and emission savings, in addition to the contribution to the global economy.

Currently, Egypt is establishing the Suez Canal Economic Zone (SCZ) with the aim of providing bunkering facilities on this main shipping route which is expected to include different types of low emission and green fuels. In addition to the added reduction in emissions, another contribution involves simplifying world supply chains and creating new hubs directly on the main shipping routes.

SUMED is a crude oil pipeline established in 1974 connecting the Gulf of Suez and the Mediterranean sea. This project has an added contribution in reducing the shipping required for oil and consequently the amount of emissions involved. A detailed analysis is currently being carried out to highlight the role and impact of the SC, SCZ and SUMED to the reduction of CO2 emission globally and discusses how the tolls scheme could be used by SCA to provide incentives for the use of clean bunkering in the shipping industry. The objectives of this analysis is to measure the impact of the Suez Canal in the shift towards carbon clean maritime supply chains, and to provide investment plan to the SC to become carbon neutral by investing in hybrid tugboats and applying ISO 14001 & ISO 50001. Academic partners in this project include the Arab Academy for Science, Technology& Maritime Transport.

Alexandria Water and Energy Services Company (AWESCO)

There has been an increased interest in recent years in providing energy services for the purpose of achieving energy and environmental related goals. In particular, specialized companies providing energy services to final energy users, including the supply and installation of energy efficient equipment, and/or building refurbishment, have started to operate on the international market.

Alexandria University is planning to establish a water and energy services company (AWESCO) to operate in the fields of energy and water resources. Potential shareholders shall be Alexandria University and a financing institute. AWESCO vision is to:

- Transform Egypt’s built environment and industry to a leading example of energy efficiency.
- Help Alexandria to be a green and sustainable city.
- Lower the carbon footprint of the region.
- Introduce and implement the concept of energy performance contracting.

AWESCO will provide services for the fields of construction, industry, transportation, agriculture, and entrepreneurship. For the field of construction, the following services will be provided:

- Energy auditing of existing buildings as well as proposed construction.
- Propose sustainable building retrofitting techniques that help optimize building energy consumption.
- Propose appropriate renewable energy systems.
- Propose water efficiency measures.
- Provide complete solutions including procurement and project management.
- Provide energy performance contracts to act as a third party between lending and financing agencies and building owners in order to fund proposed building energy retrofitting with guaranteed payback time.
- Amend national building codes and standards to improve energy efficiency.

Services for the industry would include:

- Provide energy auditing for the building envelope as well as the industrial process.
- Propose solutions for optimization of energy use.
- Perform research and development for common industry energy optimization problems through funding of research in Alexandria University.

Services in the field of transportation would include performing studies and research for enhancement of green transportation, while services provided by AWESCO in the field of agriculture would include water efficiency in irrigation systems and energy efficiency in agricultural machinery. Target funding agencies include international funding agencies and the Egyptian banking sector.

Egypt as a World Hub for the Electronics Design and Manufacturing

Egypt is making significant steps towards transforming its economy into a knowledge economy based on innovation. In this context, Egypt has launched a Presidential Initiative entitled “Egypt Makes Electronics (EME)” to capitalize on the growth of this nascent industry in Egypt during the last two decades and to capture a huge opportunity that is presenting itself on the international scene. The objective of EME is to transform Egypt into a world hub for electronics design and manufacturing and to attract significant foreign direct investment (FDI) in this field.

Egypt has intrinsic advantages that play in the favor of attracting FDI in electronics design and manufacturing such as the abundance of talent and its strategic geographic location. However, several important drivers and dynamics may prove highly valuable in enabling Egypt to position itself as a world hub for this industry. Indeed, the world is moving from a globalization model that has prevailed for decades to a model where manufacturing is more regional and distributed. Many players are starting to establish regional manufacturing facilities in contrast to depending on the Far East and specifically China as the world’s major manufacturer of electronics. This is driven by geopolitical reasons as well as securing supply chain and avoiding its disruption. In addition, one important reason to move manufacturing facilities to regions closer to big markets is to minimize the cost of transportation and its negative impact on the environment. On the design side, many global players are looking for talent around the world to augment their resources and their ability to develop and produce new products in time. Such global companies will establish Offshore Design Centers (ODCs) wherever they find critical mass of talent that they can tap into.

The objective of this initiative is to establish a technology park for electronics manufacturing and design. The project has two pillars; the first is to establish a hub for Electronics Manufacturing Services (EMS). This can be spearheaded by one mega company through a Joint Venture between one of the local Egyptian players with track record in electronics manufacturing and a global EMS player. The other pillar is to establish a cluster of ODCs serving European and international players in the semiconductor and electronics industries. The objective of the initiative is to have a significant positive impact on the Egyptian economy and to boost exports and creation of high value jobs.

Alexandria University is positioned to be the academic leader of this project due to its expertise and resources and the large number of qualified graduates that can fuel both parts of the projects, manufacturing, and design. Potential industrial partners are currently being assessed who can spearhead the establishment of a major EMS provider in partnership with a global player.

Egyptian Energy Mix and Egypt as a Regional Energy Hub

The present initiative aims at establishing Egypt as an energy hub for gas and other sources of energy. Moreover, and in the meantime, Egypt should also ensure a sustainable balanced portfolio of alternative energy sources (oil, gas, solar, wind, hydro, and nuclear). Although renewable energy sources provide environmental advantages, they cannot fully replace fossil fuel use. They also offer challenges of their own. As such, we can see that short-term replacement of oil and gas is not possible. And with the growing energy needs of rising population, urbanization, and increased standard of living; investment in all sources of energy should be sought. Investment into reducing the harmful emissions from fossil fuels to make them cleaner should be also increased. The two large-scale feasible solutions (at least technically) available to mankind to reduce CO2 and harmful gases emissions are: (1) Forestation or planting trees (which require significant fresh water resources) and (2) Carbon Capture and Storage (CCS) in underground reservoirs. Improving the efficiency of all systems that use energy should also be sought. Efficiency of existing systems that consume high energy (regardless of the source of energy) can be increased by a combination of technological solutions, improvement of building codes and implementation of regulations and effective audits.

Alexandria University offers a group of courses related to the environment and sustainability in various sectors, in line with the state's strategies to achieve sustainable development goals and to achieve the goals of linking science with industry and qualifying the graduate to find job opportunities commensurate with the field of specialization. The university works to qualify the graduate by providing various awareness and training programs during the study period. The university also provides a distinguished group of postgraduate programs that are compatible with their counterparts in international universities, as indicated by the indicator data for this standard.

An academic team (Ph.D.) from the Faculty of Science at Alexandria University teaches a course titled 'Man and Environment' (University Elective Course – 2 Credits). The course addresses environmental problems, types of natural resources, pollution, environmental footprint, carbon footprint, waste management, recycling, climate change and global warming, biodiversity, and the Sustainable Development Goals (SDGs). It is offered to students from various faculties at Alexandria University, such as:

1) Faculty of Science
2) Faculty of Tourism
3) Faculty of Agriculture
4) Faculty of Sport Education
5) Faculty of Business
6) Faculty of Computers and Data Science
7) Faculty of Dentistry
8) Faculty of Economics and Political Science
9) Faculty of Arts
10) Faculty of Nursing

Also, this course is offered in some programs at Alexandria National University, including:

A. Computer and Data Sciences (CDS) Programs
B. Oral and Dental Surgery Program
C. Software and Multimedia Production Program (SIM)

The Industrial Microbiology and Applied Chemistry Program (IMAC) at Faculty Science of Alexandria University organized a scientific visit to El-Shafei Leather Tannery in the Al-Max area of Alexandria on March 26 and April 30, 2024. This visit was part of the program's applied teaching and learning methods and was included in the practical component of the 'Bioremediation of Pollutants' course (Code: Micb 472). During

the visit, the students toured all departments of the company and received a comprehensive scientific explanation of the stages of natural leather production, as well as how to protect the leather from mold during manufacturing and how to manage leather industry waste.

Alexandria University Technology Incubator for Smart Systems (AUTISS)

Alexandria University Technology Incubator for Smart Systems (AUTISS) was accredited by the Ministry of Higher Education in 2020 to be established at Smart Critical Infrastructure (SmartCI) Research Center, Alexandria University (AlexU). AUTISS aims to nurture the culture of innovation at campus among the university community and to create value added services for researchers and entrepreneurs. AUTISS is mainly interested in using Smart systems and modern technology for the development of different infrastructure systems (e.g., education, transportation, healthcare…etc.).AUTISS aims to be a hub that fosters synergy between the academia and the industry to fuel entrepreneurial spirit among students to help them to be self-reliant and contribute to the economic development and nation building.

The Renewable Energy Center at Faculty of Agriculture Alexandria University.

- The center along with partner from Greece, Germany, Spain Morocco and Tunisia awarded a Six Framework project (FP6project) from the European commission to developed Hybrid renewable energy system to supply service for Mediterranean partner countries.
- The center representing AU and Las Palm University in Spain awarded a project from the Spanish cooperation Spanish Agency for International Co-Operation (AECE), in the area of water desalination by Renewable Energy.
- Recently with cooperation with the Faculty of Engineering, the center awarded an STDF project. The project title is "Development of hybrid renewable energy - RO desalination system and minigrids for remote and desert areas in Egypt(HAREDES)".

The Center Goals are to:

- Remove the knowledge barriers against the installation of RE systems in Egypt.
- Enhance the utilization of renewable energy.
- Develop educational and e-learning program about renewable energy.
- Educate students, graduates, public and key stakeholders in Egypt and the Arab world on the various sources ofrenewable energy and its successful applications.
- Build the infrastructure necessary to develop, install and maintain renewable energy applications.
- Present a show case or a model for the successful utilization of renewable energy in Egypt.
- Continue excellence in all of our educational programs.

S**olar Energy Center at the Faculty of Agriculture (Alexandria University)**

Hybrid Renewable Energy Systems to Supply Services in Rural Settlements of Mediterranean Partner Countries.

The services provided by the center:

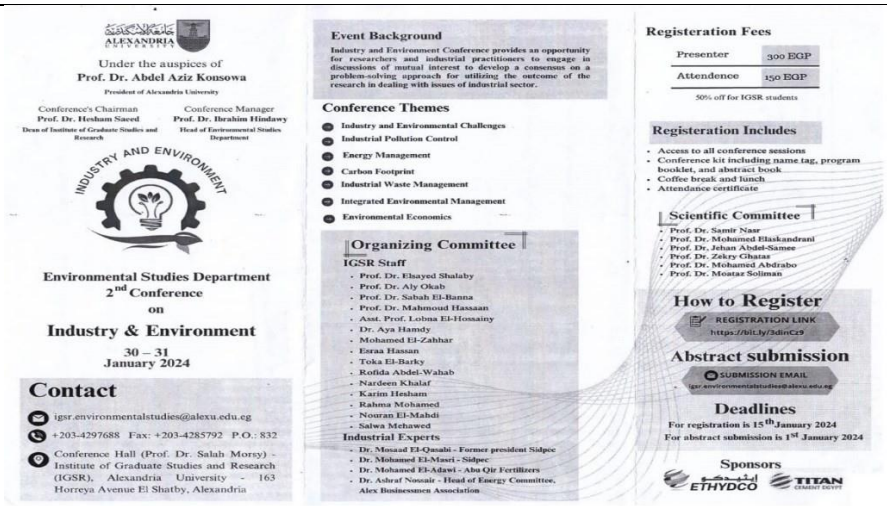
5) **Research and development**: Encouraging applied research on renewable energy at AU and through collaborations with other national and international universities. Development of hybrid systems in renewable energy and its uses in water pumping and water desalination and development of remote and desert areas. Development of research in energy from biomass and waste. Development of thermal uses of solar energy.

6) **Consultations:** Various consultations in renewable energy systems, especially hybrid systems, drying and solar heating.

7) **Education and Training:** Supporting the renewable energy education at AU. Developing and delivering courses, e-learning, workshops, training courses, and conferences on various renewable energy systems.

8) Serving the Egyptian community by providing all renewable energy information to the public.

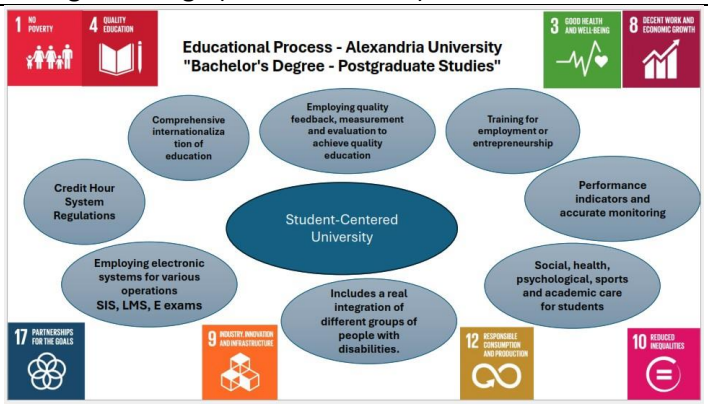
Alexandria University held a symposium on “Climate Change and Green Transformation: The Vision of Alexandria University with several universities and scientific bodies to participate in the COP27 climate conference. These projects include the use of green hydrogen and green ammonia in the fertilizer industry in cooperation with the Egyptian Chemical Industries Company (Kima), the establishment of the Alexandria University Company for Energy and Water Services, the localization of the electric car industry inside Egypt through the design and manufacture of the electric bus and the electric car, the role of the Suez Canal in reducing carbon emissions on the global level, the establishmentof the Alexandria University Centre for the blue-green economy, the role of Egypt as a regional centre for Energy, the production of green and grey hydrogen, the establishment of the Electronic Components Manufacturing Centre, in addition to the establishment of the Alexandria University Centre for Sustainable Development, with the aim of achieving sustainable development goals within the Alexandria University campus in order to turn it into a green university.



Industry and Environment Conference held by Institute of Graduate Studies and Research, Alexandria University (30-31 January 2024)

The students of the Gas and Petrochemical Program visited the Middle East Petroleum Refining Company “Midor” on Thursday, 24/3/2022, where the students learned about the refining operations and the various industrial operations that take place in the company, the treatment andseparation operations, and the expansions that take place in the company, where the company's refining capacity is 60%, and this comes as a continuation of the cooperation between the company and the Faculty of Engineering, Alexandria University, in line with the cooperation between Alexandria University, industry, and society.

The EFFCT team from Alexandria University has won second place in the prestigious Hult Prize International Competition, held in Paris, France. Competing against over 10,000 teams from 110 countries, the team impressed the judges with their innovativestartup, which focuses on recycling waste from the textile industry. Their achievement highlights Alexandria University’s dedication to fostering student innovation and entrepreneurship on the global stage (November 2023).



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The preparatory webinar for the COP28 Climate Conference, which was organized by the International Committee for the Development of Dry Lands, the Regional Action for Climate Change Foundation in Japan, the "Nizami Ganjavi" International Centre, and the African Organization for Young Leaders, at the Conference Centre of the Faculty of Medicine. The webinar discussed many important topics, including climate change and dry lands, food security, biodiversity, energy and sustainable development, political will and human solidarity needed for change, adaptation, African youth's view of climate change, the Egyptian perspective on climate change, and funding requirements.

7.4.4 University inform and support government in clean energy and energy-efficient technology policy development

Alexandria University Technology Incubator for Smart Systems (AUTISS)
About

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- Digitization of different services
- Smart health services/products
- Fintech applications
- Smart business solutions
- Smart educational services/products
- Biomedical engineering
- New technologies in the field of Energy, Agriculture and Food industry

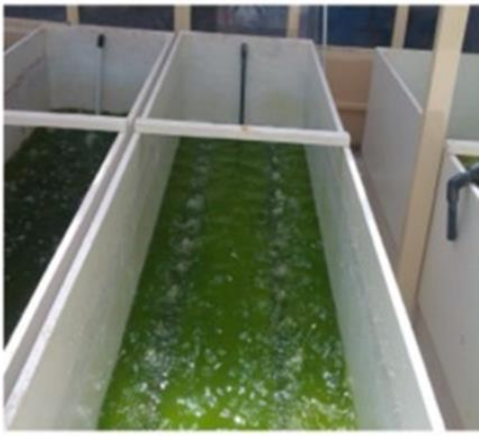
Research Project in Faculty of Science:

Production of Bio-Diesel from Algae in Selected Mediterranean Countries: Med-Algae Project

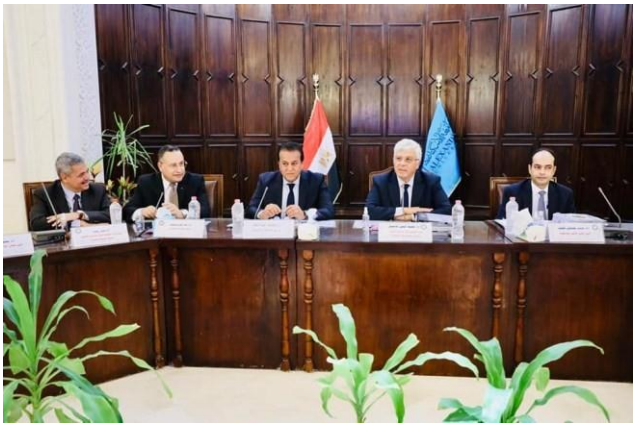
The project objective is to explore:

1- The development of microalgae-based biodiesel production and other valuable products in six Mediterranean countries (Cyprus, Egypt, Greece, Italy, Lebanon and Malta).

2- The current level of technology, the relevant market structure, and the governmental and environmental boundaries will be mapped in the participating countries, in order to identify the most promising strategies in each country.



The Minister of Higher Education chairs the meeting of the Supreme Council of Universities at Alexandria University supporting the "Egypt Digital Cubs" initiative organized by the Ministry of Communications and Information Technology, by allowing the use of electronic testing laboratories spread throughout all public universities, to conduct admission tests for applicants, by activating a tripartite cooperation protocol between the Ministry of Higher Education and Scientific Research, the Ministry of Communications and Information Technology, and the presidents ofpublic universities. The Ministry launched the green financing initiative for research, development and innovation to support applied projects that contribute to solving environmental problems, nature conservation, Energy Efficient Appliances Usage Alexandria University intends to realize further energy savings by paying closeattention to energy management. All the faculties and institutes of the university realize their own energy-saving potential by means of LED lighting and the deployment of sustainable technology.



Alexandria University Project on using LEDs as Energy-Efficient Bulbs:

Within the framework of the University's keenness to transform into a green,environmentally friendly university that works to enhance its resources and rationalize energy consumption, the Department of Community Service Development has launched a project for the total transformation of the usedLED bulbs instead of the fluorescent ones.

The light-emitting diode (LED) bulbs are more efficient, and energy-saving compared to fluorescent bulbs, with a relatively longer life span.

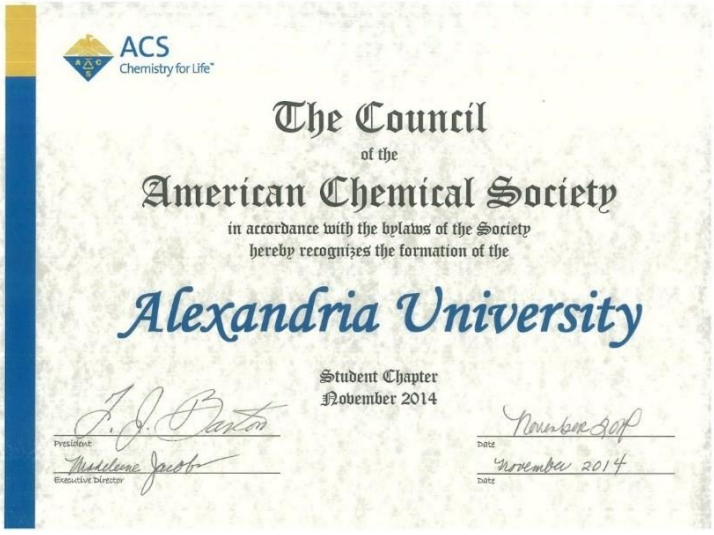
The project has been implemented in phases since 2019 based on the preparation of an inventory of the total numbers needed for all faculties and institutes of the university. The first quarter, the numbers

required, which represents the typesof 60 cm, 120 cm and 9 watts' bulbs, has been spent and installed, which are almost 30%. In parallel, appropriate measures were taken to dispose of the lost fluorescent lamps through one of the companies concerned with safe disposal. The second step required the purchase and transformation of 37% of the total needs of the faculties and institutes of the university. The third step required the purchase and transformation of 25% of the total needs of the faculties and institutes of the university. During the last phase, the transformation of all remaining LED bulbs was performed.

Alexandria University Program to reduce Electricity consumption from Air Conditioners and electric devices such as Computers, printers, photocopiers, surveillance cameras.

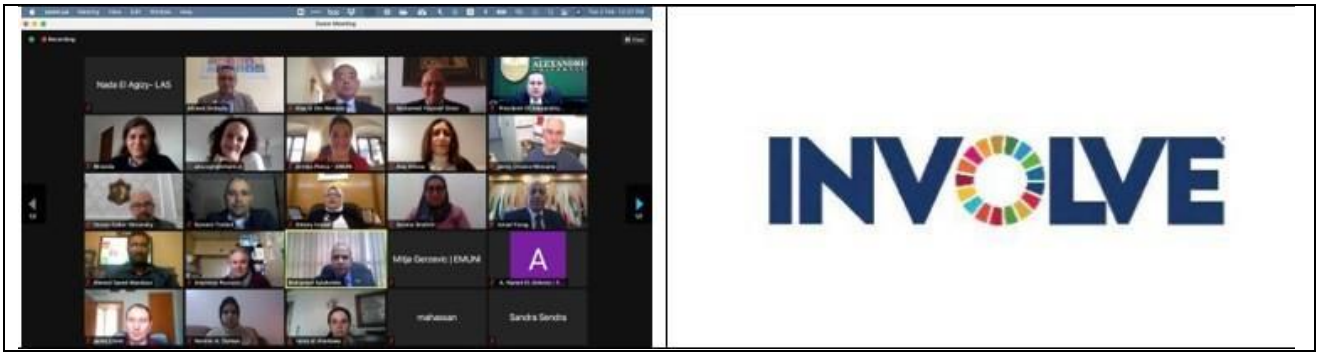
13. All newly purchased AC are inverter AC to reduce the electricity consumption (attached pdf file).
14. The new electric devices such as Computers, printers, photocopiers, surveillance cameras are energy efficient devices (detailed in evidence file 2.1).
15. All electronic devises must be shut down at night, when not used.
16. Passive Infrared (PIR) Sensors were implemented in some Faculties for motion-activated lighting to detect changes in heat signatures when someone or something moves within the sensor's range. These sensors will be implemented in phases in for all faculties and institutes of the university.
17. Regular Maintenance of all devices.
18. The thermostats of the air conditioner are set at 25□C, and direct sunlight is avoided by using sun protection curtains.

International Collaboration and Partnerships is performed by collaborating with other countries and institutions to share knowledge, technology, and expertise on GHG emission reduction.



Project "Integrating Sustainable Development Goals into Universities for Better Management of Climate Change," which is funded by the European Union within the Erasmus Plus program (2021-2024)with a budget of 15 million pounds, via the electronic platform, and its work continued over two days. Alexandria University is leading the project, which includes 7 other partners, from the European Union, namely the University of Aveiro in Portugal, the University of Sassari in Italy, the University of Valencia in Spain, the Euro-Mediterranean University from Slovenia, and from Egypt the Arab Academy for Science, Technology and Maritime Transport, Zewail University, and

Heliopolis University. The project aims to enhance the capabilities of Egyptian universities in terms of raising awareness of sustainable development goals for university members, integrating sustainable development goals into strategic plans and university policies, and transforming universities into environmentally sustainable universities.



جامعة الإسكندرية
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

جامعة الإسكندرية
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UNIVERSITY

Alexandria University Sustainable Investment policy.

A sustainable investment policy refers to the set of guidelines and principles that Alexandria University . The policy aims to align the organization's investment activities with its sustainability goals and values.

Implementing a sustainable investment policy align investments strategies of the university with sustainable developement Goals, and promotes responsible investing practices, and contribute to the transition to a more sustainable and resilient economy. It also attracts socially and environmentally conscious investors and stakeholders who value sustainable investment practices.

Important elements include:

1. ESG Integration: The policy should emphasize the integration of ESG factors into the investment decision-making process. This involves considering environmental and social risks and opportunities, as well as governance practices of potential investments. ESG analysis can help identify companies or projects that demonstrate strong sustainability performance.
2. Sustainable objectives: The policy defines the university's sustainability objectives and priorities focusing on on specific ESG themes, such as climate change, renewable energy, social justice, or diversity and inclusion. Such objectives help guide investment strategies and ensure consistency with sustainability goals .
3. Engagement and Stewardship: The policy outlines the organization's commitment to active engagement with investee companies to encourage improved ESG practices. This includes voting on shareholder resolutions, engaging in dialogues, and exercising influence to promote positive change. Stewardship activities help drive sustainable behavior and align investee companies with sustainability goals.
4. Ongoing review and monitoring: The policy includes procedures for ongoing monitoring and review of investments to ensure they continue to meet sustainability criteria. Regular assessments of portfolio performance, ESG risks, and evolving sustainability trends help maintain alignment with the university's strategic objectives
5. Positive Impact investments: The policy ensures commitment to investing in projects that generate positive environmental and social impacts. This could include investing in renewable energy projects in new buildings of the universities and in the upgrade process taking place, , clean technologies in the use of energy and water, sustainable infrastructure with green areas .
6. Reporting and transparency: The policy encourages collaboration with the industry sector, and stakeholders to advance sustainable investment practices. This involves

sharing best practices, participating in initiatives, and supporting industry-wide efforts to promote sustainability.

Adopting this sustainable investment policy, the university contributes to positive social and environmental outcomes while generating financial returns. It demonstrates a commitment to responsible investing and can attract stakeholders who value sustainability.

Following this strategy, the university has established several investment projects e.g. technology park for incubation and acceleration, Alexandria National university, International university with two branches in Chad and south Sudan, as well as International Branch Campuses (IBC).

University president Endorsement

A. Konsowa

Prof. Abdel Aziz Konsowa

جامعة الإسكندرية
ALEXANDRIA
UNIVERSITY

Alexandria University Sustainable Procurement/purchasing policy.

A sustainable procurement or purchasing policy refers to the set of guidelines and principles that Alexandria University follows when procuring goods, services, or works in a sustainable and socially responsible manner. It aims to minimize the negative environmental, social, and economic impacts associated with the procurement process and promote sustainable practices throughout the supply chain.

Implementing a sustainable procurement and purchasing policy brings several benefits including reduced environmental impact, enhanced reputation, cost savings through efficiency improvements, and increased social responsibility. The element of the policy are used as guidelines that the university follows when making decisions with a focus on environmental, social and governance (ESG) factors and ensure consistency with sustainability goals.

Below is the set of key elements included in the policy:

1. Environmental Considerations: prioritization of environmentally friendly products and services that have a reduced carbon footprint, conserve resources, promote energy efficiency, and minimize waste generation. This includes the use of renewable materials, promote recycling and waste reduction, and specify environmentally preferable conditions and standards.
2. Social and Labor Standards: The policy require suppliers to comply with social and labor standards, including fair wages, safe working conditions, and respect for human rights. Such a policy promotes the use of suppliers who have fair trade or responsible sourcing certifications and encourage diversity and inclusion
3. Ethical Sourcing: The policy addresses issues such as conflict minerals, child labor, and corruption. It requires suppliers to provide evidences of responsible sourcing practices and ensure that they do not engage in unethical or illegal activities.
4. Screening and Exclusions: The policy includes criteria for screening and excluding certain investments based on negative ESG factors. For example, it may exclude investments in companies involved in fossil fuel extraction or those with poor labor practices. This approach aims to align investments with ethical and sustainable principles
5. Supplier Evaluation and Selection: The policy outlines criteria for evaluating and selecting suppliers based on their sustainability performance. It considers factors such as environmental management systems, social responsibility practices, and adherence

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 (AUTISS)

About

محور الإبداع والريادة والابتكار 3.5			
Numbr of start ups and spin-offs from the tecnology incubator8			
Company Name	**Issuing Date**	**Registration No -**	**Product Type**
Connect Out	Sep-23	756 075 017	Training for Recruitment Services
Millenium	Sep-23	581 327 128	Metaverse Environment for Museums
Orbit Technology	Mar-24	Ongoing	Hologram Technology for teachning Medical Students
KED	Mar-24	Ongoing	Networking Sevices with Architecture Competitions
Kement	Mar-24	Ongoing	Augmented Reality Environment for Museums
Young Engineering Academy	Mar-24	Ongoing	Robotics training solutions for PWD
Golgara	Mar-24	Ongoing	AI-Supported translation services
DeafTechno	Mar-24	Ongoing	IT training solutions for PWD
HR Mystery	Mar-24	Ongoing	Corporate Training LMS
Sci-Ask	Mar-24	Ongoing	Mult-level Learning Community

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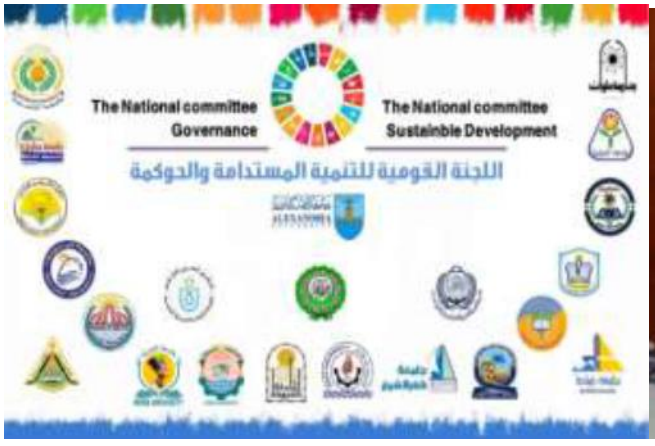
Alexandria University Technology Incubator for Smart Systems (AUTISS) Incubator (Faculty of Engineering, Alexandria University)

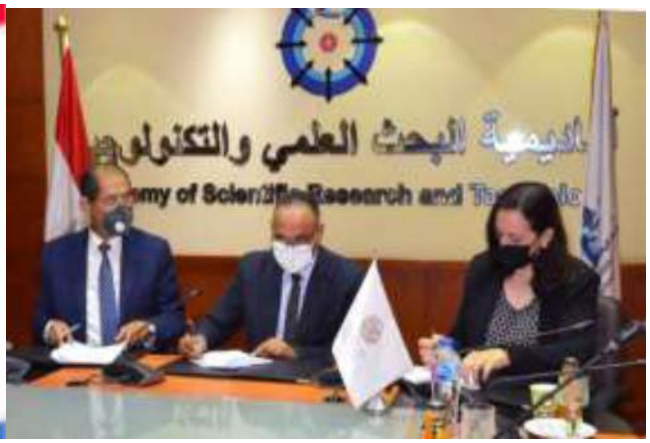
National Committee Sustainable Development

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.





Energy Conservation Advisory Group:

This group is concerned with reviewing energy in all its forms at all levels, such as measuring and analyzing exhaust gases in furnaces and boilers with the aim of improving combustion efficiency and reducing emissions, measuring and analyzing boiler water, in addition to tests of thermal insulation efficiency, lighting efficiency, electrical energy analysis, and compatibility with electrical loads. It also determines the power factor to increase efficiency. Rationalizing the energy used, reviewing energy use, radiation measurements and safety tests for radioactive sources. The group has a mobile laboratory that can visit sites and make environmental measurements related to energy as well as emissions and study energy consumption and the extent of thermal insulation in industrial sites.

Air Pollution Advisory Group:

The group is interested in monitoring organic and inorganic gaseous emissions to determine air quality in residential and traffic-intensive industrial areas. It manages the national network of air pollutant monitoring stations in Alexandria and the Delta. It also provides consulting services to factories and agencies to determine air quality inside and outside the work environment and also control air pollutants.

Green building implementation through the use of sun breakers in the SSP building at the Faculty of Engineering

Green buildings of Alexandria University are designed to reduce environmental impact through efficient use of resources and sustainable practices. The main elements of green building include:

The European Union project to convert several buildings of Alexandria Universityinto green buildings by reducing energy consumption in addition to establishing solar-powered power stations

- In light of the keenness to rationalize energy consumption in university buildings and the general trend to increase the percentage of reliance on new and renewable sources in electricity production, and in cooperation with the European Union, the European Union funding was accepted for a project to transform some buildings of Alexandria University into green buildings by reducing energy consumption in addition to constructing Electrical power stations powered by solar energy on the roofs of some qualified faculty and institute buildings suitable for this purpose.
- Accordingly, three buildings belonging to the university's faculties were chosen as a first stage to study the feasibility of applying the project to them in terms of the building's ability to bear the weight of solar stations to produce electricity, as well as studying the spaces available for building these stations and the extent of those spaces' exposure to solar radiation throughout the day. The opportunities available to reduce reliance on usual energy sources were also studied in terms of using more efficient lighting, increasing reliance on natural lighting during the day, and reducing the building's air conditioning loads.
- After research and review, the specialized scientific programs will be developed in the Faculty of Engineering, the Faculty of Education building within the Literary faculties Complex, and the Manchester Building in the Faculty of Medicine, whichwere chosen due to the recent construction of these buildings and their ability to accommodate the proposed development in terms of the electrical load network and the development of air conditioning systems and water heating systems used in laboratories and bathrooms.
- These buildings were visited and their suitability for the project was evaluated. The current electricity consumption and the possibility of covering these loads with electricity generated from solar energy were studied. The roof areas facing south and suitable for establishing solar stations were inspected and raised. The available roof area in the Specialized Scientific Programs Building at the Faculty of Engineering, Alexandria University, was 2,400 square meters. It can be used to create a solar station with an area of 1,000 square meters with a capacity of **120 kilowatts**, so that the station will be able to generate **360 megawatt hours** of electricity annually. As for the Faculty of Education building, the total area of thebuilding was 4,000 square meters, and the appropriate spaces for building the station accommodate 1,000 square meters of solar cells with a capacity of **120 kilowatts**, so that the station is capable of generating **360 megawatt hours** of electricityannually, and for the Manchester building at the Faculty of Medicine, 1,200 square meters is capable of accommodating a solar power station with an area of 800 square meters. With a capacity of **96 kilowatts**, the station is capable of generating**288 megawatt hours** of electricity annually. These stations also contribute to reducing carbon dioxide emissions by a totalof approximately 214 tons annually. The total expected cost of the project is about 300,000 euros.
- The time to recover the capital was estimated through providing the electricity consumed in the three buildings for approximately seven years from the date the stations entered service at full capacity, considering the periodic maintenance necessary

to continue the station's operation with the greatest possible efficiency. Detailed reports were also prepared for each building and submitted to the general coordinator of the project, for review and to take the necessary steps tostart this vital project, which is an important step in strengthening the efforts of the Egyptian state towards switching to renewable energy and reducing dependence on fossil fuels that have a negative impact on the environment.

New European Union Project for Renewable energy production (Solar panels)

No	Location	Production (in kWh)
1	Faculty of Engineering	360,000
2	Faculty of Education	360,000
3	Faculty of Medicine	288,000
	Total	1,008,000

The European Union project to convert several buildings of Alexandria University into green buildings by reducing energy consumption in addition to establishing solar-powered power stations: the Specialized Scientific Programs Building at the Faculty of Engineering, the Faculty of Education Building within the Literary Colleges Complex, and the Manchester Building at the Faculty of Medicine.

Policy created (2022)

ALEXANDRIA UNIVERSITY

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