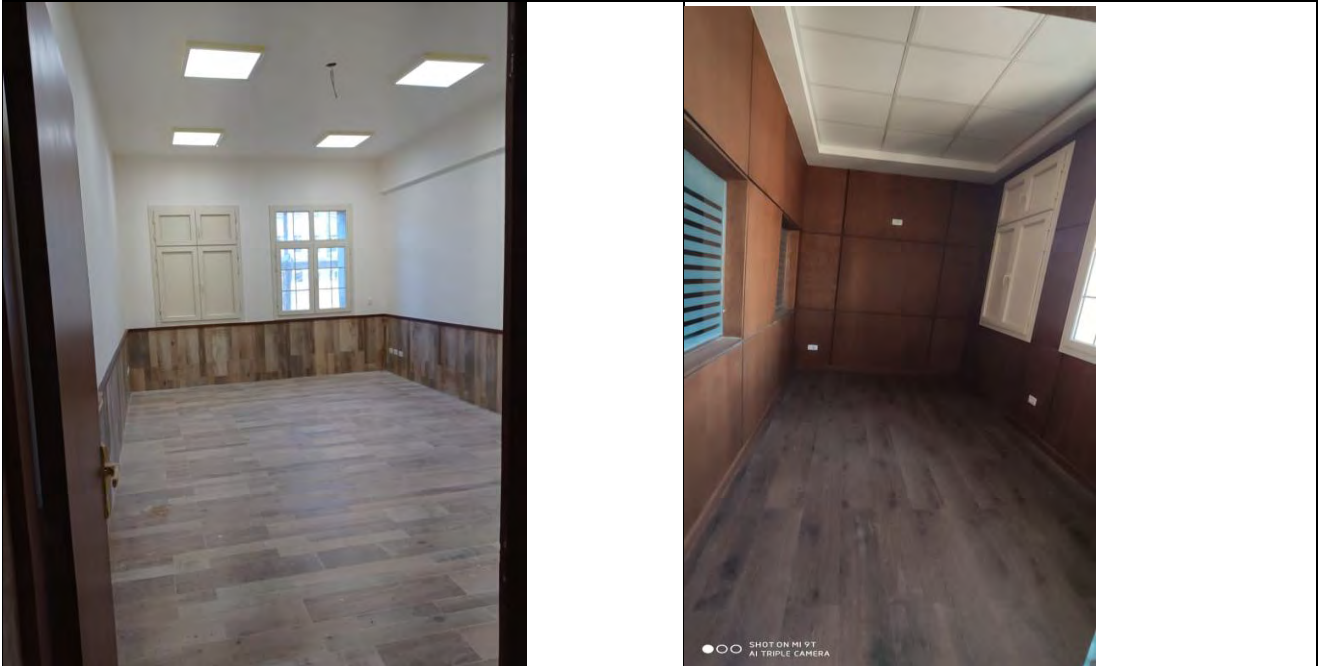


Template for Evidence(s) UI GreenMetric Questionnaire

University : Alexandria University
Country : Egypt
Web Address : <https://alexu.edu.eg/>

[2] Energy and Climate Change (EC)

[2.1] Energy Efficient Appliances Usage



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



Energy Efficient Appliances Usage: Solar Energy Center at the Faculty of Agriculture (Alexandria University)



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



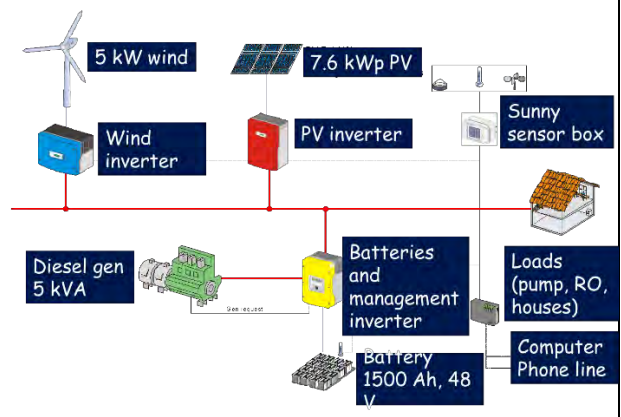
Solar Energy Center at the Faculty of Agriculture (Alexandria University)



100 KW Hybrid Wind/PV System (50 KW PV and 50 KW Wind)



Lay out of the Hybrid system



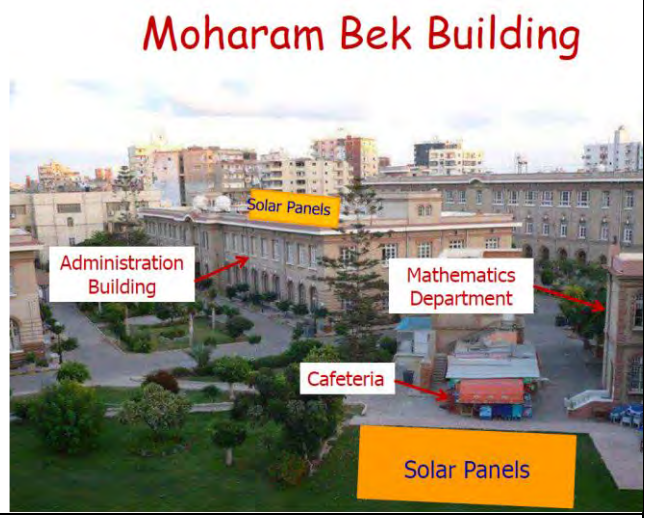
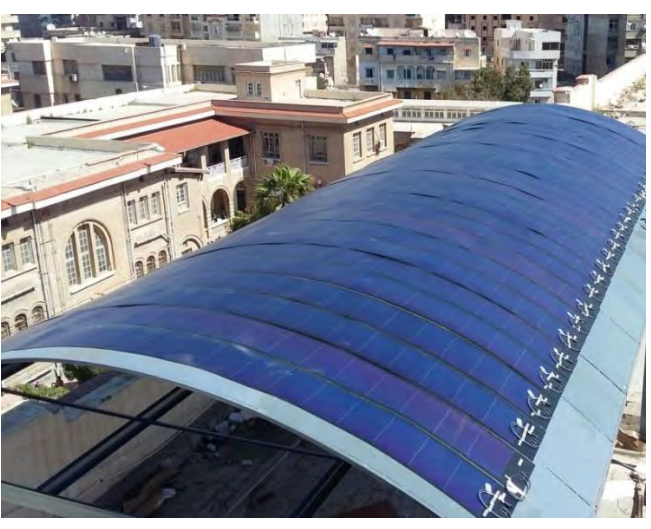
HYRESS Site at Wadi El-Natroon, Solar Energy Center at the Faculty of Agriculture (Alexandria University)

The modular hybrid power supply concept proposes the coupling of all sources of energy, storage media and loads on the AC-side (Faculty of Agriculture, Alexandria University).



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

BIPV Garden Pergola, Faculty of Science in Moharram Bek (Alexandria University)



BIPV Roof Pergola, Faculty of Science in Moharram Bek (Alexandria University)



Description:

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 (2019-2022):

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.

During the current phase we are processing the third step of purchasing and transformation of around 92% of the total needs of the faculties and institutes of the university (attached pdf file).

The Table below summarizes the total number of LED bulbs that are required for complete transformation into using green energy source along with the percentage of the bulbs that were already replaced over the last 3 years.

LED 60 cm

LED Lamps	Total Number required	Total number energy Efficient appliances (replaced)	Percentage
2019	39198	10142	25.9%
2020		12504	31.9
2021	...	12900	32.9%
		Total Percentage	90.7%

LED 120 cm

LED Lamps	Total Number required	Total number energy Efficient appliances (replaced)	Percentage
2019	30799	9874	32.1%
2020		12500	40.6%
2021	...	6221	20.2%
		Total Percentage	92.9%

LED 9 watts

LED Lamps	Total Number required	Total number energy Efficient appliances (replaced)	Percentage
2019	5190	1678	32.3%
2020		1998	38.5%
2021	...	1282	24.7%
		Total Percentage	95.5%

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 (attached pdf file).
2. The new electric devices such as Computers, printers, photocopiers, surveillance cameras are energy efficient devices (attached pdf file).
3. All electronic devises must be shut down at night, when not used.
4. Regular Maintenance of all devices.



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



Solar 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:

- 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.

Equipment at the center:

- 1) The center has many devices for different applications of renewable energy.
- 2) A hybrid system to generate electricity from the sun with a capacity of about 130 kilowatts.
- 3) E-learning courses on the site.

System Application	Solar System power kWp	Air Turbine power	Energy (kWh)
Wadi El-Natroon 1, Photovoltaic cells	7		7000
Wadi El-Natroon 2, Photovoltaic cells	50		50,000
Wadi El-Natroon 1, Air turbines		5	5000
Wadi El-Natroon 2, Air turbines		50	50,000
Abis Campus			130
University Main building			20
	Total Power (kWh)		112,150

The Faculty of Science:

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

System Application	Number of modules	Solar System kWp	Power (kWh)
BIPV façade brise-soleil	120	17.28	26350
BIPV garden pergola	90	8.1	
BIPV roof pergola	30	4.1	49,620
	Total Power (kWh)		



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 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**.

Ratio of renewable energy production divided by total energy usage per year

No	Renewable Energy	Production (in kWh)
1	Solar panel	57,150 + 49,620 + 241.2 + 360
2	Windmill	55,000
	Total	162,371.2

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

Additional evidence link: <https://alexu.edu.eg/index.php/about-us-ar>

Link for LED lighting:

https://alexu.edu.eg/index.php/?option=com_content&view=article&id=5935&catid=21&lang=ar-AA

Link for Solar Energy:

https://alexu.edu.eg/index.php/?option=com_content&view=article&id=5936&catid=21&lang=ar-AA

Link for Sustainable Development: <https://alexu.edu.eg/index.php/en/sustainable-development>

Link for Green University:

https://alexu.edu.eg/index.php/?option=com_content&view=article&id=5932&catid=21&lang=ar-AA

Energy Efficient Appliances Usage

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VICE PRESIDENT
Community Service & Environment Development
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4. Regular Maintenance of all devices.
5. The thermostats of the air conditioner are set at 25°C, and direct sunlight is avoided by using sun protection curtains.

Sincerely,


Prof. Ashraf Elghandour, MD
Vice president of graduate Students & Research
Acting Vice president Community Service &
Environment Development
Alexandria University



Entity	LED bulbs	Computers	Airconditions	photocopiers	Surveillance Cameras	Fire extinguishers	Fire Alarm Systems	Fire hydrants	Bathroom Faucets
1 General Administration	2000	403	142	88	37	177	1	10	100
2 General Administration of University Cities	5500	130	234	19	23	729	0	0	55
3 General Administration of Libraries	0	75	9	5	16	168	1	0	8
4 Faculty of Dentistry	4600	169	269	36	61	166	1	0	485
5 Faculty of Pharmacy	5700	444	165	34	85	271	0	0	125
6 Faculty of Medicine	7000	761	186	96	86	571	1	45	10
7 Faculty of Veterinary Medicine	68	238	42	40	4	160	0	0	1
8 Faculty of Nursing	1050	225	92	34	40	155	0	0	100
9 Faculty of Science	3290	500	217	42	32	464	1	65	10
10 Faculty of Engineering	8610	312	23	21	39	375	1	0	42
11 Faculty of Tourism and Hotels	350	122	43	9	0	85	0	0	6
12 Faculty of fine Arts	0	107	53	21	0	300	0	0	10
13 Faculty of Physical Education for Girls	294	193	26	27	25	343	1	4	10
14 Faculty of Physical Education for Boys	100	165	65	20	0	145	0	0	50
15 Faculty of Economics and Political Science	2200	49	19	20	0	50	1	0	10
16 & Faculty of Computer Information Sciences	377	150	41	5	0	51	1	0	12
17 Faculty of Education for Early Childhood	662	50	30	9	0	53	0	14	10
18 Faculty of Law	1300	243	170	65	0	172	1	0	37
19 Faculty of Education	2500	300	73	11	30	134	0	33	10
20 Faculty of Commerce	13404	724	227	25	25	150	0	0	176
21 Faculty of Agriculture	3300	353	40	45	42	205	0	0	76
22 Shabhy Faculty of Agriculture Saba Pasha	0	0	0	0	0	0	0	0	0
23 Faculty of Arts	2200	239	126	24	48	83	0	0	22
24 Faculty of Specific Education	344	102	29	20	6	62	0	0	14
25 Medical Research Institute	3256	333	353	17	37	193	0	0	10
26 Institute of Graduate Studies & Research	870	182	80	18	30	116	1	0	216
27 High Institute of Public Health	0	0	0	0	0	0	0	0	0
Total	68975	6376	2754	751	666	5378	11	171	1605

General Manager
Dr. Nadira Sobhy Mohamed

Nadira 17-10-22