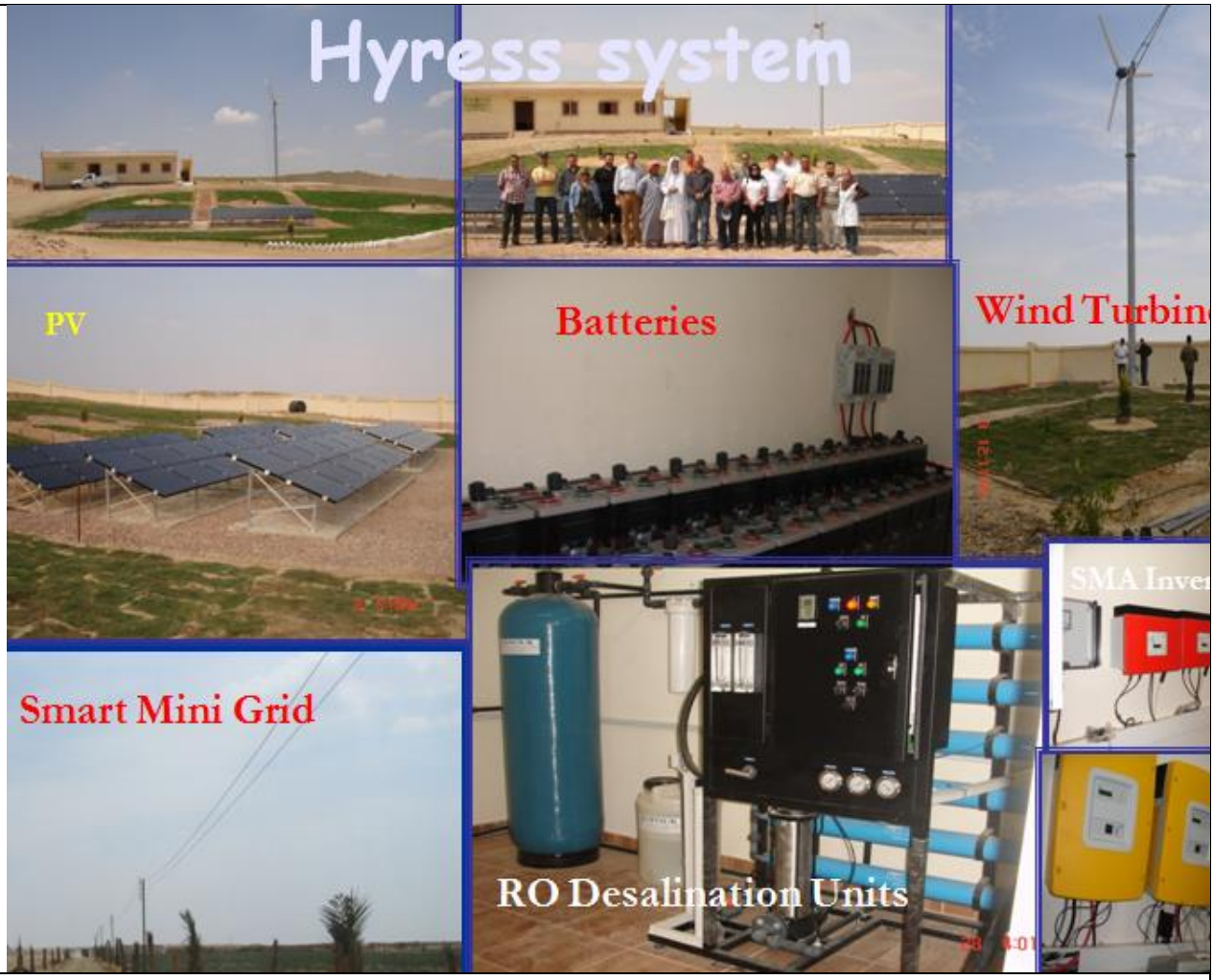
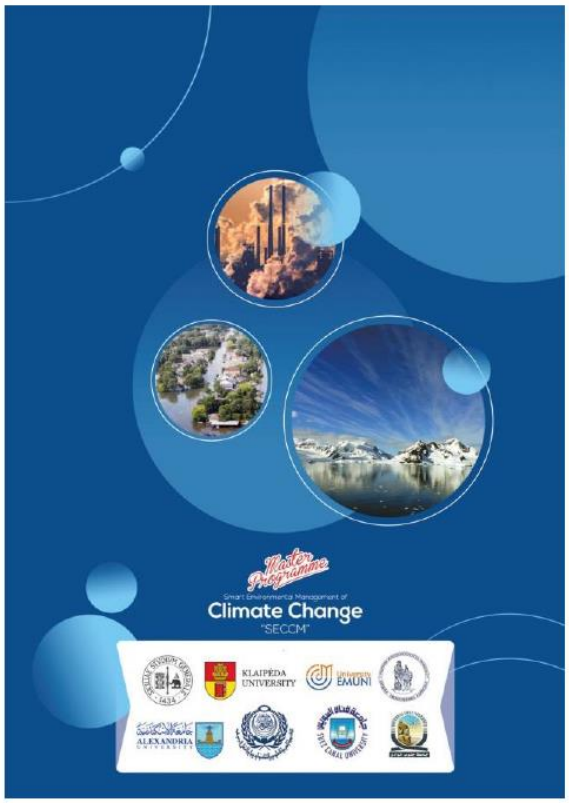
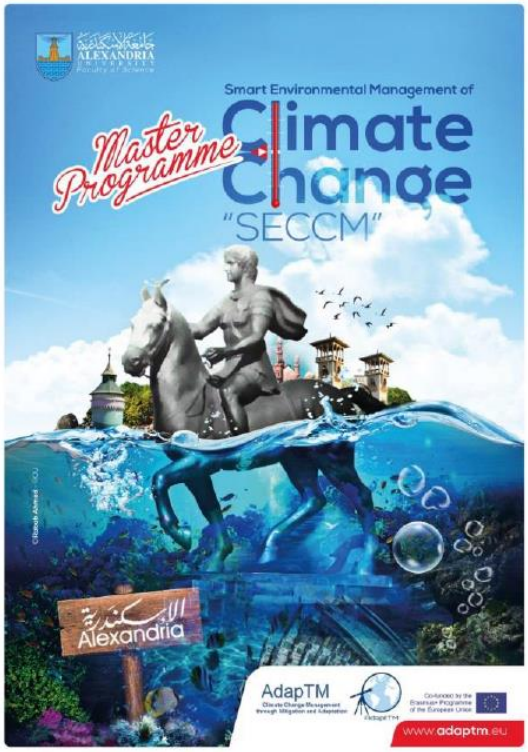
Number of innovative program(s) in energy and climate change

1	
	Solar Energy Center at the Faculty of Agriculture (Alexandria University)
2	
	Windmill and Solar Panels (Solar Energy Center at the Faculty of Agriculture - Alexandria University)

2	
	Solar Energy Center at the Faculty of Agriculture (Alexandria University)
3	 
	BIPV Façade Brise-Soleil System Solar Energy Center at the Faculty of Science (Alexandria University)

3		
	BIPV Roof Pergola, Faculty of Science in Moharram Bek (Alexandria University)	BIPV Garden Pergola, Faculty of Science in Moharram Bek (Alexandria University
4		
	Production of Bio-Diesel from Algae in Selected Mediterranean Countries: Med-Algae Project (Faculty of Science, Alexandria University)	Algae Cultivated In Flat Panel Photo-Bioreactor, Med-Algae Project (Faculty of Science, Alexandria University)
4		
	Seawater tank outside the chamber, Med-Algae Project (Faculty of Science, Alexandria University)	Open Ponds with running algal cultures, Med-Algae Project (Faculty of Science, Alexandria University)

5	 
	Smart Environmental Management of Climate Change Master Program (Alexandria University, Egypt)
6	
	Sustainable Management of Fisheries and Aquaculture Science Master Program (Alexandria University, Egypt)

7	
	Natural Resources Sustainability for Land Development Master Program (Alexandria University, Egypt)

Description:

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

a) The renewable Energy Center in Wadi Natrun.

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.

b) 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.

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

- The center along with partner from Greece, Germany, Spain Morocco and Tunisia awarded a Six Framework project (FP6 project) 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 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.

The services provided by the center:

a) **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.
b) **Consultations:** Various consultations in renewable energy systems, especially hybrid systems, drying and solar heating.
c) **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.
d) Serving the Egyptian community by providing all renewable energy information to the public.

Equipment at the center:

a) The center has many devices for different applications of renewable energy.
b) A hybrid system to generate electricity from the sun with a capacity of about 130 kilowatts.
c) E-learning courses on the site (www.areac-agr.com).

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

3- The Faculty of Science:

Research Project: Development and implementation of decentralised 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	23270
BIPV roof pergola	30	4.1	
	Total Power (kWh)		49,620

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**
2	**Windmill**	**55,000**
	Total	**161,770**

Environmental Benefits

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

4- The Faculty of Science:

Research Project: 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.

Studied Strains Chlorella sp was chosen to be the common examined strain between the partners. In addition, native algal strains from each participant country were isolated and identified.

Both Chlorella sp and locally isolated microalgae have been examined under lab and out-door scale.

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

5- Smart Environmental Management of Climate Change in collaboration with Catania University, Italy

2 year Postgraduate Master program (4 semesters).
AdapTm-Erasmus project: The participating countries and Universities: Italy, Greece, Lithuania, Slovenia, Egypt (Alexandria University, Suez Canal University, South Valley University, Arab Academy for Science and Technology and Maritime Transport).

Program start date: year 2019

Link: https://emuni.si › ADAPTM-handout_2_Mod

6- Sustainable Management of Fisheries and Aquaculture Science, in collaboration with University of Aveiro, Portugal.

2 year Postgraduate Master program (4 semesters).
(Erasmus+ Project, European Union): The participating countries and Universities: Portugal (University of Aveiro), Italy, Croatia, Slovenia, Egypt (Alexandria University, Aswan University, Matrouh University, Arab Academy for Science and Technology and Maritime Transport).

Program start date: year 2021

Link: http://fishaqu.eu

7- Natural Resources Sustainability for Land Development in collaboration with Aachen University, Germany

2 year Postgraduate Master program (4 semesters).
Erasmus+ Project, European Union: The participating countries and Universities: Germany (RWTH Aachen), Egypt (Alexandria University, Heliopolis University, the American University in Cairo, Aswan University), Cyprus (CITY College – Sheffield University), Italy (University of Palermo), Spain (Technical University of Madrid).

Program start date: year 2022

Link:

YouTube: https://suremap.eu
facebook: https://www.facebook.com/suremapproject
LinkedIn: https://www.linkedin.com/company/suremap-project