

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

<p>1</p>	 <p>(Second HEEPF Project)</p> <p>www.areac-agr.com</p> <p>E-Learning Lab</p> <p>الخلايا الكهروضوئية أ.د. عبد الوهاب شلبي، فاسم</p> <p>تخزين الحرارة لطاقة الشمس أ.د. محمد عبد الحامد محمد</p> <p>أساليب طاقة الرياح وتطبيقاتها أ.د. عبد الوهاب شلبي</p> <p>طاقة المتجددة أ.د. محمد عبد الحامد محمد</p> <p>الطاقة من المخلف الحيوية أ.د. عبد الوهاب شلبي، فاسم</p> <p>EVACUATED TUBE SOLAR COLLECTOR</p>
<p>Solar Energy Center at the Faculty of Agriculture (Alexandria University)</p>	
<p>2</p>	 <p>Old HYRESS system</p> <p>New STDF system</p>
<p>Windmill and Solar Panels (Solar Energy Center at the Faculty of Agriculture - Alexandria University)</p>	

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

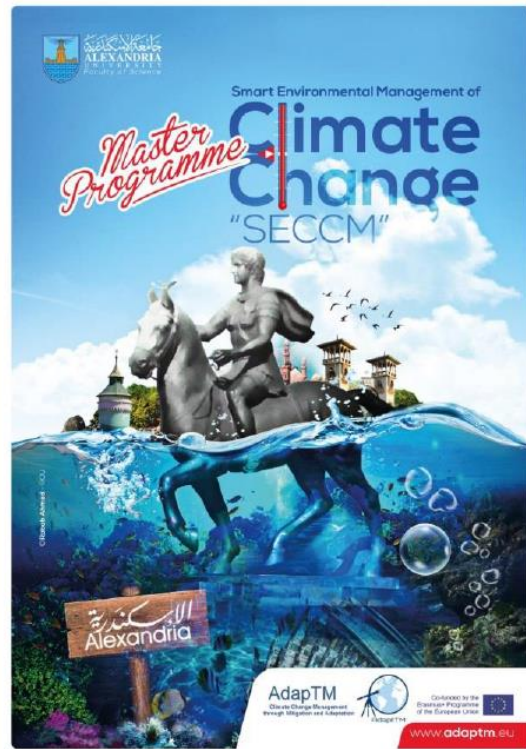
3



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

3		
	<p>BIPV Roof Pergola, Faculty of Science in Moharram Bek (Alexandria University)</p>	<p>BIPV Garden Pergola, Faculty of Science in Moharram Bek (Alexandria University)</p>
4	 <p>Visitors, Stakeholders & Media 29 March 2014</p>	
	<p>Production of Bio-Diesel from Algae in Selected Mediterranean Countries: Med-Algae Project (Faculty of Science, Alexandria University)</p>	<p>Algae Cultivated In Flat Panel Photo-Bioreactor, Med-Algae Project (Faculty of Science, Alexandria University)</p>
4		
	<p>Seawater tank outside the chamber, Med-Algae Project (Faculty of Science, Alexandria University)</p>	<p>Open Ponds with running algal cultures, Med-Algae Project (Faculty of Science, Alexandria University)</p>

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)



M.Sc. in:
Natural Resources Sustainability for Land Development (NRSLD)
Under the framework of SuReMap project
(Sustainable Resource Management Programme to solve Deserted Challenges)

SuReMap Project:

Aims to establish interdisciplinary programs that train students to address water, energy & food-related challenges in "Egypt's 2030 strategy".

NRSLD is an outcome of the SureMap Erasmus+ project that includes a consortium of 8 Egyptian and European universities. The program is cooperatively designed by the consortium, therefore; it has the advantage of the international and interdisciplinary perspective, European framework of recognition, and benefits from a wide network of participating professors from the following universities: RWTH Aachen, Heliopolis University, Alexandria University, CITY College – Sheffield University, The American University in Cairo, University of Palermo, Aswan University, and Technical University of Madrid.

Program Vision:

NRSLD program aims to prepare students with the knowledge and experience for the management and sustainable development of drylands' natural resources in the local, regional, and international related sectors.



Program Mission:

The Faculty of Science through NRSLD program seeks to qualify the graduates to be competitive at local, regional, and international levels, by creating an appropriate educational environment and fostering ethically, scientifically, and professionally sound approaches that enable graduates to serve the community and the institutions closely related to sustainable development plans.



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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- Solar 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:

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

Equipment at the center:

- The center has many devices for different applications of renewable energy.
- A hybrid system to generate electricity from the sun with a capacity of about 130 kilowatts.
- 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>