

ISLAMIC UNIVERSITY OF LEBANON
REPORT ON
SDG 17

PARTNERSHIP FOR
THE GOAL

**7 AFFORDABLE AND
CLEAN ENERGY**



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SDG 17 - PARTNERSHIP FOR THE GOAL

INTRODUCTION

The Sustainable Development Goals, SDGs, represent basic principles to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. They were gestated at the United Nations Conference on Sustainable Development, held in Rio de Janeiro in 2012, replacing the Millennium Development Goals (MDG, 2000), to create a set of global goals related to environmental, political and political challenges. economic conditions that our world faces. They were launched in January 2016 and will guide the policies and funding of the United Nations Development Program (UNDP) for the next 15 years.

The United Nations Development Program works with governments to integrate the SDGs into their national development plans and policies, and this in turn has led to the need to implement a new agenda to promote Sustainable Development, Agenda 2030. Agenda 2030, is a new tool for sustainable development, which aims to end poverty, promote prosperity and well-being for all people, in addition to protecting the environment by 2030.

More and more institutions are auditing their situation with respect to the SDGs to lay the foundations of the new agenda, Agenda 2030. Those most committed and more aware of this international need will be the best positioned to carry out necessary improvements in the current management model and infrastructures with technical and financial assistance from the United Nations Development Program.

Within these institutions are the universities, where the relationship between the SDGs and the universities can be seen as mutually beneficial and necessary for both parties. On the one hand, anticipating offering training on the SDGs is a way of demonstrating the institution's ability to adapt to these changing circumstances, and on the other, funding entities and sponsors are allocating more and more aid to meeting the Goals.

Sustainable Development Goal 17 "Partnerships for the goals" refers to the need for cross-sector and cross -country collaboration in pursuit of all the goals by the year 2030. SDG 17 is a vision for improved and more equitable trade, as well as coordinated investment initiatives to promote sustainable development across borders. It is about strengthening and streamlining cooperation between nation-states, both developed and developing, using the SDGs as a shared framework and a shared vision for defining that collaborative way forward.

At the Islamic University of Lebanon, we have a strong belief that in order for our country to develop sustainably, we have to abide by and follow these SDGs where people will enjoy a better life as well as a higher standard of living. The Islamic University has already implemented many of the requirements of the SDGs and is much willing and able to implement the remaining and incorporate it in its programs and policies.

At the end, it is extremely important to note that we need as human beings living on earth to live happily and with dignity by partnering together. All of us have to have the ultimate respect and

appreciation of each other's rights; the human right. However, to be able to enjoy that and develop our lives, many elements have to be taken with great consideration. We need as humans living on this planet to care for each other by providing assistance to the less fortunate ones. And what could be better to assist than a collaborative and joint effort among all countries under the United Nations umbrella. This is the reason behind the SDGs: Sustainable Development Goals.

We, countries of the world, need to assist in preventing hunger, stressing the importance of sustainable and drinkable water, being ready to face climate change, protecting life under water and on land, respecting the order of law, treating each other equally and without discrimination, continuously and relentlessly working on looking out for other sources of affordable and clean energy, sustaining city life without having to continuously run away to the suburbs, preserving justice among us all through a good and fair judicial system, consuming and producing responsibly, stressing innovation and creativity, promoting decent jobs and good work environments without any human trafficking or child labor or money laundering, promoting good health and well-being, making education affordable and reflective of the job market demand and assuring each other of zero tolerance for hunger.

When all of these are implemented then the world will be a much better place to live. The quality as well as the standard of living of people will be better leading to a decrease in the gap between the rich and the poor. There will be more respect for the human rights, lesser crime and extremism and finally peace will prevail.

SDG 7 – AFFORDABLE AND CLEAN ENERGY

SDG 7 aims at ensuring access to affordable, reliable, sustainable and modern energy for all. To do so, the global rate of energy efficiency improvements should double and the percentage of renewables in the energy mix and should increase.

It is critical that the whole world should have access to clean energy and it should be affordable as well. All countries around the world have energy but it actually is not affordable by millions of people. This will indeed lead to problems in development and eventually to lower standards of living and more crime, poverty and extremism. It is the role of both the private sectors as represented by businesses and the public sectors to make sure that the economically deprived classes of people should have access to energy and at a price that is affordable to them. They should be charged differently on the energy consumption as compared to those that are more affluent.

More governmental programs should be initiated to provide people with the solar energy that is much needed as it is a clean one and affordable as well. This could be provided in cooperation with local financial companies that are willing to provide access to this clean energy with easy financing and lower interest rates.

Having access to clean sources of energy will make farming in poorer sectors of the world easier and more productive and as such farmers will make more money and they will enjoy a higher standard of living. Consequently, they will be able to expand their businesses and hire more people. Demand in the country will increase and eventually more businesses will be opened and the whole

country will prosper and develop. Therefore, we see that as energy becomes cleaner and more affordable, the whole world will develop further and become more peaceful. In addition, the gap between the “haves” and the “have nots” will become smaller and smaller.

The Islamic University of Lebanon (IUL) in its mission seeks to contribute to the development of society, it has taken into consideration the reduction of energy consumption and the integration of renewable energy.

To do so, the IUL is working on several levels as follows:

1. The reduction of energy consumption at all IUL campuses.
2. The integration of clean and renewable energy.
3. The collaboration with the local community in supporting all initiatives that aim at developing new modes of energy consumption.
4. Supporting scientific research initiatives that help in creating and developing new ways and tools for sustainable energy consumption.

IUL and affordable and clean energy

Energy consumption at IUL

IUL has already adopted the criteria of Green Buildings in Lebanon [1] issued by the Order of Engineers and Architects as an energy policy to be used as a reference for future expansion of university buildings, especially the sections related to Energy Efficiency. To illustrate, the main elements taken into consideration are building Envelope, energy efficiency, artificial lighting, and heat recovery. Actually, the university is putting a plan to change non-compliant equipment in existing buildings and to improve energy efficiency. IUL is looking to benefit from government policies in the domain of energy.

Actually, the university is putting a plan to change non-compliant equipment in existing buildings and to improve the energy efficiency. These improvements include, but are not limited to:

- Replacing old fluorescent tubes and Compact Fluorescent Light (CFL) with light emitting diode (LED) technology.
- Finalizing a study to implement solar photovoltaic panels on an area up to 1000 square meters in Wardanieh campus to provide clean and affordable energy.
- Equipping common areas which are not regularly occupied with occupancy / Motion sensors. (study)
- Replacing current energy storage lead-acid batteries to lithium-ion batteries.
- Install smart meters at the level of each floor inside the buildings.

We have to mention here that some projects need foreign development aid on renewable energy. The university plans to benefit from official development assistance on electricity exchange with the EDL grid, by benefiting from related government policies.

IUL is committed to reducing carbon dioxide emissions by reducing the total electricity consumption, water, paper and fossil fuels. Regarding the electricity, the IUL plan is to provide affordable electricity to its facilities by relying totally on clean energy sources such as solar energy.

Furthermore, IUL has also adopted the Air Quality Protection Act [2] issued by the Lebanese Parliament in order to reduce air pollution resulting from transportation and encouraging the employees to use fewer polluting fuels. It also ensures free transportation to students and ensures places in its parking for private buses. Also, the university is currently reviewing its energy consumption policy. As a result of this review, old buildings have been clearly categorized as agents of high energy consumption.

The university has put a plan to reduce overall energy consumption and to provide reliable electricity, the plan includes, but is not limited to:

- As the buildings raised up to three floors only, it is prohibited to use elevators in the university except for people with special needs.
- Replacing old fluorescent tubes and Compact Fluorescent Light (CFL) with light emitting diode (LED) technology.
- Reducing the water heating expenses by limiting its usage.
- University staff are required to turn off their computers when work hours are over, also screens are set to be turned off automatically if unused after a certain time.
- Eliminating vampire loads: idle electronics are not allowed to remain plugged in.
- Staff are required to turn off the lights when offices or classrooms are not in use, also encouraging them to rely on natural lighting whenever possible.
- Using shades on the windows during hot summer days, this will help to keep the heat out.
- Setting the air conditioner at 25°C to decrease their power consumption.
- Install ceiling fans in places that are not exposed to direct sunlight. Ceiling fans have less environmental impact.
- Upgrade the current grid to be a smart micro-grid by installing new technological equipment to monitor power flows from points of generation to points of consumption in real time.

According to the review undertaken by the university to identify areas where energy wastage is highest, old buildings have been clearly categorized as foci of weak energy efficiency. The future renovation of these buildings shall take into consideration the criteria of green buildings to improve their energy efficiency and to increase the energy conservation. Currently, plans are in preparation to:

- Replace all windows with Low-emissivity ENERGY STAR windows.
- Replace lifts motor generator sets with modern energy efficient types.

The energy access to all the campuses of the university (Wardanieh, Baalbak, Khaldeh, Tyr) comes from three sources, the first is provided by EDL grid (Electricité Du Liban), the Lebanese public electricity provider, the second from local university generators and the third from the renewable energy sources:

- Electricity consumed from EDL and from university generators (**Error! Reference source not found.**): 2,184,679 KW = 2,184,6 MW.

- Total energy produced from renewable sources (available only at Wardanieh campus): 21,600 KW.
- The total electricity usage per year in the different campuses is equal to **2,206,279 KW**

Total Energy Consumption Summary Report					
Campus:	IUL - All Campuses				
Source of Data:	Electricity Monitoring and Management System				
Period:	September 2018 - August 2019				
Energy sources:	EDL + Generators				
Month	Wardanieh	Tyr	Khaldeh	Baalback	Monthly Consumption in KWh
Sep-18	69699	37731	55003	32003	194436
Oct-18	66212	37775	54743	30983	189713
Nov-18	63714	36971	54223	30939	185847
Dec-18	70418	37509	54483	32054	194464
Jan-19	73488	38244	53964	31914	197610
Feb-19	71139	37534	54353	31829	194855
Mar-19	53845	37462	53704	30419	175430
Apr-19	50415	36876	54613	30948	172852
May-19	51892	38539	64377	31968	186776
Jun-19	51434	38903	74372	32649	197358
Jul-19	47852	29146	74892	33264	185154
Aug-19	47068	18929	25800	18387	110184
Total Yearly	717176	425619	674527	367357	2184679

Figure 1. Total energy consumption in all campuses for the academic year 2018-2019

Figure shows the map of Khaldeh 2 main campus, Figure shows the map of Tyre campus, 3 Figure illustrates the map of Baalback campus and Figure 4 shows the map of Wardanieh 5 buildings. Table 1 highlights the campuses building area

Table 1. Area of campuses buildings.

Campus	Buildings Area (m²)
Khaldeh	13,400
Tyre	5,320
Baalback	9,400
Wardanieh	28,625
Total Area	56,745



Figure 2. Khaldeh Campus - Buliding area.



Figure 3. Tyre Campus - Building area



Figure 4. Baalback Campus - Building area



Figure 5. Wardanieh Campus - Buildings area

Collaboration with the local community

IUL is collaborating with the local community by helping them learn about the relevance of energy efficiency and clean energy technology through the participation in activities, seminars and workshops organized by the concerned associations and ministries. To illustrate, the staff members of IUL have participated in several events and workshops to promote the use of renewable energy.

IUL also provides direct services to local industry aimed at improving energy efficiency and clean energy (energy efficiency assessments, workshops, research renewable energy options). It has contributed to many collaborative projects with the Lebanese industry under the umbrella of LIRA projects (Lebanese Industrial Research Achievements). Some of these projects aimed to improve energy efficiency and clean energy. The IUL also gives the industrialists access to the labs of the Faculty of Engineering for testing and research purposes. The labs used for this intent are Power Electronics lab, Control Labs, Electronics Labs.

The university represented by its staff members have participated in several events and workshops to promote the use of renewable energy on country scale, especially that in the 2009 Copenhagen Climate Summit, the Lebanese government made a pledge to develop renewable energy production capacity to reach 12% of the total electricity supply by 2020. These events have been managed either by the Lebanese Ministry of Energy and Water (MoEW), the Lebanese Center of Energy Conservation (LCEC) or by the Order of Engineers and Architects (OEA). The following are some of these events:

- International Beirut Energy Forum (IBEF) from 2015 till 2019, organized by MoEW and LCEC.
<https://beirutenergyforum.com/>
<http://lcec.org.lb/en/LCEC/Events/20/iBEF-2016>
<http://lcec.org.lb/en/LCEC/Events/23/iBEF-2017>
- Renewable Energy and Energy Efficiency for Industry, organized by OEA, May 02, 2014.
<https://oea.org.lb/Arabic/EventDetails.aspx?pageid=4770>
- "Solar Process Heating in Lebanon: Opportunities & Key Factors for Quick Assessments", organized by OEA, March 14, 2016.
<https://www.oea.org.lb/Arabic/EventDetails.aspx?pageid=5430>
- An Insight on Pro-Green, OEA, July 26, 2016.
<https://www.oea.org.lb/Arabic/EventDetails.aspx?pageid=5504>
- **Building Integrated Solar Technologies**, organized by OEA, June 19, 2018.
<https://www.oea.org.lb/Arabic/EventDetails.aspx?pageid=5950>
- Sustainability for Lebanon, organized by OEA, October 11, 2019.
<https://www.oea.org.lb/Arabic/EventDetails.aspx?pageid=6266>

Scientific research

At the level of scientific research, the members of the faculty of Engineering have published several papers in international conferences. The university also puts all its scientific capabilities at the service of society and the government. In this context, the academic staff is always ready to help, in their fields of research, to support the government to develop clean energy and energy-efficient technology policy. To illustrate, the university co-finances a project in collaboration with the CNRS-L (Lebanese National Scientific Research Center) to solve the traffic on Beirut roads, and consequently, affect the carbon footprint.

Conclusion and future perspectives:

The future renovation of the IUL buildings shall take into consideration the criteria of green buildings to improve their energy efficiency and to increase energy conservation. Currently, the IUL is planning to replace all high energy consumption facilities with low energy ones.

At the level of renewable energy sources, a life-cycle assessment is under preparation to choose the best renewable source (in addition to the installed solar panels) suitable to be used on some campuses of the university.

IUL aims at making an energy transition of a part of its electricity to “green” power in order to minimize carbon footprint. To do so, the IUL is preparing studies to establish hybrid renewable energy systems to produce power from clean renewable sources such as the sun and wind, rather than oil, and using clean fuel whenever possible.

The Islamic University of Lebanon will continue to do the following among others:

1. Ensuring free public transportation for its students.
2. Organize events and conferences to promote the concepts of renewable energy.
3. Organize campaigns to raise the awareness of local communities.
4. Support initiatives aiming at developing new modes of energy consumption.
5. Integrate the concepts of green energy and renewable energy in its curricula.
6. Administer and organize webinars about reducing energy consumption and adopting renewable energy.

References

- [1] Criteria for Green Buildings in Lebanon, "Green Buildings in Lebanon," [Online].
- [2] Air Quality Protection Act, "Lebanese Parliament," [Online]. Available: <http://www.legallaw.ul.edu.lb/LawView.aspx?opt=view&LawID=275522>.