



Mediterranean and National Strategies for Sustainable
Development
Priority Field of Action 2: Energy and Climate Change

Energy Efficiency and Renewable Energy
Libya - National study's summary

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1. Libya Energy Situation:

In Libya, the energy sector plays a vital role in achieving social and economic development through satisfying the energy needs of the different economic sectors, in addition to the sector's effective contribution, particularly the oil and gas sector, to the GDP. In spite of such vital role, the sector has several features that can affect its contribution to the achievement of sustainable development this is mainly due to unsustainable energy production and consumption patterns, particularly in the end use sectors, the sector has its adverse environmental impacts on air, water and soil resources.

Libya is experiencing strong economic growth during the last three years which made Libya one of highest per capita GDP in Africa.

Oil export revenues are extremely important to the economic development of the country as they represent 90% of the total revenue.

Libya has continues increasing in total primary energy supply with average annual growth of about 5 % and the oil has the largest share, while the total energy demand reached 9.1 Mte in 2003 with highest consumption in oil sector.

The electricity is covering more than 99% of population; PV systems are used to supply electricity to about 2000 inhabitants in rural areas.

The electric energy demand is expected to grow very rapidly in the next few years; water desalination plants will be the major drive for energy demand as Libya planned to install desalination plants with amount of one million meter cub per day in the next five years.

The following points to be considered:

- Calling on developing and implementing policies and programs to change the current energy production and consumption patterns, through improving energy efficiencies in all sectors, particularly the highest energy consuming sectors, as well as promoting the use of cleaner fuels and renewable energy resources.
- Calling on supporting R&D, technology transfer and industrial development of sustainable energy technologies, utilizing the available bilateral, regional, and international technical cooperation and funding mechanisms.
- Calling on All Libyan organizations to put more emphasis on developing and implementing educational, capacity building and public awareness programs on energy for Sustainable Development.

2. Renewable Energy summary:

The share of renewable energy technologies in Libya up to now hold only a small contribution in meeting the basic energy needs, it is used to electrify rural areas for sustainable development, supply microwave repeater station, and in cathodic protection. A setup plane was planed for implementing renewable energy sources is to contribute a 10% off the electric demand by the year 2020. The short plane for renewable energy is to invest 500 million euro in the next five years.

During the past three decades, photovoltaic is the most technology which has been used in rural applications, particularly for small- and medium- sized remote applications with proven

economic feasibility, several constraints and barriers, including costs exist. The experience raised from PV applications indicates that there is a high potential of building a large scale of PV plants in the south ~~ght of~~ ~~after the~~ ~~of the~~ Mediterranean.

There is a great potential for utilizing, home grid connected photovoltaic systems, large scale grid connected electricity generation using Wind farms, and solar thermal for electricity generation, with capacities of several thousands of MW. The high potential of solar energy in Libya may be considered as a future source of electricity for the northern countries of Mediterranean.

Solar energy resources in particular can be of great source of energy for Libya after oil and natural gas. Renewable energy resources offer good opportunities for technology transfer and international cooperation. The modularity and decentralised nature of renewable energy technologies make them particularly well suited for rural energy development. In this aspect, use can be made of the Clean Development Mechanism (CDM) adopted by Kyoto Protocol in renewable energy applications that would reduce greenhouse gases.

Libya is located in a place which can be considered as a good place for renewable energy technology and applications development. It is also has great a resources for photovoltaic basic industry and a solar cell technology which can be built with the share of international investors.

3. What is needed to promote RE are:

- Promote and exerting private investment in renewable energy technology transfers and services.
- Increase informal education on all energy aspects as in the formal education.
- More attention needs to be paid to social issues related to energy.
- Disseminate widely an approach that could be implemented widely in all applications of RE.
- Need to establish partnership at local, national and international levels in order to develop policies based on evidence of the impact on people.
- Courage the international investment to invest in the industry.
- International cooperation to develop and build large scale solar energy applications as a pilot project.
- To develop and support, technically, financially, and institutionally, the national research and application institutions concerned with issues relevant to energy for sustainable development.
- To develop national energy policies and regulatory frameworks that will help to create the necessary economic, social and institutional conditions in the energy sector to improve access to reliable, affordable, economically viable socially acceptable and environmentally sound energy services for sustainable development.

4. Environment and Rational Energy:

The usual practice in Libya showed low efficiencies in energy production and consumption, there is a real challenge to develop an efficient energy use in most sectors, with several barriers including: lack of access to technology, capacity building, and institutional issues.

Energy efficiency can be implemented in both energy consumption and production sides. Almost in all energy end-uses, sectors, the focus is on improving the efficiency of equipment that provides the services, such as heating and air conditioning equipment, appliances, lighting and motors. In contrast, supply-side energy management focuses on performance-based improvements resulting in more-efficient energy generation, improved industrial processes, co-generation and energy recovery systems. On the production side there is a great importance in increasing efficiency in large-scale energy production. Energy efficiency can help reducing cost, preserving natural resources and protecting the environment. Energy efficiency can also be enhanced through access to appropriate technology, capacity-building, and institutional issues.

Libya is non annex I country under the UN FCCC, and is signatory to the Kyoto protocol, thus Libya currently is eligible to the CDM. The main emitters of CO₂ in 2003 are fuel combustion in the power generation sector. Libya's energy related CO₂ emissions increased by more than 78% in one decade mostly due to increased energy supply.

The analysis of the present energy situation in Libya clearly indicates that there are no programs toward rational use of energy. This situation related to many factors summarized as follow:

- 1- Low electricity tariff specially for residential sector.
- 2- cheap oil prices for transportation.
- 3- Lack of national policy toward the conservation of energy.
- 4- Lack of specialized national institution which deal with the rational use of energy.
- 5- Lack of detailed and deep studies related to the rational use of energy (RUE).

Many studies have indicated that the country's energy demand generation could be significant reduced if improved energy utilization efficiency by the major energy sectors is achieved.