

IMPACT OF ALTERNATIVE ENERGY TO ACHIEVE SUSTAINABLE DEVELOPMENT IN LIBYA

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ABSTRACT

Alternative energy represents an important energy source of the future as it is based on achieving sustainable development goals, conserving the environment and atmosphere from the negative effects of using traditional fuels, and achieving large economic goals that many countries care about. Develop and benefit from this source. Libya has enough natural resources to be an important source of alternative energy, but it is not being utilized optimally.

This paper aims to reviews Libya's capabilities in the renewable energy, the importance of investment in the field of sustainable development, the obstacles facing production, and the most important proposals for determining the appropriate mechanisms for overcoming these obstacles and activating contributions of renewable energy in Libya to achieve sustainable development.

The study concluded that Libya has great potential in areas that Use of renewable energy, especially wind and solar energy, and that it can make good use of this energy in a way that contributes to sustainable development. Raise awareness of the importance of going to alternative energy sources and leverage the experience of developed countries in this field.

Keywords: Alternative Energy-Sustainable Development-Environmental Pollution-Traditional Fuel

1.0. INTRODUCTION

Energy is a prerequisite for development. The demand for this is characterized by a continuous increase due to the increase in the current energy demand, which leads to its depletion and pollution, negatively affects sustainable development, and stimulates the search for sustainable, environmentally friendly and sustainable renewable energy.

Alternative energy, whether limited or unlimited, can be defined as a natural resource that is permanent and usable in nature, but it is continuously renewable and clean and does not cause environmental pollution due to its use. The most important of these sources are solar and wind energy, tidal and wave energy, which are originally considered major energy sources. Libya has a good location to produce renewable energy.

A more sustainable option is to accelerate the transition to renewable energy ahead of an international climate. The treaty stipulates that coal and oil are not used on the planet. Libya can make Europe carbon neutral through large exports of solar electricity.

One of the characteristics of renewable energy was studied by Robert Goodland [1]. The result showed that the local and natural energy that can be used in most countries around the world. It is also clean energy that does not pollute the environment, maintain public health, and does not cause global warming. We use uncomplicated technologies that are suitable for the human, technological and economic potential of developing countries and can be manufactured locally. It provides autonomy to users, especially in a centralized distribution network. Many countries paid attention to renewable energy due to the great achievement in economic sector and trying to the development of these energy sources.

Based on REAOL's planning and research department, shows the projected growth of the Libyan renewable energy market assuming sustainable stability in the future [2].

The main aims in this paper gain a knowledge and details that can be useful to help countries such as Libya to more clean and environmental friendly of energies

and there is no policy to provide financial security to private sector investors to ensure payment under the power purchase contract. There are also no internal tax cuts for the project. Renewable energy has no funding to fund, and the project is financed from the government budget.

The question is how well these problems can be solved, and the renewable energy sources invested in Libya can become an alternative to traditional energy sources and achieve environmentally friendly and sustainable development.

2.0. METHODOLOGY

In this section the main method to achieve the target is to review several research papers in the area of alternative energy and sustainable development in general and compared with the current situation in Libya the recommendation takes place to address the issues and the possibility of using alternative energy in Libya based on reports from national and international organizations. Accredited research centers specialized in this field identify problems that hinder energy production from available natural resources and find ways to find suitable solutions to utilize alternative energies as they advance their development to meet the goals of current and future generations. Few sections have been reviewed and concluded such as renewable energy, solar energy, Heat turbine system, Hydropower and wind energy. The map shown in Figure 2 were used to find out the distribution of oil resources in Libya.

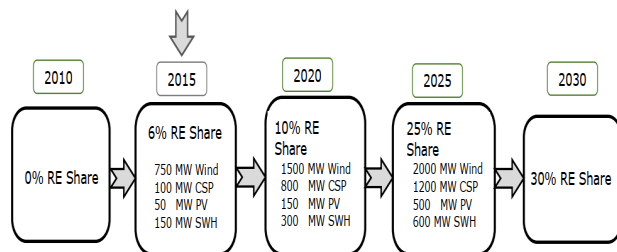


Fig. 1. Expected renewable energy market share [2].

Despite the presence of traditional energy sources in the State of Libya, especially crude oil and natural gas, these resources are subject to exhaustion due to their depletion as well as their risks to the environment. And despite the availability of alternative energy sources, the transition to Alternative energy production faces many obstacles, as the Libyan legal framework does not allow the private sector to independently produce energy from renewable sources.

There is also no binding law that includes long-term energy purchase agreements with energy producers from renewable sources. The law does not give priority to linking and transmitting energy produced from renewable sources.

While a new electricity law is being prepared to allow private sector companies to produce electricity, the energy sector is still closed to private sector investors

3.0. RESULTS AND DISCUSSION

3.1. Resource of wind energy

Based on data collected by F. Ahwide et al⁽³⁾ in January 2013 The wind data were collected from the representative meteorological station. For approximately 10 years' time each 3 hours measured as shown Figure 3 the monthly changing in the average wind speeding of highest of 10-meter height, the lowest value of average wind speed was in May and the highest in Dec. The average shown in the figure is 5.57 m/s.

3.2. Resource of Solar Energy

Speed looking in country close to Libya such as Tunisia the total amount is more than 2300 kWh / m². As shown in Figure 4 the distribution of DNI the most resources are found on south country where the average value is 2.400Wh/M². In general, can be higher the north the country as well as Libya can be same case.

Libya's geographic location make it one of the countries with high solar energy. The solar energy is considered the most important and viable renewable energy source in Libya. The solar radiation in different cities in Libya is shown in Fig. 5 [6].

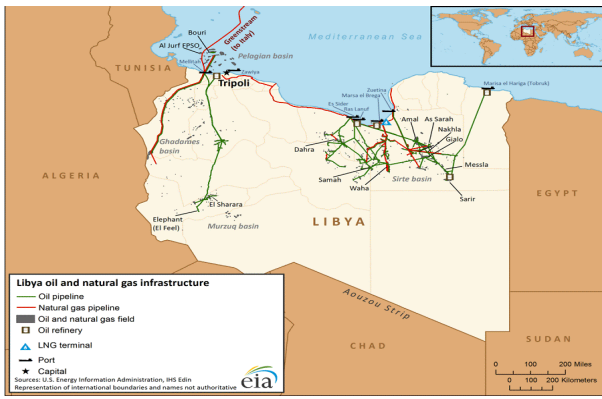


Fig. 2. Distribution of oil resources in Libya (Updated, 2015) [4].

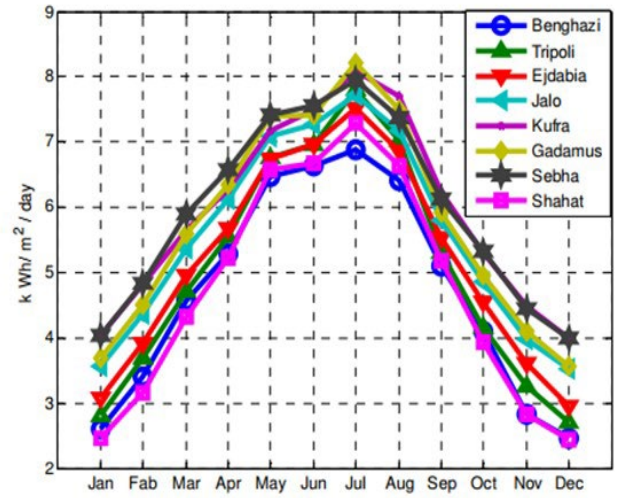


Fig. 5. Monthly solar radiation in various cities in Libya [6].



Fig.

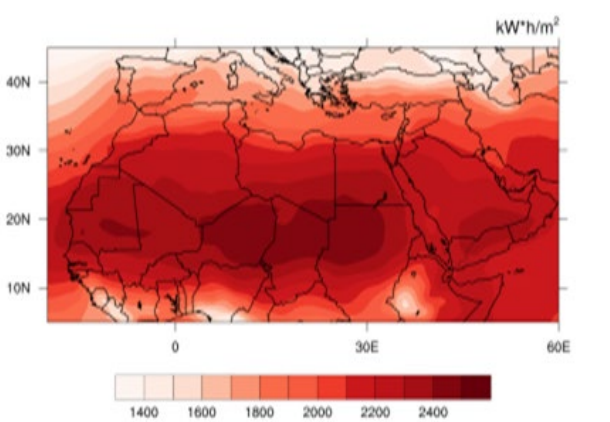


Fig 4. Annual average DNI distribution map North Africa region [5]

3.3. Solar system for microwave communication network in Libya

The Libyan telecommunications network began powering microwave stations through a PV system near the town of Zella in 1979, which consisted of more than 500 repeater stations, and in the early 1980s only 9 stations were fully powered by solar systems. And four of them still remain. It's working. In the 1980s, remote stations operated solely with diesel generators, while stations near the power grid were primarily sourced from the grid itself and suffered from service outages using diesel generators as backups. For example, in 1997, one of the stations went out of service for 17 days.



Fig. 6. PV panels installed to supply telecommunication towers [7].

The PV system installed to power the tower is shown in Figure 6. Impact of renewable energy of sustainable development [7].

The term sustainable development has been shown to identify the need to reduce natural resource depletion through economic growth that preserves ecosystems and conserves natural resources. This means responding to the needs of today without threatening the capabilities of future generations.

From the above, it can be said that sustainable development aims to reasonably meet the needs of the present without disturbing the natural environment and guarantees the right of future generations to meet their needs and achieve social care in the long run. It tries to conserve human and natural resource bases and limit environmental destruction.

The importance of developing renewable energy to achieve sustainable development highlights its effective role in achieving the following goals:

- Protecting the environment and the atmosphere and limiting the negative impacts of the energy sector. Rational utilization of available resources in the environment, as many of them are not renewable, which necessitates their exploitation according to rules that preserve survival and do not lead to environmental disruption.
- Achieving human development and raising the standard of living, as the production of electricity from renewable sources plays an important role in improving human development indicators, improving educational and health services, and thus improving the quality of life.
- Changing the types of production and sustainable exploitation of natural resources to keep pace with the increasing population growth.
- Diversifying sources of electric energy production from conventional energy and renewable energy projects. Renewable energy systems provide new, clean and advanced job opportunities.

On the other hand, sustainable development emphasizes the evolution of human society from a responsible economic point of view along with environmental and natural processes. So the political dimension is the key factor. In addition, the sustainable development paradigm can contribute to the well-being of present and future generations, taking into account the limitations of economic, social and environmental resources. Policies can be regional, nationally or

internationally oriented and able to solve problems such as sustainable development, climate change, air, water, waste, health and more. For example, the European Commission has proposed a declaration of principles for sustainable development. The term policy is closely related to the environment [8].

3.4. Application of renewable energy in Libya

Solar and wind energy are the most useful and used in Libya among other alternative energy sources, as they are appropriate in regions and locations where average wind speed and solar radiation are high, but these energies are not well utilized except for some simple applications that use the sun. not. Energy using solar cells. Pumping water, telecommunications stations, electricity supply in some rural areas, street lights, cell phones, etc. do not exceed 40,000 kilowatts total. Despite the difficult situation facing the country, the alternative energy sector is committed to sustainable development through off-road that wants to permanently provide the energy it needs, preserve the environment, provide new and clean jobs, meet social needs, and promote. So you can contribute. With several projects, Libya wants to get 22% of its energy demand.

It has become very necessary to move towards developing and exploiting renewable energy sources available in the environment, encouraging and facilitating investment and supporting efforts that change to reach an alternative source for traditional energy, especially in the solar and wind energy sector, as they are among the fastest growing energy sources and attract investments at the present time, especially with their availability. In appropriate quantities in our country, paying attention to studying the geographical and climatic challenges that may face the use of alternative energy sources and providing the necessary financial resources to conduct accurate scientific studies in this field and benefit from the experiences of developed countries to use renewable energy sources.

Renewable energy of all kinds tends to be the only source of energy in the future because it does not run out and is constantly renewed and on the other hand because it is not polluting the environment. In addition, the application of modern technologies to generate these types of energy will provide multiple job opportunities for young people and therefore we must intensify interest in this field through: -

- Establishing an effective and sustainable legislative and legal framework that regulates the process of providing energy from renewable sources, establishing the administrative system that implements this legislation and ensures its implementation, and takes stimulating and

encouraging measures to support renewable energy programs to be completed on time.

- Establishing training centers on renewable energies to qualify cadres and specialized skills in the field of energy technology, especially solar and wind energy.
- Encouraging cooperation with developed countries in this field to benefit from their experiences.
- Supporting the partnership between the public and private sectors, cooperation with universities and specialized research centers, and prompting their efforts to activate work in alternative energy fields and related industries to benefit from them in the areas of development.
- Directing the media to carry out a broad campaign to explain the importance of renewable energy targeting all categories of energy beneficiaries, investors and economic institutions.
- State support for projects that use alternative energy through financial concessions that strongly support the success of these green and environmentally friendly projects and impose fines and penalties on projects that pollute the environment.
- Establishing research centers in the field of renewable energies, in which the public and private sectors participate, to keep pace with studies and research in this field.

4.0. CONCLUSION REMARKS

Libya has a strategic location and ample natural resources, making it an eco-friendly and important energy source as an alternative to traditional energy sources. It will be one of the most important energy sources that will clearly change the global production map in the short term. Therefore, interest in this new energy source will greatly contribute to promoting sustainable development, protecting the environment, and preserving the rights of future generations to obtain energy and live in a pollution-free environment.

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