Joint master of Mediterranean Initiatives on renewable and sustainable energy

DEANSHIP OF GRADUATE STUDIES

AL-QUDS UNIVERSITY

Master Program of Renewable Energy and Sustainability

Renewable Energy Laws and Policies in Palestine

By:

Ali Mustaffa M. Arouri

Supervisor:

Dr. Husain Alsamamra

Theses submitted to obtain degree of Master of science in Renewable Energy and Sustainability

M.Sc. Thesis

Jerusalem-Palestine 1442 / 2020

Renewable Energy Laws and Policies in Palestine

Prepared by Ali Mustaffa M. Arouri

B.Sc. Electrical Engineering (Palestine Polytechnic University) (Hebron)

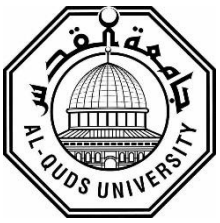
Supervisor: Dr. Husain Alsamamra

A thesis submitted in partial fulfillment of requirements for the degree of Master of Science in renewable energy and sustainability department –Al-Quds University

1442/2020

Al-Quds University

Deanship of Graduate Studies



Thesis approval

Renewable Energy Laws and Policies in Palestine

Prepared by Ali Mustaffa M. Arouri

Registration No.: 21712636

Supervisor: Dr. Husain Alsamamra

Master thesis submitted and accepted, Date: 23 /12/2020

The names and signatures of the examining committee members as follows:

1- Head of Committee: Dr. Husain Alsamamra Signature:

2- Internal Examiner: Dr. Omar Ayyad Signature:

3- External Examiner: Dr. Ishaq Sider Signature:

Jerusalem-Palestine 1442 / 2020

Dedication

I dedicate this research work to everyone who supported me and stood beside me, especially my family and my teachers. This research was also devoted to the martyrs of the Blessed Land of Palestine and its prisoners, who have provided the most precious and precious for the sake of the dignity of this country**.**

Declaration

I certify that this thesis submitted for the degree of master is the result of my own research based on the results found by myself. Materials of works found by other researchers are mentioned by references. except where otherwise acknowledged, and that This thesis, neither in whole or in part, has been previously submitted for any degree to any other university or institution.

The work was done under the supervision of Dr. Husain Alsamamra

Name: Ali Mustaffa M. Arorui

Signed:

Date: 23/12/2020

Acknowledgement

As it is known, who does not thank people does not thank God. After my great gratitude and thanks to God who gave me the will to complete this research, I would like to express my sincere thanks to the able instructor and supervisor Dr. Husain Al Samamra, who always had a certain good for me in guiding me and advising me during my work. I also thank my family for standing by me during my work.

الملخص

العنوان: سياسات وقوانين الطاقة المتجددة في فلسطين

اعداد: علي مصطفى محمد عروري

اشراف: د. حسين السمامرة

تعتبر مسألة الطاقة مؤشر مهم على تقدم واستقلال الأمم , حيث يعيش العالم في هذه الأيام في حالة تسابق على انتاجية الطاقة. واتجه العالم منذ سنين لانتاج الطاقة المتجددة حيث ساهمت الحكومات بشكل كبير في تحفيز الاستثمار في مجال الطالقة المتجددة. وسنت دول كثير قوانين جلبت بها استثمارات كبيرة في هذا المجال وعملت على رفع انتاجيتها من الطاقة البديلة.

ونحن هنا في فلسطين نعاني من تحكم وسيطرة الجانب (الاسرائيلي) على الطاقة بحيث 87% من الكهرباء المستهلكة في فلسطين مصدرها الشركة القطرية الاسرائيلية. لذلك كان حري بنا أن نتجه الى نوع من الاستقلالية في انتاج الطاقة حتى نخرج من هذه السيطرة وهذا التحكم.

في هذا البحث استعرض قوانين دول معينة في مجال الطاقة المتجددة وأستعرض أيضا حجم الأستثمارات في هذا المجال لديهم ومدى تأثرها بالأنظمة والتشريعات وأخص في دراسة الحالة المملكة الأردنية. وفي المقابل نستعرض القوانين والسياسات الخاصة بالطاقة المتجددة في قلسطين وحجم الاستثمار في مجال الطاقة المتجددة لأخرج بنتائج تبين مدى أهمية القوانين والتسهيلات في رفع انتاجية الطاقة البديلة. كما استعرض في النهاية مجموعة من التوصيات التي من شأنها أن تساهم في النظر الى الموضوع بشكل جيد ولفت نظر الجهات المختصة.

Abstract

The energy issue is an important indicator of the progress and independence of nations, as the world lives these days in a race for energy productivity. For years, the world has turned to renewable energy, as governments have contributed significantly to stimulating investment in renewable energy. Many countries have enacted laws that have brought in large investments in this area and have worked to raise their productivity in alternative energy.

We here in Palestine suffer from the control and control of the (Israeli) side of the energy, so that 87% of the electricity consumed in Palestine comes from the Israeli-Qataria company. Therefore, we had to turn to a kind of autonomy in producing energy so that we can get out of this control and this control.

In this research, i reviewed the laws of certain countries in the field of renewable energy and also reviewed the volume of investments in this field they have and the extent of their influence on laws and regulations, especially in the case of the Kingdom of Jordan. On the other hand, we review the aspects and policies related to renewable energy in Palestine and the size of investment in the field of renewable energy to produce results that show the importance of laws and facilities in raising the productivity of alternative energy. I also reviewed in the end a set of recommendations that would contribute to looking at the matter well and drawing the attention of the competent authorities.

Table of Contents

List of Figures

List of Abreviations

abbreviation	representation
RE	**Renewable Energy**
IEC	**Israel Electric Corporation**
PEA	**Palestinian Energy Authority**
PV	**Photo Voltaic**
MENA	**Middle East and North Africa**
OPT	**Occupied Palestinians Territories**
PA,s	**Palestinians Authority**
KWH	**kilo Watt Hour**
MW	**Mega Watt**
GDP	**Growing Demand of Products**
MOU	**Memorandum of Understanding**
EOI	**Expression of Interest**
EE	**Energy Efficiency**
RS	**Remote Sensing**
BOD	**Board of Directors**
GEF	**Global Environmental Facility**
AFD	**Agency France Development**
EA	**Energy Authority**

CHAPTER ONE

Renewable Energy Sector in Palestine

1.1 Introduction

The development achievement in any country cause increasing the demand for energy, and so the Palestinians need for energy is increasing rapidly. The energy sector in Palestine faces many political, environmental and social problems, so that Palestine imports all of its energy need from the Israeli market and other neighboring countries. The percentage of renewable energy's contribution from the total energy consumed in Palestine is estimated at about 1.5%, according to information published on the websites of the Energy Authority and the Electricity Sector Regulatory Council[1]. The small quantity of energy effect strongly by the political stability in the region, economic situation of the people, rising demand on energy and availability of the indigenous resources[2].

As with all sectors in the Palestinian territories, the energy sector is insecure and faces many obstacles that make it a subject of controversy as it imports all the energy consumed from the occupation government.

This makes this evident through the control and control of the Israeli side over the energy sector. It is well known that the Palestinian territories are divided into two parts by the Israeli occupation: The West Bank and Gaza Strip. These areas were conceptually subject to the Palestinian interim self-government in 1993 [2].

Because there is no developed infrastructure in Palestine to accommodate the linkage projects with renewable energy generation sources. For example, there is insufficient capacity to store petroleum products. Also, the shortage of electrical supplies is an important issue. Palestinians' consumption of electricity is about a third of their total energy consumption [3], and in the long term, experts estimate that future electricity consumption in Palestine will reach 8,400 gigawatts by 2020[3].

It is known that the policy of occupation government in Palestine stand handicap in the face of developing and installing fossil fuel power plants, Moreover, the Israel Electric Corporation (IEC) controlling the supply of energy to the Palestinians. It provides about 87% of the Palestinian electricity consumption, the major portion comprising bilateral contracts between

local councils and the IEC[4], the energy field is one of the important challenges facing Palestine today, and it is one of the obstacles to achieving independence. the first institution to lead is the Energy Authority, which has thankfully drafted a series of laws and incentives that encourage investment in renewable energy. But these incentives alone seem insufficient to advance the renewable energy sector compared to other countries in the region. the Palestinian Energy Authority (PEA) has issued a strategy for renewable energy and has set its goal of achieving 10% of electricity production from renewable sources gradually by the year 2020[5].

But it is known that the strategy differentiated feed-in tariff prices according to the capacity and the type of renewable projects, but it did not define the type of feed-in tariff in order to be adopted.

In this research we studied other cases of neighboring countries and compare their laws with our laws in order to propose a series of incentives and laws that promote this sector in Palestine.

1.2 Main Renewable Energy Sources

1.2.1 Solar Energy

Palestine is considered to have a huge potential of solar energy due to the average solar radiation that ranges between 5 and 6 kWh / m² due to its location in the solar belt area. The sun shines about 300 days annually, which makes its climate suitable for energy production because of its moderate levels of humidity, temperature and dust[5].

Nowadays, PV modules in rural villages are currently used for lighting, water pumps and other social services (1000 kW of maximum capacity). Additionally, around 15% of all homes use solar water heating systems. This constitutes a contribution of up to 2% of total energy consumption at present[1].

1.2.2 Wind

Palestine has large wind energy resources that can be used to generate energy. As the wind speed in Palestine reaches 7.5(m / s) according to the wind atlas, especially in the northern and western regions, and reaches 11.3(m / s) in the mountainous areas. Therefore, there is potential to build wind energy facilities in the Palestinian territories[6].

1.2.3 Biogas

Palestine has ability to produce biogas from solid waste for electricity generation. A successful 1 MW pilot (Aljebrini) project using caw dung waste and digesting technology to produce CH4 (natural gas), then converting this gas into electricity using gas generator.

1.3 Renewable Energy Advantages and disadvantages

The role of energy is considered a major factor in economic activity and is considered an important indicator of the development and growth of countries, their progress and prosperity. It is known that the most energy-consuming country is the developed and industrialized countries, and where the industry thrives in it. In large developing countries, in general, energy and renewable resources such as solar energy, wind energy, water and other untapped resources on a large scale, and other non-renewable resources, such as coal, natural gas, oil and non-renewable energy, Lead to climate change, which leads to emissions and thus leads to increased environmental pollution and damage to the ozone layer, as well as coal production requires the use of forest resources, which leads to scarcity and shortage of agricultural land[7].

1.3.1 Advantages of Renewable Energy

- The Renewable energy is defined that it has infinity of sustainability and it will never run out. Not like other sources of energy like coal, oil and gas which are limited and will run out some day.

- The environmental benefits can be summarized as follow: It is clean energy and results in little to no greenhouse effect and no toxic emissions.

- It is reliable Energy Source and will not run out.

- It has economic benefits: the renewable resources are cheep and more economic sources.

- Stabilizing the energy prices.

1.3.2 Disadvantage of Renewable Energy

- It is difficult to generate in large quantity.

- It has large capital cost.

- It has large tracts of land required.

- reliability of supply.

1.4 Objectives

Renewable energy is one of the most important types of energy resources. In this research we aim to:

- Study the regulations and laws which determine the field of renewable energy in Palestine.
- Documentation of the energy laws and policies in Palestine.
- Compare the situation of renewable energy between Palestine and Jordan.
- Study the investment in the renewable energy field in our land and Study the obstacles of the investment in the renewable energy field in Palestine.
- Recommend a group of regulations and rules which encourage investment in the renewable energy field to grow up this field in our land.

1.5 Justifications

- The independence of any country depends on its ability to produce energy.
- The demand of energy is increasing rapidly in Palestine.
- About 87% of the electricity in Palestine is imported from (Israel) with an annual bill of about $ 450 million.
- The rate for 1 KWh in Palestine is the highest between MENA countries.
- The laws and policy of renewable energy in Palestine discourage investment in this field.
- Reducing gas emissions is one of the most important factors that have pushed towards finding a clean alternative through this research.
- The availability of solar energy in Palestine has a high solar energy potential. It has about 3000 sunshine hours per year. So, it is suitable area for renewable energy investment[8].
- Increase people awareness about the importance of green energy.

CHAPTER TWO

Energy Policy in Palestine

2.1 Geographical and demographic conditions in Palestine

The location of Palestine is determined between the Jordan River and Mediterranean with longitude 31.9522° N, 35.2332° E, Palestine divided into two separated geographical areas under Palestinian self-rule in addition to the occupied areas, the borders of the West Bank from the Jordan River in the east to the occupied territories in the west. The climatic conditions of Palestine vary greatly [1]. The Gaza Strip is located on the western side of the Palestinian territories, on the shore of the Mediterranean Sea. The elevation of Palestine ranges from 350 meters below sea level in the Jericho area to the sea elevation level at along the Gaza Strip sea level in and exceeds about 1,000 meters above sea level in some mountains in the West Bank. The coastal climate in the Gaza Strip is Mediterranean, humid and hot in summer and mild in winter[4].

Palestine have about 300 sunny day in the year which mean that it is very suitable for producing solar energy in the most areas of Palestine. Nowadays the Israeli occupation controlling our energy which mean they offer the energy for their people without looking for the Palestinian need, so it is very important to work on renewable energy sector in Palestine[9].

2.2 Energy in Palestine

The energy service in Palestine has become so expensive that it can no longer be afforded by a large portion of the people who are suffering from poverty and scarcity of possibilities. The price of the fuel and coal in Palestine is very high comparing with other countries. But the biggest challenge is the inability of the official authorities to pay the largest supplier, which is the IEC, which increases the control and control of the Israeli side in this sector.

Palestine's total dependence on electricity is represented by its dependence on the IEC, at a rate of 87%. Energy market options in Palestine to develop local resources are limited, and also restrictions by Israel imposed have prevented the building of power networks in large areas of Area C, which makes up 60% of the West Bank[9]. So here the necessary for developing renewable energy resources in order to face this insecure situation in the energy sector.

Nowadays, the electricity demand in West Bank and Gaza Strip is considered about 2000 MW. According to the IEC, they installed generators with a capacity about 13,248 MW in some areas in West Bank. This is nearly 100 times the current indigenous Palestinian generating capacity. In its country note on Palestine, The U.S the center of the energy information said that: "in 2010, the Palestinian Territories generated only 445 million kilowatt hours of electricity, enough to meet just 10% of demand." Electricity imports, mainly from Israel, accounted for the remaining 87% of demand[1].

2.3 Renewable Energy Potential in Palestine

The energy sector in Palestine is considered to be insecure because of the occupation control, and so it is incorrect to compare it with other countries in the Middle East for several reasons, the most important of which are: the lack of natural resources, the turbulent political situation, the financial crises, and the high population density.

In addition, Palestine imports 100% of its fossil fuel from other countries and about 87% of its electricity imports [3]. In addition, high population growth, high living standards and rapid industrial progress have led to an increase in energy demand in Palestine in the recent period. Total energy consumption per citizen in Palestine is the lowest in the region (0.79 megawatt hours per year for citizen) and costs more than anywhere else compared to the countries of the Middle East. The main objective of this theses is to study the current situation of the energy sector in Palestine and focus on the issue of renewable energy as the most important future resource in Palestine. Regarding the main potential of renewable energy, the average wind speed (m / s) for the five major cities are: Tubas area 4.97, Salfeet area 4.26, Ramallah area 3.09, Hebron mountains 2.90 and Jordan Valley 1.32. [9] Therefore, we can say that the wind speed in Palestine is moderate. Regarding the sun, the sun shines in Palestine about 3000 hours annually, which gives it high solar energy (kilowatt / m^2 / day) for the year 2013, with 8.27 in Ramallah, 7.51 in Hebron, 6.86 in Salfeet, and 6.15 in Tubas [9]. This information is encouraging to exploit solar energy in various applications.

2.4 Renewable Energy Sector in Palestine

The issue of achieving sustainable development in Palestine is critical. Where the political and economic situation prevailed in creating difficulty in achieving development and impeding it. The poor Palestinian infrastructure for nearly four decades has prevented any progress in the energy field. The shortage of renewable energy projects and the shortage of traditional energy

resources have destabilized energy prices and created a future energy crisis[10]. Energy policy in Palestine remains not clear due to the ongoing Israeli occupation, the weak and dispersed institutional framework, and the incomplete framework of Palestine.

Many factors have strongly affected the renewable energy market, such as: the political situation in the region, economic conditions, increased energy demand and local resource availability. Where political risks and lack of confidence in the security situation prevented investors from embarking on projects in renewable energy. Despite all these challenges, Palestine has gone ahead in using its natural resources for rehabilitation and construction, but not as required.

2.5 The Electricity Sector in Palestine.

Efficient infrastructure is the main factor for development and social welfare and the main driver of private investment. The electricity sector - with its institutions, facilities and legal framework - is one of the basic elements of the infrastructure and the basic criterion for judging the economic and welfare situation in the country[11]. The electricity sector consists of several basic components; These are the power stations, transmission and distribution, the electricity grid, the tariff system, the supervisory institutions, as well as the legal framework - all of which affect the sector's performance and its contribution to economic development. In Palestine, there are additional factors that affect the management of the sector and determine its potential. The political situation, the investment climate, the economic conditions, and the legal situation have contributed to the formation of the Palestinian electricity sector in recent decades.

The development of the electricity sector in Palestine has recently taken center stage, especially with the latest political, economic, and even social reinforcements: alleged breakthroughs in the peace process and intense Palestinian efforts towards a political solution that leads to statehood. The accumulated debts of the Palestinian Authority to the Israeli Electricity Company, in addition to the financial crisis of the Palestinian Authority (partly caused by net lending); High poverty rates and lack of job opportunities[10].

Therefore, special attention must be paid to efforts that seek to define the sector's status and the necessary reforms that would enable the sector to meet future requirements for economic and social development, figure 2.1 shows the electricity problems in Palestine.

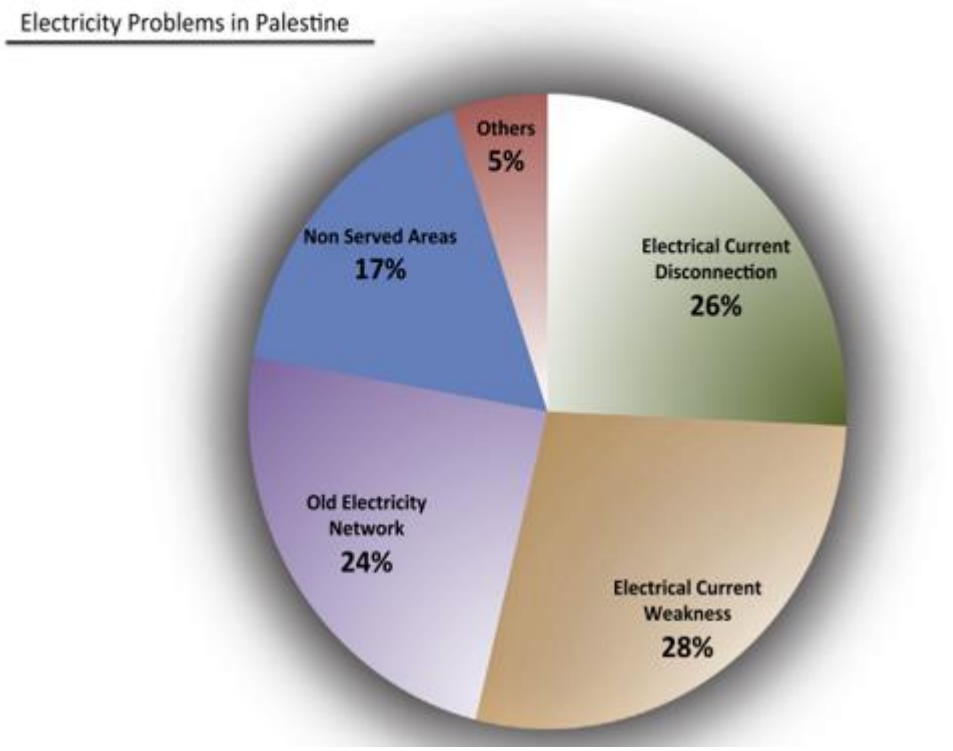


Fig. 2.1 Electricity Problems in Palestine[12].

2.6 Energy Price in Palestine

It is known that the price of electricity in Palestine is the most expensive compared to the countries of the region, because most of the energy is imported, and the Israeli side imposes heavy taxes on it, amounting to about 0.13 euros / kilowatt hour.

The price which paid to the Israeli Electricity Company is about 0.07 EUR / kWh inclusive of VAT. KWh is used for pricing consumed electricity; Thus the prices of KWh units are constant (non-progressive) for all the consumed units and therefore the price of kWh is called here the fixed price, which means that it applies to all the consumed units. [11]

The energy sector in Palestine is insecure and critical since the rate for 1 kwh in Palestine is the highest between MENA countries. because of the Israeli occupation control energy by force. The demand of energy is increasing rapidly in Palestine.

- 87% of electricity in Palestine is imported from (Israel) with an annual bill of about $ 450 million.
- The independence of any country depends on its ability to produce energy.

- The laws and policy of renewable energy in Palestine discourage investment in this field.
- Reducing carbon emissions is one of the most important factors that have pushed towards finding a clean alternative through this research.
- The availability of solar energy in Palestine has high solar energy potential. It has about 3000 sunshine hours per year. So, it is suitable area for renewable energy investment.

2.7 The law for renewable energy and energy efficiency

The Palestinian Authority in the West Bank issued a law signed by the Prime Minister to regulate the use of renewable energy in addition to energy efficiency (the Council of Ministers refers the draft law on renewable energy and energy efficiency to the President of the Authority, Resolution No. 51/6/17 issued on May 19, 2015). Like Resolution No. 13/127/16, a decree-law was issued based on the Electricity Law Decree of 2009. (Decree-Law No. 14 of 2015 on Renewable Energy and Energy Efficiency, Newspaper 115 Palestine, issued on October 11, 2015; in all parts of the country., The law is also referred to as the "Renewable Energy and Energy Efficiency Act"). The new renewable energy sources decree gives an unclear definition by allowing any potential new green energy sources to be incorporated and by moving away from the ambiguity that was present in the definition included in the decision. The Decree-Law also defines definitions of renewable energy installations, net metering and other terms that aid in understanding the law.

2.7.1 Cabinet Resolution No. (6) of 2017 by the system of holding an incentive package for the purpose of encouraging investment in the field of using renewable energy technologies.

Article # (1): definitions

Power plants: Any station that uses renewable energy sources to produce electrical energy, including the buildings and constructions used for this purpose, the lands belonging to it, and the machines and equipment used for this the aim.

Renewable Energy: The alternative energy generated from natural sources that is of a permanent and sustainable nature, such as energy Solar, wind energy, and any other natural sources approved by the Energy Authority.

Accredited regions: The regions designated by the Energy Authority and the Authority, and For the purpose of establishing power plants in the ,approved by the Board of Directors Palestinian governorates.

Article # (2): Conditions for benefiting from incentives

The following conditions must be met to benefit from the incentives provided for in this system:

1. Obtaining the necessary licenses from the competent authorities.

2. To fulfill all the conditions stipulated in the law, regulations and instructions issued pursuant to it.

3. Maintaining the minimum number of employees throughout the period of benefiting from the incentives, and the Board of Directors sets

Instructions for the number of employees and their specialties.

Article # (3):

Duration of application:

An application to benefit from the incentive package contracts issued by the authority is submitted according to the following:

All the laws are in the appendices.

1. Power plants projects for the Authority within a maximum period of three years from the date of the effective date of this system

And after obtaining the operating permission from the competent authorities.

2. Net measurement projects for the Authority within a maximum period of two years from the effective date of this system.

Article # (4):

Power plant incentives

Power plants with a power of no less than (1) MW, which are implemented within a scope, benefit the approved regions include the following incentives:

1. First stage: Income tax is collected at (0) % for a period of seven years, from the date of operation of the station.

2. The second stage: the income tax is collected at (5) % for a period of five years, starting from the end the first stage.

3. The third stage: Income tax is collected at (10) % for a period of three years, starting from the end of the second stage.

4. After the third stage, the income tax is calculated according to the rates in effect.

Article # (5):

Incentives for net measurement projects:

1. Projects registered with the Authority and benefiting from the incentives stipulated in the law are granted the following:

A. Extension of the incentive granted for projects that generate at least (20) kilowatts, for one year, according to the applicable chip.

B. Extend the incentive granted for projects that generate at least 40 kW, for two years, according to the tranche mast.

C. Extend the incentive granted for projects that generate at least (60) kilowatts, for a period of three years, according to the applicable chip.

2. Projects that have benefited from the incentives of the law or existing projects that do not benefit from incentives are subject to incentives the law previously, which developed its energy sources to generate at least (40) kilowatts, for use in Project activities to collect income tax at (5)% for a period of two years.

Despite previous decisions, and with a gap in the energy shortage, the annual report issued by the Energy Sector Regulatory Council in Palestine in 2018 recognizes the need to enhance the competitive spirit in the field of renewable energy production in addition to providing financing, providing land areas for projects and enhancing local expertise in the field of investment in energy projects In addition to the high price of renewable energy technologies[3].

According to the annual report, the main challenge for the electricity and energy sector in Palestine is to limit the supply to providing the increasing demand from consumers. This is due to the significant increase in the growth rates in the Palestinian society due to the energy demand that is accompanied by the lack of availability of the network of this growth, at a time when unconventional sources (renewable energy), by virtue of their novelty, are unable to bridge the gap completely Between demand and supply.

Weak legislation and laws regulating the alternative energy sector is one of main barrier face development of investment in renewable energy field. In the West Bank there are four companies that supply citizens with electricity, and they take current from the Israeli-Qatari company, and at the same time there is no uniform policy or tariff between them; which necessitates the existence of a national electricity company that provides subsidiaries with their needs But within a unified policy based on known and agreed legislative and legal structure.

2.8 Investment in Renewable Energy in Palestine

The Palestinian National Energy Plan (2011–2013) show that in addition to coal, wood and peat, renewable energy is used for heating water in most of buildings. Exploitation of renewable energy resources comprises approximately 18% of the total energy consumption in Palestine.

Therefore, the annual growth in solar energy use is close to 1%. However, the national plan shows that the use of solar energy is very low compared to the available capacity of the total energy demand, as only 8% of solar energy is used[10]. It should be noted that this percentage has decreased over the past years. It also did not keep pace with general growth and expansion in other sectors and did not meet the demand for energy. Some reports report showed that the projects that were implemented in the West Bank were small-scale experimental solar energy projects to generate electricity and supply outpatient clinics, schools, Bedouin residential areas or small villages, which were far from the public electricity networks, which are stand-alone systems. Such as the project of Amnizel village in the south of Hebron governorate, and the village of Atouf in the northern West Bank.

The total capacity of the solar energy projects is around 50 kilowatts. An agreement has been reached between Japan and Palestine on a 500-kilowatt project in the New Jericho Industrial Zone in partnership with the Industrial Estates Authority, where implementation is

currently in its final stages. Preparations are under way to establish a 100-megawatt solar plant project to generate electricity in the Jericho area. This plant will be built in several phases, and the first phase will provide 10-20 MW. [25] As it is known, many villages and remote areas in Palestine do not have access to electricity. People who live in these remote communities use diesel generators to run their homes for a limited time, especially after sunset. Also, about 35% of Palestinian families suffer from power cuts [13]. Supplying electricity to these remote villages will help solve the power shortage problem. Implementation of a hybrid photovoltaic (PV) system to supply power to remote and isolated sites is viable. This is especially true for regions that receive sufficient amounts of annual solar radiation [14]

So, we can conclude the factors which lead us to study the regulations and the policy of renewable energy investments as follow:

- The sector of energy in Palestine is insecure.
- The price of energy in Palestine is very expensive comparing to other countries in the region.
- The Israeli control of the electricity cause disconnection of power in most of the areas specially in winter which cause Economic losses and affect all sectors, especially the health and industrial sectors.
- Green energy serves nature and health and so it is sustainable.
- The geographical nature and climate of Palestine makes it an appropriate environment to produce alternative energy.
- Investment in the field of renewable energy in Palestine is very limited and does not rise to the required level.

CHAPTER THREE

Renewable Energy Policies in Some Countries of The Middle East and Europe

3.1 General Background

Most countries have pursued similar policies to some extent in order to advance the issue of renewable energy, and thus many countries have made clear progress in this field as a result of adopting policies that enhance the role of renewable energy. Strategies that are generally adapted include tax exemptions and incentives for purchase certificates and agreements, [15] and these strategies have led to policies that stimulate investment in this sector. Among them are environmental taxes (RECs) [16] and the tariff regimes in use.

Many countries have adopted the so-called 2030 energy plan in order to increase the contribution of renewable energy. And the countries that adopted the plan are: Ecuador, China, Canada, Brazil, France, India, Indonesia, Australia, Italy, Japan, Malaysia, Mexico, Morocco, Nigeria, Germany, Russia, Saudi Arabia, South Africa, and the south. Korea, Tonga, Turkey, Ukraine, the United Arab Emirates, the United States, and the United Kingdom [17].

Power generation from renewable energy is developing popularity in the Middle East region and evolving at a fast pace. Saudi Arabia, the largest oil producer in the world has adopted an aggressive target of 9.5 GW of renewable energy by 2023 and signed a memorandum of understanding with a Japanese multinational investment bank to build 200 GW of solar power by 2030 at a cost of $200 billion[4]. If built, that solar-power plant will be about 200 times the size of the biggest solar plant operating today in the world. The Saudi focus on the development of renewable energy is part of a plan to wean its economy off oil dependency. The advantages have been recognized by other countries in the region as well through implementation of aggressive renewable energy programs, including the United Arab Emirates which has set a clean energy target of 7 percent by 2020 and 30 percent by 2030. Dubai Electricity and Water Authority (DEWA) has contracted three phases of solar photovoltaic (PV) projects, the most recent with a rated capacity of 800 MW. Abu Dhabi has begun construction of a 1.17 GW solar PV farm. Kuwait has set a target of 15 percent of its energy generation to come from renewable energy technologies by 2030, roughly equivalent to 4.5 GW of power production. Other

countries like Egypt, Morocco, Jordan and Oman have also implemented significant renewable energy programs[4].

3.2 Iraq

In 2019 the united nation published report describes some Arab countries policy in the renewable energy field, for example: in Iraq; Ministry of Science and Technology was established to be responsible In 2003, renewable energy identified several key priority areas for the future of renewable energy, including: the development of a national renewable energy policy to coordinate the work of different government ministries; Renewable energy in Iraq that will facilitate the integration of renewable energy into future projects. In 2010, the Ministry of Electricity established the Renewable Energies and Environment Unit. This made that the field have package of facilities and so that turnout and encouraged the investors to investigate in the renewable energy field better than before[13].

Estimated potential solar energy in Iraq estimated about 3.4 billion kilowatt hours a year and that is equivalent to a total capacity of 5.9 GW. This is corresponding to an area of about 10 kilometers square of solar cells with an efficiency of about 16%.

3.3 Syria

Within the Electricity Law No. 32 of 2010 on the General Policy of the Electricity Sector, articles about supporting and encouraging the renewable energies use in various Allowing local, Arab and foreign private sector to invest in this field. The law permits the state to purchase electricity produced from a renewable energy source that is pumped onto the grid at favorable prices, according to certain controls and conditions, and the state commits to purchase from the investor who implemented the renewable energy project based on a ministerial announcement requesting bids according to the contracted price. With the investor, and an obligation to connect power stations or renewable energy network systems, provided that the licensee implements the requirements[14].

The Syrian government has moved towards developing the countryside economically and taking care of it and limiting migration to cities. This policy relied on supplying rural areas with electric energy [19]. Much efforts have been made in developing rural areas and supporting them economically by establishing power plants from renewable energy sources.

Rural energy initiatives have been largely planned and implemented in the Syrian Arab Republic. On the other hand, rural energy initiatives in Lebanon remain weak, unspecified, and underpaid. Energy policies and institutional adjustments must be launched to improve energy conditions and achieve development in rural areas. In addition, there are limited industrial capabilities and services to enhance the role of renewable energy and energy efficiency programs in Syria and Lebanon [16].

3.4 Jordan

The Energy Charter Protocol on the Energy Efficiency and Related Environmental Aspects **PEEREA** which was published in 2010 about renewable energy policies in Jordan shows that the importance of laws and policies for developing renewable energy sector. The protocol reviews many important actions and rules should be achieved like:

It is worth noting that the Kingdom’s plan was to generate 10% of its electricity from renewable energy sources by the year 2020 [20].

The government has also restructured the Natural Resources Authority and strengthened the role of the National Energy Research Center (NERC) in order to exploit new and renewable energy resources, and preserve the energy sector [20].

In order to promote use of electric cars, these cars are today exempted from the purchase tax and the annual owner's tax[15].

Not only that, but other technical issues related to renewable energy laws such as tariff system and others have been amended. After the approval of the protocol in 2010, the Kingdom was able to control the growing demand for energy, although this growth has exceeded expectations in the Kingdom by about 3% in recent years.

3.5 UAE

Policies in the United Arab Emirates differ from one emirate to another, as Dubai and Abu Dhabi can be classified as the two most interested and independent supervisory bodies (known as the regulation and supervision offices in Dubai and Abu Dhabi) have been introduced for the energy and water markets. Dubai established the so-called Supreme Council of Energy in Dubai in 2011, which is the most official governmental body interested in the energy sector in the country. It unites energy consumers and producers in the emirate to collectively define

policy and invest in energy sectors. Abu Dhabi seeks to create a similar model, through the Abu Dhabi Energy Authority, which is under development. At present, only the hydrocarbon sector in Abu Dhabi enjoys a unified management structure under the Supreme Council of Energy, which was established in 1988 [22].

Competitive bidding on power plants is the most important pillar of energy policy. The projects are traditionally created by the government and then submitted competitively, with tariffs negotiated with the winner. The government usually keeps the majority as a shareholding percentage in the project, with the independent power producers getting the rest. For example, Shams 1's ownership rights are split between state-owned Masdar (60%), Total (20%), and Abingoa (20%) [22]. The tariff system has been agreed upon between the consortium and the Abu Dhabi Public Utilities Company (ADWEA) and approved by the Regulation and Supervision Bureau. Then a metering framework was announced in Dubai in order to encourage the installation of solar home systems and the latest building code requires new buildings to take advantage of 75% of the solar water heating requirements. Owners of government-sponsored villas in the United Arab Emirates in Abu Dhabi are forced to heat water with solar energy, equivalent to 50-80% of their needs [22]. Solar heating can be used to meet parts of the Estidama mandatory green building code for new projects and constructions.

3.6 Egypt

The current situation for solar energy in Egypt is not clear and modest in size. The evolutionary approach is straightforward, while solar energy is expected to cost much more than the available alternatives. However, Egypt needs two features to incorporate them in its deliberations on its solar energy strategy. First, most other developing countries pushing in this direction focus on gaining an economic position in the market. Second, there is substantial financial support that Egypt can benefit from through a calculated and innovative approach to financing alternative energy projects. The decision to be aggressive or passive in developing solar energy should stem from a well-designed, not hypothetical, strategy[16].

Egypt seeks to develop the local manufacturing of tools and services for renewable energy projects. It has the support of the international community and can count on its export potential to other countries in Africa and the Middle East. She has a good foundation for acquiring the requisite technical and managerial skills. However, it needs to develop a clear vision and design

for institutional arrangements, material support, R&D facility, human resource development, as well as international cooperation.

Create a body that can develop a holistic view of challenges and solutions to encourage new manufacturing and service projects.

In this thesis we will take Jordan as a case study, since that the kingdom is located near Palestine with similar geographic and whether. We will study the Jordanian laws and policies in the renewable energy field and so the main steps that the Kingdom has applied to grow up the renewable energy sector[16]. After that we will show the volume of the investment in the renewable energy sector and how does investment grow up the production of green energy. On the other hand, we will focus on the renewable energy sector in Palestine, to show the relation between renewable energy production and the polices of the government about this sector.

3.7 Denmark

In December 2012 the **Danish Energy efficiency** published the famous strategy for the renewable energy sector:

The Government in Denmark has the target that the country should depend 100% on renewable energy in the energy and transport sectors by 2050.

The targeted energy agreement signed in March 2012 and approved in Denmark is a new political agreement regarding the energy issue in Denmark. This agreement is the most important step towards achieving the 2050 goal. 95% of parliament members (meaning all parties except for one party) have approved the agreement [21].

The agreement includes a wide range of constructive initiatives, making Denmark one of the closest countries to a 100% renewable energy target in 2050.

The main policies which encouraged this development:

Absolutely no tax on the renewable fuels in Denmark.

Heavy taxes on fossil fuels types. the share of renewable energy for space heating grew by 8 percentage points, from 5% in 1980 to 13% in 2001[15].

In Denmark, there are heavy taxes on gasoline and oil for transportation. Taxes (which includes energy tax, nitrogen oxide emissions tax, and carbon dioxide emissions tax) approx.

92 DKK / GJ for diesel and approx. 134 DKK / GJ for gasoline. Also, there is a high purchase tax on new fuel-powered cars and an annual tax on the owner that depends on the car's energy efficiency [21].

Not only this; but a lot of facilities on using renewable energy has been applied in Denmark which made that Denmark one of the most famous countries in using renewable energy.

3.8 Germany

Decades ago, the German government began to support investment in renewable energy. The policy mechanisms in this area have been multi-faceted, from publicly funded research and development programs to market stimulus programs and soft loans for end-consumers investing in renewable energy technologies. It is known that the main building pillar of the renewable energy policy strategy in Germany, which is responsible for the success story of building renewable energy plants in Germany, is the "Renewable Energy Priority Law" - Renewable Energy Sources (EEG Law of 2002, the policy and EEG laws succeeded in increasing the contribution of renewable energy sources Renewable energy is largely the share of German electricity. The total contribution of renewable energy to the electricity supply in Germany is about 20% [17].

During 10 years extending between 2005 and 2015, investors in Germany contributed more than 130 million euros in investments in renewable energy projects, as all parties, including capital, businessmen, companies, farmers and government agencies contributed money to renewable energy projects, depending on the policy that Provides reliable returns, attractive returns and certainty. Because of the cost gap between conventional and renewable energy, a policy was needed to offset the difference between the costs of renewable energy and the market price for electricity[17].

CHAPTR FOUR

Renewable Energy Sector in Jordan

4.1 Background on Energy in Jordan

The imbalance in the energy sector affects other sectors and the standard of living in the country, because energy is the lifeblood of all sectors in any country. Energy problems are among the most complex challenges facing governments. Especially in countries that depend heavily on oil and import it from abroad [2]. This situation is further complicated by international political links and their relationship to fuel prices. The Kingdom is considered one of the countries that depend on imported energy sources and is located in the most volatile regions of the world in the region, as the Kingdom suffers from a permanent energy crisis, especially after recent events, and needs logical and constructive solutions. That may affect energy options, decisions and options available to get out of this crisis.

Petroleum is the main source of electricity production in Jordan. In return, the Kingdom imports energy from other countries at high prices, which affected the Jordanian economy [19]. The Kingdom's reliance on energy production and distribution companies, such as transportation companies, has clearly contributed to shaping energy strategies and policies.

Oil and gas brokers and the Ministry of Energy are a major source of imports [25]. A report issued by the Ministry of Energy in Jordan showed that the average daily consumption of various fuels is estimated at 120,000 barrels of oil per day, with a lost rate of 0.0003 during land and sea transport. Oil and gas are received only through the port of Aqaba in southern Jordan, which is transported by oil tankers or pipelines. Figure 4.1 shows the line of the gas between Egypt and Jordan. The pipeline cross is 36 inches in diameter, with compressor stations located approximately every 200 km - providing a maximum annual gas discharge of 10.3BCM [25].

Fig 4.1 pipeline between Jordan and Egypt.[18]

4.2 Analysis of renewable energy situation in Jordan

There are many problems and difficulties that Jordan faces in the field of advancing renewable energy technology. The most important reason driving the adoption of renewable energy technologies in Jordan is Jordan's lack of traditional energy sources. Therefore, there is a need for abundant renewable energy resources [26]. It is also known that renewable energy technologies need lower maintenance, operation and construction costs and are inherently more environmentally friendly than other sources. It reinforces its consideration by energy policy makers as essential components of Jordan's energy balance and supporting the local economy.

Jordan is an energy importing country, which increases the ratio of imported energy to the GDP, and this in turn leads to great pressure on the government budget and the constant need for foreign currencies to finance the purchase of Jordan's energy needs, and this leads to the search for an alternative. The conventional energy and renewable energy sector is one of the most important alternative sources available in Jordan, and since the strategies are not clear enough to keep pace with the changes, the renewable energy policy has been modified to target 20% of the total energy mix in 2020. And a strategy that focuses on developing ways to exploit

renewable energy sources Various sectors, including solar energy, wind energy, thermal and geothermal energy, hydropower and other natural resources, with the aim of contributing to an increase in the proportion of renewable energy in total energy. This leads to a decrease in the cost of oil, diversification of energy sources, and environmental protection to achieve development.

The Hashemite Kingdom of Jordan enjoyed a clear wealth in renewable energies (renewable energy is the energy produced from natural resources that are not depletable, including solar, wind, hydro, and bioenergy), especially solar energy, with potential for high average direct solar radiation, due to the occurrence The Kingdom is in the so-called solar belt countries, which are the areas between latitudes 25 north and 25 south[19]. Various scientific studies have shown that the number of days in which the sun rises over the kingdom is 316 days per year and an average of 8 hours per day. As for wind energy, it is called Righteousness is one of the best renewable energy sources for generating electricity in the Kingdom, as many regions in the Kingdom are characterized by wind speeds ranging from 7-8.5 meters per second, which is a suitable speed to build stations that use wind energy to generate electric energy.

The field of renewable energy is considered a fertile environment for international cooperation and exchange of experiences in this field, and in order to secure a legislative environment for the competent authorities in the renewable energy sector. Several laws, regulations and instructions have been issued in the Kingdom, the most important of which is the Renewable Energy and Energy Conservation Law No. 13 of 2012 to regulate all matters. With regard to renewable energy, encouraging the trend towards renewable energy sources systems to generate electric energy, encouraging investment and competition in this sector, encouraging production and manufacturing inputs and any equipment that helps rationalize energy in general, as is the case in many of the regulations and instructions contained in this law was issued to achieve These goals [25]. The Ministry of Energy and Mining has approved several regulations to facilitate contracting and purchasing in the field of renewable energy. This sector in Jordan is subject to regulation and oversight by the Jordanian Energy and Minerals Regulatory Authority, by specifying the various responsibilities of the licensees and granting them the necessary licenses in accordance with the regulations and instructions in force to implement the various activities on the basis of balance between the interests of consumers, licensees, investors and other related parties [34].

The past years have witnessed a remarkable trend towards renewable energy through the implementation of many projects and the signing of many energy purchase agreements that pave the way for the implementation of future projects in the fields of renewable energy. Jordan also witnessed a significant increase in the use of solar energy to cover the private consumption of homes and mosques, in addition to the entry of these systems in the commercial, hotel and industrial fields, through the transit system and the net metering system.

On the other hand, the Ministry of Energy and Mineral Resources and the Energy and Minerals Regulatory Authority Partnership have implemented measures to curb the waste and misuse of electrical energy and preserve it by spreading awareness of the importance of energy among citizens through the media. It showed the impact of the wrong and ineffective use of electric energy and its impact on the country's economic situation [26].

The energy sector is essential for the economic developing of the developing countries. Since the bad management of energy production and use has a bad effect on the environment. The nations of the world should formulate a true cooperation among them to safeguard the environmental global concern[20]. One of the most important things to achieve and focus on is increasing the role of renewable energy in the global energy mix.

4.3 Renewable Energy Prospects in Jordan

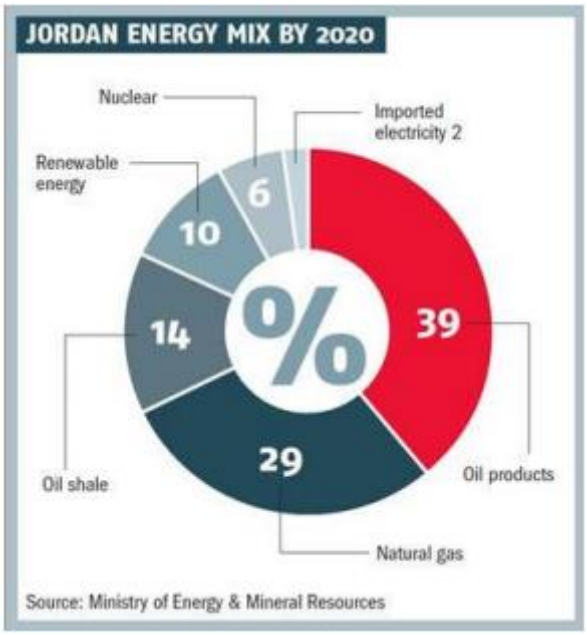
In October 2014 Nada Abdul Rahim the economic &commercial counsellor published report shows that Jordan plan calls for up to 1,200 MW of wind, 600 MW of solar and 50 MW of waste-to energy to be brought online by 2020. All renewable energy projects are to be linked to the grid by 2018.

Local and international companies have been interested in establishing wind and solar energy stations in Jordan. According to industry sources, over 60 expressions of interest have been filed over the past years to the DOE. Of these, about half have passed the qualification criteria and conditions that require the company to be financially sound and include references to past experiences such as completed previous projects, financial tracking records, etc.

MOUs were approved, so that they will be in effect for a period ranging between 12 to 24 months, with dozens of pre-qualified domestic and foreign companies in the month of May 2012. These projects will cover about 1 gigawatt of solar and wind energy projects scheduled to be developed during the next five years. Since most of the Jordanian companies failed to

meet this requirement, many companies chose to partner with foreign companies. Jordan has identified three phases to increase the inputs of locally produced renewable energy projects.

The first call to express interest in this field was launched in 2011. Proposals for renewable energy projects were to be submitted in April 2013, and in the first round, 12 agreements were signed. These projects will generate 470 gigawatt hours per day and cost more than $ 560 million. It was completed and connected to the network in 2015 [27].



4.2 The Renewable Energy and Energy Efficiency Law (REEL)[17].

4.4 Background: Energy Policies and Prices

The energy future in the Kingdom is a top priority on the government agenda. The national agenda in Jordan recognizes that the energy sector faces fundamental challenges and must be dealt with, especially the reliance on energy markets for direct imports. The high cost of imports of crude oil and petroleum products (estimated at 17.6 percent of GDP in 2008); Growth in demand for oil products is expected to exceed 3%. Annually, electricity consumption has maintained an upward trend (growth is expected to exceed 4% annually)[2].

There are other challenges represented in providing the necessary financing for investment in developing and supporting energy and its projects in a timely manner to meet the growing needs of the energy market, promoting the optimal use of energy in all fields, and raising the

specifications of oil products in line with international standards in order to ensure safety and environmental protection [20]. Therefore, these challenges require clear procedures and laws from the government.

To meet these challenges, the government has set clear goals, which are:

- Working to secure the supply of petroleum products.
- The country has shifted its energy fuel mix from oil to gas for use in power generation industries.
- Achieving the security of the electricity supply. The current strategy shows the best way forward in the sector, with the goal of diversifying the energy mix. To this end, four programs have been developed:
- Developing a peaceful nuclear reactor by 2020 for civilian uses of power generation. 10% of the electricity needed through renewable energy sources by 2020,
- Exploiting oil shale through direct combustion by the year 2015. Particularly through wind and solar energy. And the
- Increasing energy efficiency to reduce demand.

4.5 Renewable Energy Policy, laws and Regulations in Jordan

In the request for expressions of interest (EOIs), the Jordanian government has introduced general policies or instructions to investors:

- Priority will be given to photovoltaic projects from 5 to 10 MWs and solar thermal projects from 25 to 50 MWs "in order to meet the interest of a large number of investors and to comply with the commercial applications of such projects and the similar experience required by the Law".

- Larger projects will be considered but they "will need to demonstrate their clear superiority in terms of technical and financial aspects in order to be accepted" in addition to compliance with the Law.

- The Kingdom will give priority to projects that generate energy for domestic consumption over export projects. Export-based projects will be considered on a case-by-case basis and priority will be given to energy export projects based on well-known regional / international initiatives.

• Investors who successfully pass the EOI stage will receive a Memorandum of Understanding (MOU) from the government. This measure will entitle the project investor to advance campaigns for feasibility studies, performance measurement, and other due diligence and preparatory work such as project progress on access to financing and access to land. Upon completion of the MOU process, the applicant will be required to do so. Submit a full and committed direct proposal to the Ministry of Energy [2]. It will also clarify several financing programs to support renewable energy and energy efficiency projects, including:

• An amount of 300 million dollars has been allocated from the soft loans package for the Gulf Cooperation Council countries to the Kingdom in order to support renewable energy projects.

• The Public Sector Energy Efficiency Fund has been launched with KfW in the amount of € 30 million to support generation projects in 700 buildings.

• Supporting the European Bank for Reconstruction and Development (EBRD) in Jordan, with a focus on supporting renewable energy sources there.

Launching small and soft loans through development and operation funds for small systems through Jordanian banks.

4.5.1 The current laws and regulations applied in Jordan:

• Regulations for the General Electricity Law No. 64 of 2002.

• Distribution Companies Licensing Law No. 76 issued 2001.

• Instructions for the electric tariff system.

• Instructions regarding clearance distance.

• Instructions for the meter certification system.

• Instructions for settling disputes.

• Instructions for tempering.

• Law on Natural Resources No. 12 of 1968.

• Mining System Law No. (131) issued 1966.

• Mines and Quarry Fee Regulations No. (8) issued in 1966, which includes the conditions and procedures for issuing mining rights.

• Regulations and procedures for issuing quarantine rights.

• Instructions for issuing approvals and licenses for stone factories.

• Radiation Protection and Nuclear Safety and Security Law No. 43 of 2007.

• Nuclear Energy Law No. (42) issued in 2007

• Bylaws of the National Center for Energy Research for the year 1998

all these instructions are published on the website of the ministry of energy in Jordan.

As a general policy, the Government of Jordan adopted an approach to privatize existing public entities in the energy sector and to maximize private sector involvement in future expansion projects[18].

In Jordan, energy issues have been divided among several institutions. The government aims to restructure this sector in order to increase its efficiency and raise its efficiency. The Kingdom signed the Energy Charter of 1991 and is now closed to joining the Energy Charter Treaty. This shows Jordan's continued commitment to investment and trade in the field of energy, and a desire to work actively with the international community to address current energy problems. Energy efficient is an important part of this commitment. The original National Energy Strategy was issued in the country in 2004 and covers the contract planning schedule up to 2015. This strategy outlines a range of options to cover the increasing energy demand in Jordan and reduce dependence on conventional energy. An important goal was to save domestic energy resources by 28% from primary power generation by 2010. During its review of the National Energy Strategy in 2007, the Royal Commission confirmed that this target was very important: it was revised to 25% in 2010 despite the ambitious goal, domestic energy resources will provide 39% of primary energy needs by 2020 [29].

4.5.2 Major Policy Decisions

The major policy decisions and actions taken by the Government of Jordan towards promoting RE are summarized as follows:

RE & EE Law No.3/2010

The law is considered a major step forward in the efforts exerted to encourage investment opportunities, raise energy efficiency, and also clarify the previous general position of the government support for the renewable energy sector, that is, the adoption of the price of kilowatt hours as a main criterion in evaluating the projects without provisions related to technology transfer and issues of establishing local industry and almost total dependence on The special sector for developing renewable energy. The energy efficiency subsector in Jordan. However, this law aims for establishing a framework for the the developments of RS & EE in the Kingdom and, for the first time, allow the investors to submit unwanted proposals for the grid-connected renewable energy investments such as solar energy parks or wind parks [29].

Jordan RE & EE Fund (JREEEF)

RE & EE Law No.3/2010 provides for the establishment of a fund "with the aim of providing the funding necessary for the exploitation of Renewable Energy Sources and the rationalization of energy consumption" (Article 11). A board of directors will be formed headed by the Minister of Energy. Board members are representatives of the private sector. According (Article 12). The responsibility of the Board of Directors is to approve the general policy, approve the annual reports, review the budget and financial statements, and also recommend approval of the Council of Ministers, and the Cabinet's recommendation of the necessary regulations and laws for the Fund (Article 13). Whereas, the main source of financing the fund is the general budget of the government (Article 14), and 20 million dinars have been allocated to start the fund from the rural cations account. MEMR recently issued a call for proposals to interested advisory bodies to prepare fund structure, staffing requirements, procedures and laws. The fund is expected to become operational by the end of 2012. In 2010, the Global Environment Facility was supported and granted to Jordan an amount of 2.3 million euros by the Global Environment Facility (GEF), implemented by the World Bank, and the French Global Environment Facility, implemented by the agency. France for Development (AFD). In addition, the French Development Agency is working to establish a credit line of 40 million euros with cooperation with local banks which will provide attractive financing for

energy efficiency projects in Jordan. The World Bank is also providing the technical assistance and support worth $ 3 million for a 90-megawatt wind plant project in Al-Fujij, which will be channeled through the fund [29].

4.5.3 Regulatory Incentives for Renewable Energy

The focus on recent financial and legal matters must be made in order to encourage investment in renewable energy in Jordan in this broader regulatory context, and it can be said that it has increased the likelihood of the Kingdom reaching its goal in the National Energy Strategy for renewables to meet 10% of the national energy needs by 2020. In April 2008, the government agreed to exempt imported solar technology from 16% national sales tax and 23% customs duties. In addition to the increase in oil prices, this has already led to a major trend and promotion of investment in renewable energy and the shift of some Jordanian companies to renewable energy. The renewable energy bill was approved in 2007 and submitted for review to the competent authorities in Jordan, especially the Electricity Sector Regulatory Authority, the National Electricity Company and the National Center for Energy Research [27]. Building on the input of Lahmeyer International, a German engineering consulting firm, this project gives MEMR the authority to approve and license eligible renewable energy plants. A number of the main regulatory incentives in the draft law include state provision of development sites at excellent rates, about 75% of tax exemptions for the first ten years from the profits of eligible renewable energy plants, exemptions from other statutory revenue fees other than that on construction, and incentives in operating and maintenance contracts.

4.6 Investment in Renewable Energy field in Jordan

Since 2014, Jordan has developed a legislative environment that enabled it to develop renewable energy projects (sun and wind) that pumps clean electricity into the network with a total capacity of 1,200 megawatts and contributes about 12% of the electrical energy generated in the Kingdom. The ministry expects the percentage to rise to 22% in 2022, making it one fifth of Jordan's electrical energy from renewable energy sources. Where in 2014, the contribution of renewable energy in Jordan was not more than 1%, while today it reached more than 12%, with an investment exceeding $ 4 billion[20].

Jordan's Minister of Energy and Mineral Resources, Hala Zawati, said during its recent inauguration of the "89-megawatt" wind energy project, that Jordan succeeded in attracting several renewable energy projects, as the share of renewable energies in generating electricity

increased from less than 1 percent 2014 to 10 percent in 2018 and will be 20 percent in 2020 and 2021. She added that currently more than 1,423 megawatts of renewable energy are being pumped into the national grid, including 1051 megawatts of solar energy and 372 megawatts of wind energy, and will reach 2,400 megawatts in 2020-2021, which will enable the achievement of the goal of reaching 20 percent of renewable energies in 2021. Awad in 2025 as it was already underlined.

For his part, General Manager of the National Electricity Company, Amjad Al-Rawashda, said that the National Electricity Company, which currently operates 20 projects of wind and solar energy, is following the construction, installation and inspection work for 12 other projects of wind and solar energy.

He added that the company will soon complete the works of the Green Corridor project, which will help transfer electrical energy ranging from 800 to 1,000 megawatts of renewable energy from southern Jordan to load centers, by integrating the production of all committed and contracted renewable energy companies according to their plans.

Al-Rawashdeh said that the production capacity of renewable energy projects will reach more than 2,400 megawatts by 2020-2021, noting that the renewable energy sector has become a pioneering experience at the regional level.

4.7 laws and Policies of Renewable Energy in Palestine

Despite the difficult security conditions in the West Bank, including East Jerusalem, and the Gaza Strip, the Palestinian Authority has made progress towards exploiting renewable energy sources after it passed a resolution in 2012, in addition to a related law and strategy. While these cannot solve the electricity problems immediately by providing electricity from renewable energy sources, they are significant steps towards gaining electricity independence from Israeli control and towards meeting part of the local demand for electricity[4].

The Electricity Law explicitly states that the executive body should encourage the search for and investment in alternative energy sources, as well as regulate their exploitation using regulations. Later, the Council of Ministers issued Resolution No. 13/127/16 (Resolution) in 2012 to regulate the exploitation of renewable energy in Palestine. The decision was important in establishing a new phase of supporting renewable sources in the electricity field in the Palestinian territories. Although environmental concerns were not rooted the Decision, it has

at least addressed electricity security concerns[4]. The law is very necessary and important, but unfortunately, its implementation is still somewhat ineffective. Whereas, the financial crisis surrounding the electricity sector exacerbated the problem, and the growing debts left a heavy burden on the government, making it unable to implement a certain thing.

The distinction between large and small enterprises is important. The laws need to address issues related to renewable energy projects, as well as clarify the maximum capacity for each technology [30]. But apparently, the regulation does not stipulate mounting capacity for future small-scale applications. However, through this strategy, it announced that the applications of the solar energy initiative will have a capacity of only five kilowatts. The regulators left the specified capacity to be specified in the electricity purchase agreements to be approved with the distribution companies. It may be better to regulate capacity in rolling regulations than to leave it to be decided by companies. In current laws, it is difficult to know the minimum and maximum capacity for small solar projects. For example, the strategy covers applications with a capacity of 15-50 kilowatts, but applications ranging from 5 to 15 kilowatts are not specified, while a minimum renewable project capacity of five kilowatts is specified in the strategy and the purchase agreement for residential initiative customers is still from It is difficult to define this for other residents who did not join the initiative [2]. Moreover, the main standards code for renewable technologies specification is prepared only for solar panels solar technologies. This code should include all technologies that can be deployed in Palestine. 95 It may be easy to prepare the codes in cooperation with the Palestinian Standards and Metrology Organization, because renewable resources can be clearly identified.

CHAPTER FIVE

Comparison and Conclusion

5.1 Introduction

The Kingdom of Jordan is considered one of the countries hosting refugees as a result of the unrest in the neighboring countries, as this led to an increase in the population in the Kingdom, which means an increase in the demand for energy.

Therefore, given the limitations of traditional energy sources, it is imperative for the Kingdom to expand the scope of alternative energy participation, and this necessitated many measures to be taken in order to stimulate this field and push it forward.

Palestine also suffers from a shortage of energy sources as a result of political factors and occupation's rule, forcing the authorities to seek an increase in renewable energy production and the percentage of its contribution in order to reduce this problem.

5.2 Environmental Law and Policy in Jordan

It is known that the Kingdom is considered a developing country, but it started working on environmental protection in 1976, when environmental affairs were entrusted to the Ministry of Municipalities and Rural Affairs. At that time, there was no official body concerned with preserving and protecting the environment as it is today. Law No. 57 of 1976 Administration and Organization Ministry of Municipal, Rural and Environmental Affairs (Jordan) 2622 Official Gazette 1027, the first environmental law was issued in 1995, and between the main concepts of environmental protection and clarified the basic provisions for building an organized environmental sector. Environmental Protection Law No. 12 of 1995 (Jordan) 4072 Official Gazette 2938 This law explains the following purposes:

1- Defining the concept of environment clearly and clarifying its main elements.

2- Defining the concept of environmental protection and environmental pollution.

3 - A governmental institution represented at that time by the Environment Watch Council in Jordan.

4- The specialists approve the necessary environmental regulations.

5- Preventing the dumping of environmental pollutants on beaches and public places.

6- Prohibiting and punishing any act that harms the reef.

7- Imposing deterrent penalties for all acts that cause water pollution.

5.3 Renewable Energy Regulatory Framework in Jordan

Jordan has made great achievements in the field of renewable energy in terms of strengthening policies supportive of this field, the most important of which are:

Jordan signed the United Nations agreement on climate change in 1993.

The Kyoto Protocol as a non-state listed in Annex 1 in 2003.

Jordan has set a goal to increase the efficiency of the energy sector, as internal regulations have been issued to rationalize energy consumption and the use of electric energy in heating. Solar energy for homes[18].

A 2012 law was issued that contains the main aspects to regulate the activities related to the exploitation of renewable energy, as through this law the electricity on the grid must be compatible with the distribution code and it must take into account the entire supply code.

The law also clarifies that suppliers must accept the purchase of the total renewable energy generated and connected to their grid.

The government has allocated large areas for investment in renewable energy, which have been approved by the Council of Ministers.

according to the law, sales of renewable generated electricity should be to license wholesale suppliers or retail suppliers using purchase agreements that must be drawn up in accordance with the law.

By looking at the instruction manual for the connection of renewable projects via the net metering in the projects, the regulator leaves the regulator for the connection agreement, which regulates the relationship between the distributor and the end user. To illustrate the connection process, the regulator refers the connection procedure to the instruction manual. The article 126 In this guide explain that the connection of small or large-scale renewable projects through

the electrical distribution network, which was defined as "all components of the network from the transmission network to the end-user connection point," and this network must distribute electricity with a voltage of 33 kilovolts [9].

5.4 Investment in renewable energy in Jordan

Jordan signed a large package of renewable energy projects recently, as several large projects are being implemented by a Korean company. In addition to that, the Al-Fujij project was implemented in Al-Shoubak to produce wind energy with a capacity of 207 megawatts in addition to the Aqaba project with a capacity of 75 megawatts and the Ma'an wind energy project with a capacity of 75 Megawatts and the Shams Maan solar energy project, in addition to dozens of medium and large projects.

5.5 Renewable Energy Legal Framework in Palestine

The feasibility of exploiting renewable energy sources to generate electric power in Palestine has been asserted in a number of energy studies[10]. Palestine is considered a fertile environment to produce solar energy due to the good rate of solar radiation in it. However, a large proportion of the population depends on solar energy to heat water, and in return, solar energy can provide a large proportion of energy if it is used well. However, if available renewable sources were employed in an effective way, solar, wind, and biomass sources could cover around 25% of Palestine's energy demand[10].

Another focal point refers to the reduction of emissions. The reference in the regulation to the proceeds that must be collected from emissions reduction does not make sense[9]. The government of Palestine didn't do anything to reduce the emission of the gases and there is no law determine this problem, which make peoples more dependent on traditional energy resources.

The government financial and banking incentives included in the decision are unclear [31]. Whereas, direct government support to encourage renewable energy projects has not been identified. Therefore, the support should be announced in order to encourage citizens or investors to participate in renewable energy projects. As the explicit addition of these clauses, whether in the renewable energy regulation or in the law, is necessary for the investment. This is because the clarity of financial incentives will reduce and encourage investor suspicion and risk, which in turn will attract investors to potential renewable projects. However, EA was not

successful in identifying these incentives. It is inappropriate to mention the incentives related to the solar energy initiative only (in the appendices), and it is not logical to rely on the ability of the future government to determine the incentives for medium and large projects that are supposed to be created within the second. Stage (2016-20). Moreover, direct support, intended for small projects related to the solar energy initiative, must be made transparently to inform people of the financial benefits that the initiative provides. Not surprisingly, it is not specified in the decision or strategy. For the purposes of the Solar Energy Initiative, it is estimated that direct support will be approximately $ 8,000 for each residential home that joins the initiative, and the total projected cost for each application is around $ 16,000. This support can be considered in advance. Government production support. Here, we wonder about the ability of the Palestinian government to continue supporting renewable electricity projects in light of the lack of clarity regarding the issue of financing and bearing the electricity debts that were transferred from the major municipalities to the government budget. In fact, it remains unclear whether the Palestinian government is able to continue this support. [9].

Not only that, but the provisions for regulating the application of renewable energy sources also have some weaknesses. Where most of what the list refers to general details. The regulations should establish stable regulations for the exercise of the specified rights, as well as the boundaries between those rights[4]. In order to improve the provisions governing the exploitation of renewable energy sources, it is important to include clauses that specify procedures for selecting suitable sites for renewable energy projects. Likewise, developing land use provisions that include renewable sites and easements for private investment is critical, as this may lead to future problems with other ministries, such as the Ministry of Agriculture. This will also protect individual rights in cases where the interests of the owners overlap by providing fair compensation for private property that may be affected according to the principle of the common good. At the very least, regulations can refer these rules to the General Electricity Law; Its provisions grant the right to pass over any private property for the purpose of establishing an electricity network or for any basic electrical work.

The government fiscal and financial incentives are unclear, for example, the issue of taxes is considered a basic and important tool in the production and operating stages of the renewable stations, but it was not included in the relevant tax laws and was mentioned in general without specifying the details[8]. The tariff's validity was also stipulated for a period of twenty years, although the type of tax exemption was not. Government decisions do not impose on companies

an explicit obligation to purchase renewable electricity from suppliers. Non-binding words have been used, where the commitment must be written in the regulations.

It is well known that the government has reduced subsidies on fuel purchased from the Israeli side, and it would be good if these funds were used to support renewable energy projects. It is also clear that the Palestinian government has not determined the supply prices according to the type and capacity of the projects, and the reduction formula used in the annual tariff adjustment has also not been determined.

If the purchase price is determined by the government and imposed on the distribution companies, it will be better than leaving it to these companies to control the price. As within the current strategy, it is difficult to know the minimum and maximum capacity of small solar energy, for example the current strategy covers projects from 15 to 50 kilowatts, but applications from 5 to 15 kilowatts are not specified. Specifications for solar cell materials and tools have been prepared and are not specified for their counterparts from other renewable energy sources.

In addition, government decisions stipulate that the construction of any station with a capacity of 15 kilowatts or more will be carried out only through bidding, and direct offers are not permitted. Therefore, the auction and bidding procedures are unclear to ensure competition. Also, there is insufficient allocation to support renewable energy projects. Not to mention that the tariff policy has gaps and needs to be addressed

5.6 Main Barriers for Investment in RE

The main barriers for investment in RE in Palestine are presented are:

A) High investment costs, lack of local manufacturing capabilities, and poor assembly and maintenance capacity.

B) Weak market demand due to lack of consumer awareness.

C) The absence of companies in the market or unions in the private sector or other institutions to promote renewable energy technologies.

D) The lack of adequate financial financing plans.

E) The high cost of investment in the field of renewable energy.

5.6 Conclusion

The renewable energy sector is dealt with under the most recent law that was recently passed, which, in my opinion, has failed to stimulate investment and work in the sector. We hope that new laws will be issued to compensate for the current deficit by addressing the critical issues facing the investment environment in this sector, such as taxes on electricity produced from renewable energy sources and incentives to encourage investors. The Palestinian Authority is currently offering to buy electricity from renewable energy investors at prices lower than those charged by Israel. It is important to reverse this practice, as it will surely discourage investors.

The weak infrastructure of the electricity networks in Palestine is a major reason for the delay in implementing solar energy projects and linking them with the networks. In addition to that, there is no clear policy with the five distribution companies located in the West Bank in terms of tariffs and calculations, and we lack the motivation necessary for the advancement of this sector. The laws regulating in the Kingdom of Jordan have given a good incentive to the investment sector in the renewable energy field in terms of unifying the system of tariffs and calculations and stimulating investment from tax exemptions and other and support projects with loans and support and facilities for licensing and tenders while we lack in Palestine many of these incentives and legislation although we are more in need to develop The volume of investment in the field of renewable energy.

In Jordan we find that the infrastructure of the electricity networks have good implementation compared to the networks in Palestine, and the legislative authorities have legislated a set of regulations and laws for connection points and tariff systems in a clear and unified manner in addition to providing great facilities for investment in this field in terms of tax exemptions, loans and purchase prices Granting government lands for investment, as all of this led to the growth of renewable energy participation to exceed 12%, while we lack many of these incentives in Palestine, which discourages investment growth and renewable energy sharing.

5.7 Recommendations

• Contact the electricity companies in order to ensure that they have the appropriate incentives to promote the exploitation of, and investment in, private renewable energy.

•The structural and regulatory framework for electricity tariffs should be reviewed to promote a sustainable and competitive environment for private renewable energy and invest in it.

• Network load flow studies must be available, which will identify critical areas in the network and connection points.

• Review the current procedures and laws with their details.

• The Renewable Energy and Energy Efficiency Fund should be fully activated and communicate with international financing facilities.

• it is necessary to develop energy national action plan.

• Encourage public-private partnership in RE projects.

• Strengthening and supporting the infrastructure of the electricity networks in Palestine.

• Legislations and laws that stimulate investment in renewable energy.

• Unifying tariff systems and linkage laws of the five companies.

• Promote tax exemptions to encourage investors.

• Supporting projects with soft loans so that investors can participate in investments in renewable energy and building solar energy stations.

• Providing facilities for obtaining licenses and bidding for renewable energy plants.

• Granting government lands to invest in building renewable energy plants and making contracts with factories to exploit roofs.

References

[1] E. Mediterranean, “Background note on energy and water issues in Palestine 1 Executive Summary The Energy Sector and the potential of Renewables,” 2015.

[2] R. Kitaneh, H. Alsamamra, and A. Aljunaidi, “Modeling of wind energy in some areas of Palestine,” *Energy Convers. Manag.*, vol. 62, pp. 64–69, 2012.

[3] A. Juaidi, F. G. Montoya, I. H. Ibrik, and F. Manzano-Agugliaro, “An overview of renewable energy potential in Palestine,” *Renew. Sustain. Energy Rev.*, vol. 65, pp. 943–960, 2016.

[4] I. Marei, “The Law and Policy for Electricity Generated by Renewable Energy: Greening the Power in Three Middle Eastern Jurisdictions,” *SSRN Electron. J.*, 2016.

[5] T. Abu Hamed, H. Flamm, and M. Azraq, “Renewable energy in the Palestinian Territories: Opportunities and challenges,” *Renew. Sustain. Energy Rev.*, vol. 16, no. 1, pp. 1082–1088, 2012.

[6] E. Basel and T. Q. Yaseen, “Renewable Energy Applications in Palestine,” vol. 804, pp. 52–65, 2007.

[7] A. A. M. O. Sawsan A. E. Ahmed, “70. Renewable Energy Advantages & Disadvantages. (Sawsan Ahmed Elhouri Ahmed & Areeg Abdelgader Mohamed Osman) International Journal of Research Science & Management Vol. 3 Issue 1...,” *Int. Sci. Manag.*, vol. 3, no. 10, pp. 1–4, 2016.

[8] T. P. Trust, “The Renewable Energy Sector in the Palestinian Territory,” no. July, pp. 2–3, 2010.

[9] I. Marei, “Developments in law and policy: The promotion of green energy in the electricity sector of palestine,” *J. Energy Nat. Resour. Law*, vol. 35, no. 1, pp. 47–67, 2017.

[10] I. Marei, “Developments in law and policy: The promotion of green energy in the electricity sector of palestine,” *J. Energy Nat. Resour. Law*, vol. 35, no. 1, pp. 47–67, 2017.

[11] M. Valipour, “Study of different climatic conditions to assess the role of solar radiation in reference crop evapotranspiration equations,” *Arch. Agron. Soil Sci.*, vol. 61, no. 5, pp. 679–694, 2015.

[12] A. Tsikalakis *et al.*, “Review of best practices of solar electricity resources applications in selected Middle East and North Africa (MENA) countries,” *Renew. Sustain. Energy Rev.*, vol. 15, no. 6, pp. 2838–2849, 2011.

[13] H. Istepanian, “Solar Energy i n Iraq : From Outset to Offset,” no. October, 2018.

[14] S. Strategy, “inian N Nation nal Pla an.”

[15] “Energy Policy in Denmark Preface Denmark´s path to a greener energy future,” no. December, 2012.

[16] International Renewable Energy Agency, *Renewable Energy Outlook: Egypt*. 2018.

[17] S. Wassermann *et al.*, “Renewable Energy Policies in Germany: Analysis of Actors and New Business Models As a Reaction To the Redesign and Adjustment of Policy Instruments,” *IAEE - 12th Eur. Energy Conf.*, pp. 1–17, 2012.

[18] Energy Charter Secretariat, “Jordan, Regular Review of Energy Efficiency Policies 2010,” 2010.

[19] N. A. Rahim, “RENEWABLE ENERGY PROSPECTS IN JORDAN Prepared by,” no. October, pp. 1–12, 2014.

[20] E. S. Hrayshat, “Analysis of renewable energy situation in Jordan,” *Renew. Sustain. Energy Rev.*, vol. 11, no. 8, pp. 1873–1887, 2007.

[21] “Energy Policy in Denmark Preface Denmark´s path to a greener energy future,” no. December, 2012.

[22] Masdar Institute/IRENA, “Renewable Energy Prospects: United Arab Emirates, REmap 2030 analysis,” no. April, p. 64, 2015.

[24] “Policy-and-investment-in-German-renewable-energy.” .

[25] M. K. Albezuirat, M. I. Hussain, and F. Al-saraireh, “Jordan Energy Sector Choices and Challenges,” no. October, 2018.

[26] E. S. Hrayshat, “Analysis of renewable energy situation in Jordan,” *Renew. Sustain. Energy Rev.*, vol. 11, no. 8, pp. 1873–1887, 2007.

[27] N. A. Rahim, “RENEWABLE ENERGY PROSPECTS IN JORDAN Prepared by,” no. October, pp. 1–12, 2014.

[28] S. Wassermann *et al.*, “Renewable Energy Policies in Germany: Analysis of Actors and New Business Models As a Reaction To the Redesign and Adjustment of Policy Instruments,” *IAEE - 12th Eur. Energy Conf.*, pp. 1–17, 2012.

[29] Friedrich-Erbert-Stiftung and Royal Scientific Society, “Sustainable Energy Mix and Policy Framework for Jordan,” p. 140, 2011.

[30] I. Marei, “Developments in law and policy: The promotion of green energy in the electricity sector of palestine,” *J. Energy Nat. Resour. Law*, vol. 35, no. 1, pp. 47–67, 2017.

[31] T. Abu Hamed, H. Flamm, and M. Azraq, “Renewable energy in the Palestinian Territories: Opportunities and challenges,” *Renew. Sustain. Energy Rev.*, vol. 16, no. 1, pp. 1082–1088, 2012.

Appendices

قرار مجلس الوزراء رقم (6) لسنة 2017م
بنظام عقد حزمة حوافز لغايات تشجيع الاستثمار
في مجال استخدام تقنيات الطاقة المتجددة

مجلس الوزراء،

استناداً لأحكام القانون الأساسي المعدل لسنة 2003م وتعديلاته، لا سيما أحكام المادة (70) منه،
ولأحكام قانون تشجيع الاستثمار في فلسطين رقم (1) لسنة 1998م وتعديلاته،
وبعد الاطلاع على أحكام القرار بقانون رقم (13) لسنة 2009م، بشأن قانون الكهرباء العام،
والاطلاع على أحكام القرار بقانون رقم (14) لسنة 2015م، بشأن الطاقة المتجددة وكفاءة الطاقة،
وعلى قرار مجلس الوزراء رقم (4) لسنة 2015م، بنظام تشجيع الاستثمار،
وبناءً على تنسيب رئيس مجلس إدارة هيئة تشجيع الاستثمار الفلسطينية،
وعلى ما أقره مجلس الوزراء بتاريخ 2017/07/18م،
وعلى الصلاحيات المخولة لنا،
وتحقيقاً للمصلحة العامة،

أصدرنا النظام الآتي:

مادة (1)
تعاريف

يكون للكلمات والعبارات الواردة في هذا النظام المعاني المخصصة لها أدناه، ما لم تدل القرينة على خلاف ذلك:

الهيئة: هيئة تشجيع الاستثمار الفلسطينية.
سلطة الطاقة: سلطة الطاقة والموارد الطبيعية.
مجلس الإدارة: مجلس إدارة هيئة تشجيع الاستثمار الفلسطينية.
محطات توليد الطاقة: أي محطة تستخدم مصادر الطاقة المتجددة لإنتاج الطاقة الكهربائية، وتشمل الأبنية والإنشاءات المستعملة لهذا الغرض، والأراضي التابعة لها، والآلات والمعدات المستعملة لهذه الغاية.
الطاقة المتجددة: الطاقة البديلة الناتجة عن مصادر طبيعية، لها طابع الديمومة والاستمرارية، كالطاقة الشمسية، وطاقة الرياح، وأي مصادر طبيعية أخرى تعتمدها سلطة الطاقة.
المناطق المعتمدة: المناطق التي تحددها سلطة الطاقة والهيئة، ويتم اعتمادها من مجلس الإدارة، لغايات إقامة محطات توليد للطاقة في المحافظات الفلسطينية.
القانون: قانون تشجيع الاستثمار رقم (1) لسنة 1998م وتعديلاته.

مادة (2)

شروط الاستفادة من الحوافز

يجب توافر الشروط التالية للاستفادة من الحوافز المنصوص عليها في هذا النظام:

1. الحصول على التراخيص اللازمة من الجهات المختصة.
2. استيفاء كافة الشروط المنصوص عليها في القانون والأنظمة والتعليمات الصادرة بموجبه.
3. الحفاظ على الحد الأدنى من الموظفين طوال فترة الاستفادة من الحوافز، ويضع مجلس الإدارة التعليمات اللازمة بعدد الموظفين وتخصصاتهم.

مادة (3)

المدة الزمنية لتقديم الطلبات

يتم تقديم طلب الاستفادة من عقود حزم الحوافز التي تصدرها الهيئة وفقاً للآتي:

1. مشاريع محطات توليد الطاقة للهيئة خلال مدة أقصاها ثلاث سنوات من تاريخ نفاذ هذا النظام، وذلك بعد الحصول على إذن التشغيل من الجهات المختصة.
2. مشاريع صافي القياس للهيئة خلال مدة أقصاها سنتين من تاريخ نفاذ هذا النظام.

مادة (4)

حوافز محطات توليد الطاقة

تستفيد محطات توليد الطاقة ذات القدرة التي لا تقل عن (1) ميغاواط، والتي يتم تنفيذها ضمن نطاق المناطق المعتمدة من الحوافز الآتية:

1. المرحلة الأولى: تستوفى ضريبة الدخل بنسبة (0%) لمدة سبع سنوات، من تاريخ تشغيل المحطة.
2. المرحلة الثانية: تستوفى ضريبة الدخل بنسبة (5%) لمدة خمس سنوات، تبدأ من نهاية المرحلة الأولى.
3. المرحلة الثالثة: تستوفى ضريبة الدخل بنسبة (10%) لمدة ثلاث سنوات، تبدأ من نهاية المرحلة الثانية.
4. تحتسب بعد انتهاء المرحلة الثالثة ضريبة الدخل حسب النسب السارية.

مادة (5)

حوافز مشاريع صافي القياس

1. تمنح المشاريع المسجلة لدى الهيئة والمستفيدة من الحوافز المنصوص عليها في القانون الآتي:
   أ. تمديد الحافز الممنوح للمشاريع التي تولد (20) كيلوواط على الأقل، لسنة واحدة، وفقاً للشريحة السارية.
   ب. تمديد الحافز الممنوح للمشاريع التي تولد (40) كيلوواط على الأقل، لسنتين، وفقاً للشريحة السارية.
   ج. تمديد الحافز الممنوح للمشاريع التي تولد (60) كيلوواط على الأقل، لثلاث سنوات، وفقاً للشريحة السارية.