



Union for the Mediterranean
Union pour la Méditerranée
الإتحاد من أجل المتوسط



PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA



**THE CYPRUS
INSTITUTE**
RESEARCH • TECHNOLOGY • INNOVATION

Towards effective policies to develop investment in renewable energy in Palestine

Ghadeer A. Arafeh
Protect for Sustainable Solutions- PSS
2021





WEFE Nexus Conference



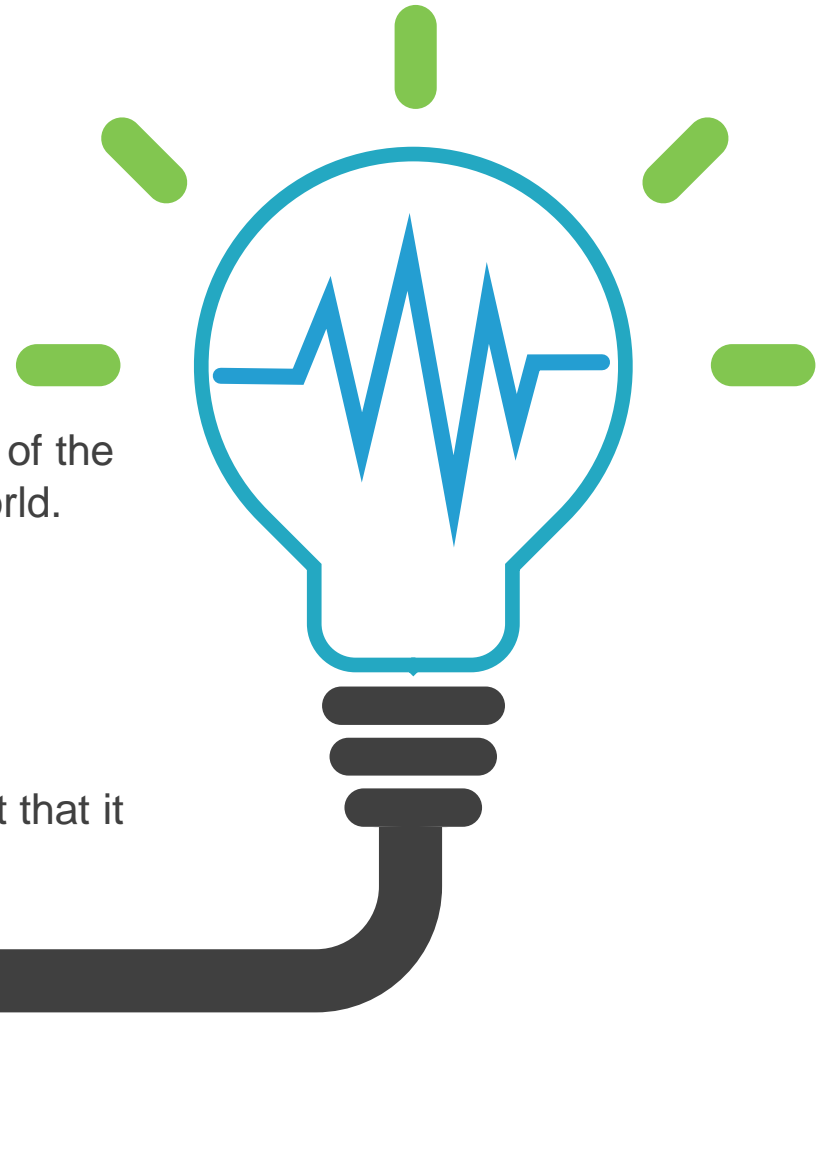
Agenda

- 01** Introduction
- 02** The Energy Sector in Palestine:
- 03** Prospects for using renewable energy
- 04** The structural and legal framework for regulating the renewable energy sector
- 05** Evaluation of pricing policies for renewable energy
- 06** Obstacles and challenges of applying renewable energy production
- 07** Suggesting alternatives options to promote the optimal use of renewable energy.

Introduction

- The renewable energy is receiving great attention globally, as it touches one of the most important strategic components of the security of any country in the world.
- Renewable energy is economically viable and contributes to achieving development goals in other sectors.
- The use of renewable energies is one of the most powerful alternatives that Palestine must adopt due to the absence of fossil fuel resources and the fact that it has been under occupation for decades.

Get Started





The study Problems



Israel supplies the electricity distribution networks to the Palestinian areas in the West Bank and Gaza Strip with the vast majority of their electrical energy needs, with approximately 92% from the Israeli national network.



Jordan supplies the Jordan Valley and Egypt supplies the Gaza Strip with a percentage not exceeding 3% for both, the rest is irregularly produced from the power plant in Gaza



The annual electricity bill from Israel amounts to the equivalent of 700 million dollars annually.



Petroleum fuels are the second highest commodity that is imported annually from Israel to Palestine, with a total value of 500 million dollars annually.



The problem statement

As a preliminary assessment, according to the statistics of The Palestine Energy and Natural Resource Authority, Palestine produces the equivalent of 45 thousand megawatts per hour of electricity, while it imports electricity from Israel, with an estimate equivalent to 5.5 million megawatts per hour. Similarly, Palestine produces the equivalent of 1.5 million megawatts per hour of solar energy for various uses.

Green Energy is considered as one of the most important factors contributing to economic independence and separation from Israeli control over the sources of electric and petroleum energy. However, until now, only 0.5% of the total energy consumed by Palestine is utilized from these available resources.

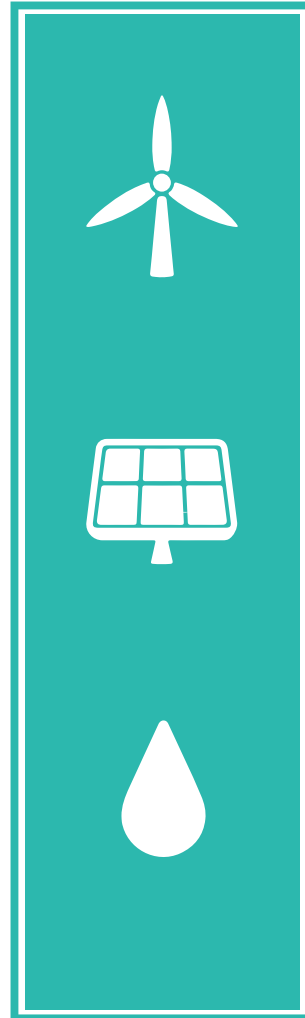
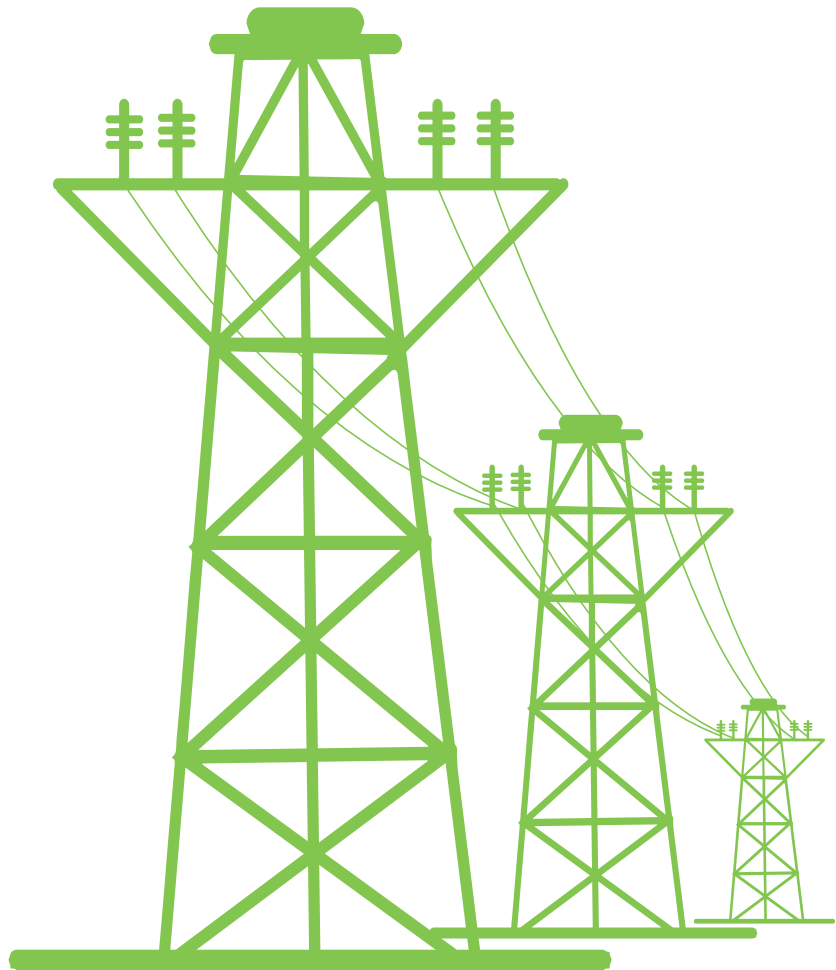




The Main Objective

Suggesting a new mechanisms and policies to regulate investment in the renewable energy sector and raise the efficiency of its productivity in Palestine in order to serve the goals of sustainable development to achieve economic security and the gradual disengagement from Israeli control.

The main technical problems of the electricity sector in Palestine



28%

weak in the electric current

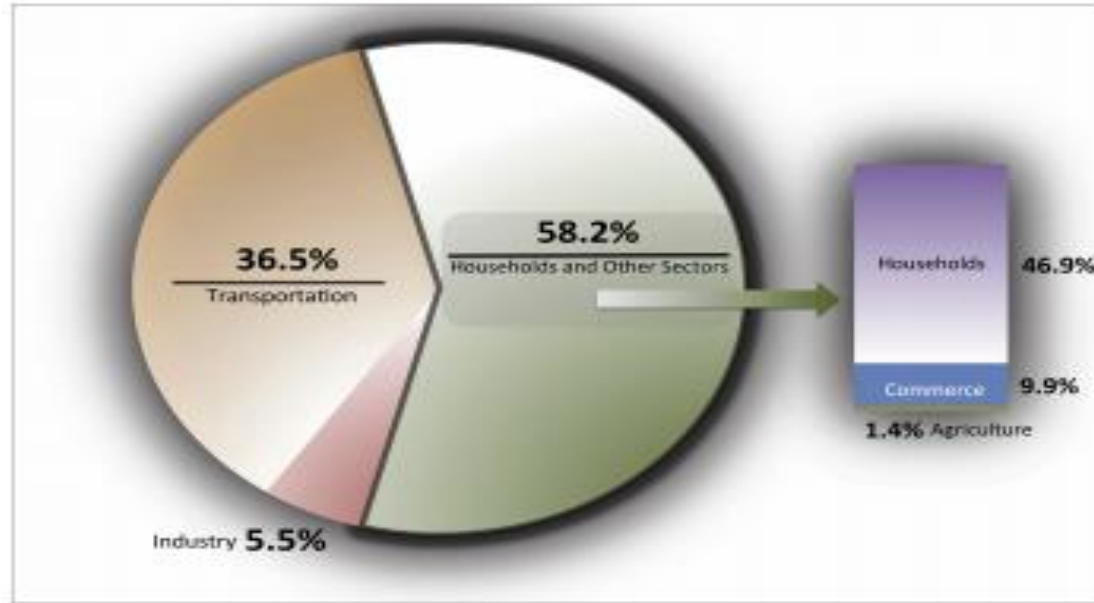
26%

power outage

24%

old and in need of rehabilitation,

In Addition, 17% of the areas not served by electric networks.



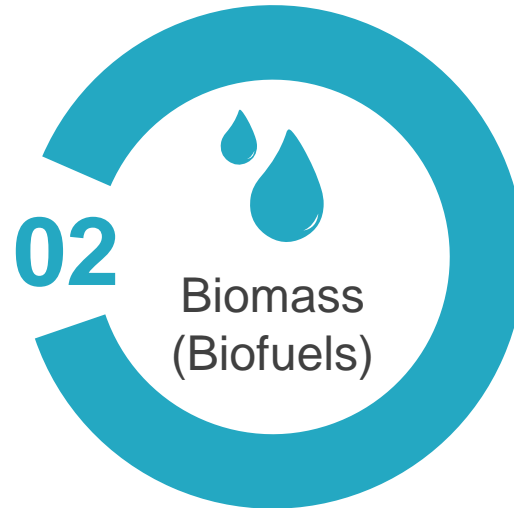
Distribution of electricity consumption by sector

- The consumption of fuels of all kinds in the West Bank and Gaza Strip is about 4-4.2 million liters per day, with an estimated bill of about 25 million shekels per day.
- The average per capita consumption of electrical energy is about 830 kilowatt-hours per year, which is a low average compared to neighboring countries, where the per capita consumption in Israel is 6600 kilowatt-hours per year.

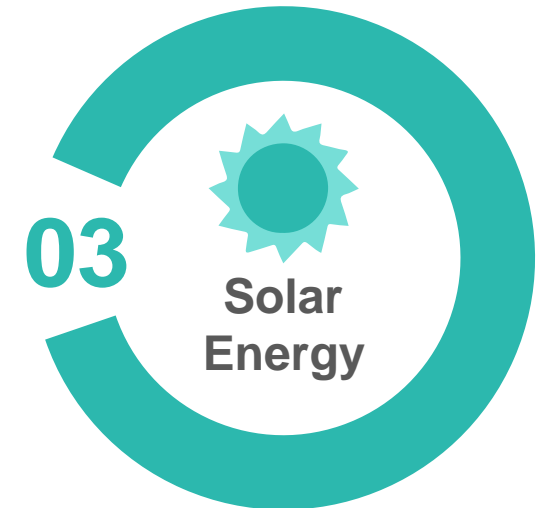
Prospects for using renewable energy in Palestine



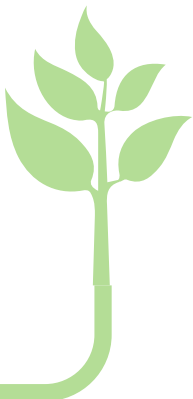
The potential of wind energy is limited to the mountains with a height of about 1000 meters represented over the areas of Nablus, Ramallah and Hebron where the speed exceeds 5 meters per second with the possibility of producing about 600 kilowatts / m².

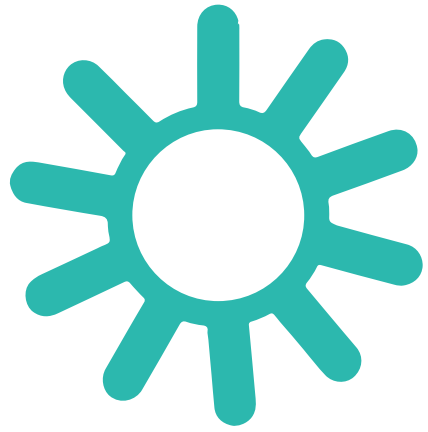


Biofuel is a source of renewable energy and contributes to a limited extent to reducing carbon dioxide concentrations in the atmosphere if it is used as an alternative to fossil fuels. It can take three forms, including liquid biodiesel, gaseous or solid, such as organic fertilizer.



Solar energy has a high potential in Palestine with about 3000 hours of sunshine per year, and the average annual solar radiation is 5.4 kWh on a horizontal surface





Solar Energy



The installation of solar cells on the rooftop of homes for solar water heating is widespread in Palestine. where nearly 70% of homes and apartments have such systems.

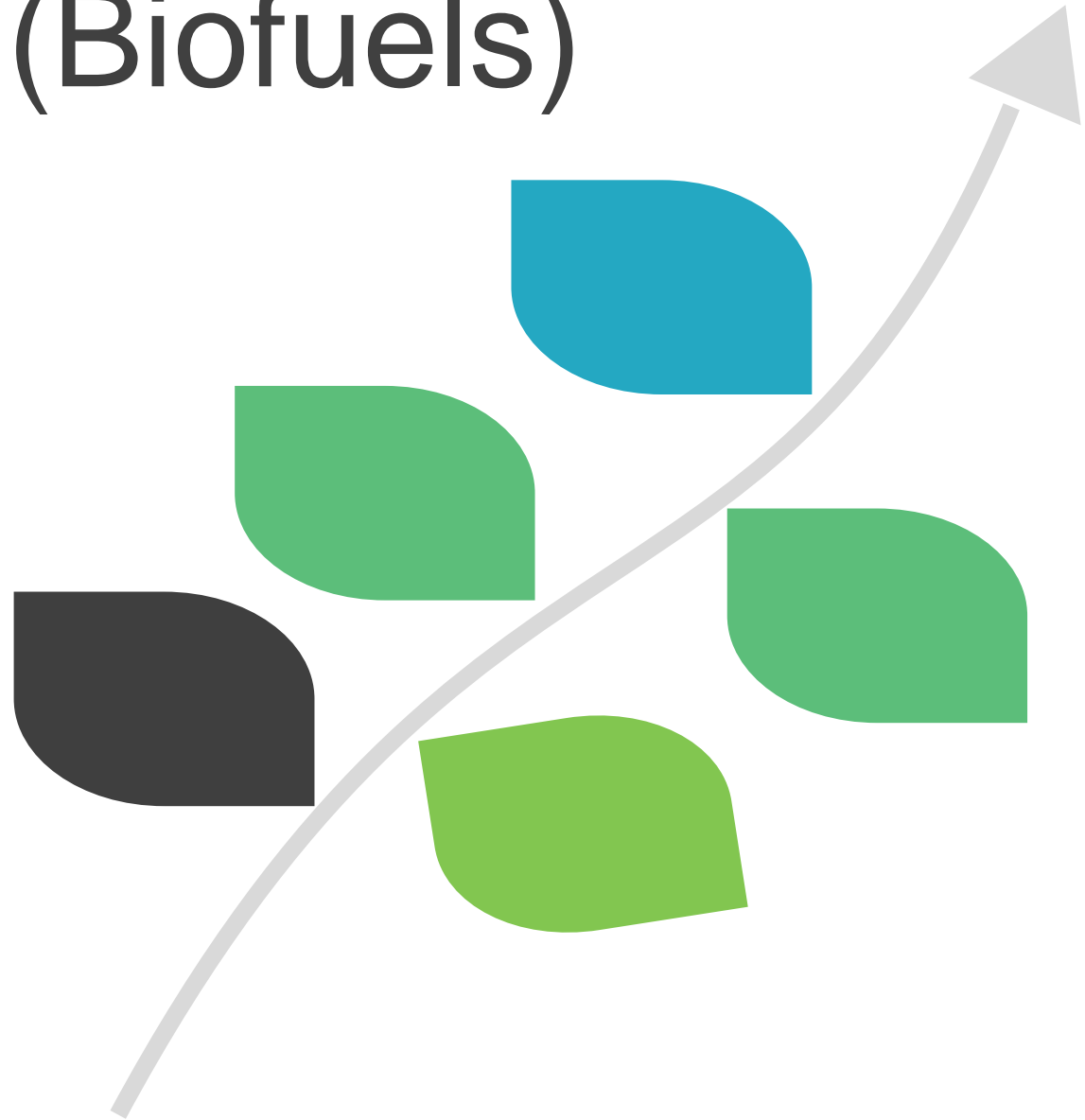
Palestine is one of the leading countries in this field as the production reaches about 24,000 units per year covering the West Bank and Gaza Strip which is considered sufficient for the Palestinian market



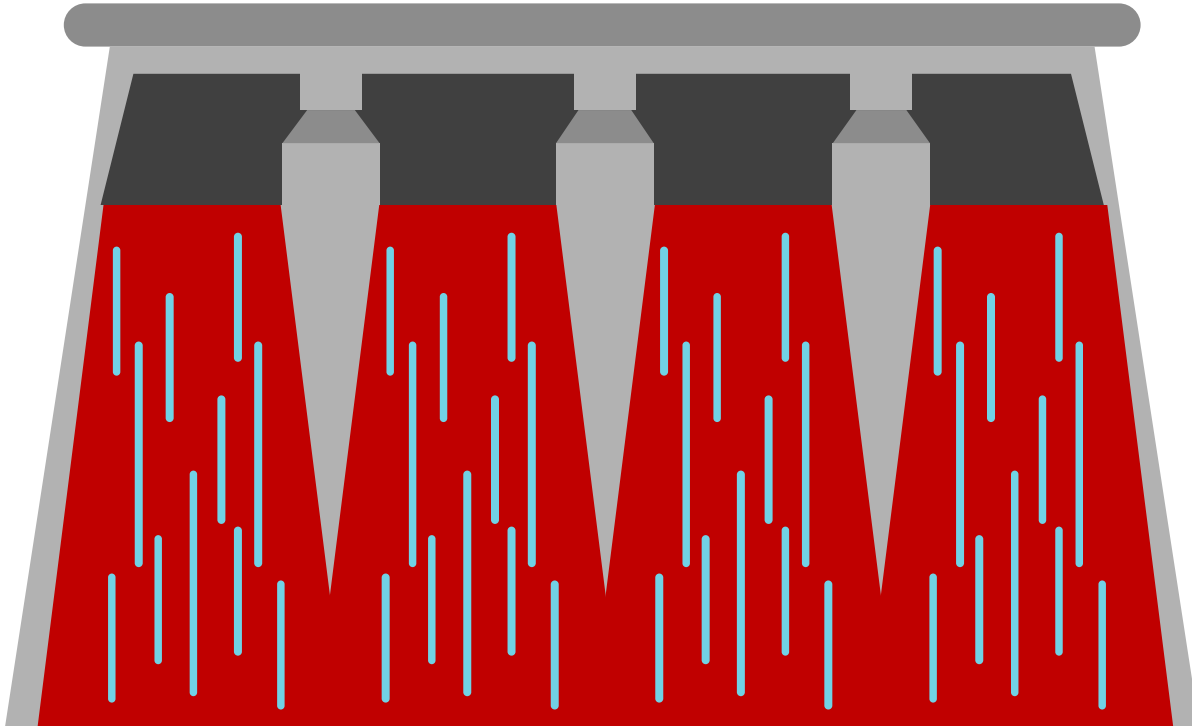


Biomass (Biofuels)

- Al-Jebrini Dairy Factory in Hebron Governorate is considered the first regionally and the largest project that was recently licensed to produce biogas from cow dung.
- In 2013, a factory was established in a village in Qalqilya to produce biodiesel from restaurant used oils and animal fats with a production capacity of 5000 liters per day and mixed with petroleum diesel or diesel, then cars and engines are supplied with this biofuel..



Geothermal Energy



Geothermal energy can be exploited to meet the heating and cooling requirements of the Palestinians throughout the year by using the geothermal energy system.

This system provided evidence of significantly reduced energy costs for heating and cooling by more than 70% of the household bill with a payback period of 4.5 years.



**The structural and legal
framework for regulating the
renewable energy sector.**





Policies to regulate the electricity sector produced from renewable energy

The Palestinian Solar Initiative

This initiative consists of three phases. It aims to establish separate small projects, distributed among 1,000 homes beautifully designed.

The net metering system

It applies to projects with capacities greater than (5) kilowatts in all sectors, with the aim of covering the self-need of electrical energy by up to 100% of the value of consumption using one of the renewable energy sources and with a maximum of 1000 kilowatts.

Competitive Bids Policy

Implementing projects by offering bids or soliciting offers on a competitive basis in accordance with the relevant applicable laws for the establishment of commercial electric power plants for the purpose of selling the produced energy. beautifully designed.

Policies to regulate the Biofuel sector



No clear policy or law regulating it.



Regulatory Framework

- The Palestinian Energy & Environment Research Center (PEC) is national R&D institution was established in 1993; followed to the Palestinian Energy Authority - PEA.
- The Palestinian Electricity Sector Regulatory Council (PERC), as a regulatory authority, enshrined in the General Electricity Law (2009) and established in February 2012.
- National Transmission Corporation (NTC)
- Electricity distribution facilities: Gaza Governorate Distribution Company (GEDCO)
- In addition, there are municipalities and rural councils that provide power distribution service.





List of DisCos in PT

Name of the company	Location
The Northern Electricity Distribution Company (NEDCo)	Northern West Bank
Jerusalem District Electric Company (JDECo)	Ramallah and around area
Hebron Electric Power (HEPCo)	Hebron municipality
Southern Electric Power (SELCo)	Southern municipalities Yatta and Al Thaherya
Gaza Electricity Distribution Company (GEDCo)	Gaza
Tubas District Electricity (TDECo)	Tubas city and region



Energy Cost Determination Policy in Palestine

- The value of electricity consumption for a Palestinian citizen on average amounts to 0.13 euros / kWh while the average price paid to the Israel Electric Company is 0.07 € / kWh
- The tariff system is still not uniform in Palestine. Each electrical utility has its own tariff system.
- In all facilities, electricity meters are used to monitor the amount consumed and a fixed monthly fee is added to each bill to cover operating and maintenance expenses and development of electrical services and utilities.
- There is no support policy in Palestine, therefore investors are always eligible to change prices according to the global market and are directly affected by Israeli tariffs.





Evaluation of pricing policies for renewable energy

Feed-in Tariff Policy

Through this policy, investors in the renewable energy sector are encouraged to recover their invested money within an economically reasonable period. A tariff is set for each unit of energy produced from a renewable source.

Net Metering Policy:

This applies to projects with capacities greater than (5) kilowatts in all sectors, with the aim of covering the self-need of electrical energy by up to 100% of the value of consumption using a renewable energy source, with a maximum of 1000 kilowatts.

Competitive Tenders Policy

Through this policy, investors submit their proposals to establish projects and build plants to produce electricity from renewable energy sources during a certain period and with specific capacities through tenders and competitive prices. Contracts with a competitive cost of production are selected, in addition to granting them exemption from taxes and customs.

Obstacles and challenges of applying renewable energy production in Palestine



Political Obstacles and the Occupation
Legislative and policy obstacles



Financial and banking obstacles



Institutional and structural obstacles
Socio-economic obstacles



Awareness and scientific research
Obstacles (consumption rationalization
and environmental protection)

Suggesting alternatives options to promote the optimal use of renewable energy.

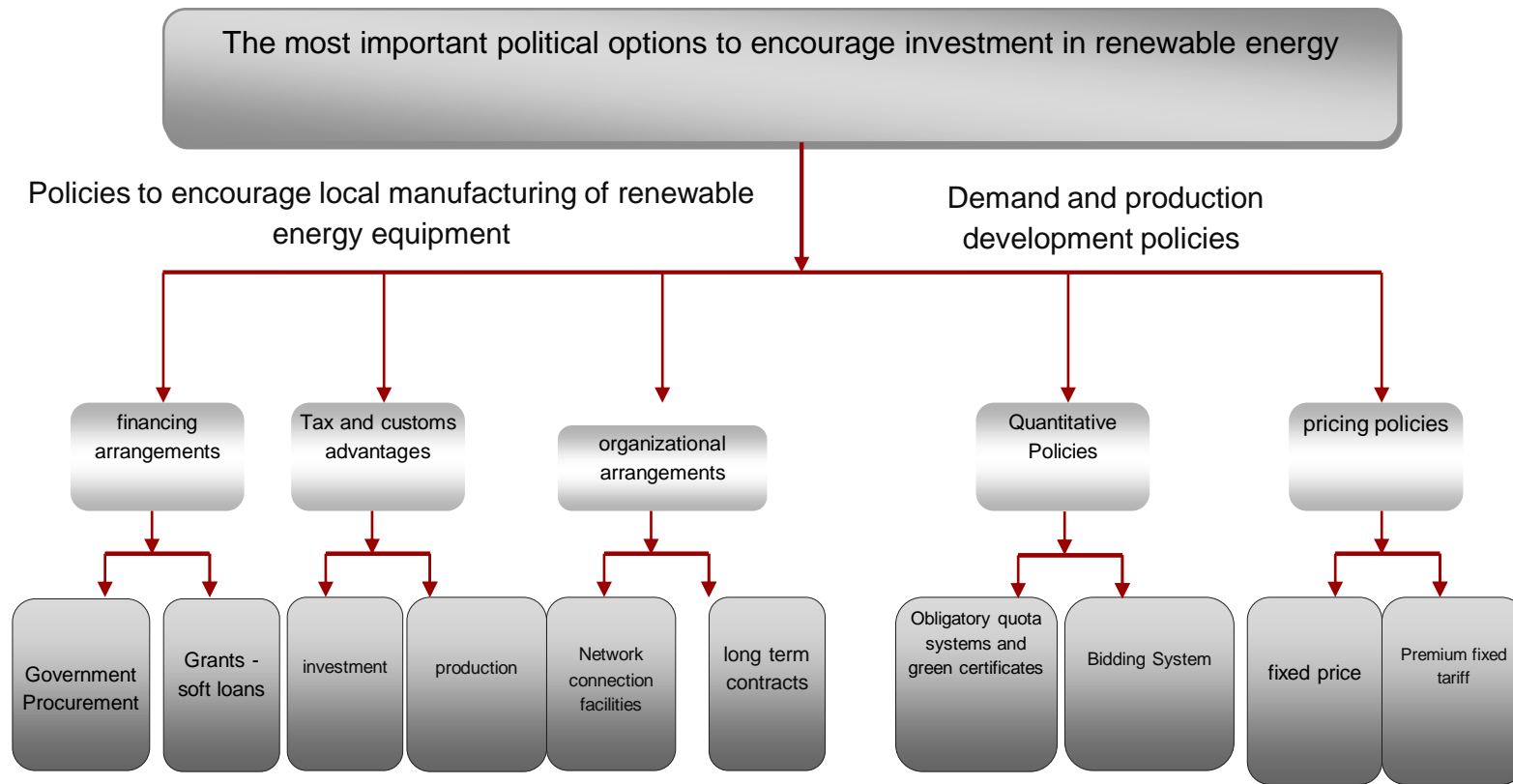


The first alternative option: relying on self-production of renewable energy at a rate of up to 100% as an alternative to the Israeli electrical and petroleum products

- **Effectiveness:** The effectiveness of this alternative appears to be linked to several political files, the most important of which is its connection with the Oslo Accord.
- **Efficiency:** Palestine can contribute to the implementation of small and medium-sized projects to meet its energy needs as an alternative to projects (large scale on Area C) that require approval from the Israeli side, thus achieving part of its self-reliance as an independent country under occupation.
- **Applicability:** The political will plays a major role in achieving this alternative in the long and short term.
- **Flexibility:** As long as Palestine can control (A) and (B) areas , and as long as there are possibilities to implement renewable energy production using several technologies for its production and marketing, which cover a high percentage of the energy demand market,
- **Public Awareness:** Palestinians realize the seriousness and importance of this option



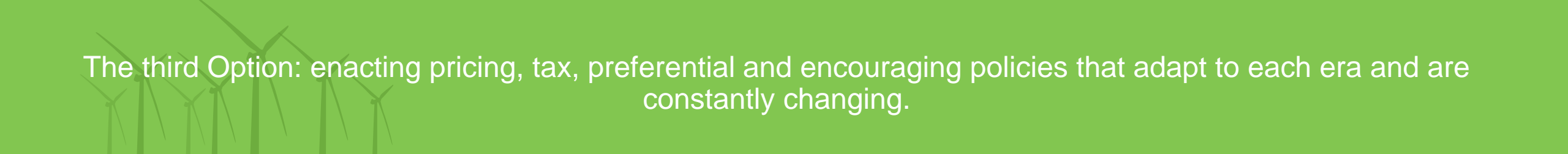
The second option: enact policies in line with market size and energy demand, and increase investment in the renewable energy sector in order to develop production and encourage local manufacturing of renewable energy equipment.



Second Option

- Effectiveness: enacting laws and legislation based on its social and economic situation without neglecting the environmental perspective to achieve sustainable development goals and adapt to climate changes or mitigate its effects in the context of the depletion of fossil fuels.
- Efficiency: the Energy Authority PEA must study the investment feasibility for each type of renewable energy separately.
- Applicability: This alternative can be implemented smoothly through the involvement of all stakeholders and partners in national decision-making, whether investors, local citizens, or relevant country institutions and associations
- Flexibility: policy makers should design more effective policy tools to support the deployment of renewable energy sources in the market.
- Public awareness: There is awareness of this alternative that has emerged recently, so all hands must be joint in order to achieve the desired goal of encouraging investment and facing these obstacles





The third Option: enacting pricing, tax, preferential and encouraging policies that adapt to each era and are constantly changing.

Efficiency: The effectiveness of this option appears to be very high if it is studied in a way that achieves justice for all parties, including citizens, investors, producers and distributors of renewable energy, taking into account the political, economic, social and environmental dimensions of each price imposed by the state.

Flexibility: Investment in this option is very flexible, but it needs enough time for Palestine to reach its own pricing, in line with the market supply and demand for renewable energy.

Applicability: It is very possible, and can be relied upon in setting special prices.

Efficiency: To study the efficiency of this alternative, the Energy Authority PEA must also study the feasibility of pricing for each type of renewable energy production separately and the size of the investment in it

Public awareness: Palestine needs economic experts, environmentalists and politicians to meet at one table in order to broadcast on this option to unite all efforts.



The fourth alternative: Encouraging scientific research and establishing a fund for renewable energies to invest in and finance small and large projects alike by providing low-interest loans, supporting marginalized groups, and encouraging local manufacturing policies for equipment by requiring specific percentages of local manufacturing.

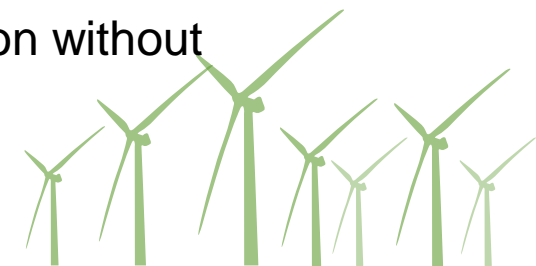
Efficiency: The effectiveness of this alternative is linked to the capabilities of Palestine on the size of the market to manufacture equipment for the production of renewable energy and the development of a financial fund dedicated to the renewable energy sector, in addition to encouraging development research

Flexibility: Investing in this option is very possible and not difficult. On the contrary, there are private companies that manufacture such equipment, which, if supported by Palestinian policies, can be developed on a large scale, accompanied by the establishment of the Green Fund and the encouragement of scientific research.

Applicability: Very possible by setting relative requirements on local manufacturing and imposing taxes on equipment imported from abroad.

Efficiency: The efficiency of this alternative is considered very high as long as it is planned in a smooth and successive manner by the relevant authorities.

Public awareness: Palestine is well aware of this step, and it can be remedied and worked on without restrictions.



The comparison matrix between the options offered .

Total	Public awareness	Flexibility	Applicability	Effectiveness	Options
11	3	2	3	3	First
16	4	4	4	4	Second Options
17	5	4	4	4	Third Option
18	4	5	5	4	Fourth Option



Recommendations based on matrix

- The fourth option is the best alternatives in terms of establishing a green fund to support the renewable energy sector and encourage local manufacturing of equipment producing renewable energy and scientific research.
- The third alternative plays an important role in the progress of Palestine in this context and overcoming most obstacles. Despite the existence of encouraging policies for investment and a renewable energy strategy, determining the cost and pricing are the most important and are enough to encourage the private sector to invest in this direction.
- Moreover, the second alternative is no less important than the third alternative, but both are linked in one way or another, as these legislative policies play in managing this sector in an integrated manner, taking into consideration the exploitation of every alternative energy that can be provided in Palestine in all its forms.
- Research studies should also be encouraged in this sector.
- Encourage the manufacture of equipment locally instead of importing it from abroad to develop encouraging policies and reduce taxes for investment in.
- The matrix results also indicate that the first alternative cannot be achieved unless the second, third and fourth alternatives are achieved.





Thank You