

Lebanon Market Study

Domain: Solar PV
Reference Year: 2022 - 2023
Forecasting Period: 2024-2030

Table of Content

- 1) Market Definition and Study Assumptions**
- 2) Research Design and Methodology**
 - a) Introduction
 - b) Objectives
 - c) Information Resources
 - d) Methodology
- 3) Overview of the Solar Energy Sector**
 - a) Introduction
 - b) Solar PV Initiatives and Programs
 - c) Government Regulations and Policies
 - d) Tariff
- 4) Solar PV Energy Market Landscape**
 - a) Solar PV Capacity By Sector
 - b) Solar PV Installed Capacity
 - c) Major Upcoming Solar PV Projects
 - d) Solar Sector Challenges
 - e) Solar PV Market Forecasting
 - f) Legal and Regulatory Framework for DG Solar Projects
- 5) EPCs Persona**
- 6) Distributors Persona**

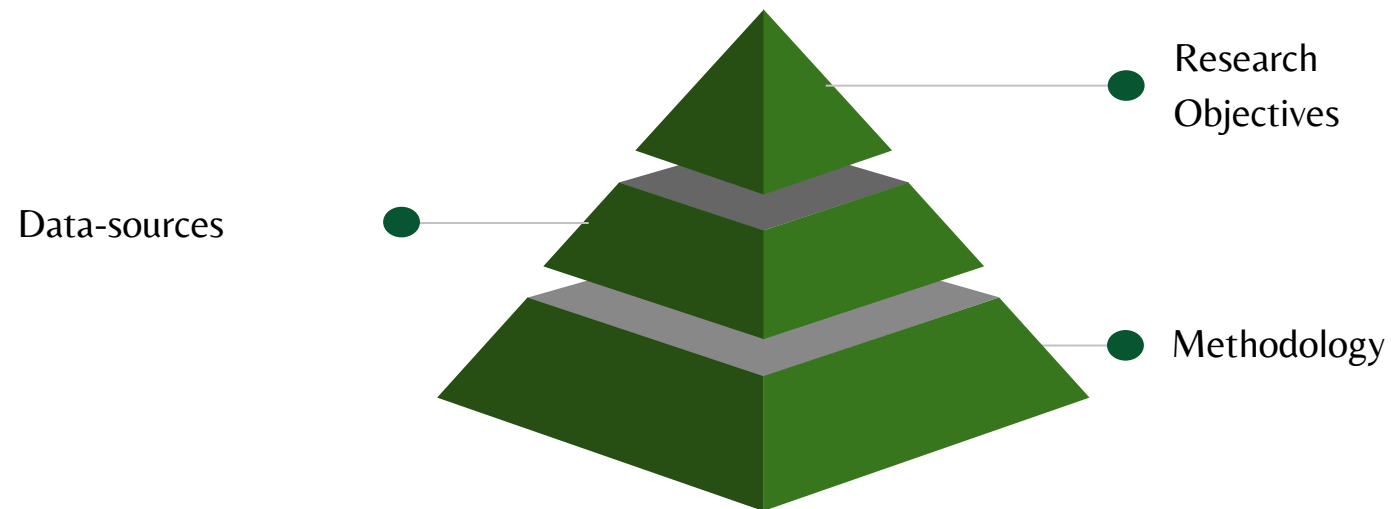
Market Definition and Study Assumptions

Term	Solar PV Energy
Description	Solar energy is the energy that produced by applying a photoelectric effect-based technique to transform sunlight into electricity.
Reference Year	The reference year is a year for which statistics are gathered or assessed and its identified based on the availability of annual reports and statistics.
	The reference year for this section is considered to be between 2022 - 2023.
Forecast Period	Forecast period is a time frame that is set to predict what will happen or is likely to happen during it
	The forecast period for this section is considered to be between 2024-2030.

Research Design and Methodology

Research Design

- **Research Objective:** Understand market trends and consumer preferences through interviews, desktop research, and expert consultations.
- **Methodology:** Conduct qualitative interviews, gather secondary data specific to Lebanon Solar PV market, validate with experts, analyze using data analytics tools.
- **Insights:** Capture qualitative insights and quantitative trends to inform strategic decisions and market positioning.
- **Recommendations:** Deliver actionable conclusions based on synthesized findings to drive business growth.



Objectives

- This market research aims to provide critical information about the solar PV landscape in the country.
- The report will focus on delivering facts, numbers, market size and share estimate both from experience, surveys, and from market reports.

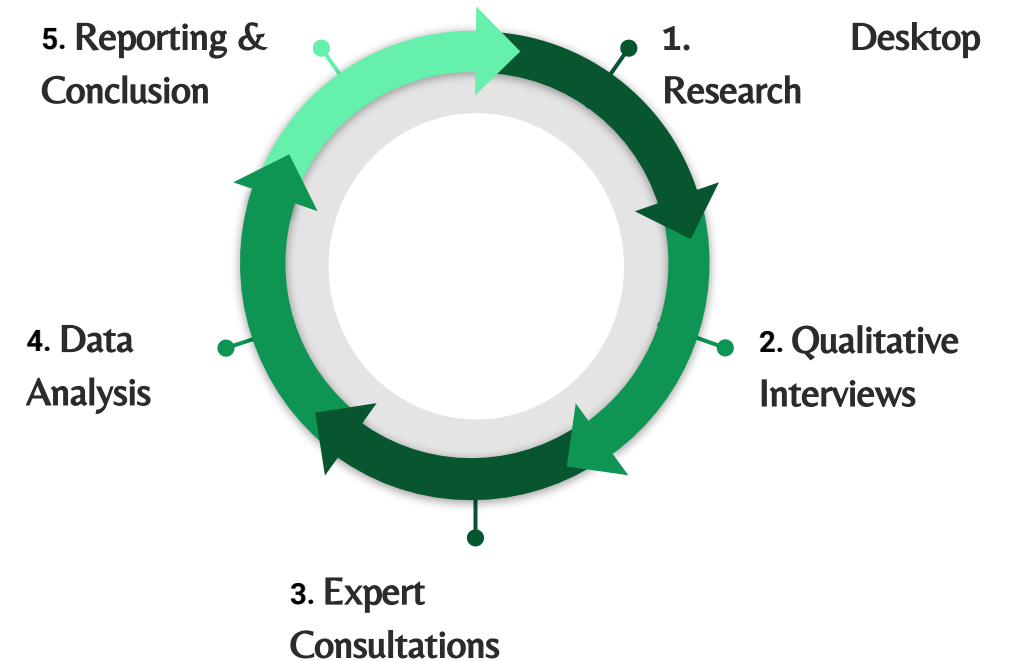


Information Resources

- Solarabic Database
- Market Experts
- Governmental Bodies:
 - Ministry of Energy and Water (MoEW)
 - Lebanese Center for Energy Conservation (LCEC)
 - Electricité du Liban (EDL)
 - National Council for Scientific Research (CNRS)
 - Higher Council for Privatization and PPP (HCP)
- Company profiles.

Methodology

- 1. Desktop Research:** Conduct extensive research on market drivers, technical specifications, pricing trends, regulatory frameworks, and government initiatives influencing Lebanon solar PV market.
- 1. Qualitative Interviews:** Conducting interviews and surveys to collect detailed information about the market, EPCs, and distributors.
- 1. Expert Consultations:** Validate research findings through consultations with local experts to ensure comprehensive understanding and accuracy.
- 1. Data Analysis:** Utilize statistical tools to analyze quantitative data, forecasting market demand, and predicting trends for solar PV market.
- 1. Reporting and Conclusion:** Outlining market dynamics, competitive landscape, and strategic recommendations for entering Lebanon solar PV market.



Overview of the Solar Energy Sector

Introduction

Lebanon's energy situation remains critical, but solar power holds renewed promise. With its abundant sunshine and strategic location, Lebanon boasts significant potential for solar energy development.

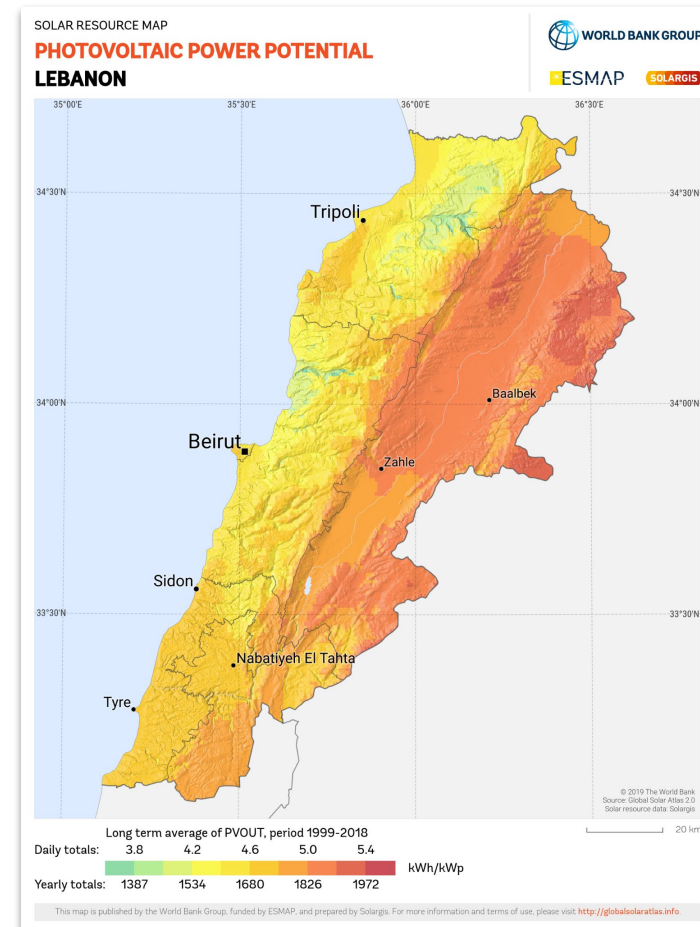
While large-scale solar projects face hurdles like regulations and financing limitations, **the distributed generation (DG) market** offers substantial opportunities, especially for commercial and industrial (C&I) consumers.

However, the rapid and sometimes unregulated installation of solar systems has led to technical issues and safety concerns, with recent reports of system fires.

Lebanon's ongoing economic crisis further complicates matters. The financial instability has pushed up costs for solar equipment and restricted access to funding, hindering the growth of solar initiatives.

Despite these challenges, the potential for DG market growth, particularly for C&I applications, remains significant. Solar energy offers a clear path to diversifying Lebanon's energy mix, enhancing energy security, and delivering economic and environmental benefits.

This report aims to provide a comprehensive 2023 market update on Lebanon's solar energy sector, identifying areas of potential growth and key opportunities within the market.



Source: Solar GIS

Solar PV Initiatives and Programs



Solar photovoltaic (PV) **initiatives** and **programs** are at the forefront of the global transition towards sustainable energy. As nations seek to reduce their carbon footprints and enhance energy security, the adoption of solar PV technology has become a critical component of modern energy strategies. This report explores the various initiatives and programs designed to promote and implement solar PV systems, highlighting the advancements, challenges, and successes in this rapidly evolving field.

By examining these initiatives and programs and current trends, we aim to provide a comprehensive overview of how solar PV is shaping the future of energy production and consumption.

Solar PV Initiatives and Programs

- **NEEREA:** As of 2024, NEEREA (National Energy Efficiency and Renewable Energy Action) continues to be a crucial financing mechanism for renewable energy projects in Lebanon. Established by the Central Bank of Lebanon in collaboration with the Ministry of Energy and Water and the Lebanese Center for Energy Conservation (LCEC), NEEREA provides low-interest loans through commercial banks for various energy efficiency and renewable energy projects. These loans can cover up to 100% of the project costs and have a repayment period of up to 14 years.



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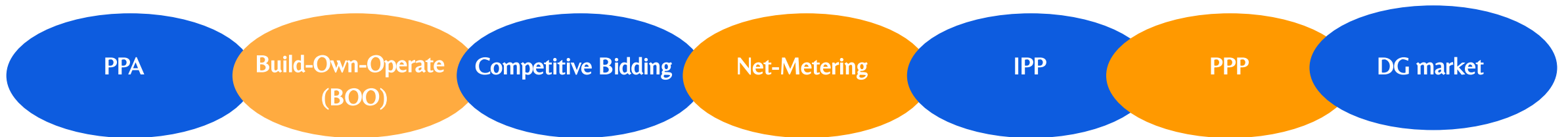
Regulatory Framework

Regulatory Framework for Renewable Energy in Lebanon:

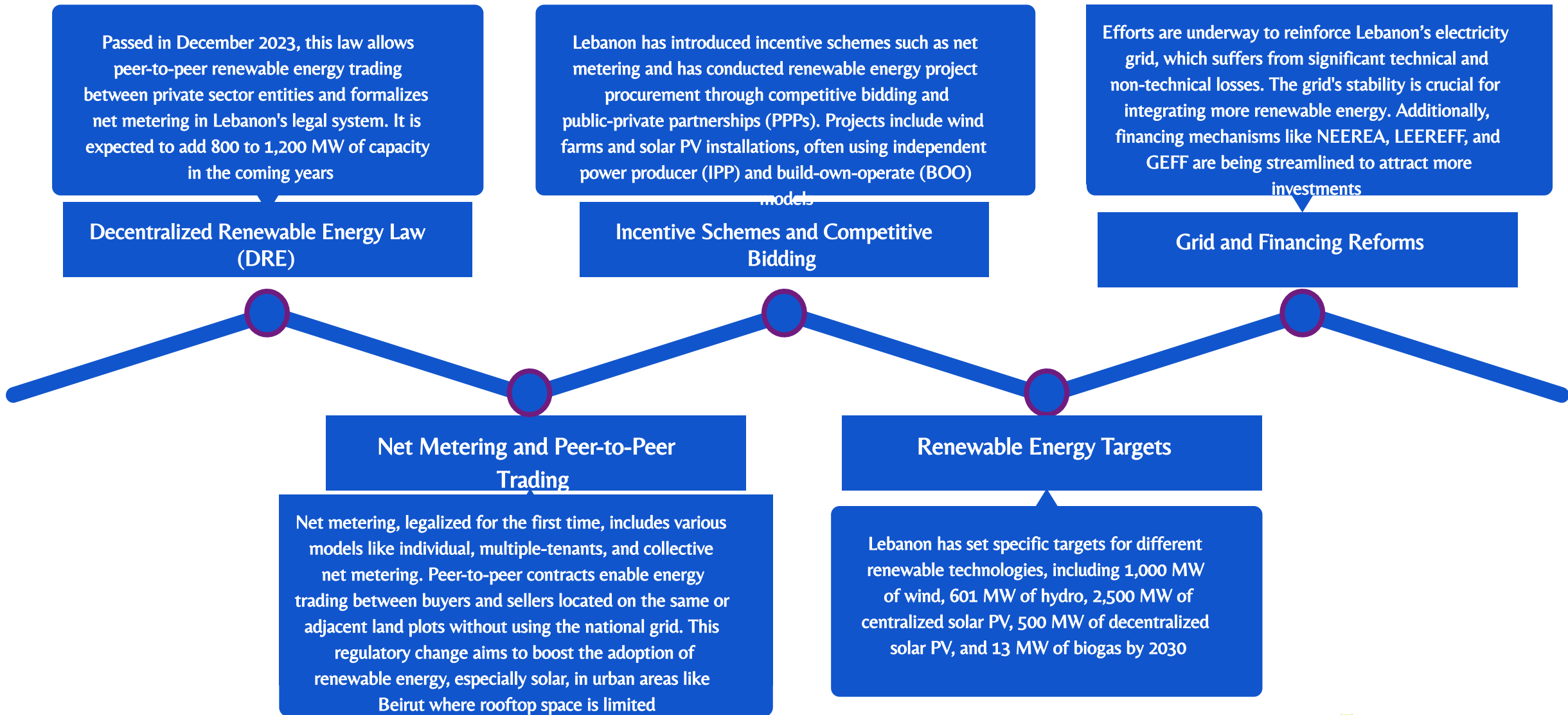
Lebanon has been pursuing renewable energy development for more than a decade with the aim of enhancing its energy security, sustainability, and affordability. To achieve this goal, Lebanon has adopted various government regulations and policies that support the deployment of renewable energy sources in its energy mix.

For example, Lebanon has set a national target of reaching **30% renewable energy share by 2030** and has passed a law to establish an **independent Electricity Regulatory Authority** to oversee the electricity sector. However, the authority has not been operational yet due to political delays.

Furthermore, Lebanon has introduced several schemes to incentivize renewable energy generation and consumption, such as **net metering**. Additionally, Lebanon has procured renewable energy projects through **competitive bidding** processes and **public-private partnerships (PPPs)**, involving wind farms and solar PV projects. Some of these projects are also based on **independent power producer (IPP)** and **build-own-operate (BOO)** models, where private entities own and operate the power plants and sell electricity under **power purchase agreements (PPAs)**.



Regulatory Framework



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Government Regulations and Policies

Net metering in Lebanon, adopted and approved by Electricité du Liban (EDL) through Decision No. 318-32/2011, remains a significant policy for renewable energy integration in 2024. The net metering scheme allows subscribers to offset their monthly electricity bills by feeding excess electricity generated by their solar PV systems back into the grid. This excess generation is rolled over to the next billing cycle, and any surplus at the end of the fiscal year is not financially remunerated but is considered a contribution to EDL's electricity production. This arrangement discourages the oversizing of solar PV systems beyond the average annual energy consumption, as it increases the initial cost without proportionally increasing the financial return, thereby extending the system's payback period.

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Tariff

As of February 2023, the Lebanese government has made significant changes to the electricity tariffs for diesel generators in response to the ongoing economic crisis and fluctuations in fuel prices. The latest updates reflect adjustments due to the volatile exchange rate and increasing operational costs. Here are the updated rates:

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Exchange Rate and Economic Context:

The official exchange rate has been adjusted for July 2024 to 89,000 LBP per dollar, which is still below the black market rate, hovering around 90,000 LBP per dollar.

Tariff

For 2023, the diesel generator electricity pricing structure in Lebanon can be updated using the official exchange rate of 89,000 LBP per USD and the black market exchange rate of 90,000 LBP per USD as follows:

Cities or Overcrowded Communities (Altitude < 700 meters)

5 Amp Capacity:

Official Rate:

Black Market Rate:

10 Amp Capacity:

Official Rate:

Black Market Rate:

Remote Villages or Areas (Altitude > 700 meters)

5 Amp Capacity:

Official Rate:

Black Market Rate:

10 Amp Capacity:

Official Rate:

Black Market Rate:

Additional 5 Amp Capacity

Official Rate:

\$2.81

Black Market Rate:

\$2.11

Source: Ministry Of Energy and Water and Market Expert

Tariff

The electricity tariffs in Lebanon for 2023 have indeed been updated after many years. According to reliable sources, the new tariffs are structured as follows:

KWh	Tariff LBP	Tariff (USD)

Electricité du Liban (EDL) - 2023

The dollar-based tariff is determined by an exchange rate of 90,000 pounds per dollar

Solar PV Energy Market Landscape

Solar PV Capacity By Sector

The solar photovoltaic (PV) market in Lebanon continues to grow, driven primarily by private sector investments. The industrial, commercial, and agricultural sectors are at the forefront of this expansion, representing the top three sectors in terms of installed capacity.

Industrial Sector:

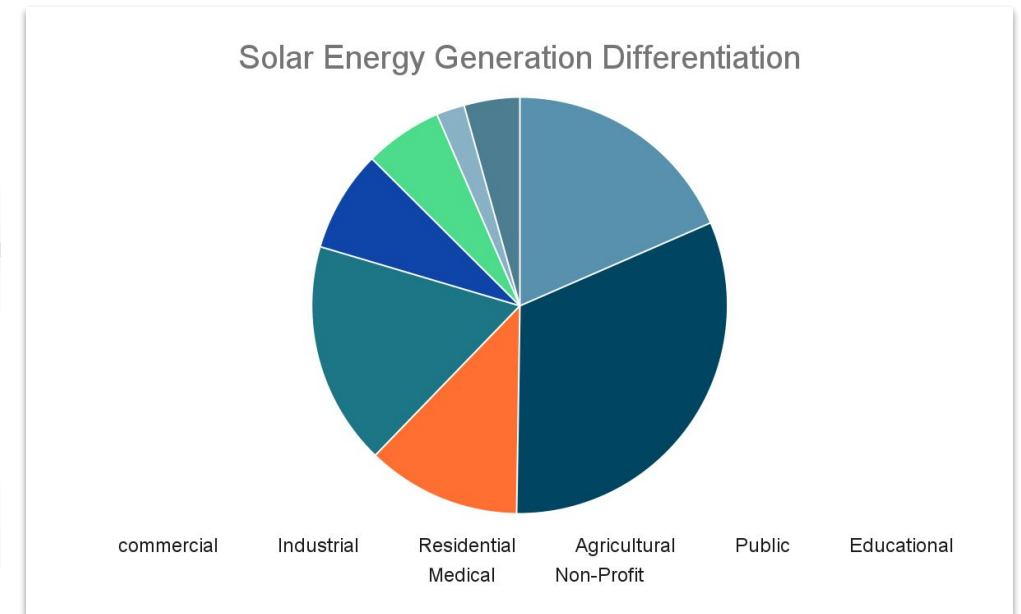
- **Installed Capacity:** xxxx MW
- **Drivers:**

Commercial Sector :

- **Installed Capacity:** xxxx MW
- **Drivers:**

Agricultural Sector :

- **Installed Capacity:** xxxx MW
- **Drivers:**



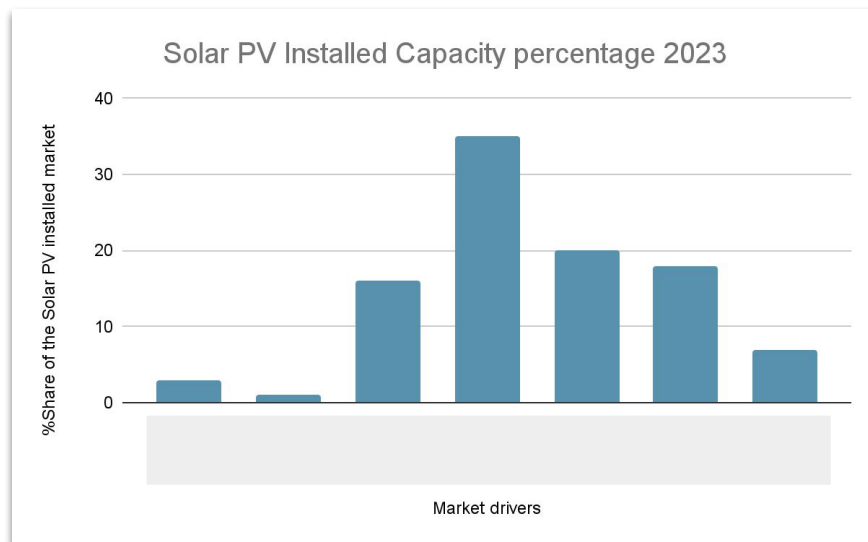
Source: Interviews with market specialists

Solar PV Installed Capacity

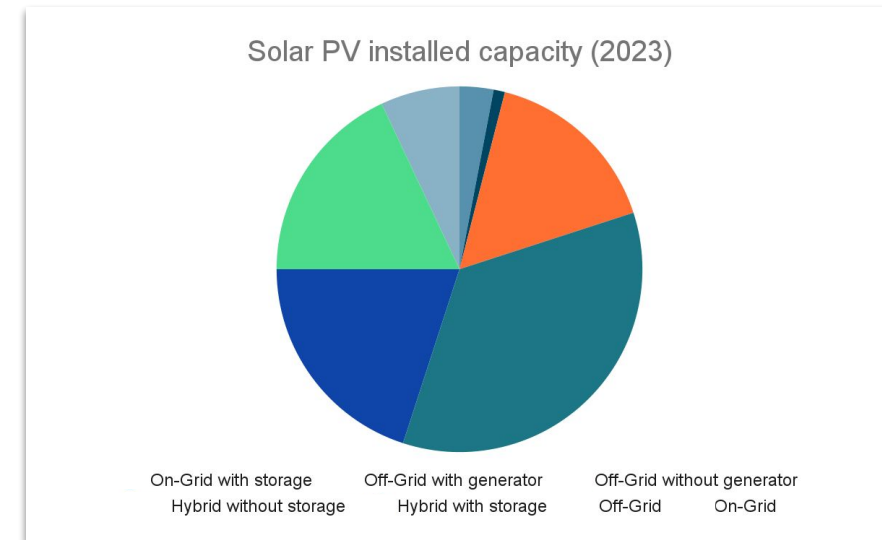
In 2020, the top three project types prevailing in the PV market in Lebanon were hybrid without storage (xxxx MW) , on-grid (xxxx MW) , and on-grid with storage (xxxx MW) . By 2023, these categories have expanded significantly:

- **Hybrid without storage** : Approximately xxx MW .
- **On-grid** : Approximately xx MW .
- **On-grid with storage** : Approximately xx MW .

These expansions highlight the growth and diversification of the solar PV market in Lebanon, despite the challenges posed by the ongoing economic and political crises.

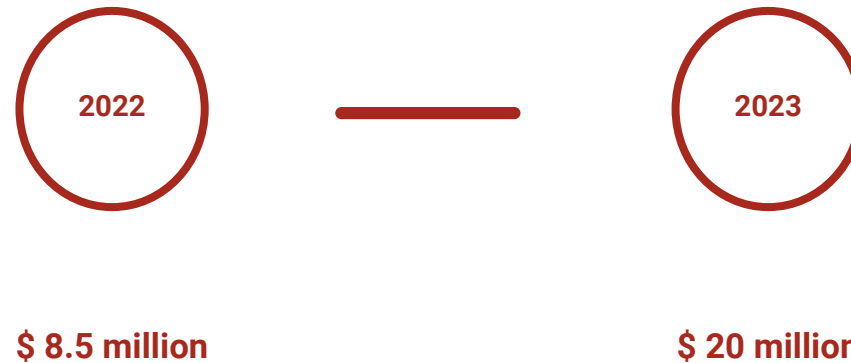


Source: interviews with market specialists

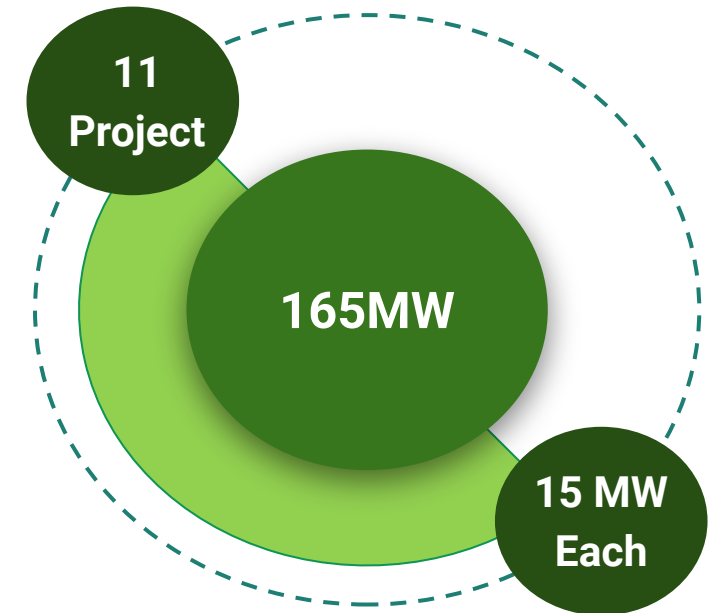


Source: interviews with market specialists

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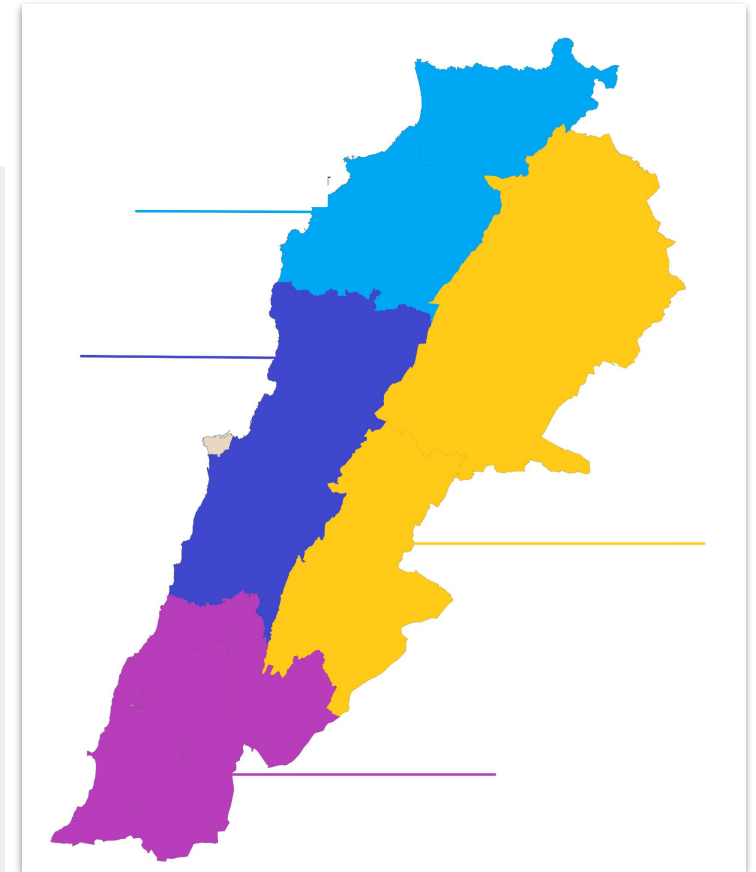
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Major Upcoming Solar PV Projects

The 11 licensed companies operating in various governorates are as follows:

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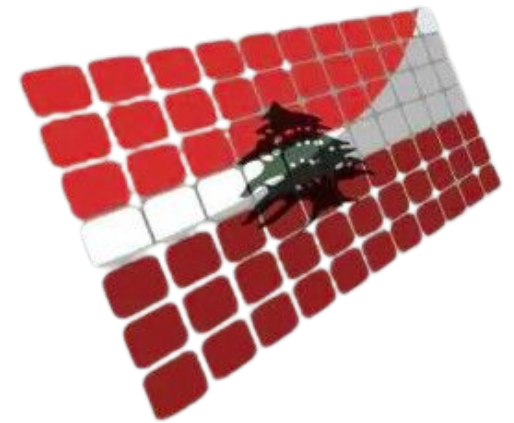


Source: (LCEC)

Solar Sector Challenges

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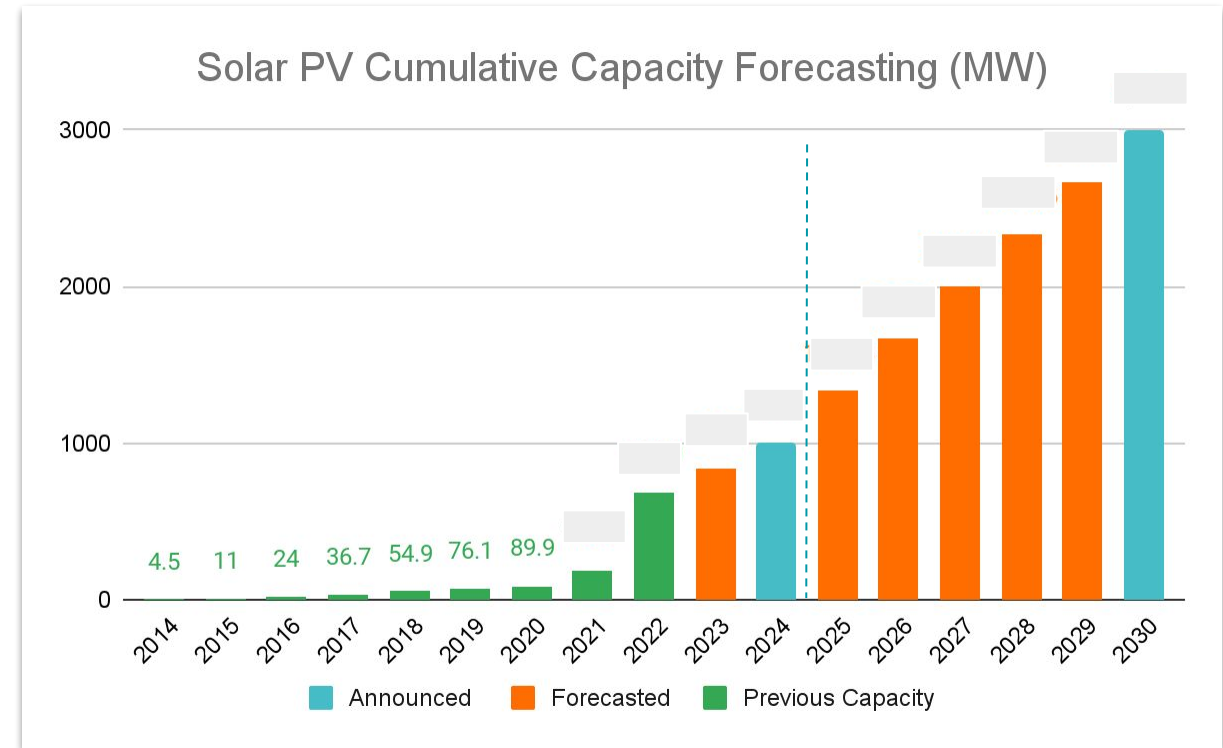
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Solar PV Market Forecasting

As of February 2024, the Lebanese solar PV market has shown significant developments despite ongoing economic and infrastructural challenges. The government remains committed to its renewable energy targets, aiming for **xxxx MW by 2024** and **xxxx MW by 2030**.

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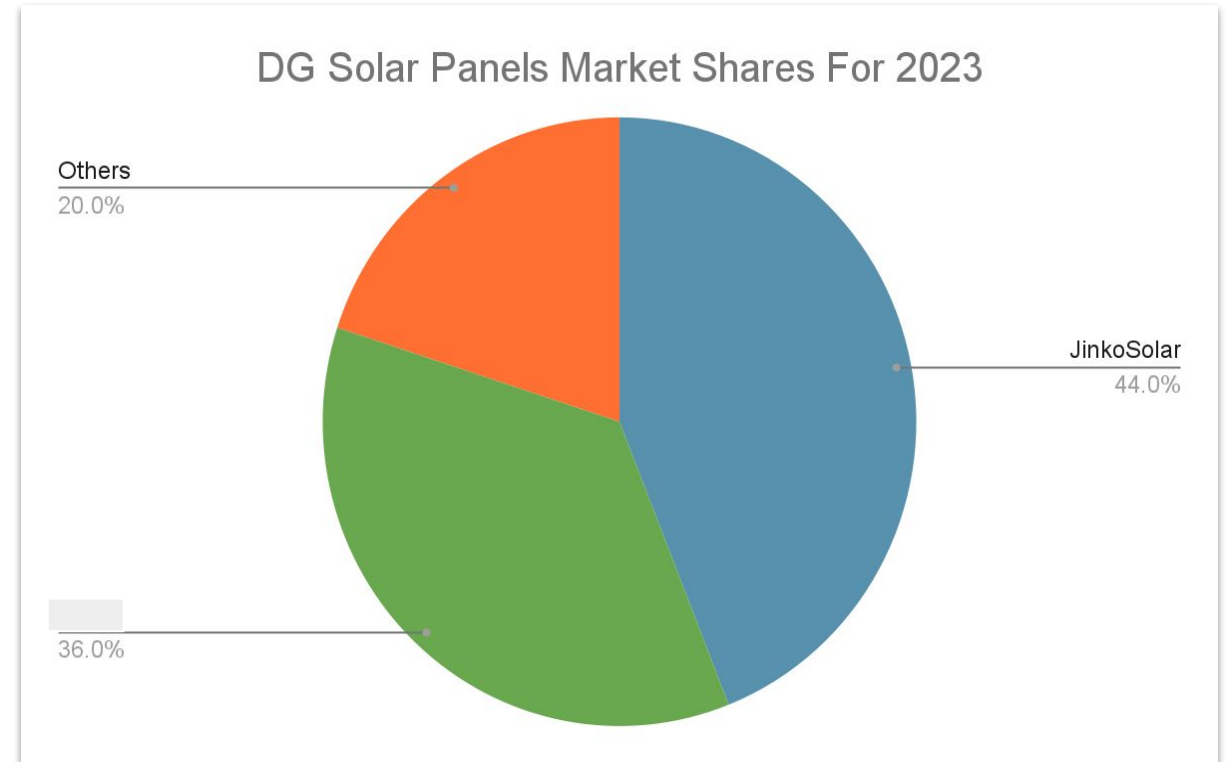


Source: LCEC, interviews with EPC'S Solarabic's estimate for 2023 - 2030

Solar PV Market Forecasting

In 2023, the total solar PV market share in Lebanon is approximately xx MW. [redacted] holds a dominant position with a market share of xx MW, while [redacted] holds xx MW. Other companies, including [redacted] collectively account for 50% of the market.

**The year 2023, [redacted] has reclaimed the leading position from [redacted] which had dominated the market in 2022*

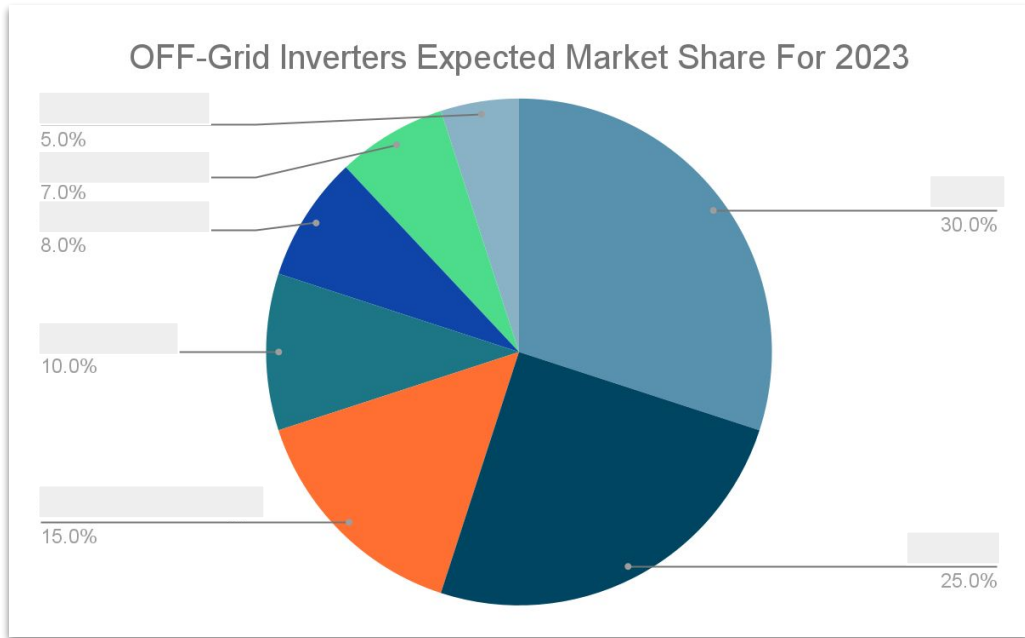


Source: Interviews with Market Experts by Solarabic

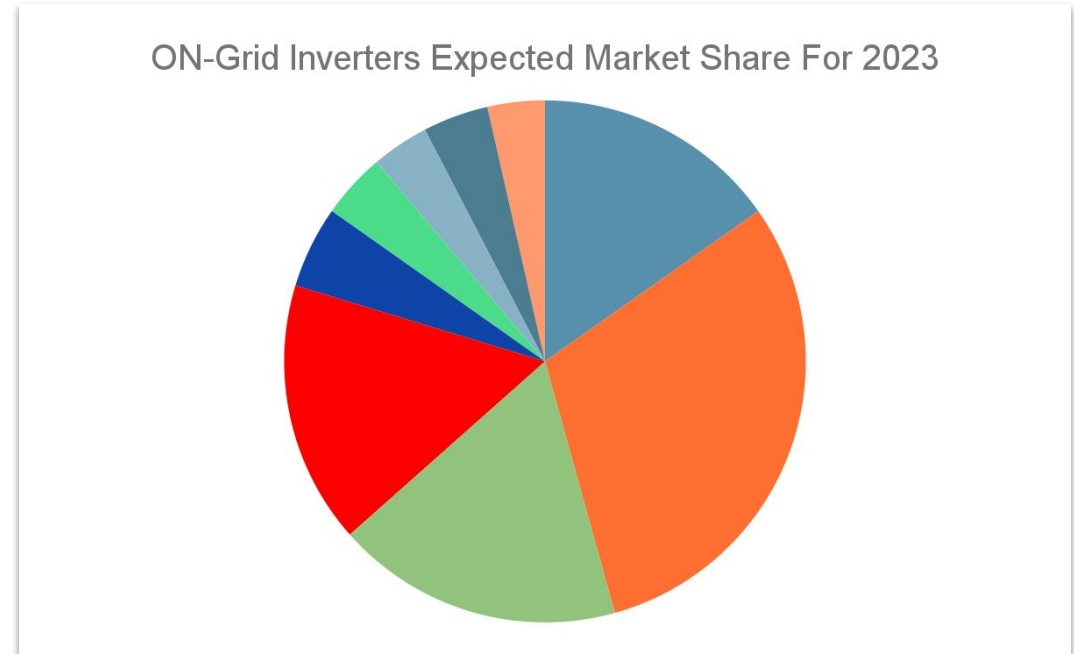
Solar PV Market Forecasting

As of 2023, the off-grid market in Lebanon continues to experience significant shifts in market share. In recent years, the market was predominantly led by M [redacted] However, G [redacted] and [redacted] have emerged as the major players in this sector.

In this market are [redacted] with xx MW, [redacted] with xx MW, [redacted] with xx MW, [redacted] with xx MW, and other companies like [redacted] with xx MW, [redacted] with x MW, [redacted] : x MW, [redacted] : x MW, Other Companies: x MW



Source: Interviews with Market Experts by Solarabic



Source: Interviews with Market Experts by Solarabic

Solar PV Market Forecasting

Lebanon has set a target of generating xx% of its total electricity demand from renewable energy sources by 2030. This includes installing xxx MW of rooftop solar systems and xxxx MW of utility-scale solar projects by 2030.

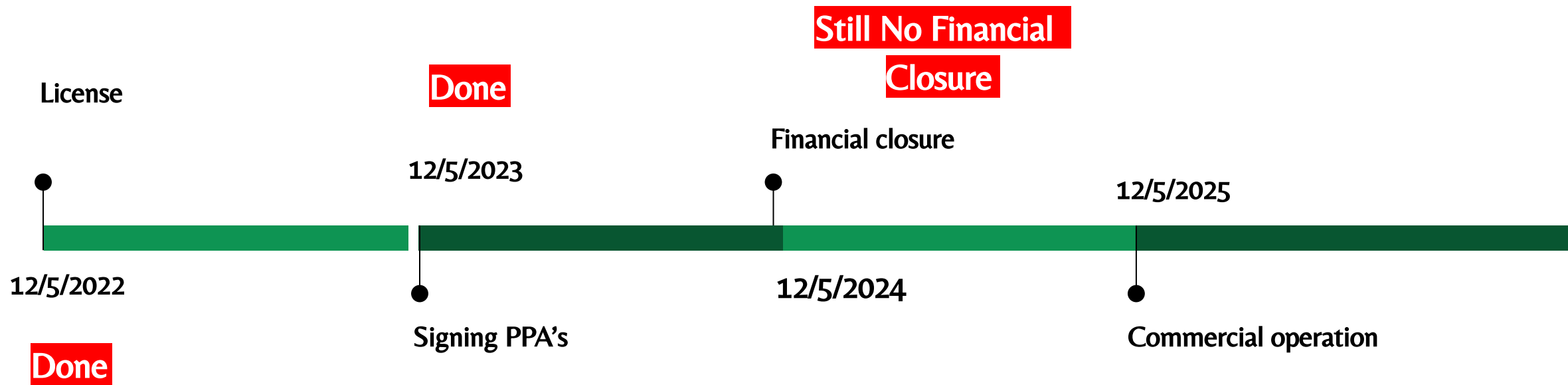


Tendering Process for Large Utility-Scale Renewable Power Projects: Latest Update

For the xxx MW project, the timelines can be condensed as follows:

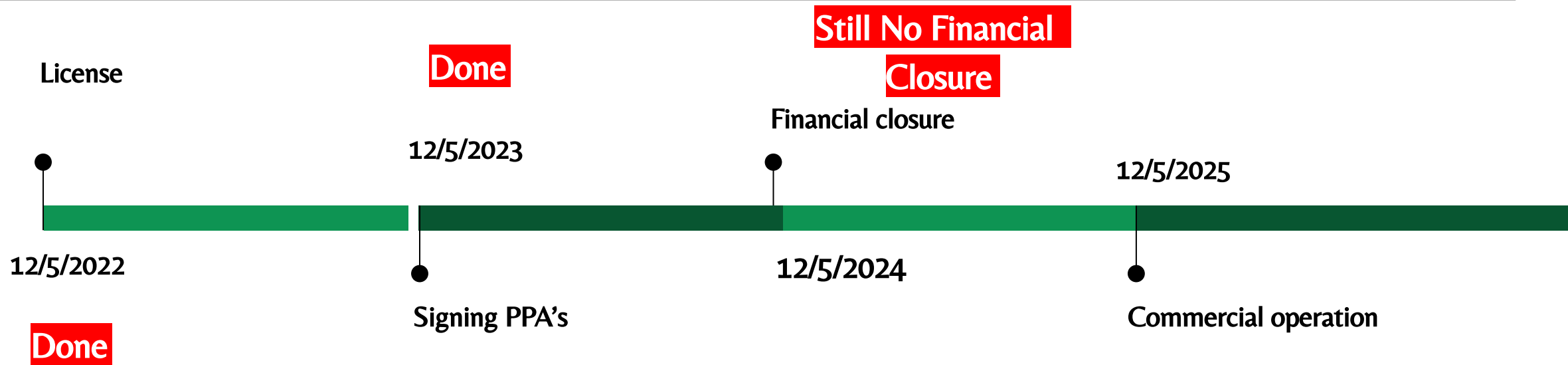
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Tendering Process for Large Utility-Scale Renewable Power Projects: Latest Update

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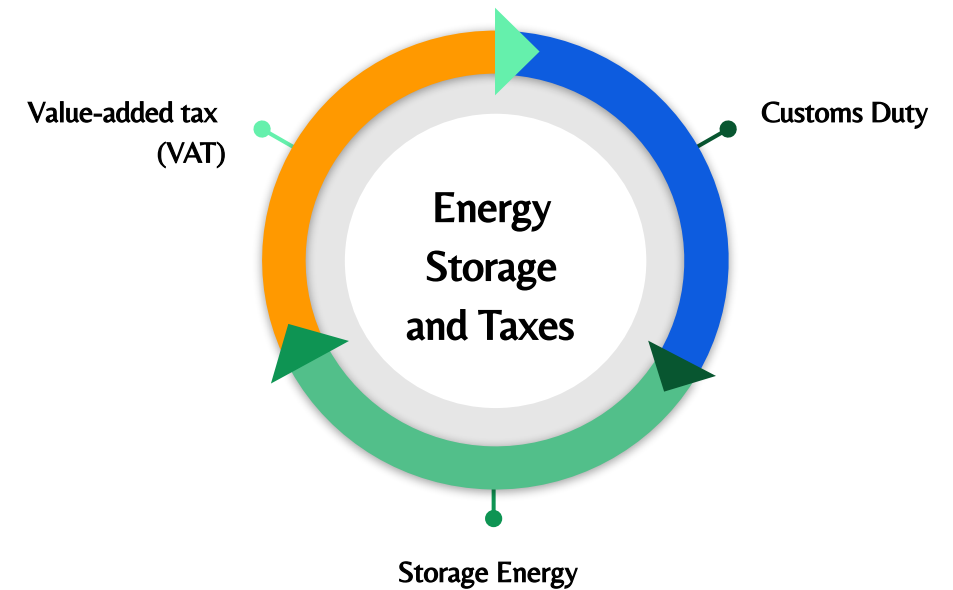


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Legal and Regulatory Framework for DG Solar Projects

Regulatory Framework for Energy equipment and Taxes:

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EPCs Persona



Team Size

~ X

A Beirut based PV and solar-diesel hybrid projects EPC in Lebanon with a small and young team but a very professional and experimental approach. The company is active in the following sectors:



Residential



Commercial & Industrial



Track Record

+X MW

The company focuses on special applications including:

- On-grid solar systems
- Off-grid solar systems
- Solar-Diesel hybrid systems
- Water pumping PV systems
- Building Integrated Photovoltaic (BIPV) systems



Pipeline

Y MW

They use the following brands:

Solar Inverters:



PV Panels:



TOP 5 References

Project	Capacity
Kfarmishki hybrid PV-Diesel System	55 kW
IC School	80 kW
Zrariyeh	30 KVA
Blawza, Solar Water Pumping System	30 KW
Bechmezzine, 3-Phase On-grid with back-up	17 Kw

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Distributors Persona

Distributors Persona

In this section, a deeper entry into Lebanese markets has been conducted.

The accredited PV solar modules, inverters, and other products/ components manufacturers are identified and their authorized distributors and resellers have been studied.

The distributor's persona has been identified, and the following data is included in all of the organizations personas:

1. Organization name.
2. Organization HQ country.
3. Organization sector.
4. Provided services.
5. Office's location.
6. Brands they distribute/ resell.
7. If they provide extra services after distribution/ resale (after-sales services, maintenance, marketing...).
8. Telephone number.
9. Website.

Extra information is added to some of these organizations such as:

1. Founding Date.
2. Installing/ sales volume.

These data are not available for all the distributors because some of companies preferred to not share such information.

Distributors Persona

ASACO General Trade & Contracting is a Lebanese company, specialized in providing solutions in water, wastewater, power, heavy machinery and parts, and logistics sectors.

ASACO is founded since 1998 and based in Lebanon.

ASACO does provide special marketing services, maintenance and after-sales services.



PV modules:



Inverters:



Batteries:



Contact info:

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www.asacogtc.com