



Mergers & Acquisitions



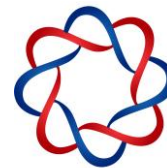
Project Finance



Strategic Advisory

Financing of small and mid-scale solar power projects in Jordan

Challenges and recommendations




Climate and Energy Project
مشروع الطاقة والمناخ



3rd December 2018

SUMMARY

- 
1. **Introduction to FINERGREEN**
 2. Overview of the solar market in Jordan
 3. Challenges and solutions to financing
 4. Conclusion



1. FINERGREEN – OUR MISSION

*WE ARE A TEAM DEDICATED TO **FINANCING THE ENERGY TRANSITION**. THANKS TO A UNIQUE POSITIONING IN THE MARKET, WE OFFER A **TRIPLE EXPERTISE** TO SUPPORT OUR CLIENTS.*

MERGERS & ACQUISITIONS

FINERGREEN is a specialist in the bid management of acquisition processes, both for buy-side and sell-side transactions. Our project team (either on greenfield or brownfield assets) also operates on equity financing operations, which are key steps in the growth journey of companies operating in this sector.



PROJECT FINANCE

A renewable energy project is highly capital intensive. Its financing requires the establishment of long term finance agreements with banking institutions. FINERGREEN has deep expertise in such contracts, which enables us to determine the most suitable legal and financial structure for each of these transactions.

STRATEGIC ADVISORY

Whether public or private, clients who make the energy transition happen are constantly evolving. We help these clients adapt to market changes, which often requires changing their business models. Additionally, we also execute high value-added missions such as independent valuations, financial audits, etc



1. FINERGREEN – OUR PRESENCE

PRESENCE ACROSS THREE CONTINENTS THROUGH OFFICES IN
PARIS, ABIDJAN, DUBAI AND SINGAPORE

COMPLETED
TRANSACTIONS

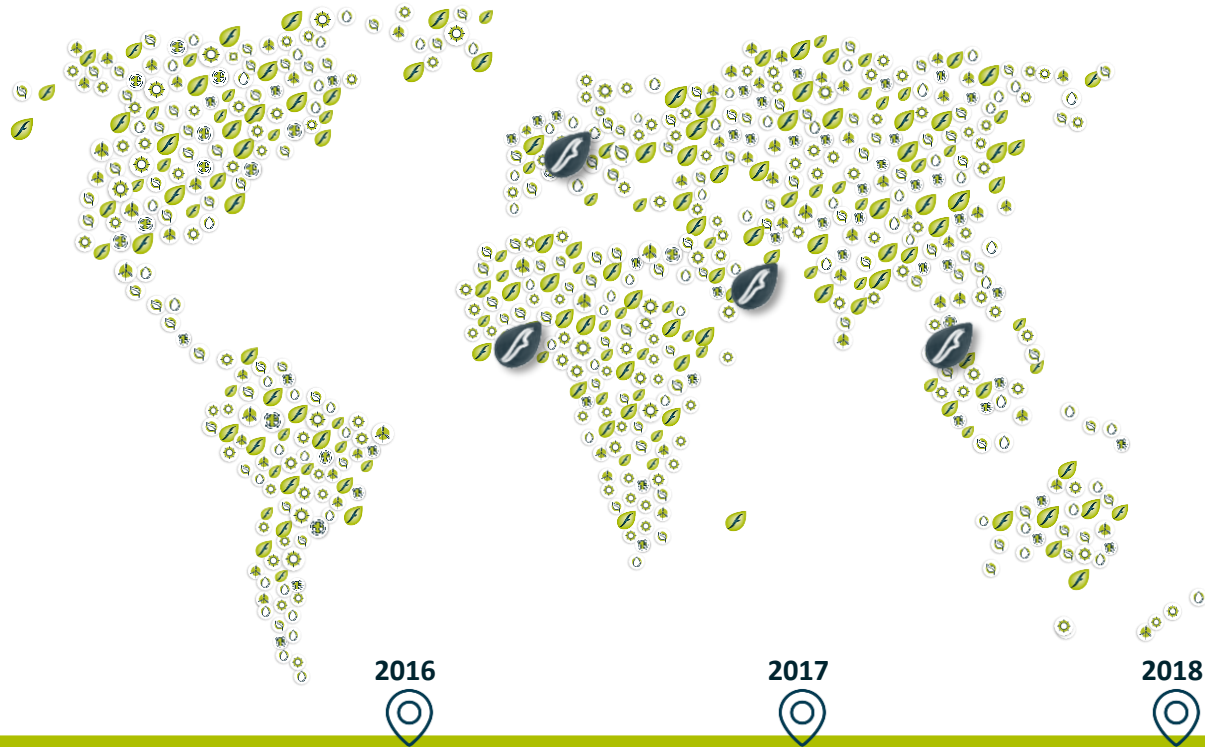
800
M€

PROJECTS
FINANCED

1 306
PLANTS

TOTAL
CAPACITY

520
MW



2013



FINERGREEN
32 rue de Paradis
75010 Paris
France

2016



FINERGREEN AFRICA
2 Plateaux, Rue des Jardins
Cocody, Abidjan
Ivory Coast

2017



FINERGREEN ASIA
541 Orchard Road
#09-01 Liat Towers
Singapore 238881


2018



FINERGREEN MENA
Reef Tower - JLT
P.O. Box 931 033
Dubai - UAE

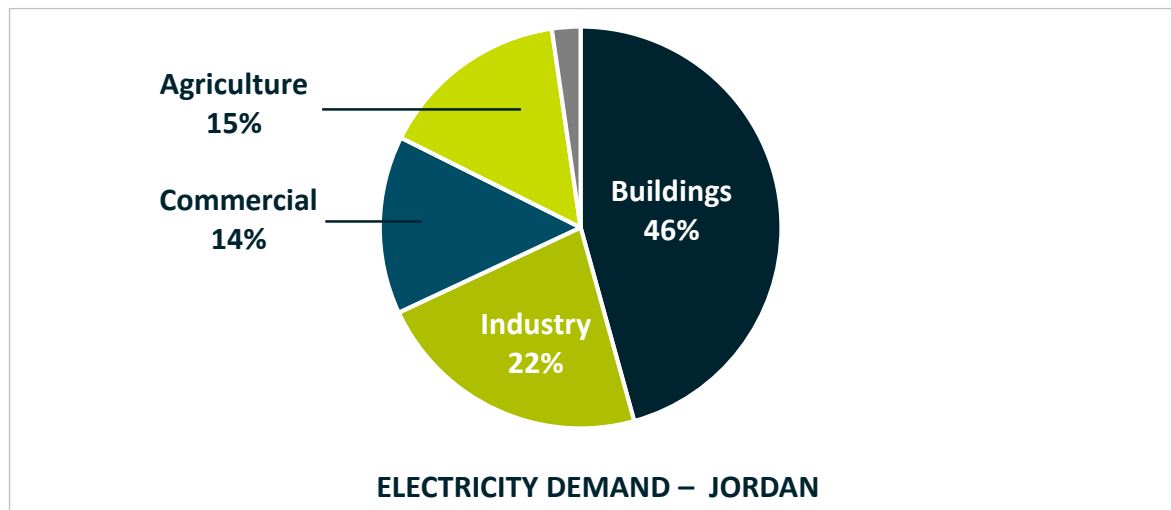
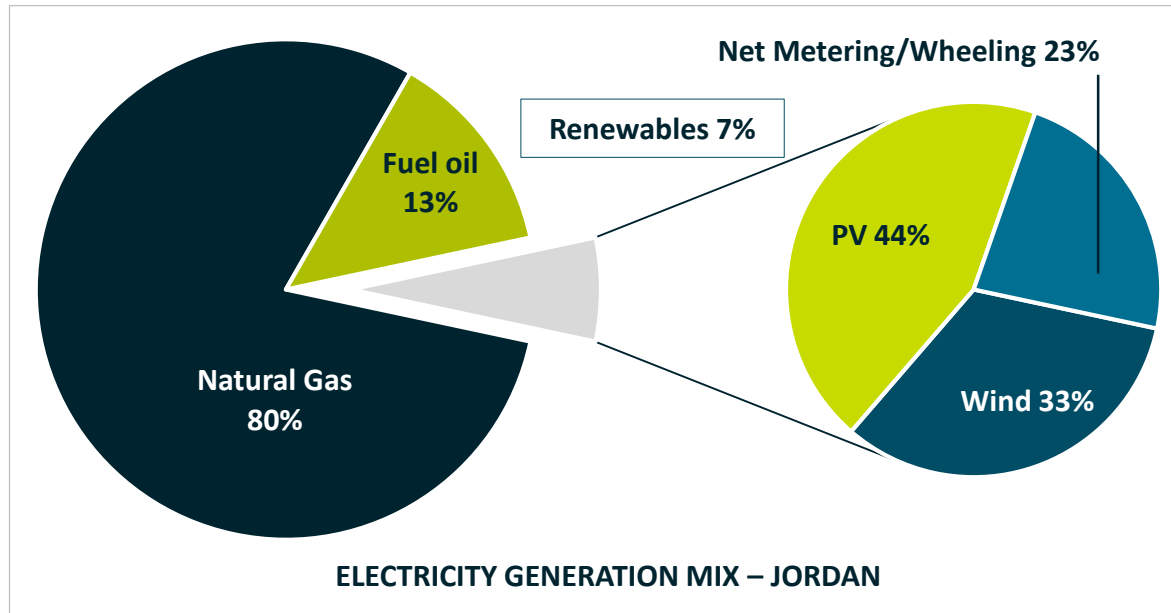


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2. SOLAR MARKET IN JORDAN – OVERVIEW



KEY FACTS

- ▶ Electricity generation is derived from imported natural gas and fuel
- ▶ Electricity produced from renewable energy sources accounts for around > 7% of total production
- ▶ 44% of electricity from renewable energy sources comes from solar
- ▶ 23% of electricity from renewable energy sources comes from Net Metering / Wheeling
- ▶ Over 40% of Jordan's electricity consumption is from households
- ▶ 20% of the total electricity generation will stem from renewable energy sources in 2020
- ▶ By end of 2017, all commissioned renewable projects accounted for a total capacity of close to 730 MW

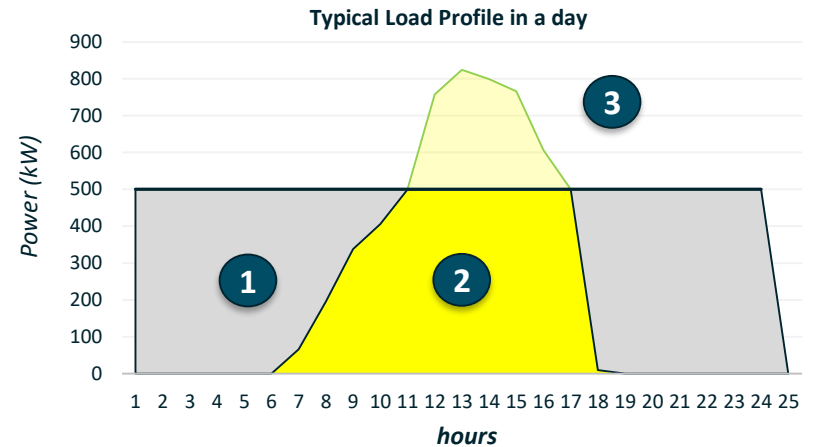


2. ROOFTOP SOLAR – OVERVIEW

- ✓ **ROOFTOP SOLAR TECHNOLOGY** forms an important part of Distributed Energy Resources.
- ✓ It allows homeowners, businesses, and communities to take advantage of the abundant solar resource to achieve reliability and self sufficiency in their energy supply.



Residential Rooftop 10 kW – Amman, Jordan



- 1 Load, from grid
- 2 Solar power produced in the day
- 3 Excess solar power available to export

SOURCE	CONSUMPTION*
Existing Buildings	150-200 kWh/m2/year
Factory (with no AC)	2.5 GWh/year
Factory with heavy machinery	>7 GWh/year
Installing PV could produce up to 1.7 GWh/MWp/ year	

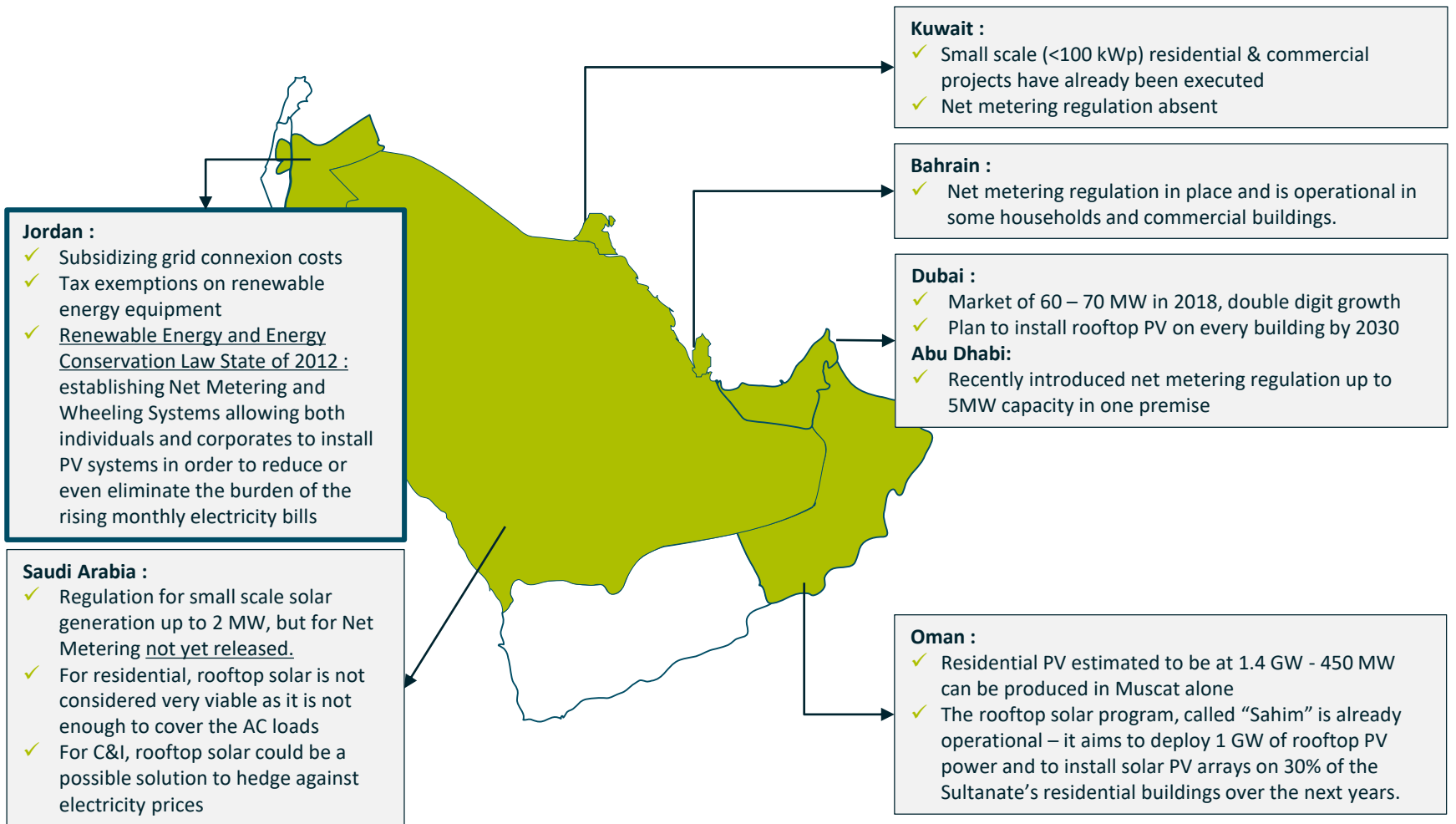
*UAE figures

- ✓ Falling prices of PV technology
- ✓ Supporting Financing Structures
- ✓ Hedging against electricity prices
- ✓ Reducing operating costs
- ✓ Improving reliability
- ✓ Focus on Sustainability and energy efficiency



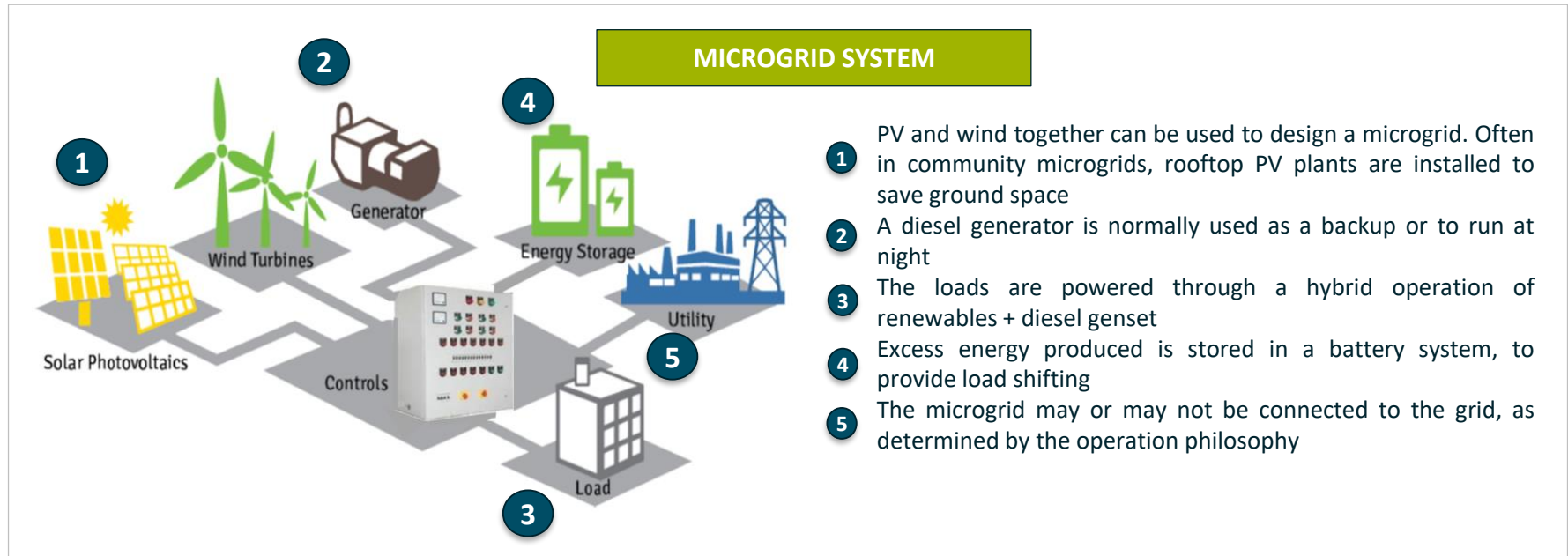
2. ROOFTOP SOLAR – A DEVELOPING MARKET

ROOFTOP SOLAR IN THE MIDDLE-EAST – POTENTIAL MARKET TO DEVELOP IN THE UPCOMING YEARS



2. MICRO GRIDS – GENERAL DESCRIPTION

- ✓ **A MICROGRID** is a group of interconnected loads and distributed energy resources that acts as a single controllable entity with respect to the grid.
- ✓ It can connect and disconnect from the grid to operate in grid-connected or island mode. Microgrids can improve customer reliability and resilience to grid disturbances.

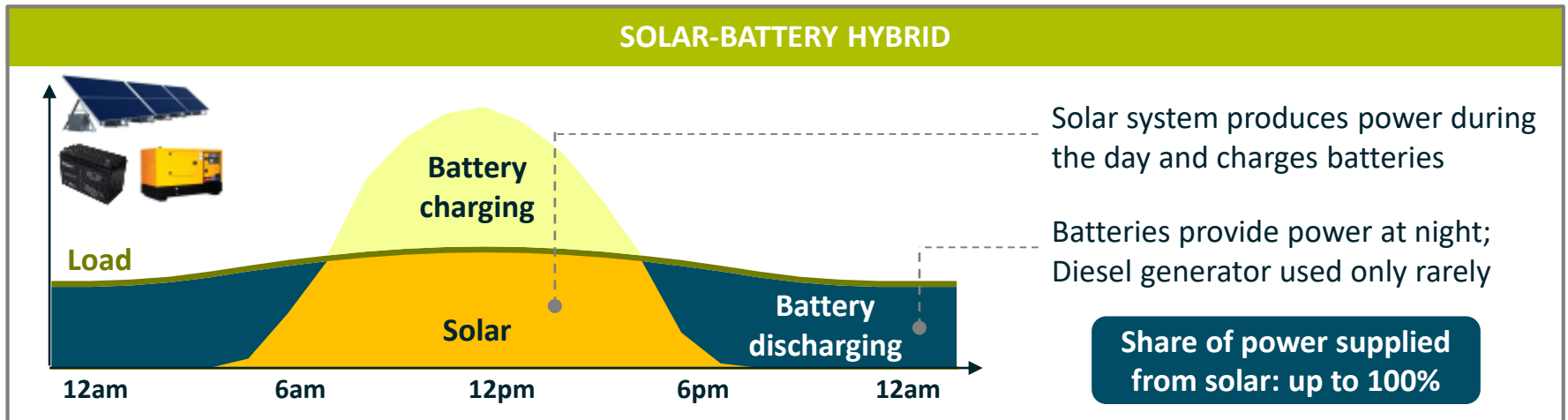
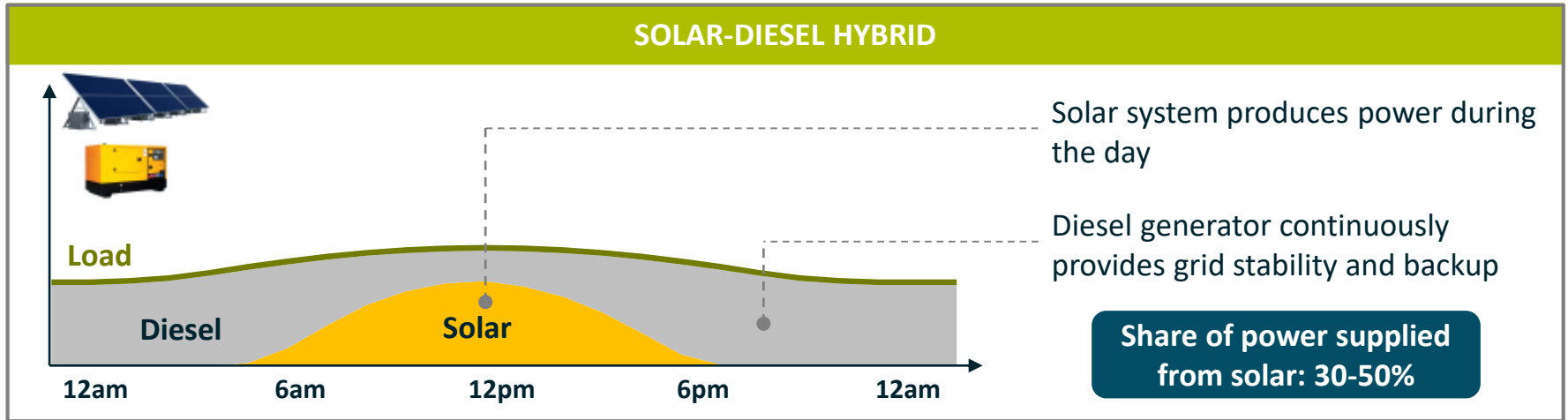


KEY POINTS

- ✓ A microgrid can be composed of 100% renewables with proper sizing and storage
- ✓ Microgrid controller is the brain of the system and dictates the smooth operation of the setup
- ✓ Such microgrids is vital for offgrid areas or small island nations



2. MICRO GRIDS – CASE STUDY

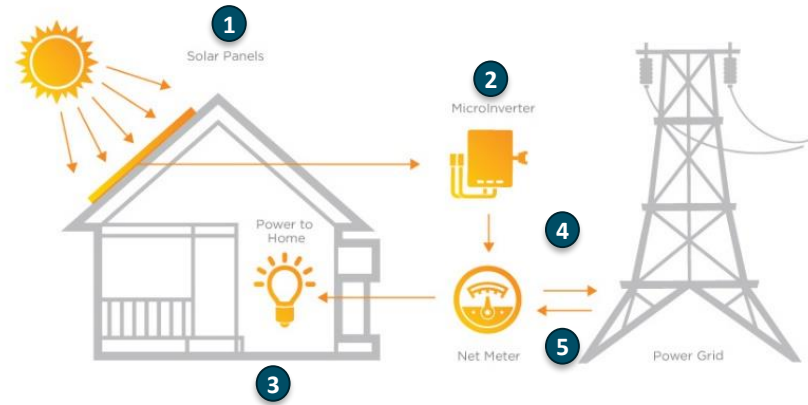


2. NET METERING/WHEELING

- ✓ **NET METERING** allows end users to offset retail electricity purchases by using output from on-site solar generation systems and to receive a credit or payment for the net excess electricity that is generated and exported to the grid.
- ✓ **WHEELING** allows solar electricity to be generated in one location and purchased directly by a company or institution in another location. This allows companies or institutions that may not have appropriate land or roof space, such as a hotel or shopping mall, to enjoy the cost savings of solar energy.

ROOFTOP SYSTEM

- 1 PV modules on the rooftop produce electricity
- 2 The PV Inverter converts the PV Direct Current into Alternating Current
- 3 The power used for self consumption is connected to loads inside the house/facility
- 4 The excess electricity is exported to the grid operator
- 5 Deficit power is imported from the grid




KEY POINTS

- ✓ Excess energy sent to grid can be compensated as credit
- ✓ Maximum size of Rooftop PV must not exceed self consumption limit.



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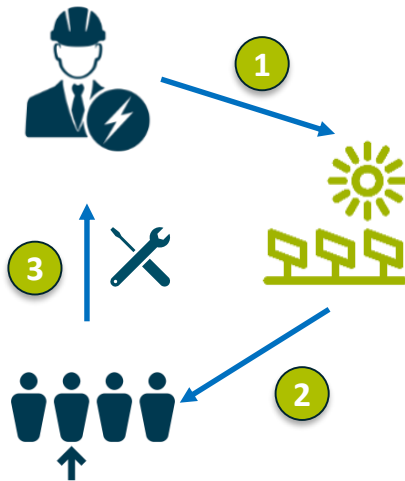
3. PURCHASE MODEL – PRESENTATION

INNOVATIVE FINANCING HELPS RAMP UP THE ADOPTION OF SOLAR ROOFTOP PROJECTS

- ▶ In the Purchase Model, the client offers to procure a rooftop PV system from a Solar EPC company.
- ▶ Client takes over control once the plant is commissioned
- ▶ The Client has full operational control, and can obtain the most effective solution
- ▶ Typical payback period of 7-10 years

FOR THE CLIENT:

- Full upfront Investment
- Complete operational responsibility
- Common when client wants to develop inhouse capabilities to operate a PV Plant, and replicate in other scenarios



HOW IT WORKS:

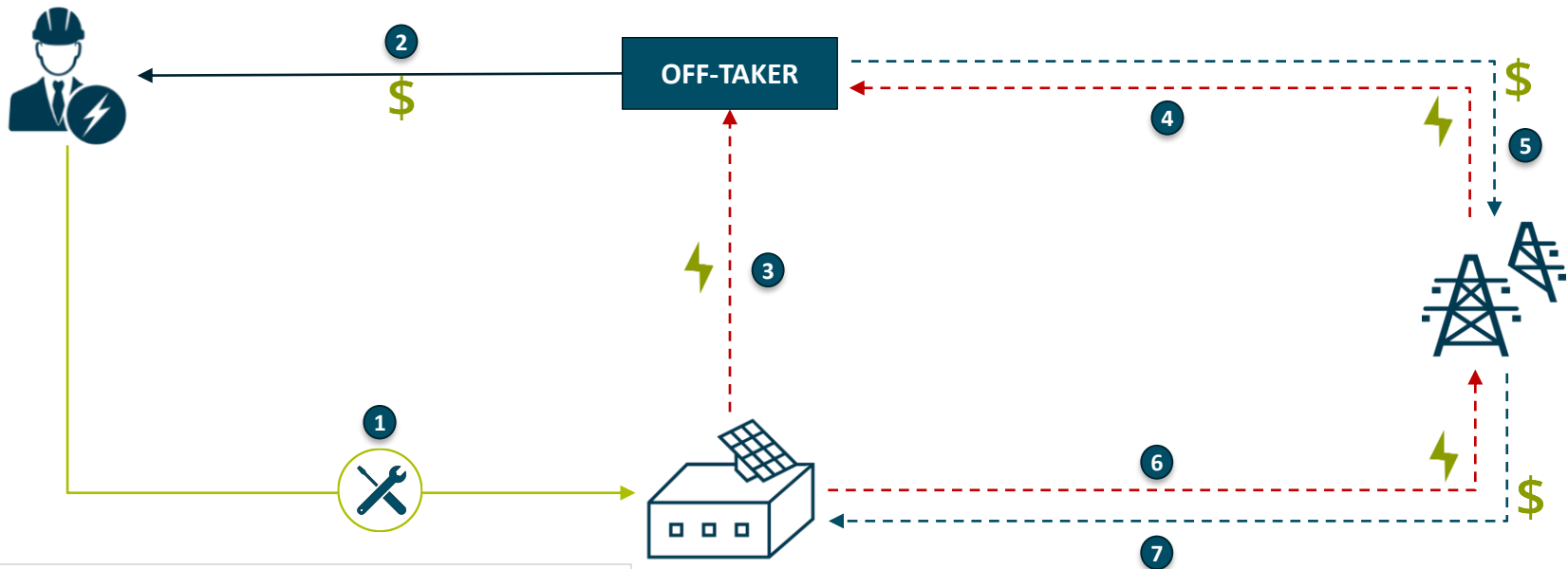
- 1 EPC company constructs and commissions the PV plant
- 2 Power produced by PV plant is used by client, excess is injected to grid
- 3 Client takes care of the O&M of the plant, EPC contractor only liable for warranty issues

Client Benefits:

- ✓ Electricity produced is essentially free after payback period
- ✓ Long term savings
- ✓ Self sufficiency



3. PURCHASE MODEL – FULL EQUITY FINANCING

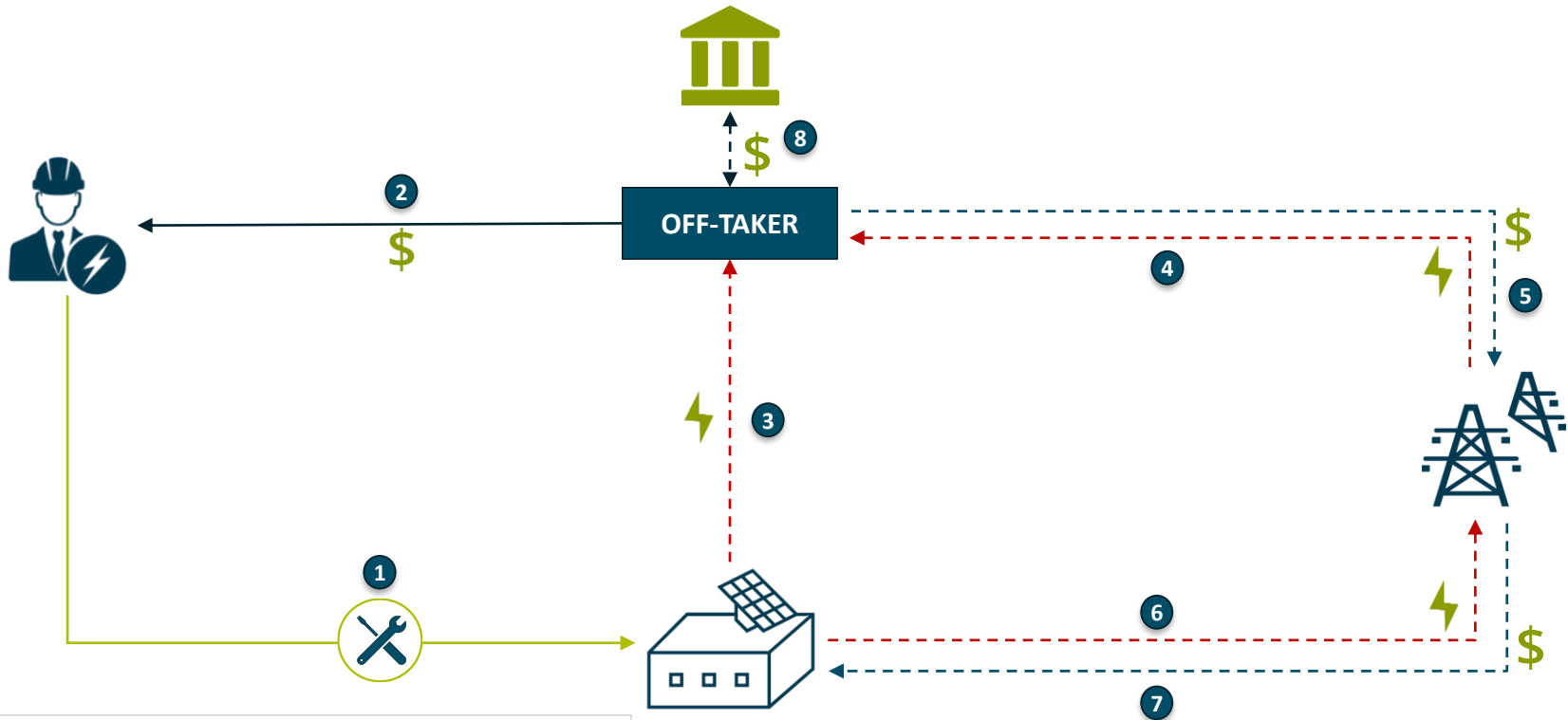


--▶ Power flow —▶ Cash flow - -▶ Recurring Cash flow

- 1 COMPANY commits to building the project.
- 2 The OFFTAKER commits to invests the needed CAPEX for the solar rooftop project. It owns the project.
- 3 The solar rooftop generates and supplies clean and free electricity to the OFFTAKER.
- 4 All electricity consumption uncovered by the solar rooftop will be covered by the national grid.
- 5 The OFFTAKER pays the bills of its electricity consumption.
- 6 The excess of electricity produced by the solar system can be fed into the grid thanks to the Net Metering System.
- 7 The grid operator pays amount of electricity fed into the grid at a fixed price.



3. PURCHASE MODEL – CORPORATE DEBT FINANCING



--▶ Power flow —▶ Cash flow - -▶ Recurring Cash flow

- 1 COMPANY commits to building the project.
- 2 The OFFTAKER commits to invests the needed CAPEX for the solar rooftop project and subscribes to a corporate debt facility.
- 3 The solar rooftop generates and supplies clean and free electricity to the OFFTAKER.
- 4 All electricity consumption uncovered by the solar rooftop will be covered by the national grid.
- 5 The OFFTAKER pays the bills of its electricity consumption.
- 6 The excess of electricity produced by the solar system can be fed into the grid thanks to the Net Metering System.
- 7 The grid operator pays amount of electricity fed into the grid at a fixed price.
- 8 The OFFTAKER pays back the loan at the agreed terms and conditions (maturity, rate, etc.)



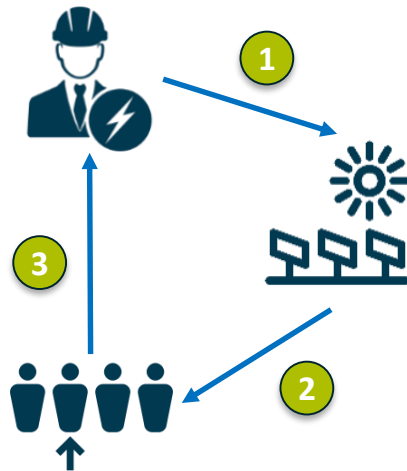
3. LEASE TO OWN MODEL

INNOVATIVE FINANCING HELPS RAMP UP THE ADOPTION OF SOLAR ROOFTOP PROJECTS

- ▶ Solar Leasing is a system whereby the Leasing Company is responsible for the complete engineering, procurement, installation, permitting, operation & maintenance and financing of the solar rooftop plant and the Client just has to pay a monthly/quarterly/annual fee to the company.
- ▶ The leasing service agreement is signed for a specific period until which the plant is guaranteed to produce pre-determined units of energy, and the fee is paid according to this production.

FOR THE CLIENT:

- No upfront Investment
- No operational obligations
- Pay a fixed rent for the use of the PV
- Can purchase the system after a lock-in period
- Owns the PV system at the end of the lease



HOW IT WORKS:

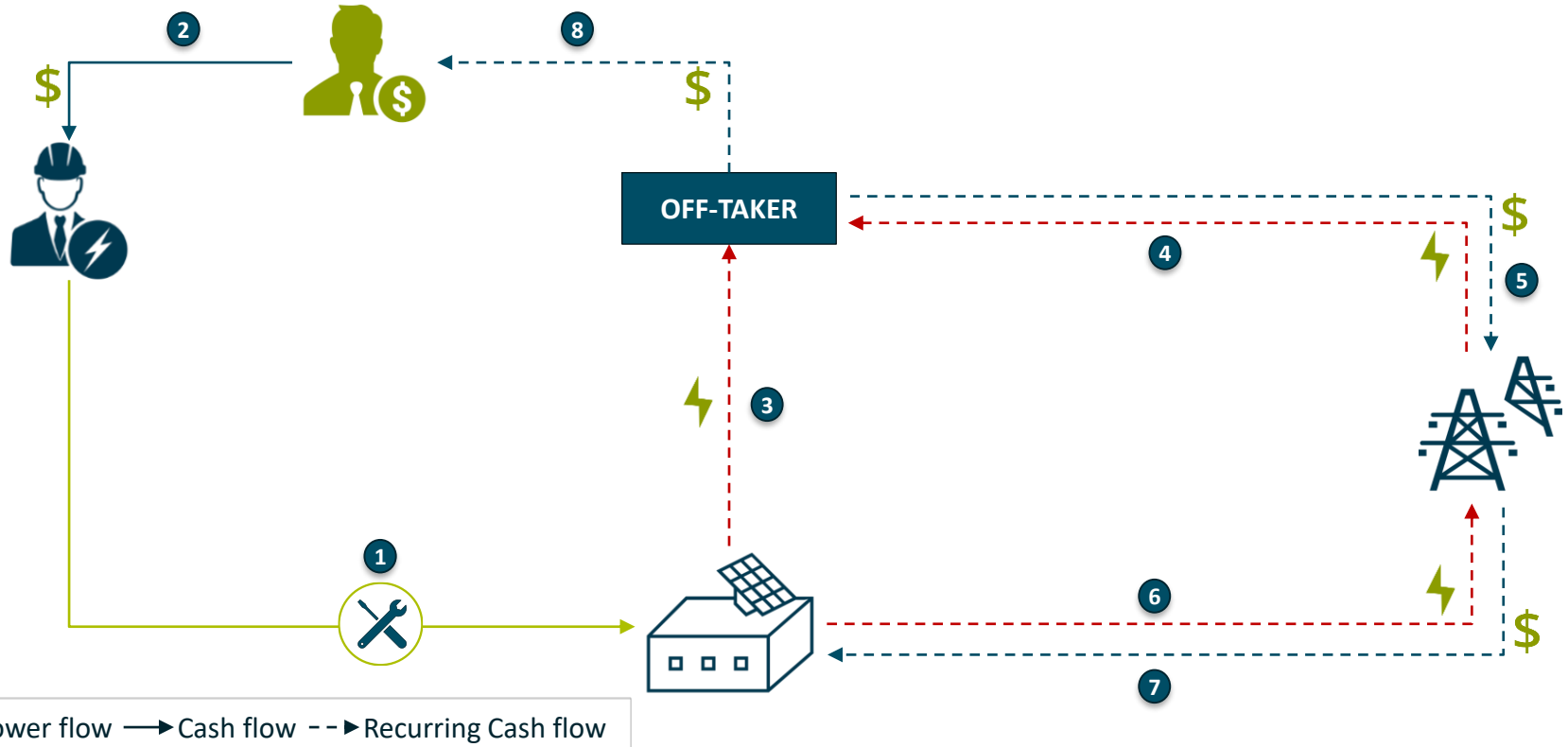
- 1 Leasing company installs, operates and maintains the rooftop PV plant
- 2 Power produced by PV plant is used by client, excess injected to the grid
- 3 Client pays a leasing fee to the leasing company

CLIENT BENEFITS:

- ✓ Lock in dependable predictable energy rates
- ✓ Long term savings
- ✓ Self sufficiency
- ✓ No expertise in solar needed



3. LEASE TO OWN MODEL – INVESTOR FINANCING



- 1 COMPANY commits to building the project.
- 2 The investor makes the upfront investment for the solar system and owns the asset for a period agreed with the OFFTAKER.
- 3 The solar rooftop system generates and supplies a predetermined amount of electricity for each given period to the OFFTAKER.
- 4 All electricity consumption uncovered by the solar rooftop will be covered by the national grid.
- 5 The OFFTAKER pays the bills of its electricity consumption.
- 6 The excess of electricity produced by the solar system can be fed into the grid thanks to the Net Metering System.
- 7 The grid operator pays amount of electricity fed into the grid at a fixed price.
- 8 In return for the electricity provided by the solar system, the OFFTAKER pays a Lease fee to the investor over each period and for the duration of their agreement.



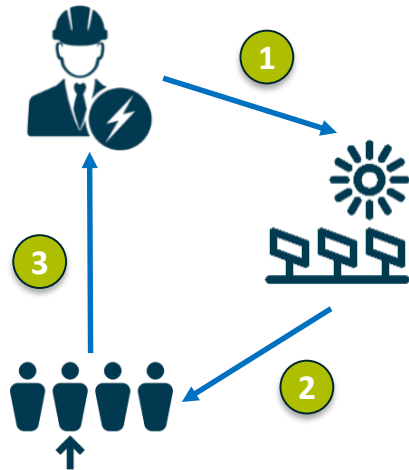
3. PRIVATE PPA MODEL

INNOVATIVE FINANCING HELPS RAMP UP THE ADOPTION OF SOLAR ROOFTOP PROJECTS

- ▶ A Private PPA is a system whereby the company acts a small utility and is responsible for the complete EPC, permitting, operation & maintenance and financing of the solar plant.
- ▶ Above all, it is responsible for providing energy to the local client on a pre-agreed tariff level, usually coming with a discount on the electricity tariff from the grid.
- ▶ The PPA contract is signed for a specific period (between 3 to 20 years).
- ▶ Over this period, the client pays the company for the electricity consumed on a kWh basis.

FOR THE CLIENT:

- No upfront Investment
- No operational obligations
- Pays for the kWh consumed from the company
- The electricity price usually comes with a discount in comparison to the electricity bought on the grid



HOW IT WORKS:

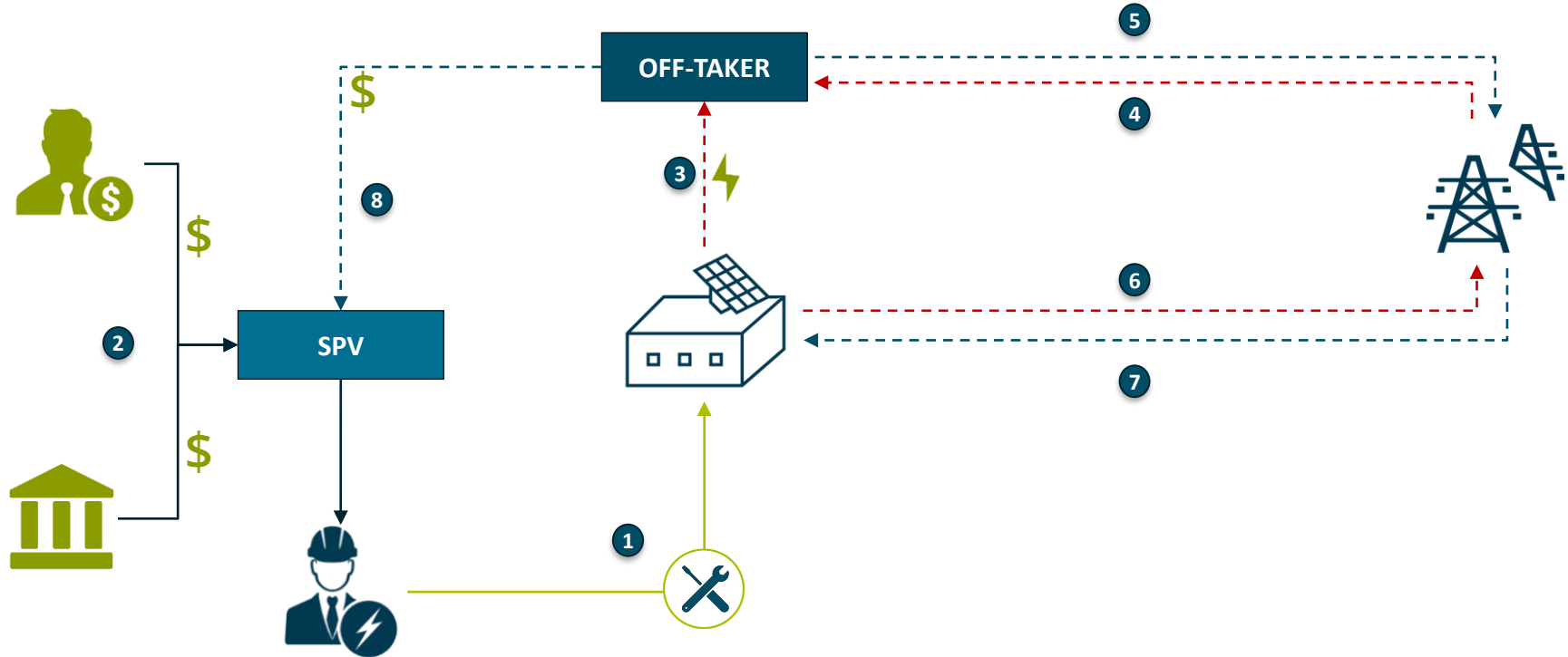
- 1 The utility company installs, operates and maintains the PV plant
- 2 Power produced by PV plant is used by client, the excess may or may not be injected on the grid
- 3 Client pays on a kWh basis to the utility company

CLIENT BENEFITS:

- ✓ Lock in predictable energy rates
- ✓ Long term savings
- ✓ Self sufficiency
- ✓ No expertise in solar needed



3. PRIVATE PPA MODEL – PROJECT FINANCE

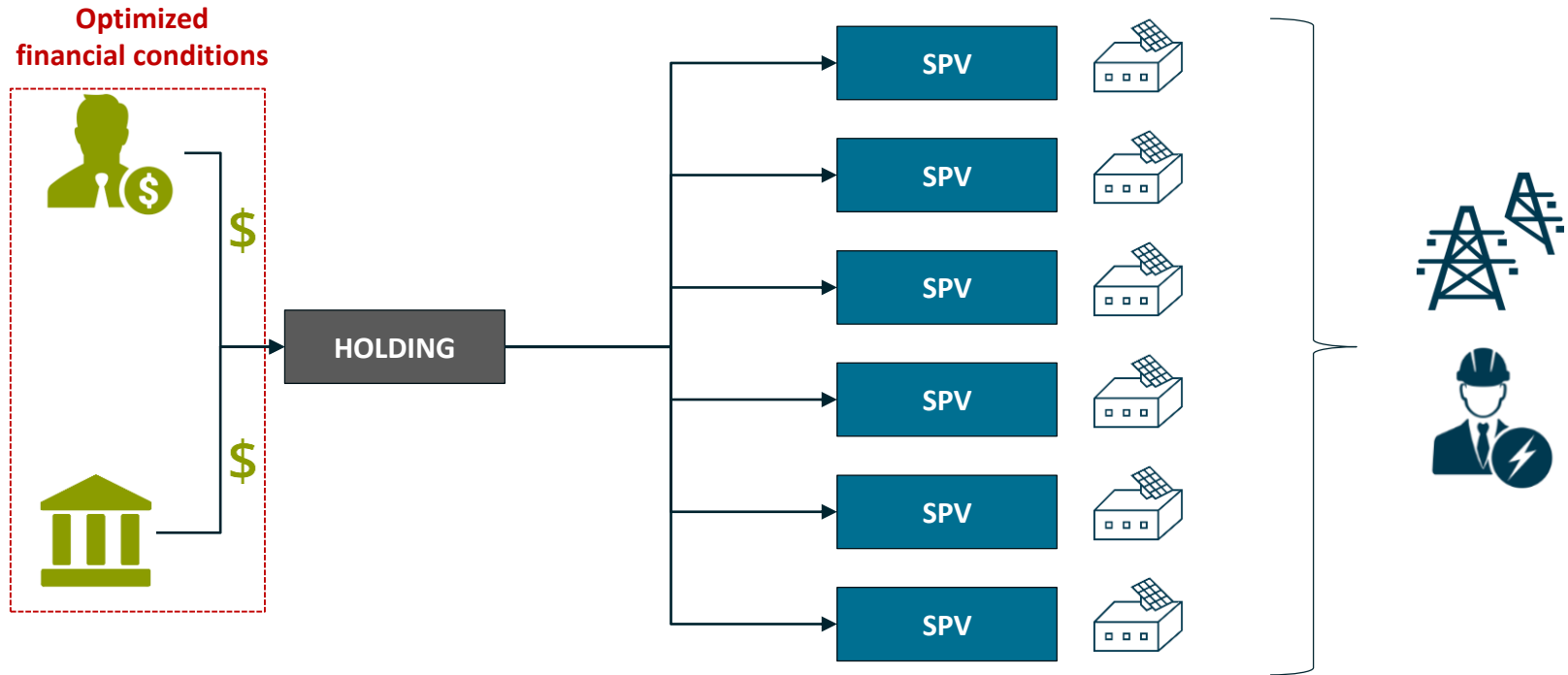


--▶ Power flow —▶ Cash flow - -▶ Recurring Cash flow

- 1 COMPANY commits to building the project.
- 2 An SPV, financed in equity and debt financing, makes the upfront investment and owns the solar rooftop system.
- 3 The solar rooftop system generates and supplies electricity, which is sold in priority to the OFFTAKER.
- 4 All electricity consumption uncovered by the solar rooftop will be covered by the national grid.
- 5 The OFFTAKER pays the bills of its electricity consumption.
- 6 The excess of electricity produced by the solar system can be fed into the grid thanks to the Net Metering System.
- 7 The grid operator pays amount of electricity fed into the grid at a fixed price.
- 8 The OFFTAKER pays for the electricity consumed directly to the SPV, to which it is contractually linked via a private PPA.



3. PRIVATE PPA MODEL – PORTFOLIO FINANCING



- ▶ Constituting a portfolio of small assets can prove very advantageous :
 - ✓ Investors and banks often have minimum tickets size – generally too high for the financing of a single solar asset
 - ✓ International investors can position themselves on large tickets only
 - ✓ A portfolio helps mitigate both the operational and the counterparty risk
 - ✓ Financing conditions can be optimized thanks to an increased interest from investors and banks
- ▶ Constituting such portfolios can be very long, hence the difficulty to set up such a scheme in a small market.



4. FINANCING INSTRUMENTS – EXAMPLES

1. SUBSIDIZED BANK LOANS



- ✓ The Jordan Renewable Energy and Energy Efficiency Fund (**JREEEF**) was established to help invest in various sources of renewable energy.
- ✓ As a part of this **USD 25 mn** fund, several local banks have formed an alliance to disburse loans but also grants to individuals, businesses and SME's to reduce their electricity bill by installing solar PV panels.

2. PROJECT FINANCE



- ✓ In UAE, to benefit from the net metering program, many industrial giants are looking to develop rooftop plants of sizes 5MW+ using traditional debt financing.
- ✓ Local banks are well poised to support these projects as rooftop technology is now mature and DEWA has excellent creditworthiness.

3. PROJECT PORTFOLIO



- ✓ In India, to meet the ambitious target of the government to have 40GW of rooftop solar by 2022, equity investors are being brought in to create a “platform” which can fund a portfolio of rooftop assets.
- ✓ The portfolio is then financed using debt financing. The sizeable portfolio thus allows to achieve good financial conditions.


4. SPECIALIZED INVESTORS



- ✓ Several funds dedicated to enhancing energy efficiency and fostering renewable energies in the Middle East and North Africa (MENA) have emerged over the past years.
- ✓ They predominantly intervene through the provision of dedicated financing to businesses and households via partnering with financial institutions and direct financing.



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CONCLUSION



New market still in the growth phase, with a high potential for growth in the short and medium term.



However, it is expected to reach its saturation point in a few years mainly because of the grid capacity limitations. The competition is severe, and the profitability is not as anticipated to create a sustainable business.



Current plans to install utility scale storage will allow for a greater and sustained integration of solar capacity in Jordan.



THANK YOU

