

Power Purchase Agreement for Commercial PV Systems

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☀ WHO WE ARE?



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Solar Energy Generation in Turkey: Licenced & Unlicenced

Third Party Financing: PPA

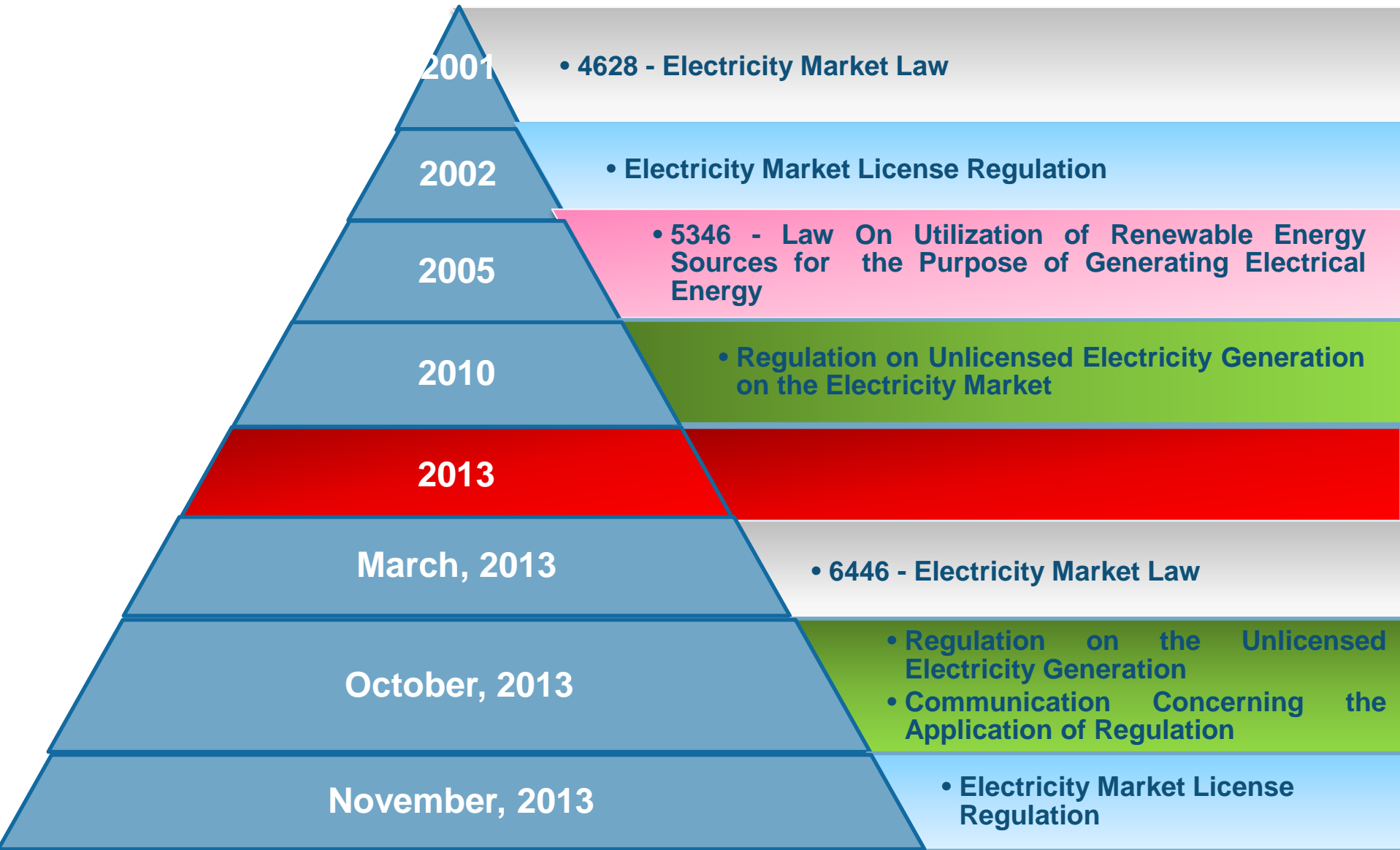
Benefits and Potential Issues



NEW ERA IN TURKISH ELECTRICITY MARKET



New Legislation > New Market > New Opportunities / New Risks



SOLAR ENERGY GENERATION IN TURKEY- *Legislation*



Licensed Generation

- License Regulation
- Communication for Wind and Solar Energy Measurements
- Communication related to Competition

Unlicensed Generation

- Unlicensed Regulation
- Communication on Implementation of the Regulation related with Unlicensed Electricity Generation in Electricity Market

➤ Electricity Market Law (6446)

➤ Law on Utilization of Renewable Energy Sources for the Purpose of Generating Electrical Energy

➤ Regulation on Documentation & Promotion of the Use of Renewable Energy Sources for Electricity Generation

WHY DO YOU INVEST FOR SOLAR ENERGY IN TURKEY?



Magnetism of the Turkish Solar Market

- Solar Energy based Electricity Generation Systems:
 - Announced Limit for Licensed Project: 600 MW total installed capacity until the end of 2013
 - ~ 1.700 MW expected application
 - ~ **9.000 MW application**

- Regional Development Agencies's Support
 - Example: IZKA (İzmir Development Agency)
 - Renewable Energy and Environment Technologies Financial Support Programme (2012)
 - Support Limits: (min.)100.000 - 1.000.000 (max.) Turkish Liras
 - Applications for Unlicensed Solar Projects
 - Total approved Renewable Energy Projects: 41
 - Total approved Solar Projects: 24 => more than ½

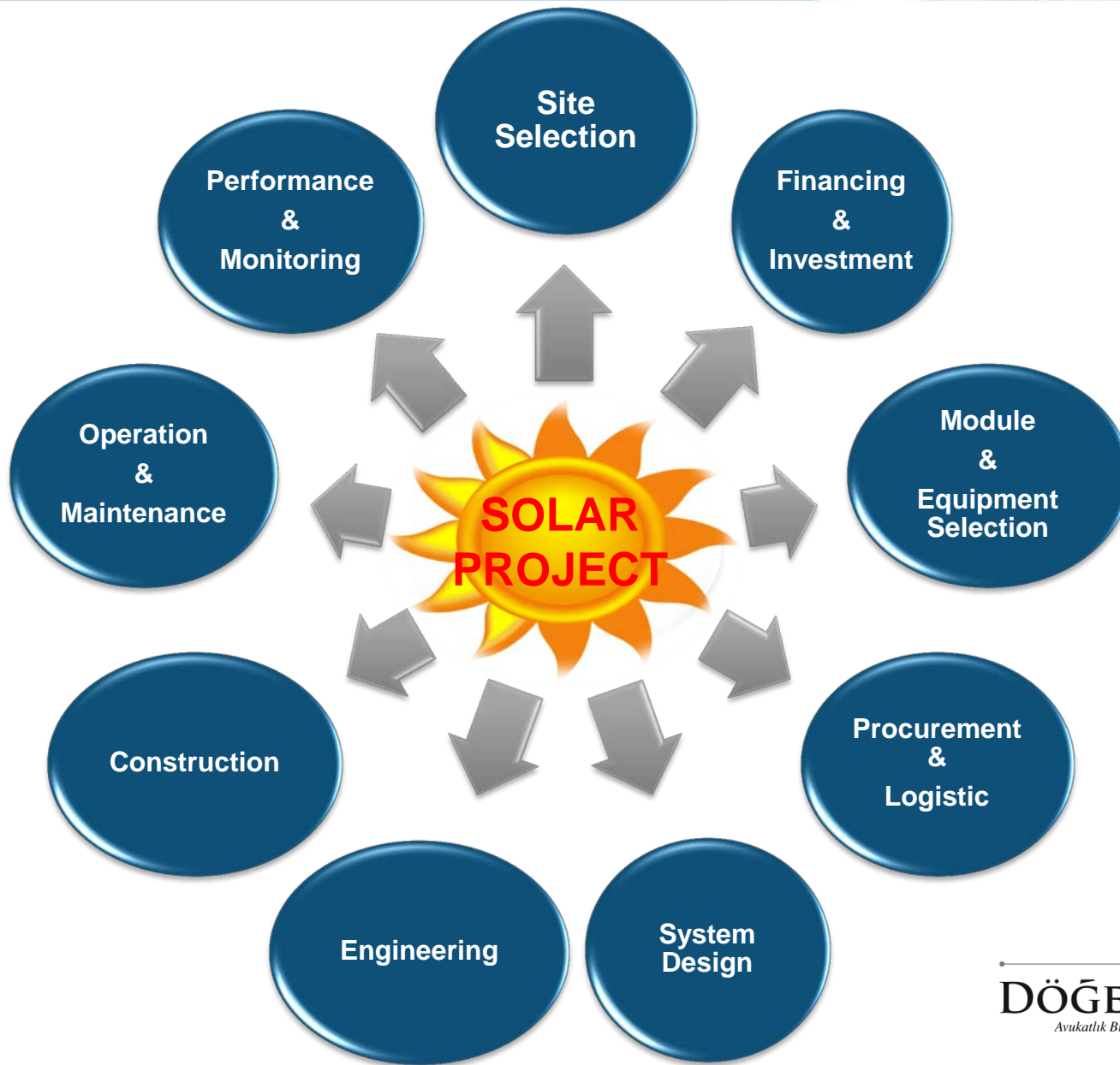
Don't you want to take a place in this Market?

SOLAR ENERGY GENERATION IN TURKEY



	LICENSED	UNLICENSED
APPLICATION PERIOD	<i>Only on the Date Announced by EMRA</i>	<i>No Restriction about Application Date</i>
BUREAUCRACY	<i>≥ 25 Institution</i>	<i>≤ 10 Institution</i>
CAPACITY	<i>No Capacity Limit</i>	<i>Up to 1 Megawatt</i> ➤ <i>Council of Minister Decision</i> ➤ <i>Without Selling to the Sytem -- Unlimited Capacity</i>
EXPROPRIATION	<i>Possible</i>	<i>Not Possible</i>
FINANCING OF PROJECT	<i>Possible</i>	<i>Willingless of Banks</i>
INCENTIVES	➤ <i>Purchasing Guarantee of State</i> ➤ <i>Domestic Product Contribution</i>	➤ <i>Possibility of Selling Surplus Energy</i> ➤ <i>Domestic Product Contribution</i>
MEASUREMENT	<i>Compulsory</i>	<i>No Need</i>
PROCEDURE	➤ <i>Limited Liability or Joint Stock Company</i> ➤ <i>Pre-License/ License Requirement</i> ➤ <i>Minimum Capital Requirement</i> ➤ <i>Competition</i>	➤ <i>Any Real or Legal Person</i> ➤ <i>No Need of Obtaining a License and Establishing a Company</i> ➤ <i>No Competition</i>
SHARE TRANSFER	<i>Forbidden (directly/indirectly) for the Pre-License</i>	<i>Transfer of Generation Facility (Article-29)</i>
TRADING OF ELECTRICITY	<i>Possible</i>	<i>Forbidden</i>

STAGES FOR UNLICENSED PROJECTS



☀ EXPECTATIONS OF THE PARTIES



S
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Low Electricity Bills

No Capital Cost

Uninterrupted
Electricity
Service

Time

Maintenance/
Operation
Process & Cost



Cash/Fund

Experience

Know How

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The Issue of Financing?

☀ HOW UNLICENSED PROJECTS CAN BE FINANCED?



***Private Banks and Funds**

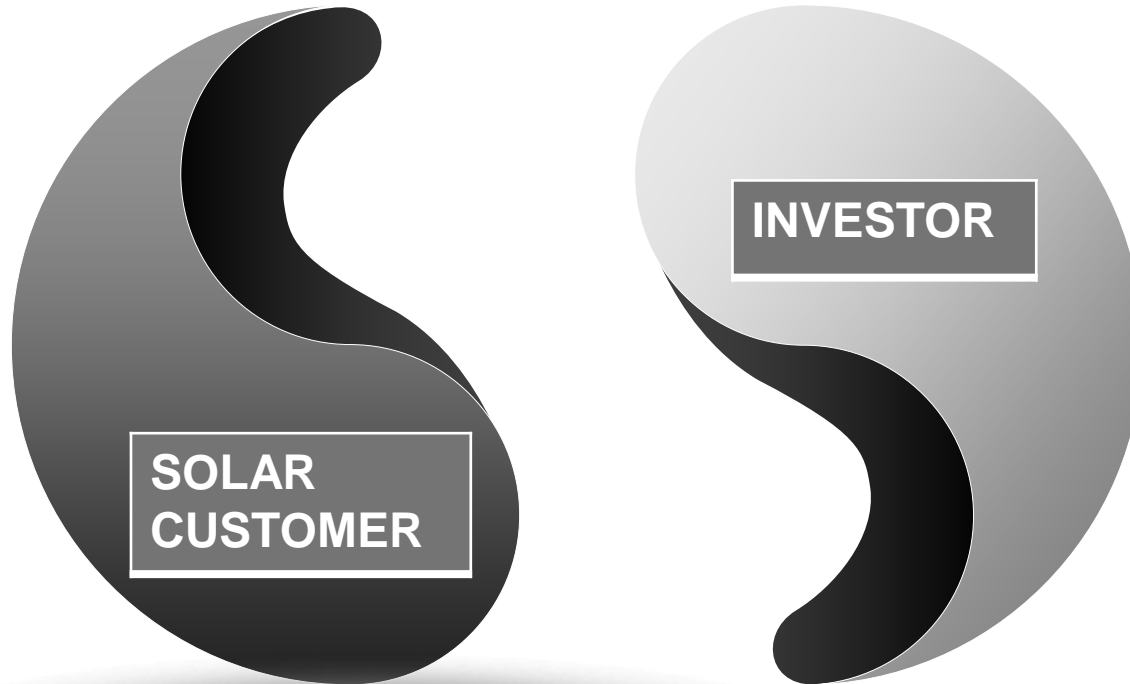
Reluctance of Turkish Banks for the Finance of Unlicensed Projects

***Own Capital**

***PV Manufacturer**

***Investor**





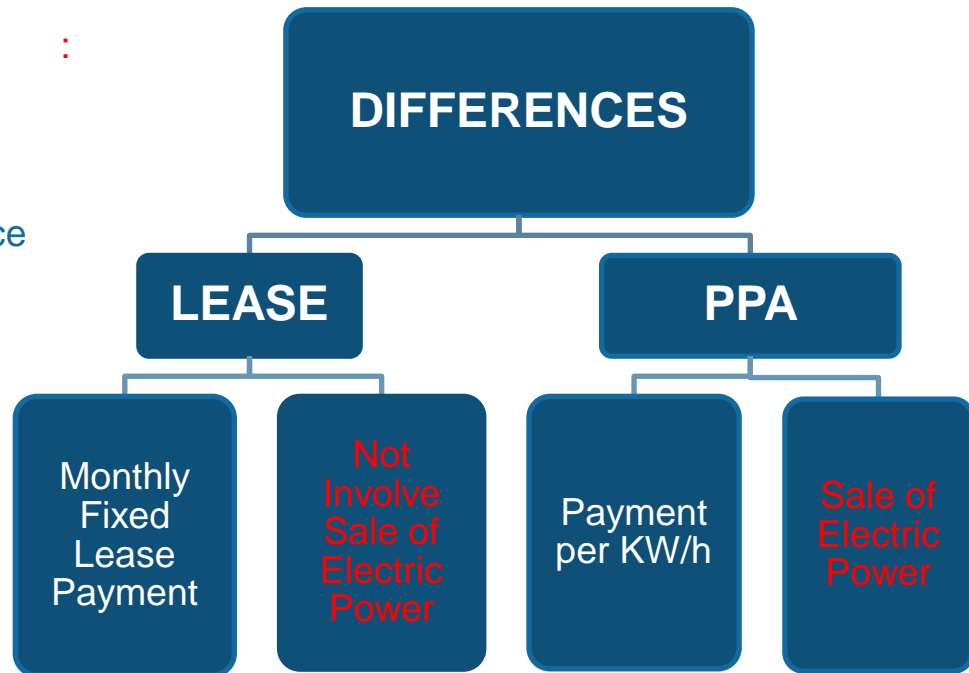
**Is PPA an Option for
Unlicensed
Projects?**

☀️ THIRD PARTY FINANCING (Common Types)

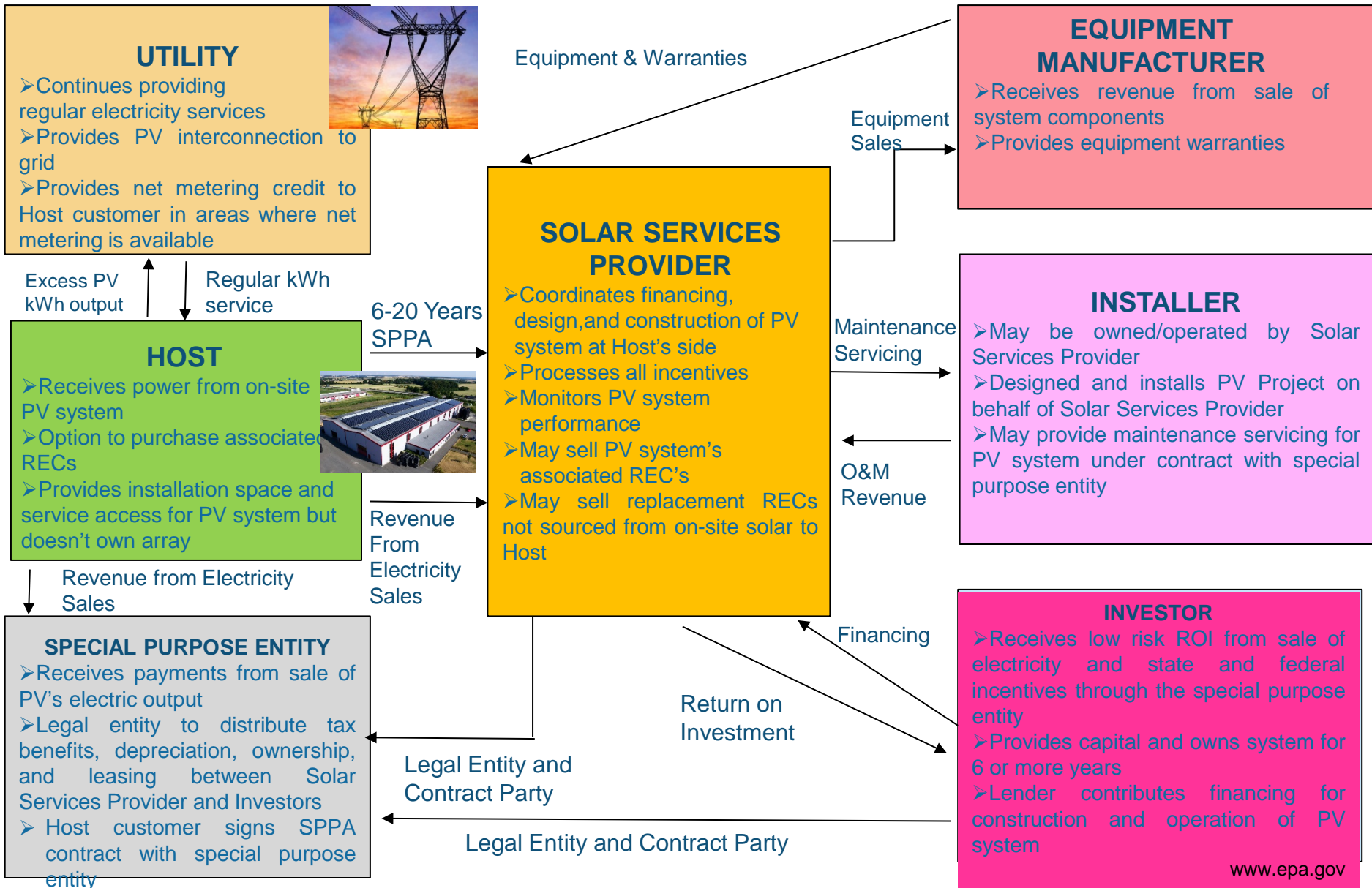


Solar Lease & PPA

- Alternative financing option
- Little or no upfront capital investment
- **Parties:**
 - Host (customer)
Location (unused rooftop, land, parking space as location)
 - Third Party (developer):
Design, **permitting?**, financing, installation, operation & maintenance, monitoring
 - Duration: 15 - 20 years



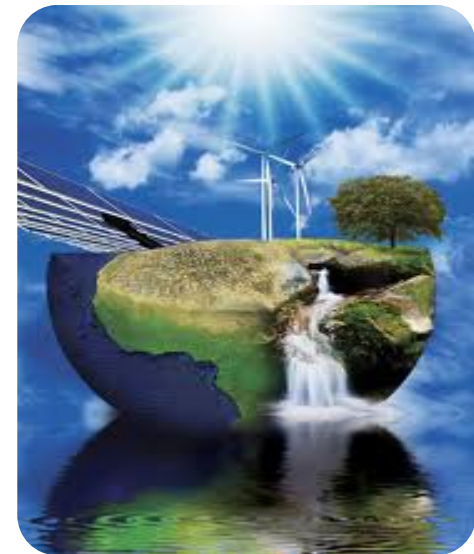
☀ POWER PURCHASE AGREEMENT



BENEFITS OF PPA



- **No initial capital investment**
- **Only pay for generated solar electricity**
- **Benefit from clean energy**
 - **Reduced carbon emissions**
 - **Carbon credits**
- **Protection against volatile electricity prices**
- **Reduces electricity bills**
- **No responsibility for system operation & maintenance**
- **Selling to the system**
- **3 options at the end of the agreement term:**
 - 1. Purchase the system at a reduced price**
 - 2. Initiate another PPA**
 - 3. Have the system removed**





Lack of Harmonization among Legislations

- The Issue of Ownership
- Status of Roof (Transfer of Generation Facility)

Legal Restrictions

- Land Issue
- Trading of Electricity
- Lack of Legal Regulation of Financial Mechanism

Other Points

- Guarantees
- Performance Bond - Insurance
- Solar Developers' Leave of the Site after 5-10 Years
- The Loss of Energy Savings from a PPA
- Land will be Tied Up and Unable to be Used for Other Purposes

☀ NEW LEGISLATION ON UNLICENSED GENERATION



- **Article 5 of Regulation-** «Exemption from Obtaining License and Establishing Company (Renewable Energy Resources)»
 - **1 MW** installed capacity **for each consumption facility** – Not for real/legal person
 - **Adequate capacity** within the distribution system ➡ **multiple** (more than one) renewable energy based generation facility for **ONLY 1 consumption facility**
 - **1 MW X 5** with the decision of the **Council of Ministers**
 - **Consumption facility** may be connected to the (distribution or transmission) system with the **generation facility simultaneously**
 - **Previous legislation**
 - **Benefit:** Opportunity for **new subscribers**
 - **BUT!!!**
 - **No limitation capacity:**
 - Generation facilities consuming all of the generated energy without giving to transmission/distribution system
 - Having both generation and consumption at the same measurement point

What are the **OPTIONS** for an electricity subscriber?



☀ RISE IN CAPACITY LIMIT: ALTERNATIVES???



Option 1



Consumption Facility

1 MW Generation Facility

Distribution/Transmission System

Surplus Energy

Option 2



Consumption Facility

$(X) \text{ KW/Solar} + (Y) \text{ KW/ Wind} + (Z) \text{ KW/}$
 $\text{Hydro} = 1000 \text{ KW}$

Distribution/Transmission System

Surplus Energy

Option 3



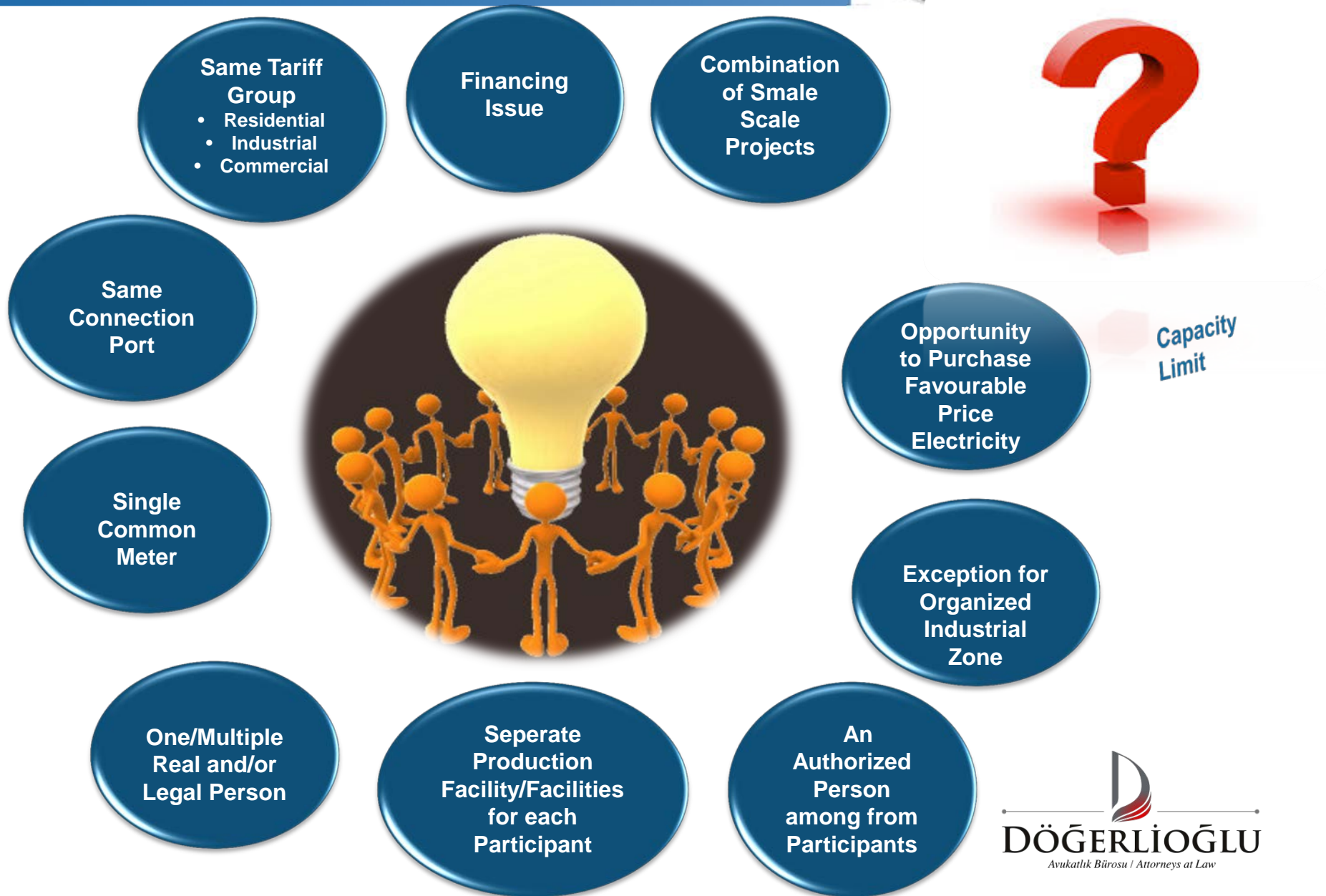
Consumption Facility

No Limitation
Same Measurement Point

No
Connection

Surplus
Energy

CONSUMPTION MERGE



SUMMARY



New Legislation > New Market > New Era: **NEW OPPORTUNITIES / NEW RISKS**

Capacity Limit: up to 1 MW - *Exceptions*

Main Issue for *Solar Customer* / Main Opportunity for *Investor*: **FINANCING**

Model for Financing: **PPA**

Benefits of PPA

- Customer: **Affordable Price for Own Electricity**
- Investor : **Profit**
- Turkey : **Increasing Share of Renewables**

Barriers Before PPA: **NEW MODEL & SHORTAGE OF LEGISLATION & TRADE OF ELECTRICITY**



☀ WE BELIEVE that “The sun will be
the fuel of the future”



KEEP
CALM
AND
USE SOLAR
ENERGY



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