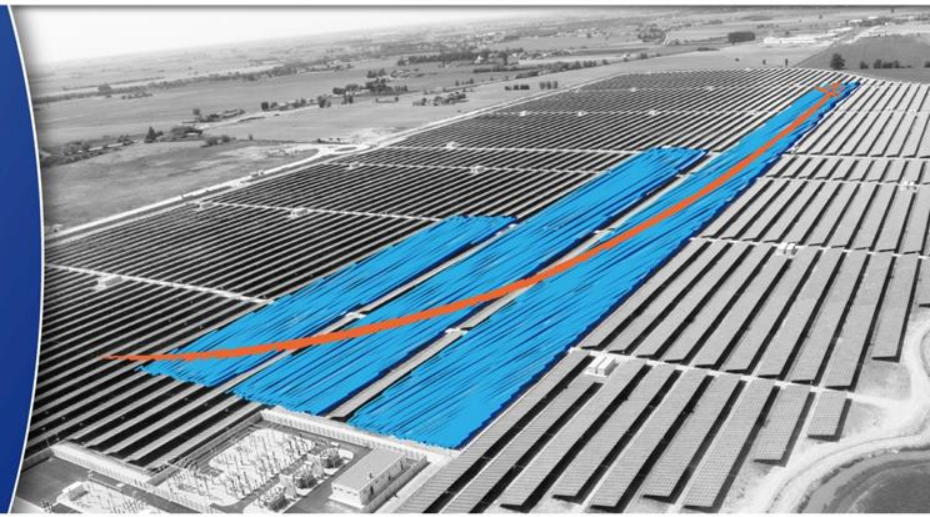
PV Financing Project

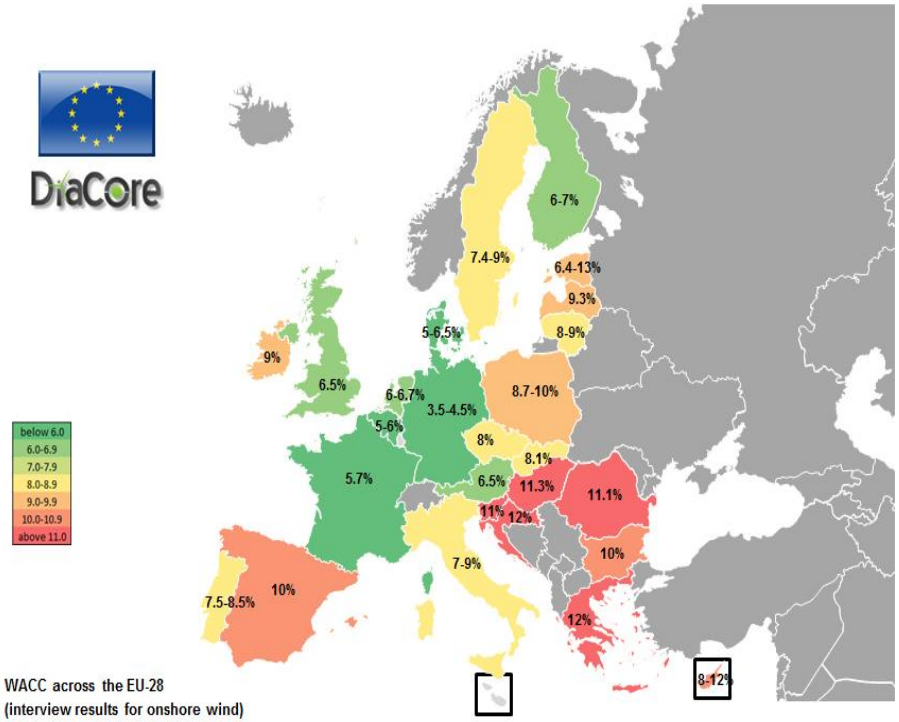


Luz Aguilar, International Project Manager, BSW-Solar

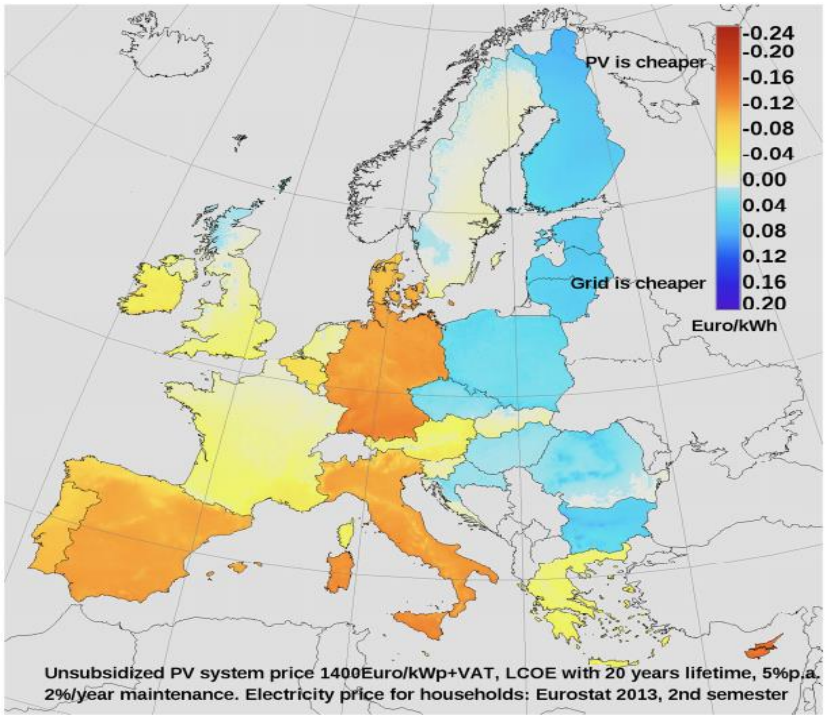
1st June, Intersolar Europe 2017

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646554

Cost of financing and cost of PV varies across member States



WACC across the EU-28
(interview results for onshore wind)



Scope of the project

PVFINANCING

Focus on:

Business Models & Financing Instruments

- Coordinator: BSW-Solar
- 7 Countries: AT, DE, FR, IT, ES, TK and UK
- 13 partners
- Duration: 30 months

PVFINANCING

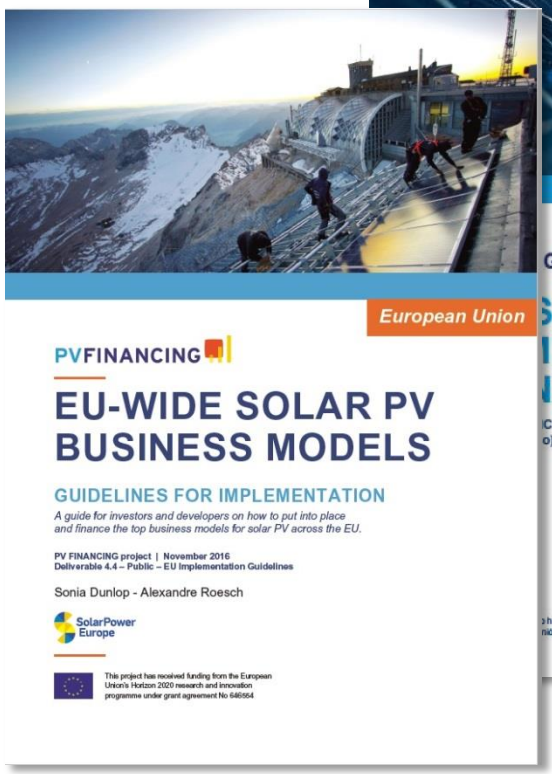
PROJECT RESULTS

Business models in the PVF countries

Nr.	Country	Business Model
1	Austria	Self-consumption
		PPA
2	France	Self-consumption
3	Germany	Self-consumption
		Self-consumption (Leasing)
		PPA / supply
4	Italy	Self-consumption
		PPA
5	Spain	Self-consumption
		Self-consumption 2 (self-consuming and selling)
6	Turkey	Self-consumption
		Net-Metering
7	UK	Self-consumption
		Third Party PPA

- Self- consumption: allowed in all the countries
- PPA: in 4 countries (in France, Spain and Turkey is not allowed)
- Net-meetering: used only in Turkey

National contract templates, implementation guidelines & policy papers at EU & national level



Cash-flow models

A tool to help investors in their final decision:

It compares the regular electricity price with the PV price per kWh

- Practical answers for each type of investors
- Easy to use
- Country based results
- The excel cash flow model is also available

Webinars

Next webinars:

- The PV Financing solar cash flow model and database
  Date: Wednesday 14 June 3:30-4:30 pm (CET)

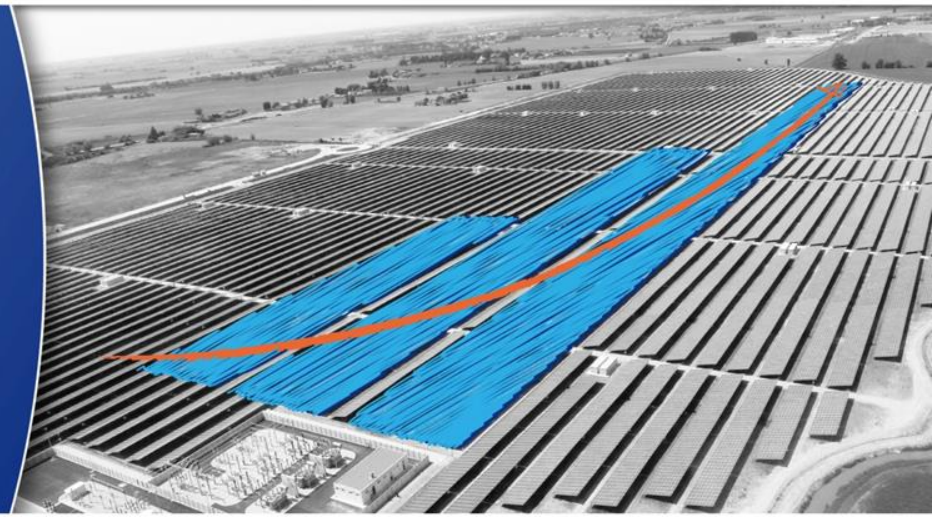
- New opportunities for "Mieterstrom" projects in Germany (EN)
  Date: Tuesday 20 June, 11pm – 12 pm (CET)

The calendar with the registration link and the presentations of all webinars are available on the website.

Check @PVFinancing on Twitter for more information &
Visit our website: http://www.pv-financing.eu/

Luz Alicia Aguilar
Phone: +49 (30) 29 777 88-40
Email: aguilar@bsw-solar.de

Solar PV development in the EU



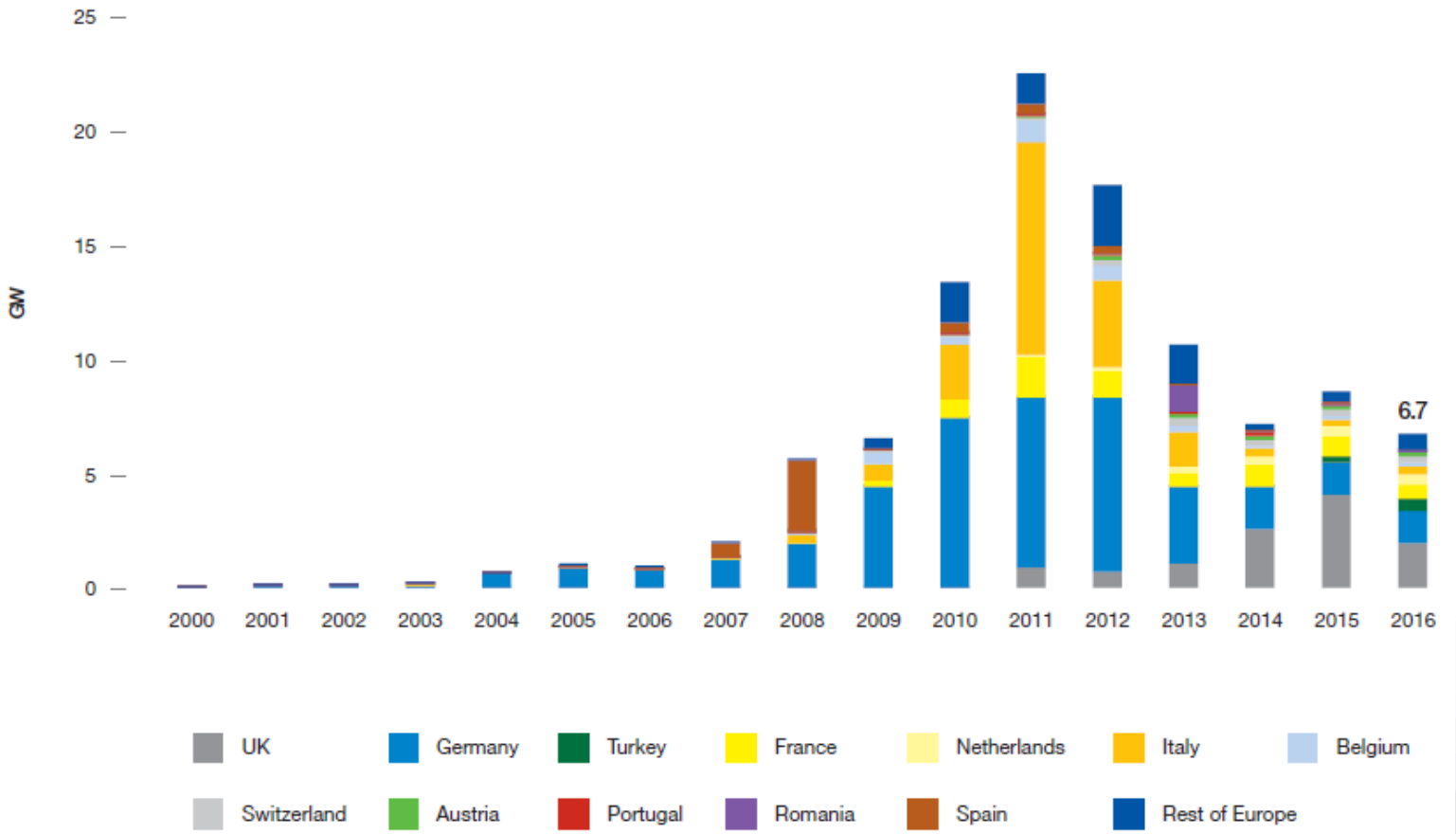
Sonia Dunlop, Policy Adviser, SolarPower Europe

Event “PV financing project: business models to boost the PV sector in Europe”, Intersolar Europe, Munich, 1 June 2017

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 646554

European solar market: update 2000-2016

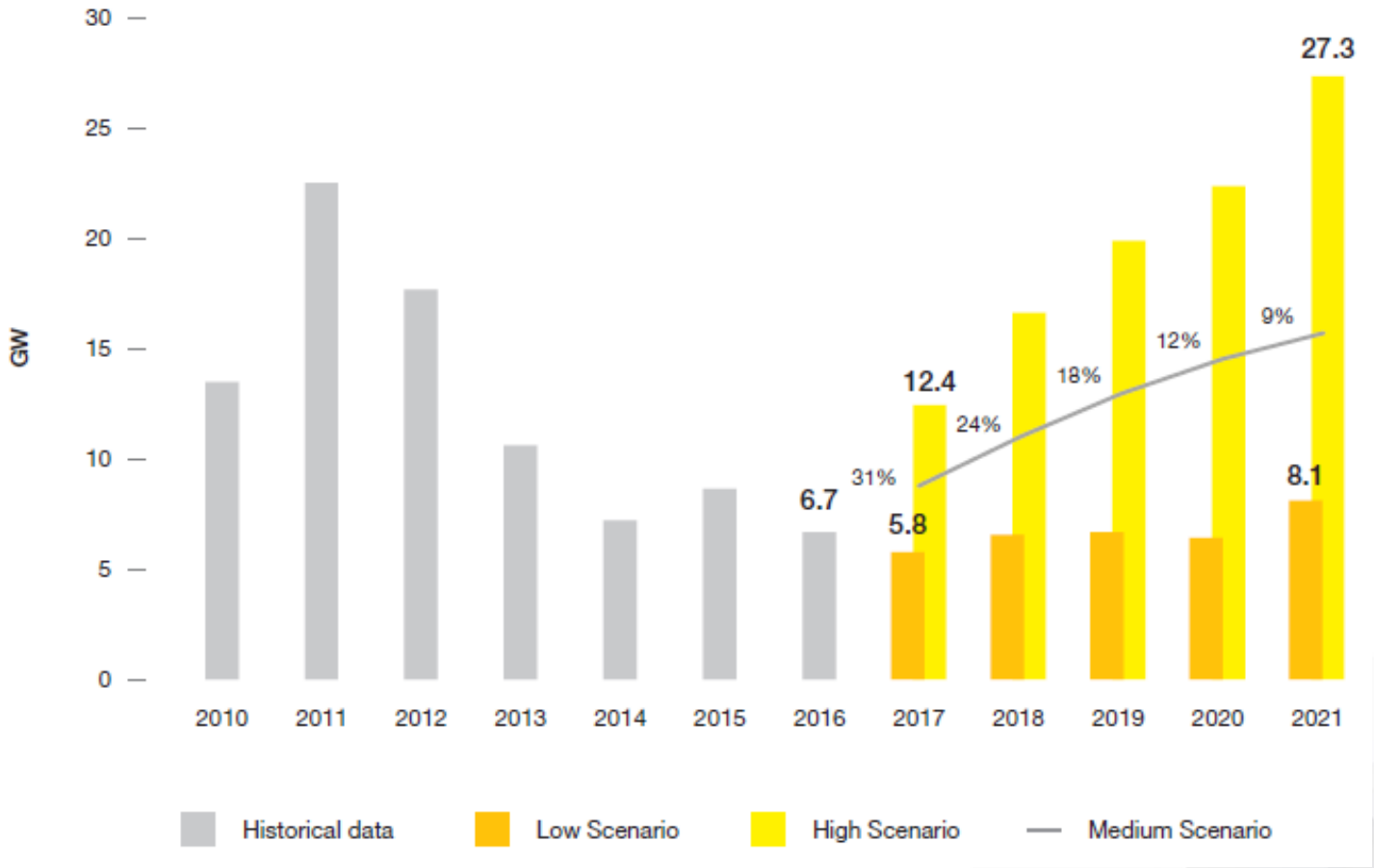
FIGURE 13 EUROPEAN SOLAR PV ANNUAL GRID CONNECTIONS 2000 - 2016 FOR SELECTED COUNTRIE



SolarPower Europe

European solar market: prospects 2016-2021

FIGURE 17 EUROPEAN ANNUAL SOLAR PV MARKET SCENARIOS 2017 - 2021



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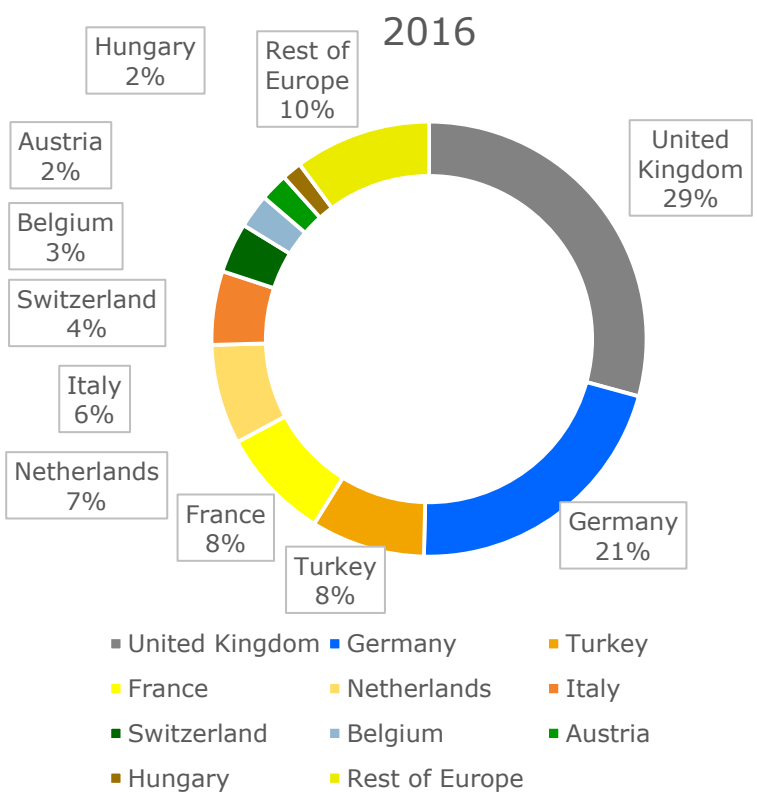
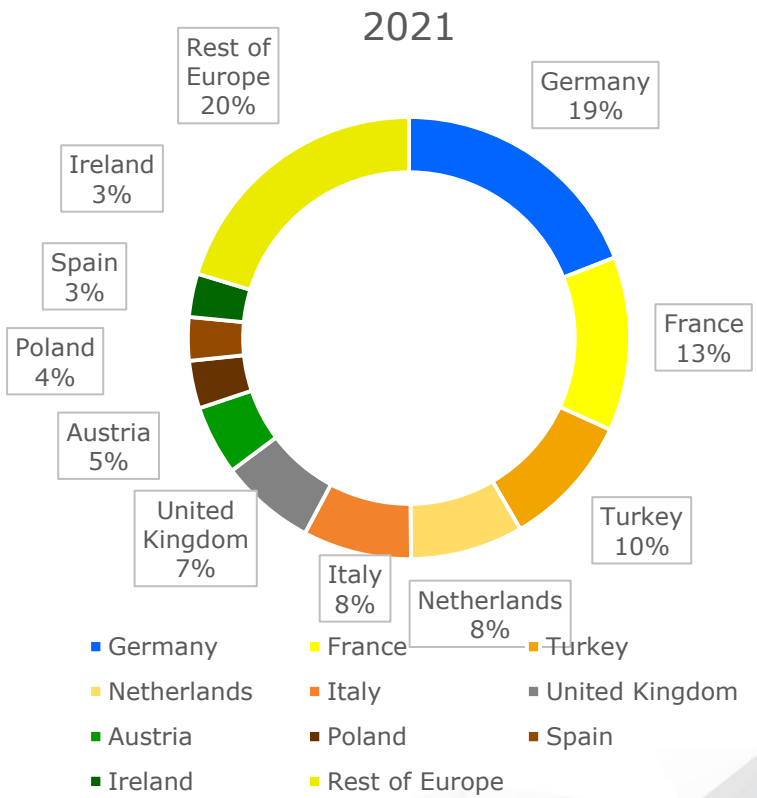
Breakdown by country

CAPACITY ADDITIONS AND SHARES OF TOP 10 EUROPEAN SOLAR PV MARKETS IN 2016 AND 2021





Germany, France, Turkey
- the top 3 solar markets in Europe until 2021

SolarPower Europe

European Union

PVFINANCING

EU-WIDE SOLAR PV BUSINESS MODELS

GUIDELINES FOR IMPLEMENTATION

A guide for investors and developers on how to put into place and finance the top business models for solar PV across the EU.

PV FINANCING project | November 2016
Deliverable 4.4 – Public – EU Implementation Guidelines

Sonia Dunlop - Alexandre Roesch

SolarPower Europe

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646554

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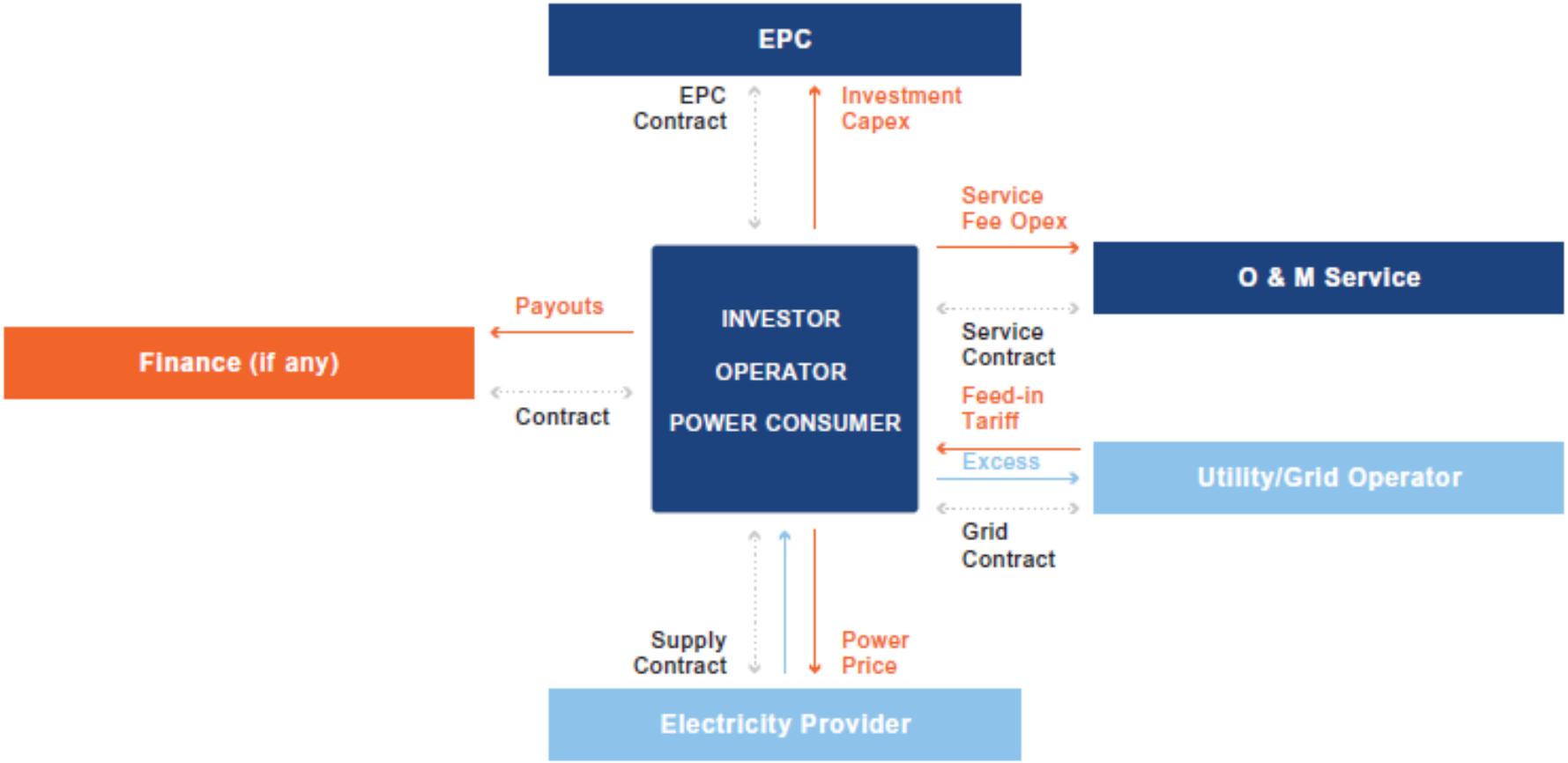

Self consumption (and self-ownership)

Power Purchase Agreements

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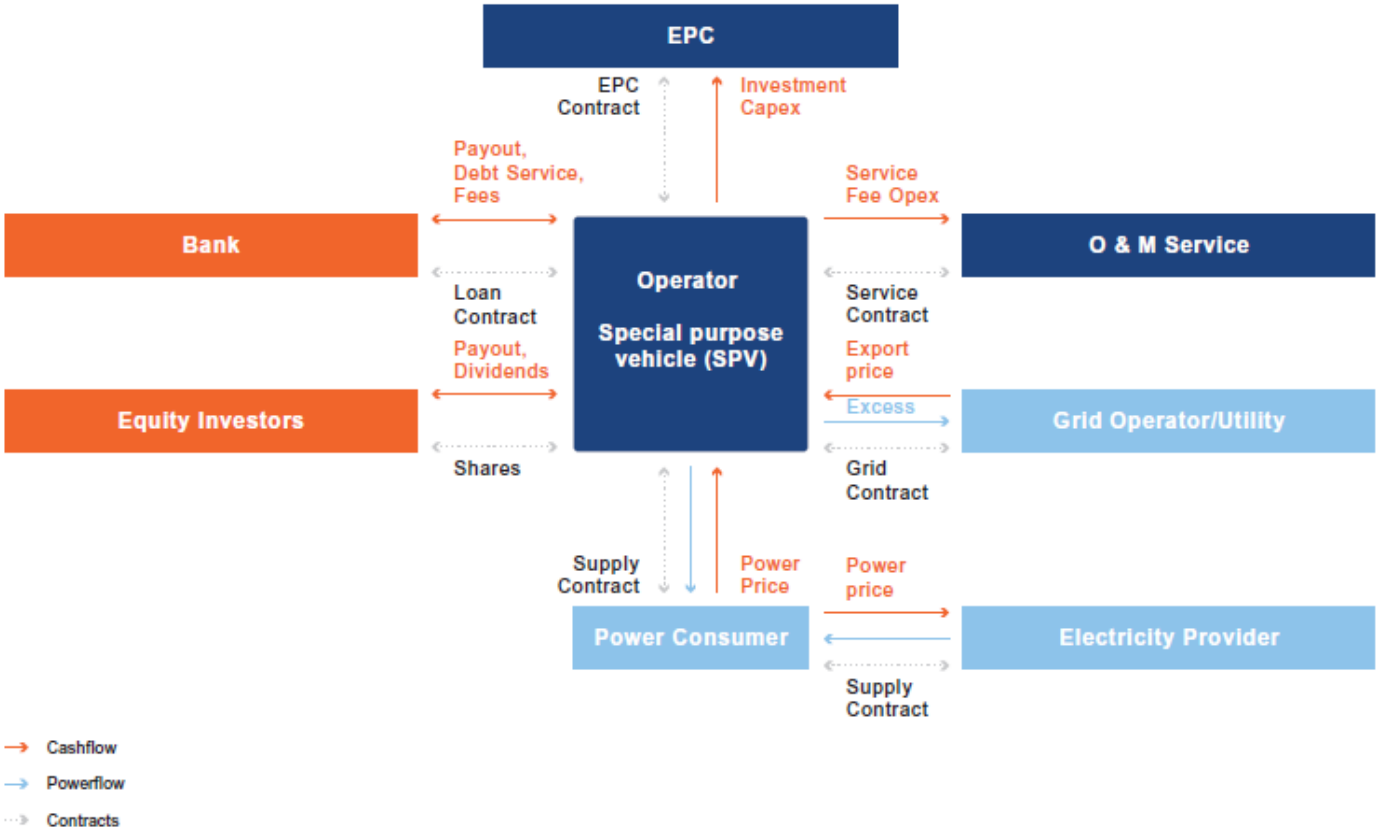


6. COOPERATIVE SCHEMES

Cooperatives, which from a financing scheme perspective are a form of equity crowdfunding, have a separate legal status and management structure to other business models.

They should be distinguished from debt or grant crowdfunding which are purely financing schemes.

6.1. REGULATORY FRAMEWORKS FOR COOPERATIVES

The benefit of cooperative schemes is that regular citizens can own and benefit from a share of energy generating assets. An experienced investor or actor can act as an intermediary for a large number of smaller private and non-professional investors. They also facilitate and promote social acceptance of renewable energy projects.

However again a certain number of regulatory basics have to be in place to implement a cooperative model, as there has to be a level playing field for cooperatives to enter the market.

In France a new provision has recently been brought in for collective self-consumption, where electricity can be sold between a number of producers and consumers within a single low-voltage branch of the grid. This opens the way for community and cooperative business models. This model is described further in Annex IV.

Cooperatives are not yet common in Italy but is a promising scheme, especially as the tax benefits for residential solar are also applicable when the project is financed through a cooperative.

7. VIRTUAL POWER PLANTS

Virtual Power Plants (VPPs), also known as aggregators, are a business model where different technologies and users are combined or aggregated into one pool of electricity and are operated together as if they were one power generation facility.

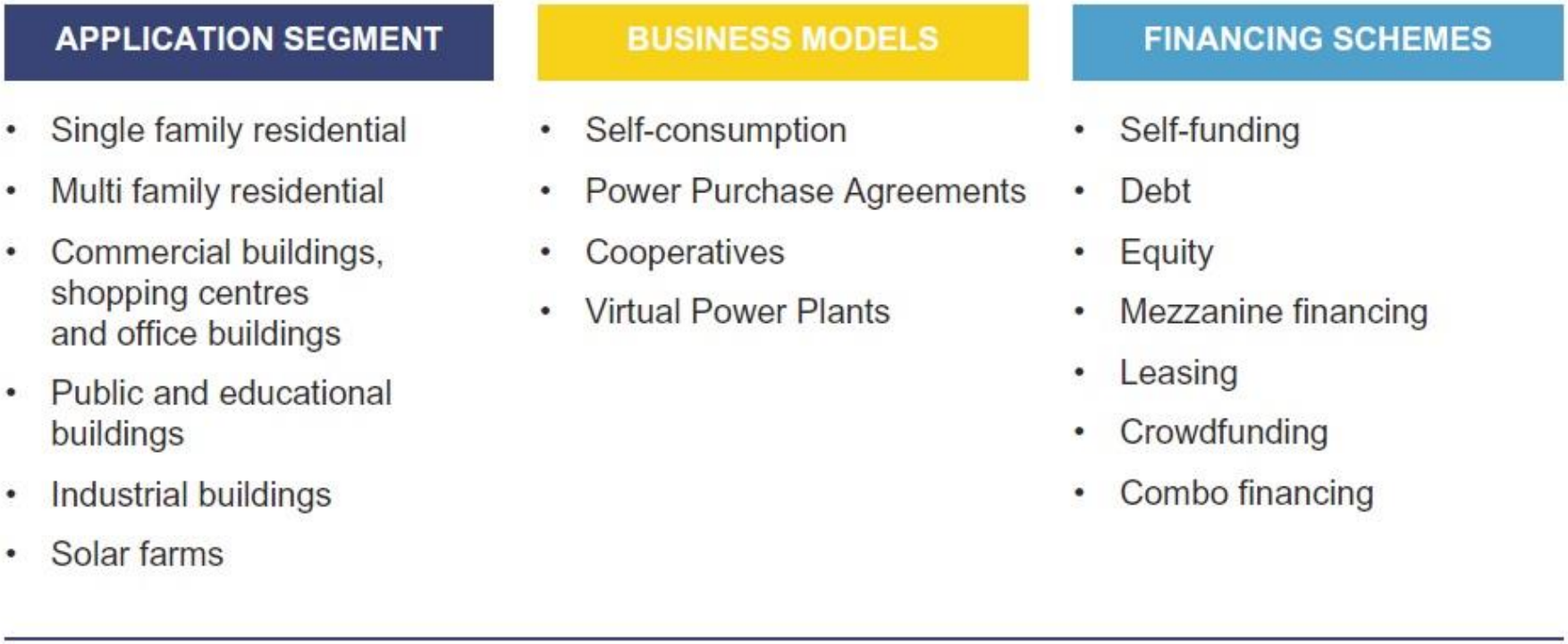
On the supply side this can include solar, micro combined heat and power, wind, biogas, small hydro, back-up diesel generators and battery storage. On the demand side this includes power consumers that have capacity to increase or decrease their power demand, including interruptible load such as heating and cooling and electric hot water heaters.

The aggregator company sells the electricity or ancillary services via an electricity exchange. The goal is to create a generation profile that allows the participants in the Virtual Power Plant to take advantage of peak prices at certain times of day.

For individual installations a VPP can increase the wholesale or excess power price.

In the long-term this business model will gain in importance as many feed-in tariff or similar support schemes only include a mandatory offtaker for 20 years. As many PV systems are likely to last for ~35 years this means that over the next 10 years or more there is going to be an older generation of small-scale often domestic systems coming online that are still generating but no longer getting a guaranteed offtaker. It is possible that the owners of these systems will look to include their systems in an aggregator mechanism for the remainder of equipment's lifetime, if residential owners are willing to invest in equipment that allows for remote control of the installation.

Figure 6. The different options for each of the three variables of a PV project



Application segments, business models and financing schemes


Loans
Promotional loans
Project finance
DEBT
Green bonds
On balance sheet
Institutional tradable notes and listed bonds
Revolving credit and bridging loans

Figure 14. Types of crowdfunding for solar PV

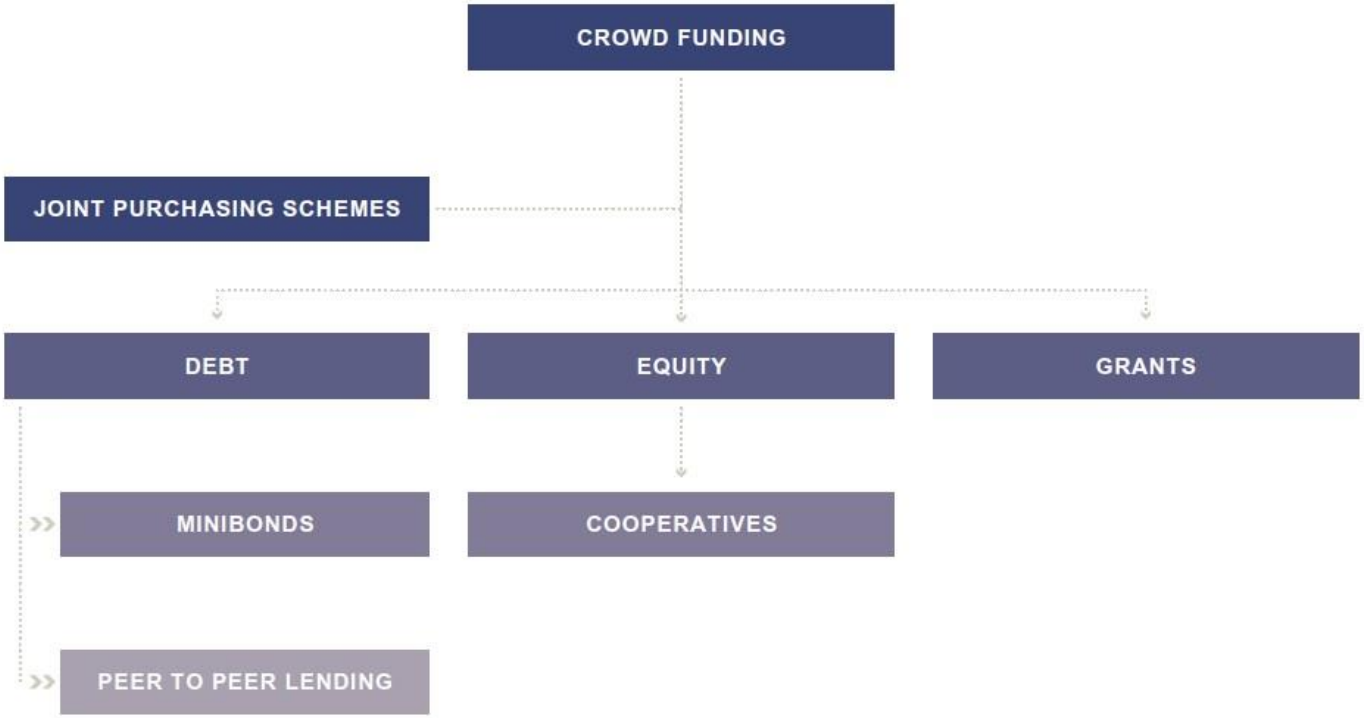
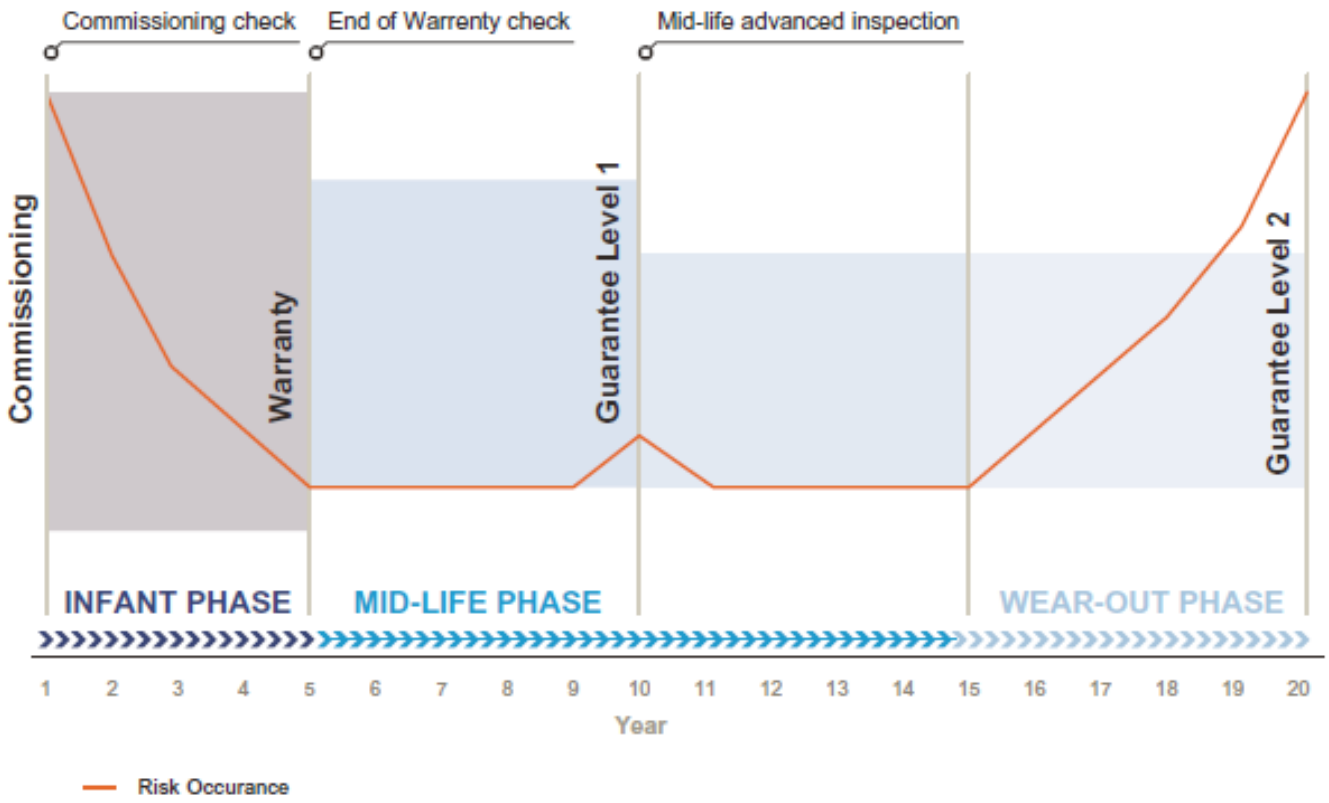


Figure 11. Stages of utility-scale ground mount solar PV and corresponding sources of financing

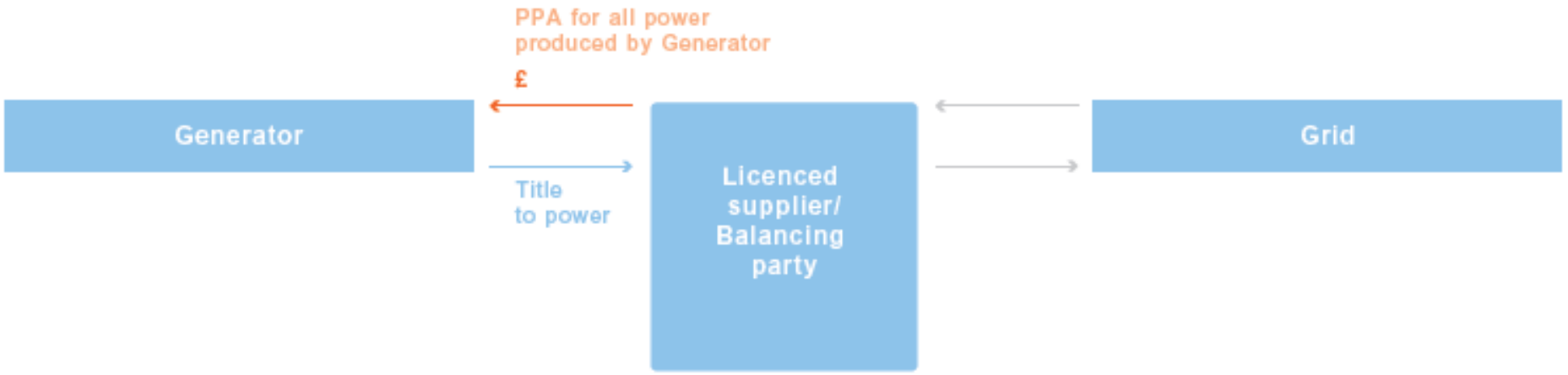
Figure 12. Technical risk profile of a typical solar PV installation (Solar Bankability[32])

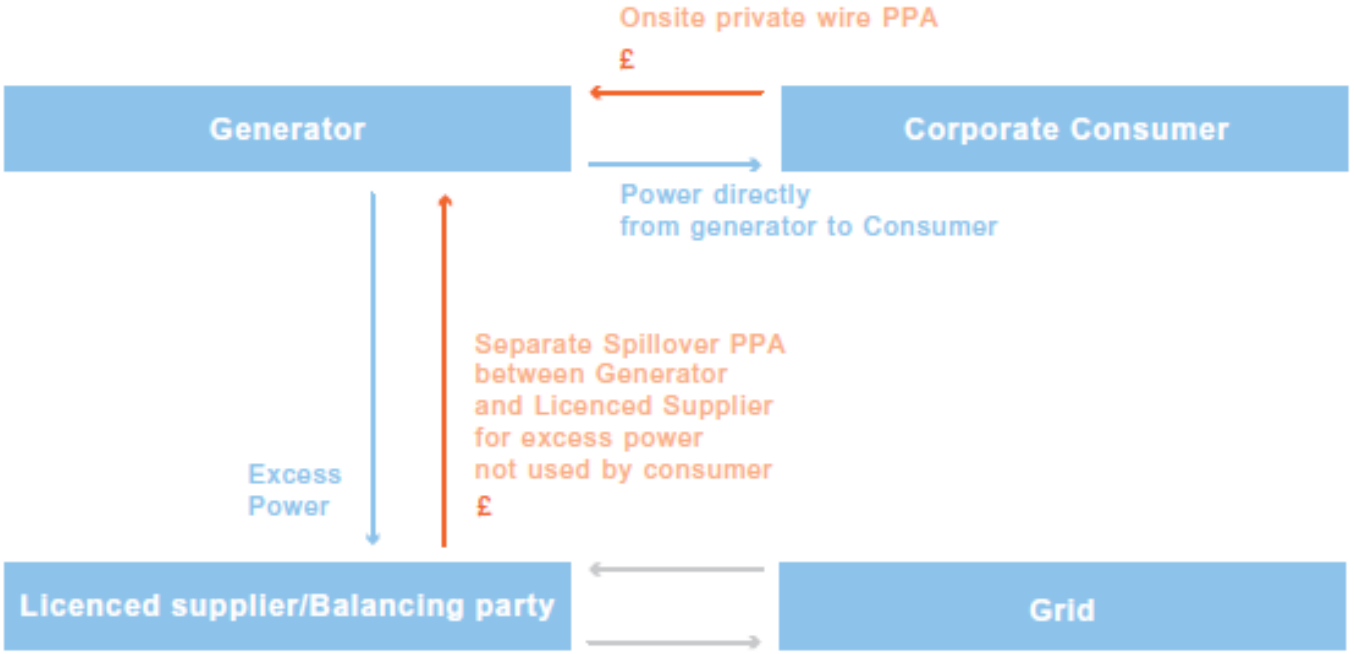


PVFINANCING

Overcoming offtaker risks

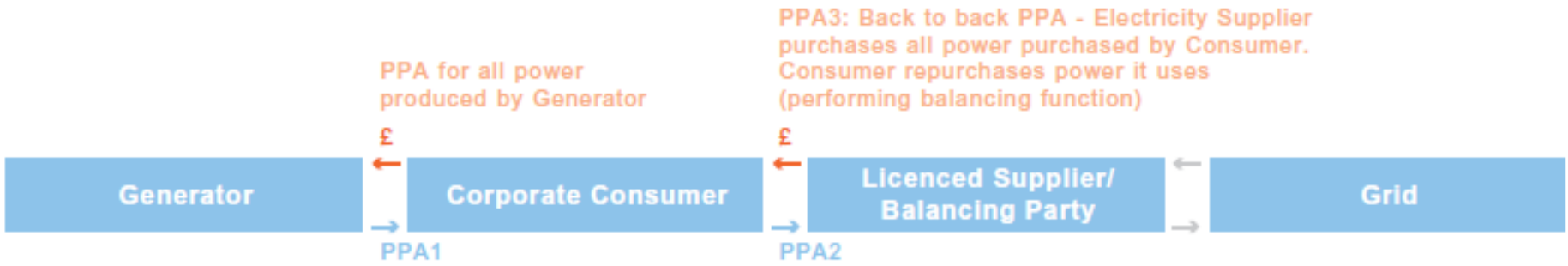
Wholesale PPA



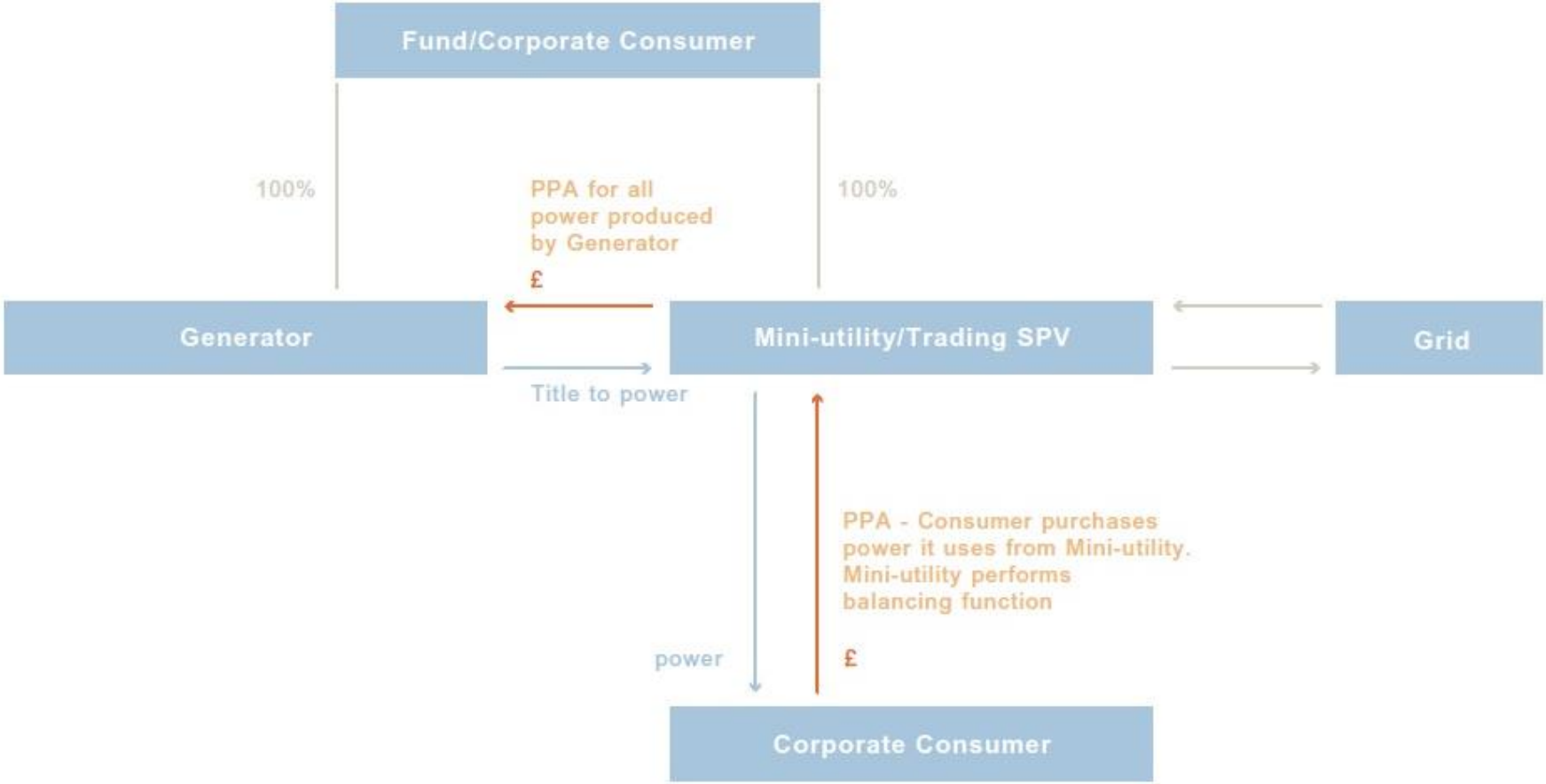


Onsite private wire PPA

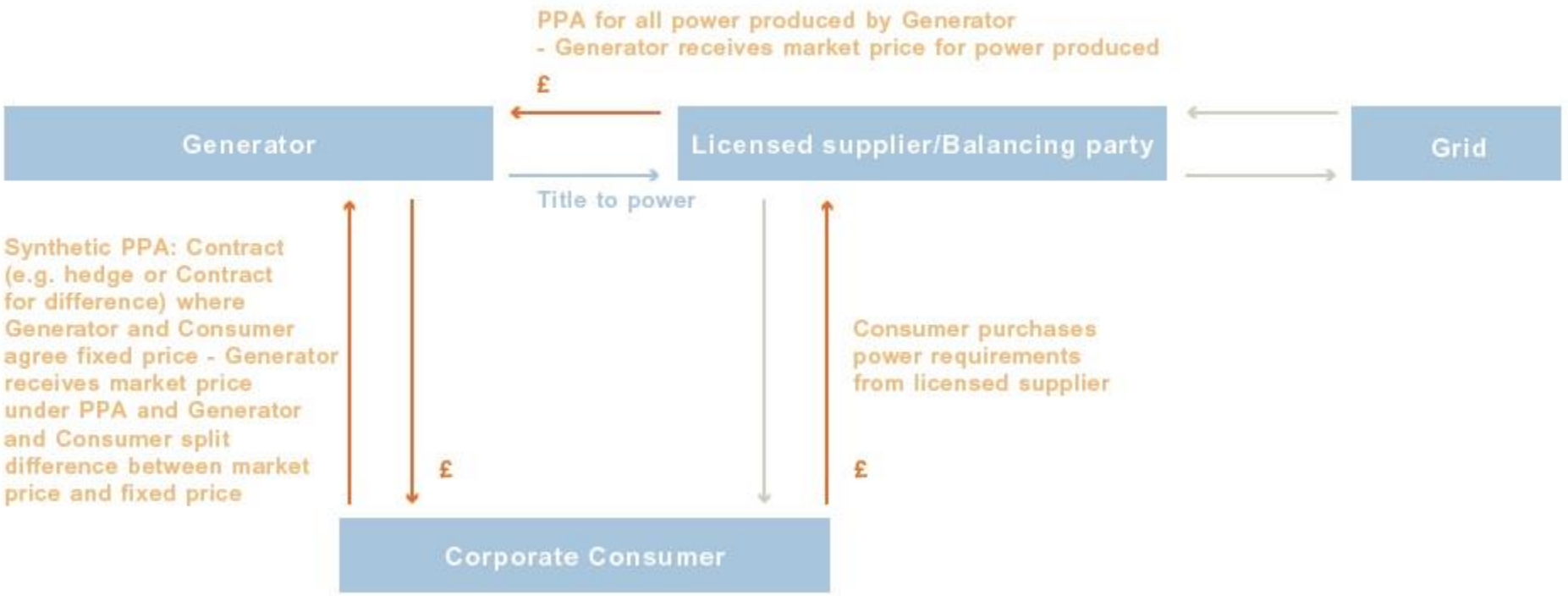
Sleeved PPA


PPA3: Back to back PPA - Electricity Supplier purchases all power purchased by Consumer. Consumer repurchases power it uses (performing balancing function)
PPA for all power produced by Generator
£
£
Generator
Corporate Consumer
Licenced Supplier/ Balancing Party
Grid
PPA1
PPA2

Mini-utility PPA



Synthetic PPA




Electricity prices
Export price and support schemes
Cost of capital
Irradiation and system costs
Self-consumption rate
Grid services revenues
PROFITABILITY DRIVERS

PVFINANCING

You are invited to join us to the

FREE

PV Financing webinar

Wednesday 14 June 15:30-16:30 CET

"Step-by-step guide to the solar cash flow model and country database"

with Eclareon

****Register here****

or on the SolarPower Europe website

Questions?

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Policy Adviser, SolarPower Europe
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Phone: +32 (0)2 709 55 28
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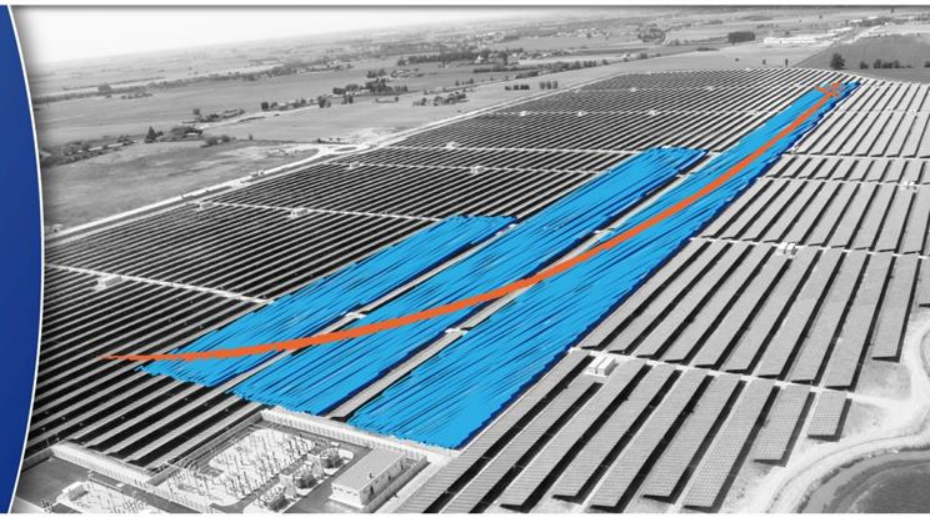
PVFINANCING

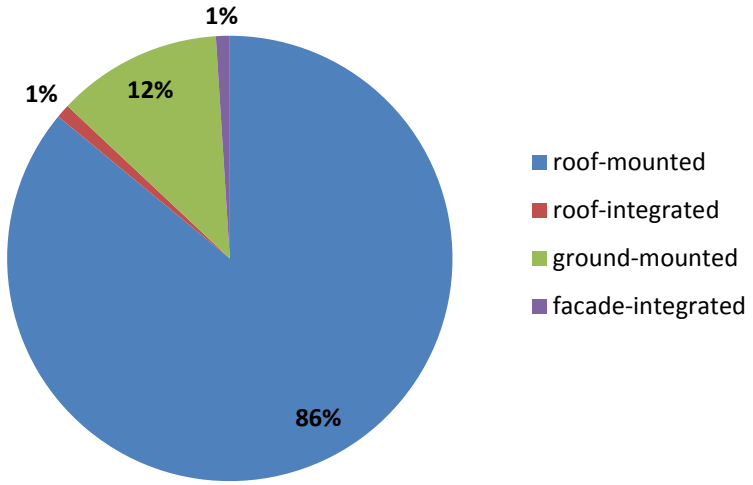
Shared generation facility model in Austria



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646554

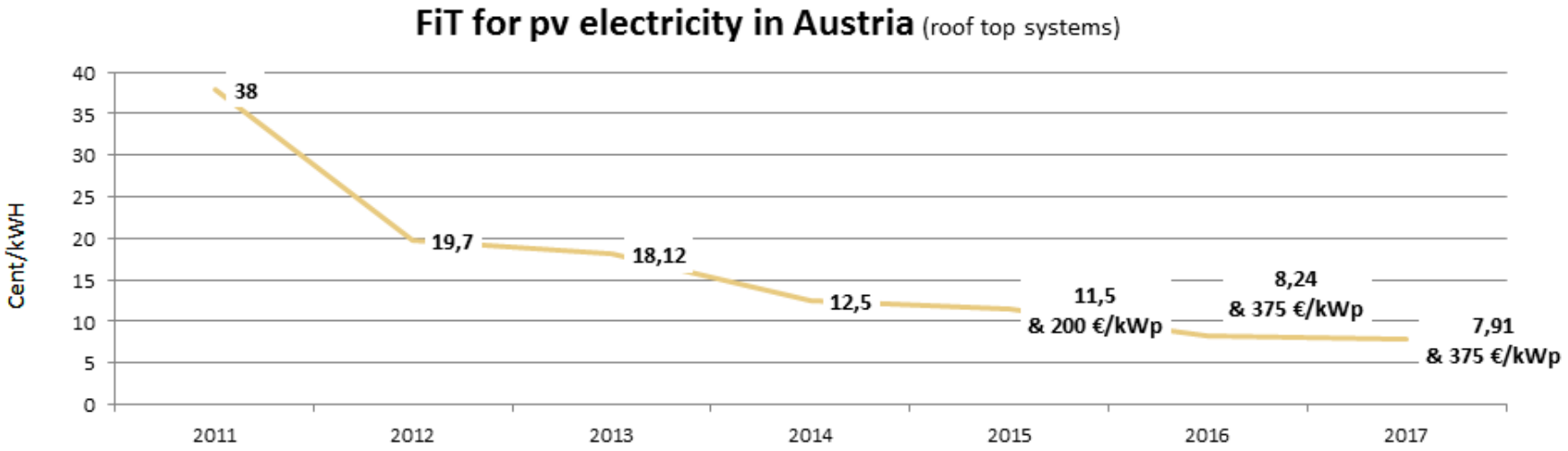
Austria PV market – framework conditions

- Electricity: 70 % renewable, 1.7 % provided by PV
- large number of small and medium systems
- private households, commercial and agricultural sector
- lager PV systems (>200 kW) and ground mounted systems not supported by FiT
- relatively low electricity price (incl. fees and taxes):
  - 18-20 Cent/kWh (household)
  - 10-15 Cent/kWh (company)



Austria PV market – framework conditions

- Decreasing feed-in-tariffs (FiT)



PVFINANCING

Current status: Shared generation facility model in Austria

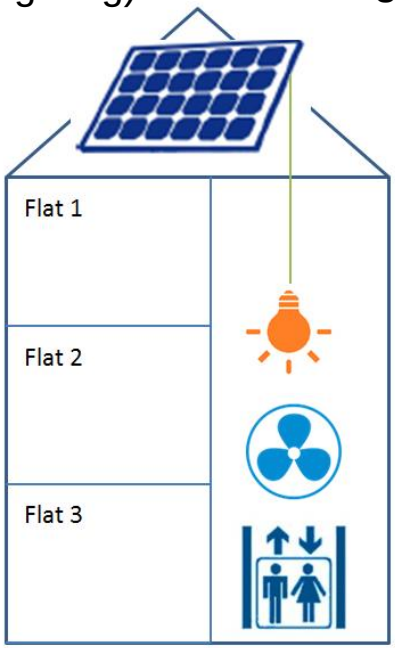
Current Status:
Shared generation facility model in Austria

- Due to regulatory restrictions PV systems on buildings with several consuming units are rare
- At the moment there are only two possible business models:

I) PV electricity only for common services

The building is equipped with a PV system, but the produced electricity can only be used for common services (e.g. corridor lighting)

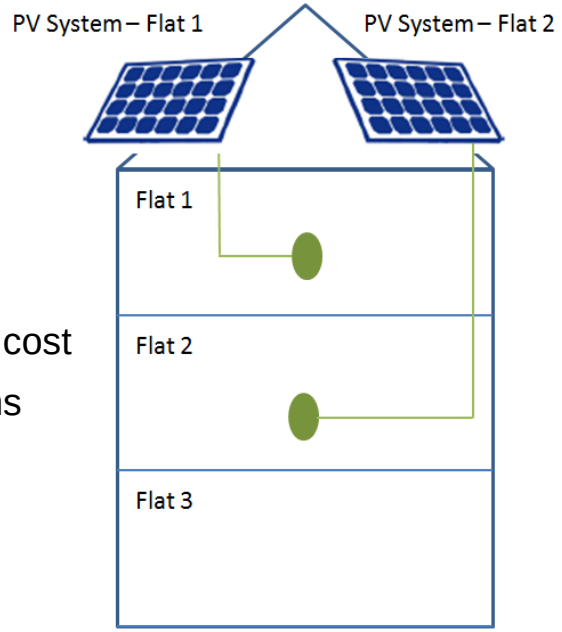
- only little self consumption
- no advantage for individual flat



II) Separated PV system

Several, technically completely separated PV systems are installed. Each PV system supplies only one flat/office/shop.

- high specific cost
- small systems not efficient



PVFINANCING

Outlook: Shared generation facility model in Austria

Outlook:
Shared generation facility model in Austria

Current draft:
released end of February 2017

Second draft:
released beginning of Jannuary 2017

First draft:
released in April 2016

March 2016:
Ministry announced a reform of the existing ElWOG (Elektrizitäts- und Organisationsgesezt) to allow collective self consumption

- Not released now – but almosed finalised
- Clarification needed in other laws that are reformed as well (e.g. Green Electricity act)

Outlook:
Shared generation facility model in Austria

30. May: Start of demonstration & petitions to rais the pressure on the government

3,300 supporters

Sign: www.erneuerbare-energie.at/petition

Outlook:
Shared generation facility model in Austria

Current draft: only 600 words, but they do change a lot

„Gemeinschaftliche Erzeugungsanlagen

§ 16a. (Grundsatzbestimmung) (1) Die Ausführungsgesetze haben einen Rechtsanspruch der Netzzugangsberechtigten gemäß § 15 gegenüber den Netzbetreibern vorzusehen, gemeinschaftliche Erzeugungsanlagen unter den Voraussetzungen von Abs. 2 bis 7 zu betreiben. Die freie Lieferantenwahl der Endverbraucher darf dadurch nicht eingeschränkt werden.

(2) Der Anschluss von gemeinschaftlichen Erzeugungsanlagen zur privaten oder gewerblichen Nutzung ist nur an gemeinschaftliche Leitungsanlagen, über die auch die teilnehmenden Berechtigten angeschlossen sind (Hauptleitungen), im Nahebereich der Anlagen der teilnehmenden Berechtigten (Verbrauchsanlage) zulässig. Der direkte Anschluss der gemeinschaftlichen Erzeugungsanlage an Anlagen im Eigentum des Netzbetreibers oder die Durchleitung von eigenerzeugter Energie durch Anlagen des Netzbetreibers an teilnehmende Berechtigte ist unzulässig.

(3) Die teilnehmenden Berechtigten können einen Betreiber der gemeinschaftlichen Erzeugungsanlage bestimmen, der sich vertraglich zum Betrieb der gemeinschaftlichen Erzeugungsanlage für die teilnehmenden Berechtigten verpflichtet und dem Netzbetreiber angezeigt wird.

(4) Die teilnehmenden Berechtigten und, sofern die gemeinschaftliche Erzeugungsanlage nicht von den teilnehmenden Berechtigten selbst betrieben wird, der Betreiber der gemeinschaftlichen Erzeugungsanlage, schließen einen Errichtungs- und Betriebsvertrag, der zumindest die folgenden Regelungen enthalten muss:

1. Allgemein verständliche Beschreibung der Funktionsweise der gemeinschaftlichen Erzeugungsanlage;
2. Anlagen der teilnehmenden Berechtigten und Zählpunktnummern;
3. jeweiliger ideeller Anteil der Anlagen der teilnehmenden Berechtigten (Verbrauchsanlage) an der gemeinschaftlichen Erzeugungsanlage;
4. Anlagenverantwortlicher für die gemeinschaftliche Erzeugungsanlage;
5. Betrieb, Erhaltung und Wartung der Anlage sowie die Kostentragung;
6. Haftung;
7. Datenverwaltung und Datenbearbeitung der Energiedaten der gemeinschaftlichen Erzeugungsanlage und der Anlagen der teilnehmenden Berechtigten durch den Netzbetreiber;
8. Aufteilung der erzeugten Energie;
9. Aufnahme und Ausscheiden teilnehmender Berechtigter samt Kostenregelungen im Fall des Ausscheidens (insbesondere Rückerstattung etwaiger Investitionskostenanteile, Aufteilung laufender Kosten und Erträge auf die verbleibenden teilnehmenden Berechtigten);
10. Beendigung des Vertragsverhältnisses sowie die Demontage der gemeinschaftlichen Erzeugungsanlage;
11. allfällige Versicherungen.

(5) Der Netzbetreiber hat

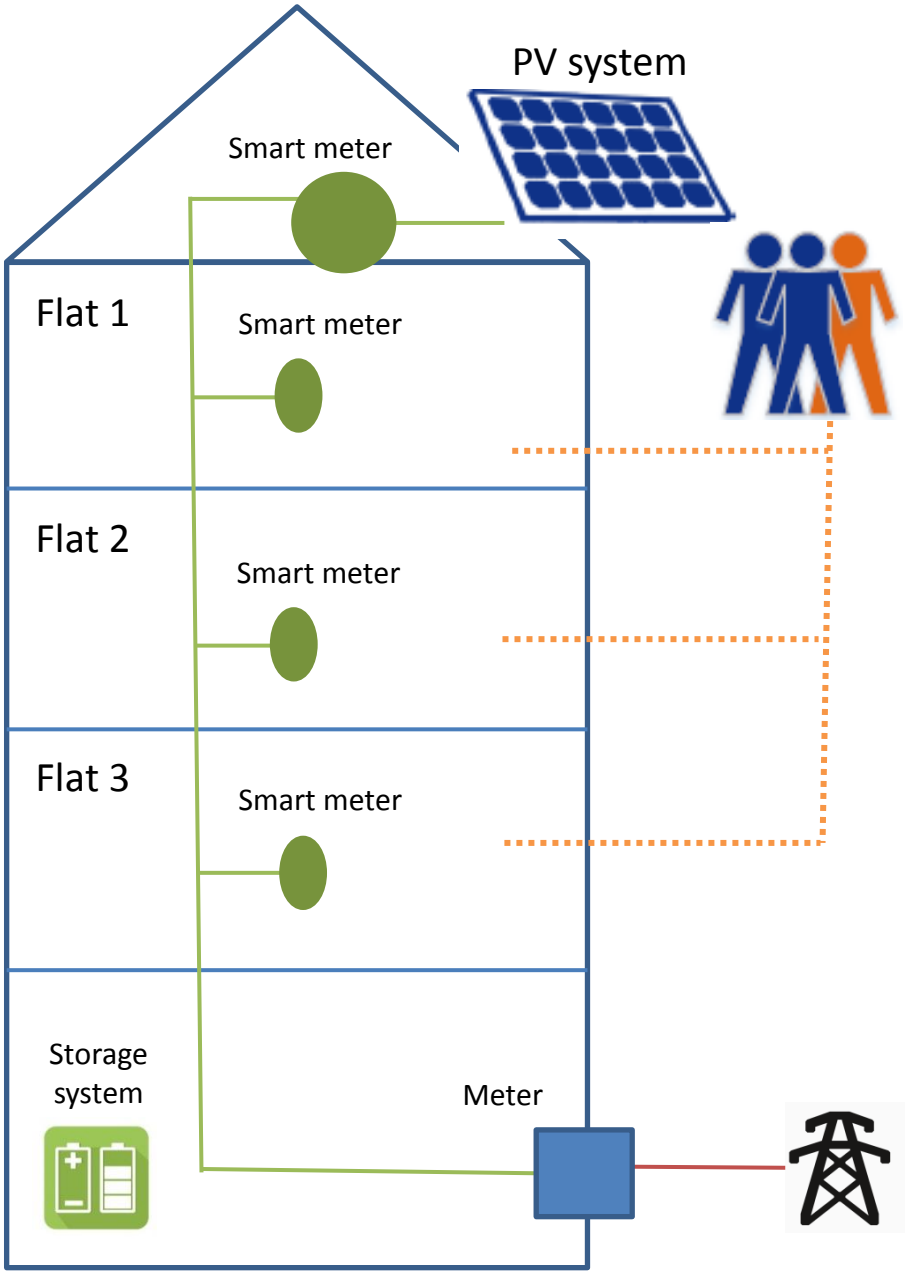
1. die Einspeisung in die Hauptleitung und den Bezug der gemeinschaftlichen Erzeugungsanlage mit einem Lastprofilzähler oder unterhalb der Grenzen des § 17 Abs. 2 mit einem intelligenten Messgerät gemäß § 7 Abs. 1 Z 31 zu messen. Sind die Verbrauchsanlagen nicht mit intelligenten Messgeräten ausgestattet, hat der Netzbetreiber diese binnen sechs Monaten zu installieren oder, falls er nicht alle Verbrauchsanlagen mit intelligenten Messgeräten ausstatten kann, abweichend von den übrigen Bestimmungen dieses Absatzes sowie der Absätze 6 und 7 die Energiewerte der gemeinschaftlichen Erzeugungsanlage nach einem zwischen den teilnehmenden Berechtigten vereinbarten Aufteilungsschlüssel zumindest jährlich mit den jeweiligen Verbrauchswerten zu saldieren;
2. den Bezug der Kundenanlagen der teilnehmenden Berechtigten mit einem Lastprofilzähler oder unterhalb der Grenzen des § 17 Abs. 2 mit einem intelligenten Messgerät gemäß § 7 Abs. 1 Z 31 zu messen;
3. die gemessenen Viertelstundenwerte der gemeinschaftlichen Erzeugungsanlage und der Anlagen der teilnehmenden Berechtigten seiner Rechnungslegung an die teilnehmenden Berechtigten zugrunde zu legen sowie nach Maßgabe der Marktregeln den Lieferanten sowie dem Betreiber der gemeinschaftlichen Erzeugungsanlage, sofern ein solcher gemäß Abs. 3 bestimmt wurde, zur Verfügung zu stellen.

Die verbleibende Energieeinspeisung pro Viertelstunde, welche nicht den teilnehmenden Berechtigten zugeordnet ist, gilt als in das öffentliche Netz eingespeist und ist der Bilanzgruppe des Stromhändlers, mit dem der Abnahmevertrag abgeschlossen wurde, zuzuordnen.

(6) Bei Verwendung von intelligenten Messgeräten müssen die Energiewerte pro Viertelstunde gemessen und ausgelesen werden.

(7) Der Netzbetreiber hat den zwischen den teilnehmenden Berechtigten vertraglich vereinbarten statischen oder dynamischen Anteil an der erzeugten Energie den jeweiligen Anlagen der teilnehmenden Berechtigten zuzuordnen und die Werte nach Maßgabe folgender Regelungen zu ermitteln:

1. die Zuordnung hat pro Viertelstunde zu erfolgen und ist mit dem Energieverbrauch der jeweiligen Anlage des teilnehmenden Berechtigten in der jeweiligen Viertelstunde begrenzt;
2. der Messwert des Energieverbrauchs pro Viertelstunde am Zählpunkt der Anlage des teilnehmenden Berechtigten ist um die zugeordnete erzeugte Energie zu reduzieren;
3. der Messwert der Energieeinspeisung in die Hauptleitung pro Viertelstunde am Zählpunkt der gemeinschaftlichen Erzeugungsanlage ist um die Summe der zugeordneten Energie zu vermindern."



PVFINANCING

Main points of the current draft:

- Tenants that want to use PV electricity have to purchase a symbolic share of the system & establish an operator association
- PV system is connected to the building's main power supply line
- Smart meter required to ensure an exact billing of the electricity consumption from each flat
- Focus on self-consumption, excess electricity is fed into the grid
- Tenants can share their amount among each other

Outlook:
Shared generation facility model in Austria

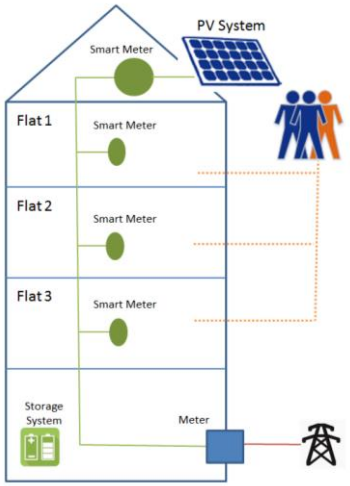
- **Contract** regulates the terms of use
- Law is valid for all buildings
- **No selling of electricity** to third parties, building across the street (not allowed to use the public grid)
- Free **choice in electricity supply** for each tenant as required by EU is guaranteed
- The grid operator is responsible for metering each unit's electricity consumption and balancing the electricity costs per metering point.
- **Other laws remain unaltered** (e.g. residential tenancy law)
- **No grid fees** are charged

Outlook:
Shared generation facility model in Austria

Different opportunities to use the law for new business models:

- House community invests
- Building owner himself invests – sells electricity to his tenants via operating costs (e.g. €/month)
- External operator invests – Contracting (billing once, per month, ...)
  - Investor company
  - Electricity provider

- Uncertainties & unsolved questions
- Detailed information will be available soon
- Business modells have to be established



Outlook:
Shared generation facility model in Austria

- Conscius of the new law favouring collective self consumption, we described possible business models in our national implementation guideline

- Available contract tempates (only in German)
  - Association by law (Vereinsstatuten)
  - rent the roof (Dachvermietung)
  - lease the PV system (Pachtvertrag)

- Contracts are available on the project website www.pv-financing.eu

Outlook:
Shared generation facility model in Austria

**Gemeinschaftliche PV-Erzeugungsanlagen –
was steckt dahinter und welche vertraglichen Vorgaben gibt es**

Photovoltaikfinanzierung von morgen: Contracting

For free and available at www.pvaustria.at/pv-financing

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Thank you for your attention!

DI Vera Liebl
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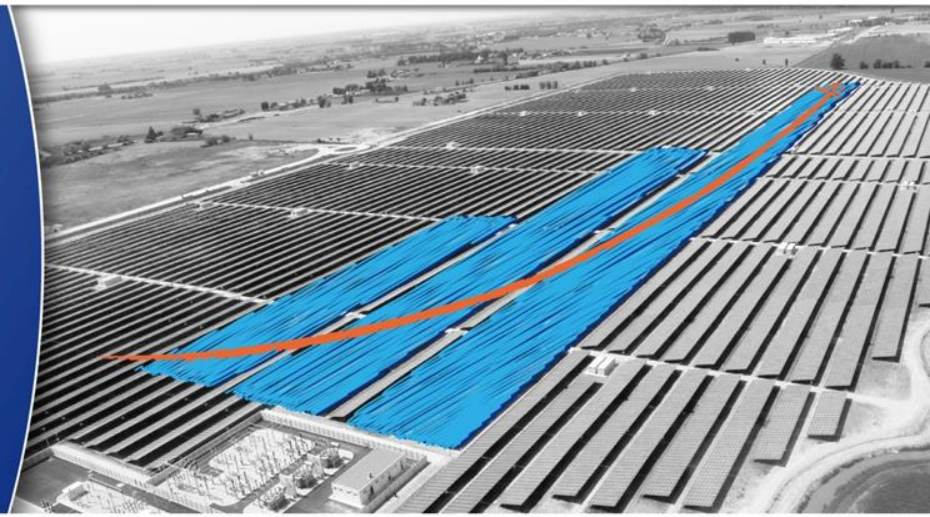
The tenant solar supply model in Germany - “Mieterstrom”

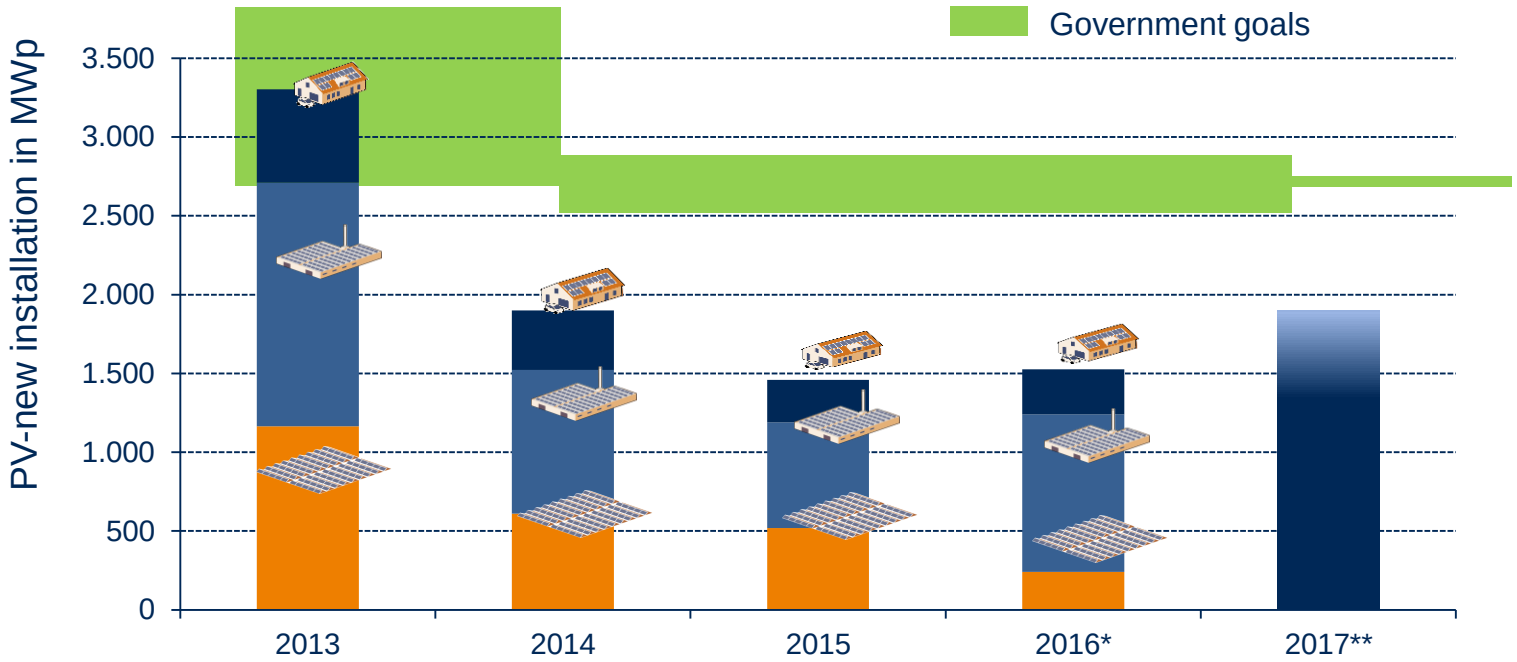


Luz Aguilar, International Project Manager, BSW-Solar

1st June, Intersolar Europe 2017

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 646554

Slight growing installation in 2017



** Expected installation in 2017: 1.600 bis 1.900 MWp
Source: BNetzA, BSW-Solar 1/2017

- 2016 =1,52 GWp installed vs.1,46 GWp in 2015
- Growing installed capacity in the commercial sector
- Still not meeting government targets

Definition of “Mieterstrom“

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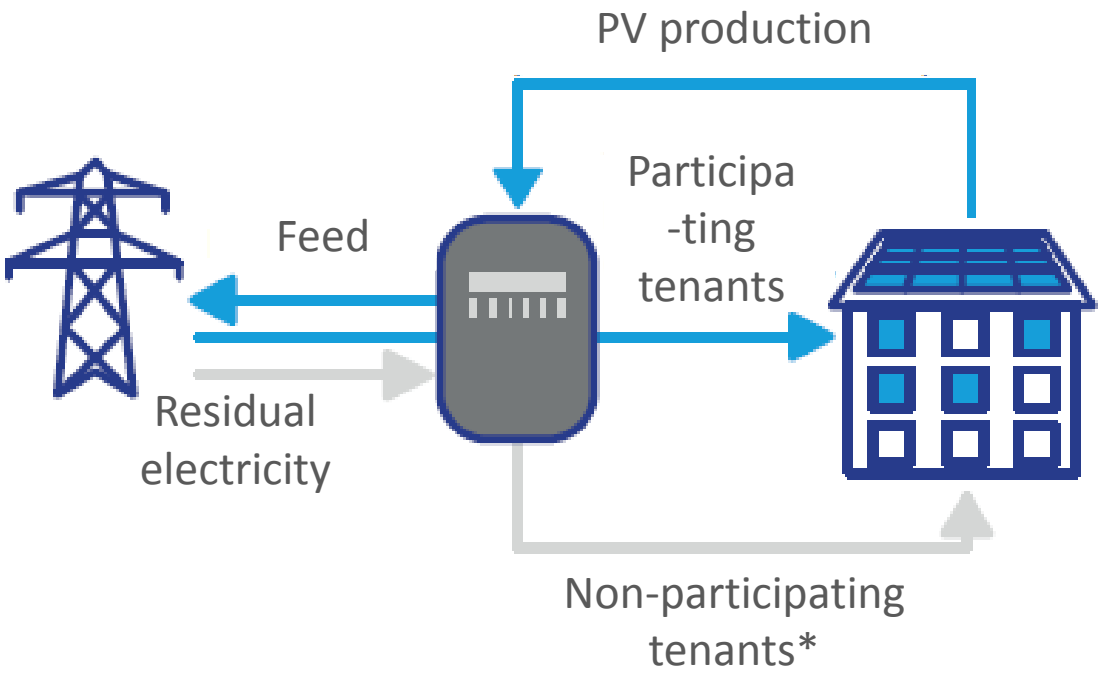
- **The tenant solar supply model** is a **decentralized / locally generated** electricity from PV plants (and/or CHP), which is used directly by the tenants in multi-family houses or commercial buildings

- Direct supply is allowed by the German Renewable Energy Act (EEG) fulfilling the following criteria:
  - Delivery to a third party (NO person identity)
  - Close proximity to the area
  - Without using the grid

The tenant supply model



*A building can have participating and non-participating tenants

New Mieterstrom draft-law: presented at the 26th April 2017

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C O M P E N S A T I O N

New Mieterstrom law:

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- The PV plant owner or operator (who could be a company or the lessor) will get a premium, equivalent to the FiT (–) 8,5 ct:
  - **Up to 10 kW = 3,81 ct/ kWh** (FiT: 12,31 ct/kWh)
  - **>10 kW to 40 kW: 3,47 ct/kWh** (FiT: 11,97 ct/kWh)
  - **>40 kW to 100 kW: 2,21 ct/kWh** (FiT: 10,71 ct/kWh)
- The PV system should be in the building*
- Contract of electricity supply for 1 year (without automatic extension)*
- Restriction: up to 500 MW pro year
- Publication in the official journal expected in July 2017

Actors & roles

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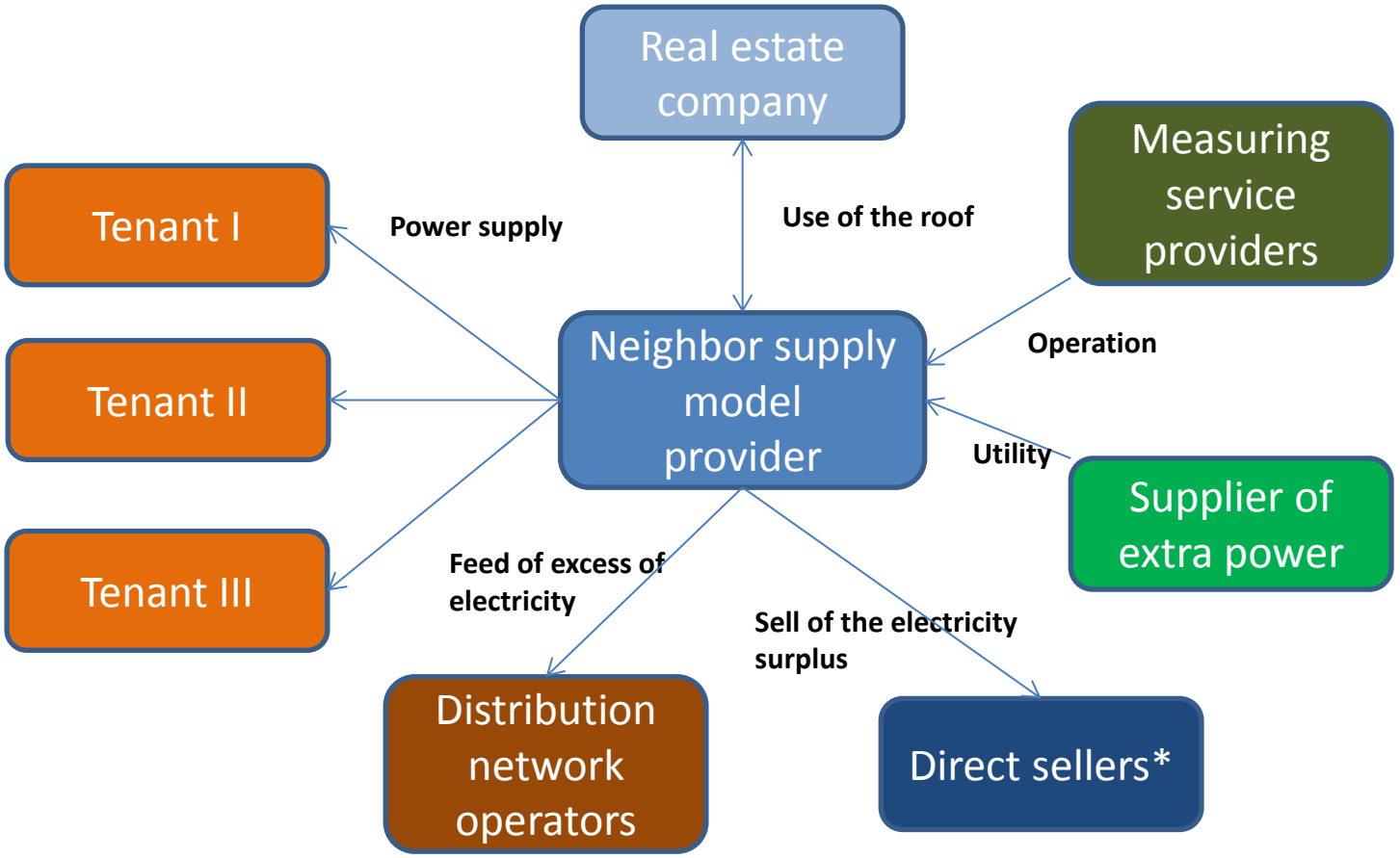
Stages	Tasks	Possible players
Building envelope	Provision of the surfaces for PV generation	**Real estate companies**
Installation & generation	Planning, installation, financing, M&O of the PV installation	**Utilities, service providers, real estate companies**
Electricity delivery	Metering point operation, billing, marketing and customer acquisition, purchasing and delivery of grid power, customer service	**Utilities, cooperatives, real estate companies that are supported in this regard by various service providers, e.g. for measuring point operation and billing**
Electricity consumption	Close of a electricity contract, electricity consumption	**Private or commercial final consumers (= tenants)**

Contractual relationships of the players



*Direct markers (from 2016 > 100 kW)

Market potential

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- Potential users of the neighbor supply model are:
  - Private tenants in multi-family houses
  - Real State Companies
  - Commercial tenants
  - Dormitories

- Number of multi-family houses: approximately 21 million apartments; About 3 to 4 million of these (up to 20 percent) are eligible for the supply model*
- If the potential is fully exploited, consumption of approx. 3 TWh
- Participating households can usually cover 25 to 35 % of their own electricity requirements via the PV system

*Estimations of BSW-Solar

Next activities

- The Mieterstrom Implementation Guideline will be updated and available at the end of June:
  - PV Financing Website
  - Sonneteilen

- Webinar “New opportunities for "Mieterstrom" projects in Germany” (EN).
  - Date: Tuesday 20 June, 11pm – 12 pm (CET)
  - Registration here

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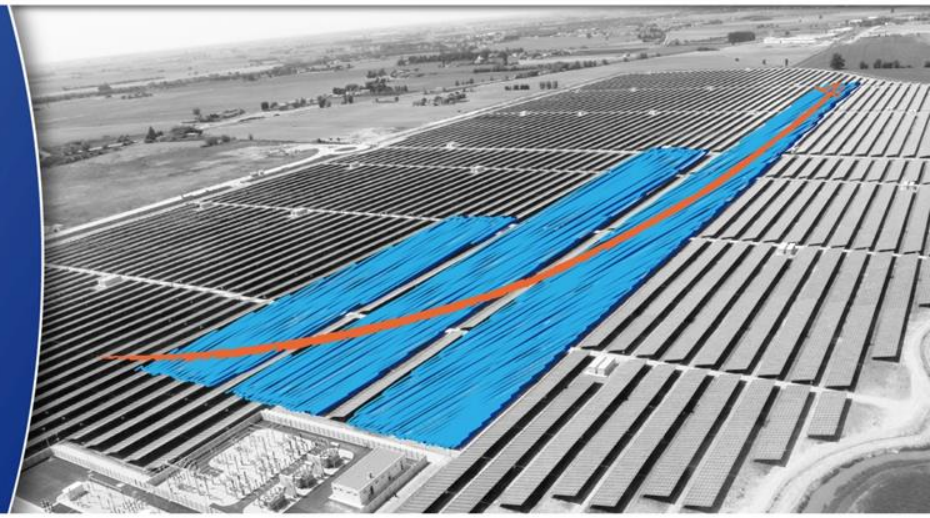
QUESTIONS?

Collective self-consumption

Julien COURTEL



1st of June, 2017

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646554

Less than one year of history

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July 2016 : An ordinance sets the framework for self-consumption, including collective SC

- One or more Producer
- One or more consumer
- In the same legal entity

February 2017: Self-consumption and collective self-consumption are finally defined by a law

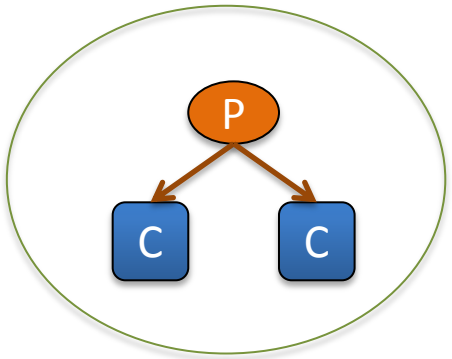
- Demand and injection points are situated after a low voltage substation

End of April 2017: A draft decree gives the last details regarding collective self-consumption schemes

- Relationships among stakeholders
- Storage

…

Collective self-consumption at a glance



Consumers and producers have to be part of a same legal entity.

- The form of this entity has to be decided on a case by case basis
- Association, company, cooperative….

The PV installation operated by one producer can not exceed 100 kW.

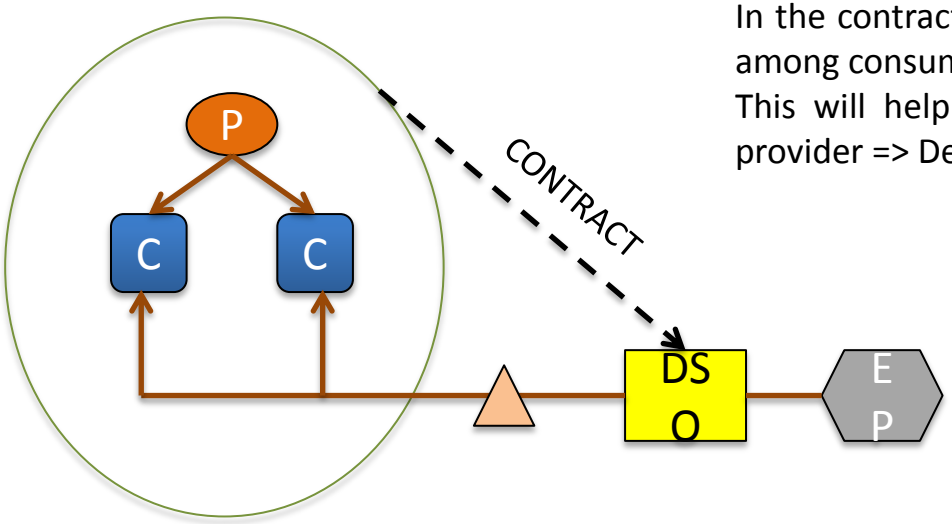
C Consumer

P Producers

Legal entity

Electricity flow

The other stakeholders



In the contract, the legal entity sets the repartition methodology among consumers.
This will help to allocate electricity supplied by the electricity provider => Determine the electricity bill.

C Consumer

P Producers

Legal entity

DSO Distribution Service Operator

E P Electricity provider

Electricity flow

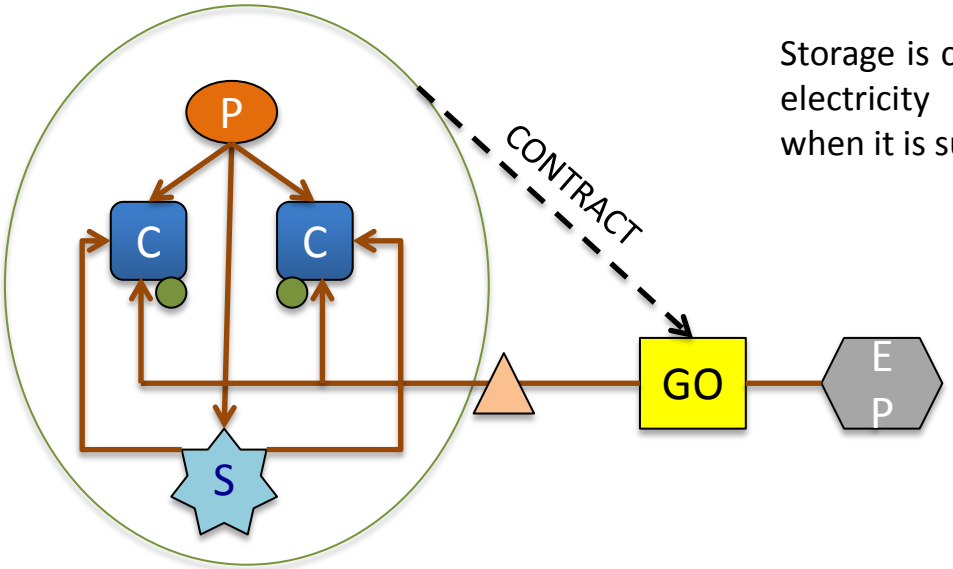
Low voltage substation

The low voltage substation blocks many projects. It is not a barrier on the short-term, but may become one in 1 or 2 years.

Smart-meters and storage

Storage is considered as a consumer when electricity is stored and as a producer when it is supplied.

The grid operator has the obligation to install smart-meters



Production for consumers + stored electricity ≤ total production
Production for consumers ≤ total production + from storage electricity

For a time slots defined by the grid operator (30 ‘ now)

C Consumer

P Producers

Legal entity

GO Grid operator

EP Electricity provider

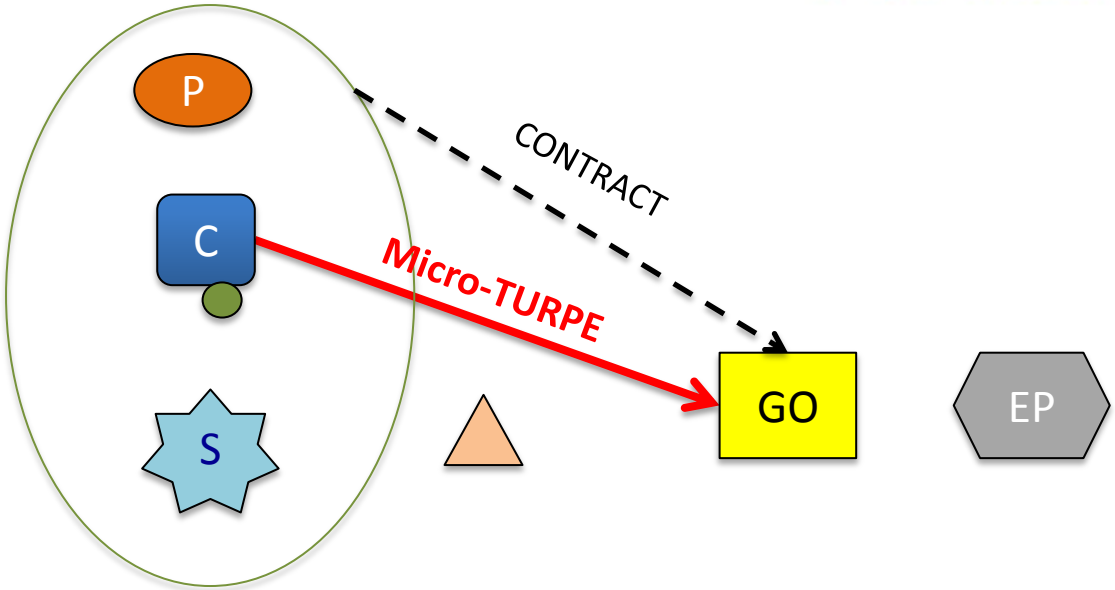
Electricity flow

Low voltage substation

Smart-meters

S Storage

Four inputs missing to have the complete overview of collective self-consumption



The TURPE is the price that paid by consumers for the services of the grid operator

- A “micro-TURPE” will be published adapted to self-consumption projects.
- The financial viability of collective self-consumption projects will depend on this micro-TURPE.
- This micro-TURPE amount will be the key for the quantity of collective self-consumption projects that will be achieved

The technical documentation that describes the connection to the grid (deadlines, information needed…).

A contract template between the legal entity and the grid operator is needed.

The limitation of the scope to the same low voltage station will become a barrier in the medium-term.

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Thank you for your attention

Making renewable energy the key to a fair energy transition

Julien DIJOL, Deputy Secretary-General

HOUSING EUROPE

Table of contents

- The energy transition in the social, cooperative, public housing sector: some figures
- Renewable energy and social housing companies: some figures
- 2 contributions of PV/RES
- How can EU/national legistlation help?

HOUSING EUROPE

Housing Europe – From Copenhagen to Paris

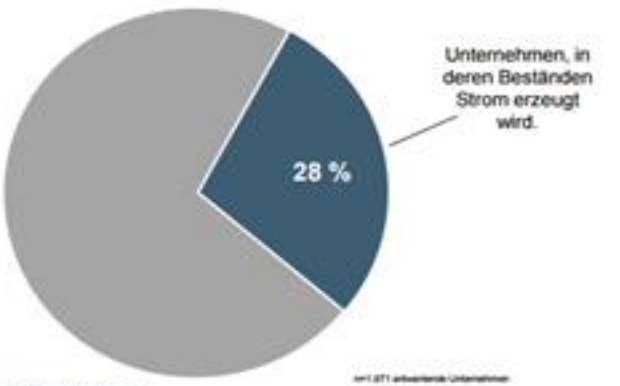
1.843.000 dwellings have been refurbished,

average refurbishment rate of **1,2 % of their stock.**

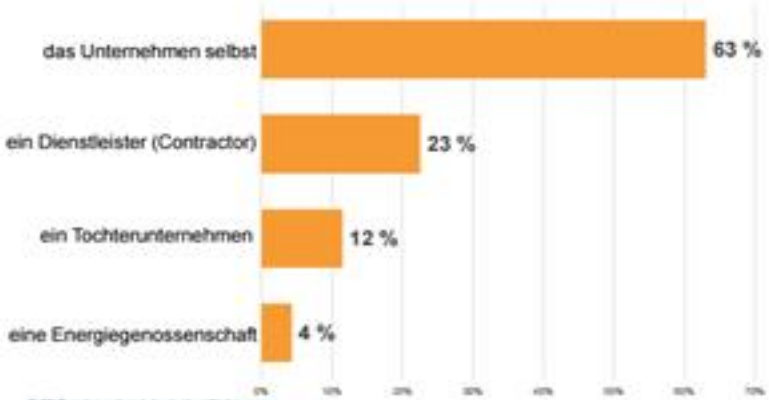
an average **energy saving** of **45 kWh/m2/year** (22%) which makes their **tenants** able to **save on average 724 € on their energy bill**

Unternehmen als Stromproduzenten.

Anteil der Unternehmen, in deren Beständen Strom produziert wird
GdW-Unternehmen

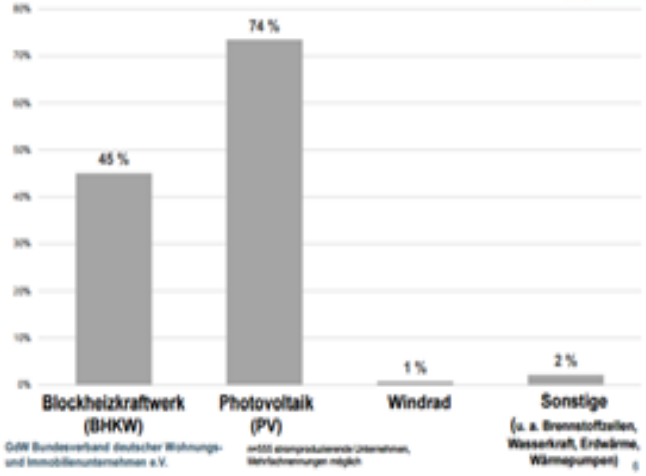


Trägerschaft der Stromerzeugung in den GdW-Beständen.
Wer erzeugt den Strom?



Technologien zur Stromproduktion

Anteile bei den stromerzeugenden Wohnungsunternehmen im GdW



GdW Bundesverband deutscher Wohnungs- und Immobilienunternehmen e.V.

n=103 stromproduzierende Unternehmen, Mehrfachnennungen möglich

Worin sehen Sie die wesentlichen Hinderungsgründe, die beseitigt werden müssten, damit Ihr Unternehmen verstärkt Mieterstrom anbieten würde? (Mehrfachantworten möglich)

2 contributions of PV (and RES in general)

1. PV/RES and social housing towards NZEBs
2. PV/RES as part of the business model for renovation of social housing

1. PV/RES and social housing towards NZEBs

- To refurbish houses to Net Zero Energy (E=0) (like in the Energiesprong model) implies that houses will require on site renewable energy generation
- likely to be solar PV, possibly solar thermal and, as appropriate, air source ground source heat pumps
- The current first completed E=0 prototypes in NL generate about 1/3 of the original total final energy consumption on site; the other 2/3 of the original final energy consumption is saved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veiligheid en welzijn
VR

- In France, positive energy buildings (BEPOS) are promoted as being the new benchmark for NZEBs from 2020.
- Atlantique Habitations have built a positive energy building for 32 dwellings and more than 200 PV panels that will cover more than 100% of energy needs

2. PV/RES as part of the business model for renovation of social housing

- In Flanders, social housing providers seek to increase rent to cover the cost of installation of PV. Part of the energy produced on site will be sold to tenants (cheaper prices than the other suppliers)
- In Germany social housing providers seek to combine low energy building (instead of passive house) with renewable energy, in order to maintain reasonable cost of living for tenants

What needs to be improved by EU/national legislation?

- **Promote self consumption model by for instance**
- allowing net metering
- allowing several suppliers for 1 building/households
- **Adapt tax regime to promote small scale generation within social housing areas**
- **Regulatory framework must take into account split incentives (EED)** (allow tenants contribution to cover costs)

HOUSING EUROPE

- **Consider the neighbourhood and not only the building –** overcome the public street issue/ownership of the grid issue

HOUSING EUROPE

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HousingEurope

Housing Europe

PV FINANCING COUNTRY OUTLOOK

Outlook: PVF countries

- **Austria:** The law, that enables collective self consumption is expected to be released before summer
- **France**: The fixation of the grid fee for self-consumption projects that will define the economic viability of such projects will be defined in the coming moths
- **Germany:** the Mieterstrom law (which will define the premium per kWh) it´s expected to be published in the official in July 2017

Outlook: PVF countries

- **Italy:** The introduction of 'closed distribution systems' (no date foreseen for this) could open the PPA market to multiple customers (currently not allowed).
- **Spain:** Some regions in Spain are working on an investment support for self-consumption installations (e.g. fiscal advantages, financing).
- **Turkey:** the legislation regarding to production <10 KW which will bring extra simplicity, it is expected to be published in the official gazette in the upcoming months.

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Check @PVFinancing on Twitter for more information &

Visit our website: http://www.pv-financing.eu/