SMARTER TOGETHER

Smart and Inclusive Solutions for a Better Life in Urban Districts

Report on collective self-consumption of Photovoltaic

Deliverable D3.3.1

Version 1.0

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SMARTER TOGETHER

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Glossary

DNO	Distribution Network Operator
EC	European Commission
EU	European Union
HEG	Heidelberger Energiegenossenschaft eG
LV	Low Voltage
MV	Medium Voltage
PV	Photovoltaic
SPL	Société Public Locale
WWF	World Wide Fund for Nature
ZAC	Zone d'Aménagement Concertée

SMARTER TOGETHER BENEFICIARIES

N°	Organisation name	Short name	Country
1	Lyon Confluence	SPL	France
2	Lyon Metropolis	GLY	France
3	HESPUL Association	HES	France
4	Toshiba	TSF	France
5	Enedis	END	France
6	Enertech	ETC	France
7	City of Munich	MUC	Germany
8	Bettervest	BET	Germany
9	G5-Partners	G5	Germany
10	Siemens Germany	SIDE	Germany
11	Spectrum Mobil	STA	Germany
12	Securitas	SCU	Germany
13	City of Vienna	VIE	Austria
14	BWS Gemeinnutzige	BWSG	Austria
15	Wiener Stadtwerke	WSTW	Austria
16	Kelag Wärme	KWG	Austria
17	Siemens Austria	SIAT	Austria
18	Sycube Informationstechnologie	SYC	Austria
19	Austrian Post	POST	Austria
20	Fraunhofer	FHG	Germany
21	Austrian Institute of Technology	AIT	Austria
22	Energy Cities	ENC	France
23	Gopa COM	GPC	Belgium
24	University of St Gallen	UNISG	Switzerland
25	Technical University of Munich	TUM	Germany
26	Deutsches Institut fuer Normung	DIN	Germany
27	Algoé	ALG	France
28	City of Santiago de Compostela	STC	Spain
29	City of Sofia	SOF	Bulgaria
30	City of Venice	VEN	Italy

1. Introduction

"The public policies ... support the self-consumption of energy."

Article 2 of the French Law on Energy Transition for a Green Growth of August 2015

1.1 Objectives of this document

Within SMARTER TOGETHER, 4 new PV systems for a total power of approximately 1MW are planned in the Lyon Lighthouse City. Detailed features of these PV systems will be given in deliverable D3.4 of SMARTER TOGETHER related to Low-energy district achievements – zero carbon objective planned on month 36 of this project (early 2019).

In close link with these new PV systems, this document aims to:

- Give the conditions under which self-consumption can be a new business model for PV systems,
- Describe existing projects of collective self-consumption of PV in Europe,
- Draw-up proposals of collective self-consumption schemes,
- Summarize main legal barriers that can prevent the implementation of collective self-consumption projects.

This document takes as example one group of 5 buildings under construction in the Lyon-Confluence area called B2 block (12.000 m²), but remains relevant for other buildings elsewhere in France and in Europe.

It has been written by Bruno GAIDDON and Marine JOOS of Hespul.

2. Self-consumption: a new business model for PV

2.1 Foreword

In the early years of grid-connected PV systems, the mainstream way of connecting PV systems was called Net-Metering. This consisted in connecting the PV system to the low-voltage board of the building in order to consume the energy produced in priority. In case power production exceeded power consumption, the excess power produced was injected into the distribution grid and made the grid meter turn backwards. Thus, this was already partial self-consumption. With Net-Metering, the price paid for the energy injected into the grid was the same as the price paid by the consumer to the electricity supplier. This was a low cost and easy way to connect to the grid.

In 2000, Germany introduced a feed-in-tariff for the energy produced in order to encourage the deployment of PV systems. This is a policy mechanism designed to accelerate investment in PV systems by providing them, on the long term, remuneration above the retail rate of electricity. This feed-in-tariff scheme requires to directly connect the PV system to the grid and to have a specific meter to measure the amount of PV energy produced. Following the successful example of Germany, almost all European countries have implemented such a policy mechanism.

Nowadays, due to the significant reduction of PV systems' price, the energy produced by PV is generally cheaper than the energy produced by conventional energy suppliers. Therefore, PV producers try to adapt their business model to self-consume the energy produced even if the excess of energy still needs to be paid at a certain tariff. However, in some cases, the legal framework implemented for the feed-in-tariff is not suited for partially or totally self-consuming the PV production.

Several reports have been published by public administrations to improve the legal framework of self-consumption of PV, such as:

- The report of the French Ministry of Ecology, Sustainable Development and Energy on the self-consumption and self-production of renewable energy published in December 2014[i],
- And the European Commission Staff Working document on Best-practices on Renewable Energy Self-consumption published in July 2015[ii].

In its report, the French Ministry noticed that self-consumption can be addressed at several scales: at the consumer site scale but also at larger scales such as the building scale or block scale (group of buildings). The French Ministry also suggested to set-up a call for projects in order to experiment self-consumption at the block scale in order to study the added value for the community (proposal n°3 of the report).

In its working document, the EC staff highlighted several best practices related to self-consumption such as:

- The establishment of simplified authorisation procedures, such as simple notification, for small-scale renewable energy projects,
- The avoidance of discriminatory charges for self-consumption projects,
- The phasing in of short-term market exposure by valuing surplus electricity injected into the grid at the wholesale market price.

2.2 Self-consumption at consumer scale

2.2.1 Description

Self-consumption at consumer scale is the most common way to self-consume the energy produced by a PV system. This solely requires the connection of the PV system to the private grid of the consumer. Depending on the local framework, self-consumption at consumer scale must be total, i.e. there must be no power surplus injected into the grid, or partial, i.e. the surplus can be injected into the grid and sold to a third party at a certain tariff. In both cases, this requires a two-way meter either to check that there is no surplus or to count the energy surplus injected into the grid.

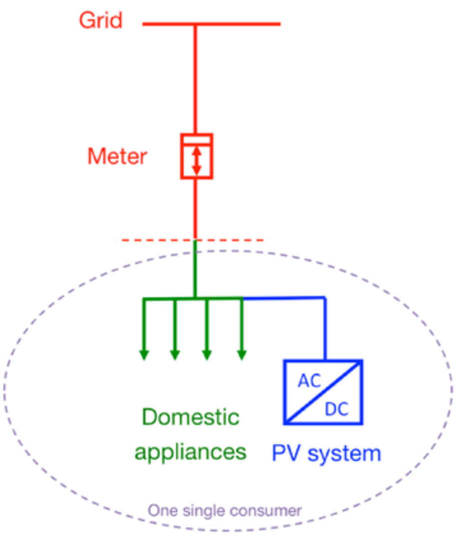

Figure 1 – Self-consumption at consumer scale

(Colour code: red=public distribution grid; green=private LV grid; blue=PV system)

The main benefit of self-consumption at consumer scale is, of course, to reduce the energy bill since the conventional energy from the supplier is partially replaced by the energy produced by the PV system, which is cheaper. Also, self-consumption at consumer scale can sometimes be a solution to significantly reduce grid connection cost, especially when the power of the PV system is much smaller than the subscribed power for the consumption.

But self-consumption at consumer scale, if required to be total, comes with many pitfalls such as:

- The strong under-sizing of PV system to be sure not to inject power into the grid even if the roof offers space for a larger system (less renewable energy!),
- The increase of energy consumption in order to consume all the energy produced (more consumption!),
- The installation of expensive storage systems to store the energy surplus and to consume it later (increase of the price of the energy produced!).

Also, self-consumption at consumer scale is easy to implement in single-user buildings such as individual homes, public buildings and office buildings with only one company. On the other hand, self-consumption at consumer scale is complex to implement in buildings with many different users such as multi-apartment buildings and office buildings with different companies due to complex electric system design (many sub-PV systems connected into each dwelling or each office).

Therefore, lessons learnt from existing projects include:

- The restriction of pure self-consumption to buildings with daily consumption such as industry and offices building,
- For residential, the avoidance of pure self-consumption and the preference of partial self-consumption with injection of surplus in the grid,
- For multi-user buildings such as multi-apartment buildings and office buildings with different companies that are both common in European cities, the avoidance of self-consumption at consumer scale and the preference of collective self-consumption, at building or at block scale (see below).

2.2.2 Self-consumption at building scale

Self-consumption at building scale is a recent way to make several electricity consumers located in one single building benefit from the electricity produced by a PV system installed on the same building. This concept has been developed as an alternative to the self-consumption at consumer scale that is not suited for multi-user buildings. Actually, self-consumption at consumer scale requires to divide the PV system in many sub-systems and to connect each one sub-system to the private grid of each user. This leads to complex system design and expensive installation price and is not realistically feasible in case of buildings with a large number of users such as large multi-apartment buildings or office buildings with many different companies.

On the opposite, self-consumption at building scale requires no specific system design as this does not require the connection of several small PV systems to each single private electricity grid but only one single PV system with consumption data split among several electricity consumers.

This split of consumption data among users is called “Virtual Metering” meaning that, in this case, physical infrastructures such as wires and meters are replaced by data.

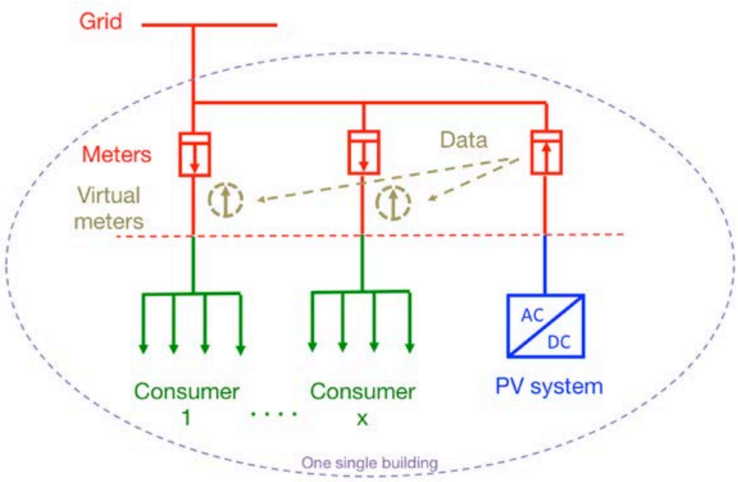

Figure 2 – Collective self-consumption at building scale

Thus, the main benefit of self-consumption at building scale is the significant cost reduction of the PV system design compared to many small PV systems connected to the private grid of each user as required for the self-consumption at consumer scale.

Self-consumption at building scale is innovative and requires:

- A local framework that allows the implementation of the virtual metering concept instead of real energy meters, that used to be the exclusive devices used by Distribution Network Operators (DNO) to measure power consumption and power production. This local framework may also include reduced grid fees due to the fact that the production system is very close to the consumers,

- A good cooperation with the local DNO as the implementation of such projects changes the state-of-the-art metering infrastructure,
- The definition of the method to split the PV production among electricity consumers given that some users of the building may not be willing to consume energy produced by the PV system and may want to choose another energy supplier.

2.2.3 Self-consumption at block scale

Self-consumption at block scale is similar to self-consumption at building scale but with one major difference. In this case, electricity consumers are located in several buildings rather than only one. These buildings can be built on the same plot or on several plots with public streets in between.

In this case, the cost reduction gained from the replacement of wires and meters that would be necessary to implement self-consumption at consumer scale by the split of the PV production data among users, the so-called Virtual Metering, is even more significant than in the case of self-consumption at building scale.

As in the case of self-consumption at building scale, self-consumption at block scale requires a favourable local framework, a good cooperation with the local DNO and a willingness of users to participate to such a project.

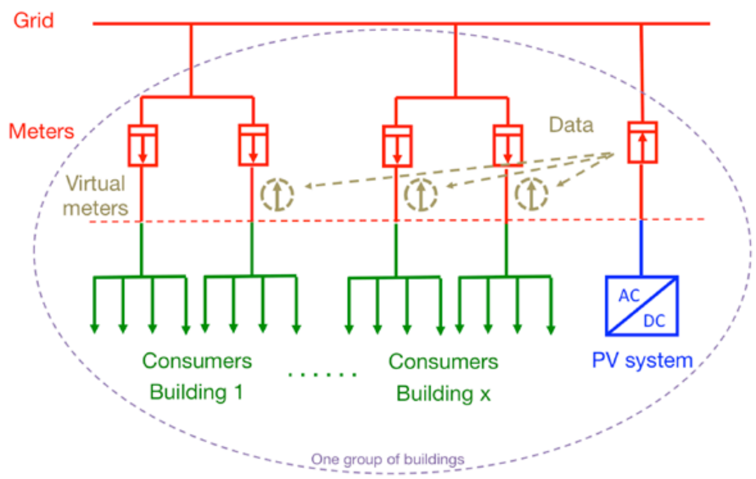

Figure 3 – Collective self-consumption at block scale

3. Existing projects

3.1 Heidelberg Energiegenossenschaft eG (Germany)

Heidelberger Energiegenossenschaft eG (HEG) is a student energy cooperative founded in 2010[iii]. Currently HEG has 200 cooperative members and has invested over 1.000.000 € in 12 citizen owned solar-power plants for a total power of 700 kWp. HEG has managed to successfully develop an innovative collective self-consumption scheme that allows tenants of apartment buildings to purchase electricity cheaper than what they would pay for purchasing electricity from the grid. This is achieved via a combination of on-site production of energy with PV, self-consumption of this energy and supply of residual energy from the grid.

This innovative business model has been tested with 116 tenants of the “Neue Heimat” Cooperative Family Home, situated in Nußloch in Germany near Heidelberg with 7 PV systems for a total power of 445 kWp.

Figure 4 - Collective self-consumption in the "Neue Heimat” Cooperative Family Home equipped with 7 PV systems (445 kWp)

The main innovation of this project lies in the metering infrastructure implemented in cooperation with the local DNO that is necessary to:

- Measure the energy produced by the PV system (regular meter owned by HEG - blue circle below),
- Measure the energy consumed by each energy consumer (regular meter owned by HEG - green circles below),

- Measure the residual energy supplied by HEG from the grid or the excess of energy injected into the grid by HEG (two-way meter owned by the local DNO - green rectangle below).
- Measure the energy consumed by energy consumers that do not want to be supplied by HEG but by any another energy supplier (regular meters owner by the local DNO and "virtual" meters located at the grid connection point with consumption data subtracted from the total energy consumed by HEG - black circles below).

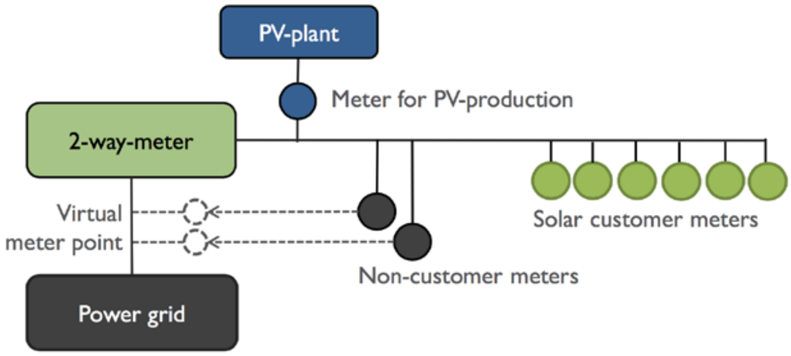

Figure 5 - Innovative metering infrastructure used by HEG for the collective self-consumption of PV

The total investment cost supported by HEG for the PV system was 525.000 € (1,18 €/Wp). Tenants can chose to buy the energy from HEG at a rate of 25.4 c€/kWh plus a monthly fee of 6.95 € given that this price is guaranteed for 20 years. This energy is a mix of the energy produced by the PV system (30%) and the energy imported from the grid (70%). The excess of energy produced is injected into the local grid and sold at a feed-in tariff. In this case, HEG becomes a real small-scale utility, which requires specialized expertise such as meters management and maintenance and energy billing to costumers.

3.2 ValSophia (France)

ValSophia - Les Aqueducs is a group of 4 office buildings with a total floor area of 6.400 m² built in 2015 in Southern France[iv]. These buildings are positive energy building since they consume less energy per year than produced with a 238 kWp PV system installed on the roof of each building and on the car park.

Figure 6 – Collective self-consumption of PV in ValSophia, a group of 4 office buildings equipped with PV systems (238 kWp)

In order to implement the self-consumption of PV, the developer of this project has designed a private micro-grid, which is used to connect energy consumers (24 companies) and PV systems (5 in total). With this micro-grid, energy consumers consume the energy produced by PV systems and the grid provides the remaining energy needed. Battery storage is used to increase the share of self-consumption but if the production power exceeds the load power, the energy surplus is injected into the grid and sold at a feed-in-tariff.

Figure 7 – Simplified diagram of the micro-grid used to implement collective self-consumption in Valsophia

Within this project, a facility manager is in charge of splitting between energy consumers:

- The energy bill issued by the energy supplier for the remaining energy provided to the micro-grid by the grid,
- The incomes generated by selling the energy injected into the grid and sold at a feed-in-tariff.

This project was a first of its kind in France and has faced serious difficulties with Enedis, the local DNO, which wanted to implement a state-of-the-art metering infrastructure. Mid-2016, both parties were still in a legal battle over the type of metering infrastructure that has to be implemented and the nature of the micro-grid (private or public)[v].

4. The Lighthouse city Lyon

4.1 The Lyon-Confluence urban project

Lyon-Confluence is an urban project that aims to redevelop a former industrial area of 150 ha in the city centre of Lyon and to build 1.000.000 m² of new dwellings, offices and shops by 2030[vi]. The district is divided into 3 different areas:

- An area of 74 ha with 600.000 m² of existing buildings called "Sainte-Blandine" (green area below),
- 400.000 m² of new buildings built from 2003 to 2016 on 41 ha in the western part, near the Saone river (ZAC 1 - red area below),
- 400.000 m² of new buildings to be built from 2016 to 2030 on 35 ha in the eastern part near the Rhône river (ZAC 2 - blue area below).

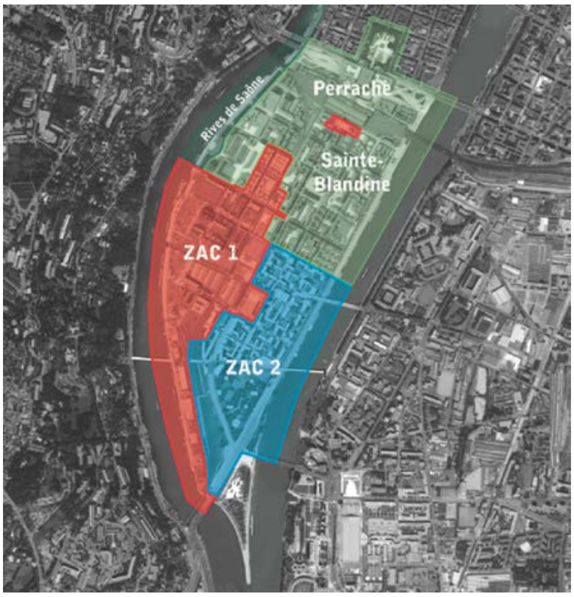

Figure 8 - Site plan of Lyon-Confluence with the existing area (in green) and the 2 new areas (in red and blue).

On top of this global objective, this project has very ambitious targets in terms of sustainability that are described in a Sustainable Action Plan designed with WWF[vii]. One of the most ambitious goals set in this action plan is the Zero Carbon objective defined as follows: the 1.000.000 m² of floor area of new buildings to be built in the area by 2030 should not lead to any increase of CO_2 emissions of the area.

In order to reach this goal, SPL Lyon-Confluence, the public company in charge of the redevelopment of the area, has undertaken several concrete measures to:

- Drastically reduce the consumption of new buildings in the area,

- Refurbish the existing buildings of Perrache/Sainte-Blandine district located in the northern part of the area,
- Massively install, on almost each new block, renewable energy systems such as wood chip boilers, solar thermal systems and PV systems.

Today, as a direct outcome of the pro-PV local building policy set up by SPL Lyon-Confluence, 10 blocks of the Lyon-Confluence area are already equipped with one or several PV systems for a total power of 1,1 MW.

Figure 9 - Architecturally integrated PV systems of A block (79 kWp)

Also, with to the improvement of this local policy that now requires real-estate developers to design and build positive energy buildings, and buildings on other local initiatives, 6 additional PV systems for a total of 1,2 MWp are currently under design. Thus, the total PV power in this area could reach 2,2 MW at the end of the SMARTER TOGETHER project, once these PV systems are installed.

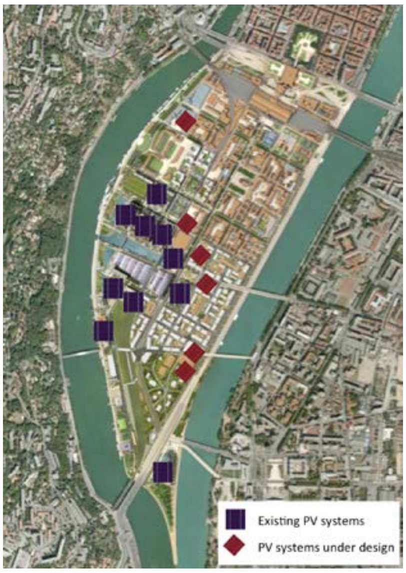

Figure 10 - Site plan of the Lyon-Confluence area with existing PV systems and PV systems under design

4.2 Description of the B2 block

The B2 block is a plot located in the centre of the Lyon-Confluence area. In 2015, SPL Lyon-Confluence launched an international design competition in order to select a team of real estate-developer/architects in charge of the construction of 5 buildings with dwellings, offices and shops. For this design competition, SPL Lyon-Confluence has set a specific energy requirement: buildings must be positive energy buildings, i.e. the primary energy consumed shouldn't exceed the primary energy produced locally by renewable energy systems.

SPL Lyon-Confluence short-listed 4 teams and awarded in December 2015 the team composed of Ogic (real-estate developer) associated with Diener & Diener Architekten (architects) and Clément Vergely (architect).

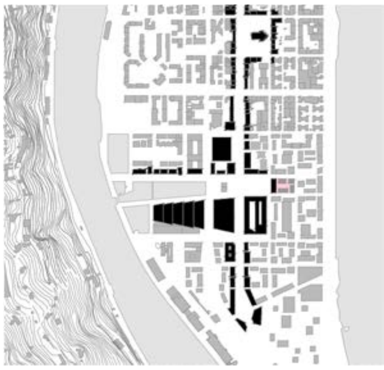

Figure 11 – Site plan and virtual view of the B2 block

In order to respect the positive energy requirement set by SPL Lyon-Confluence, this team designed low-consumption buildings equipped with a 210 kWp PV system installed on the roof of 4 buildings. In its documentation, this team considers connecting this PV system so as to self-consume the energy produced as an answer to the low feed-in tariff proposed for PV electricity and the high value it has if self-consumed due to the reduction of the energy bill. This would be a first of its kind in France at this scale with dwellings if actually implemented.

5. Proposals for collective self-consumption

5.1 Foreword

Collective self-consumption is a recent concept and only a small amount of projects have been done in Europe so far. Most of them are located in Germany and ideas to duplicate them have been reported from the Netherlands, France and Austria. The four options for collective self-consumption presented below should be theoretically feasible in all EU member States but some may not be possible due to the local legal framework. This is in particular the case for France as explained later on.

5.2 At building-scale with a public grid

For this option, the grid design is state-of-the-art. Within the French legal framework, it means that all energy consumers and the PV system are directly connected to the public distribution grid with a meter installed and controlled by the local DNO.

The local DNO is in charge of reading the PV production meter and splitting the energy production data among energy consumers of the building ("Virtual metering"). Each energy consumer has its own conventional energy supplier that bills an amount of energy corresponding to the energy consumption measured by the physical meter of the DNO minus the share of the energy production indicated by the virtual meter provided by the DNO.

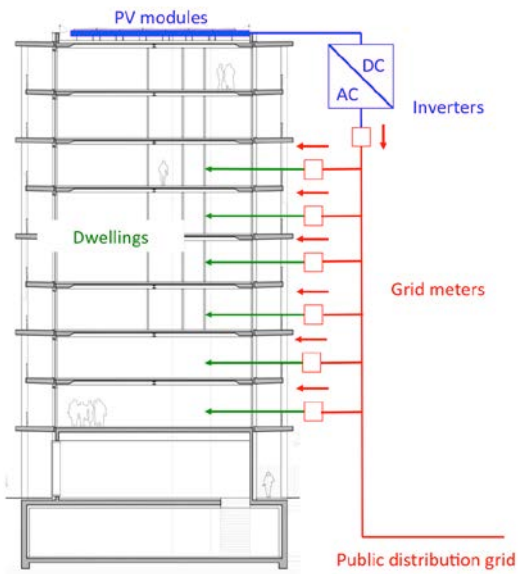

Figure 12 – Proposal of self-consumption at building scale with a public grid

(Colour code: red=public distribution grid; green=private LV grid; blue=PV system)

This option is now legally feasible in France since July 2016 if energy consumers and PV system are connected to the same LV feeder. In addition, such an option can benefit from reduced grid fees if PV power is lower than 100 kW. Application rules of these articles still need to be published in a decree (Energy code up-dated on July 2016 – see section 6.3 French legal framework).

5.3 At block-scale with a public grid

For this option, the grid design is also state-of-the-art. As for the previous option, all energy consumers and the PV system are directly connected to the public distribution grid with a meter installed and controlled by the local DNO. The local DNO is also in this case in charge of reading the PV production meter and splitting the energy production data among energy consumers of the building ("Virtual metering") to make self-consumption of PV possible.

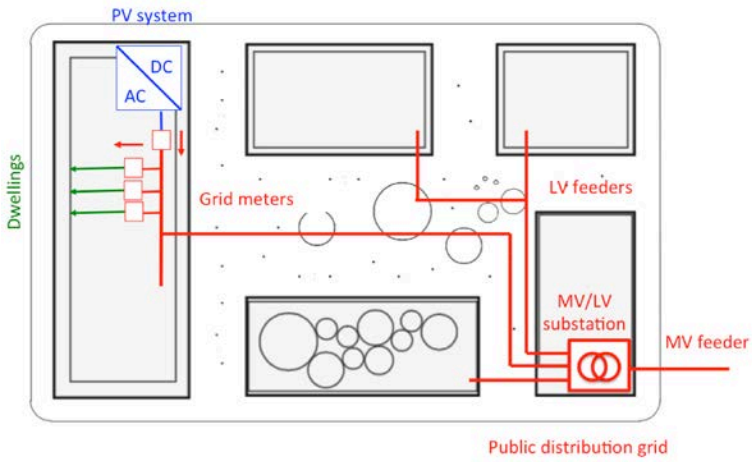

Figure 13 - Proposal of self-consumption at block scale with a public grid

This option is also now legally feasible in France since August 2016 if energy consumers and PV system are connected to the same LV feeder and reduced grid fees can be obtain if PV power is lower than 100 kW (Energy code up-dated on July 2016 – see section 6.3 French legal framework).

However, hurdles remain to make this option feasible at a block scale and it may be necessary:

- To slightly adapt the grid design in cooperation with the local DNO to have consumers and the PV system on the same LV feeder,

- To slightly adapt the PV system design in order not to exceed the maximum power of 100 kW,
- If the plot is fed by several LV feeders, to split the project in several sub-projects with one per LV feeder,
- If the PV system planned is larger than 100 kW, to split the project in several sub-projects with, for each project, no PV system that exceeds 100 kW in order to benefit from reduced grid fees.

5.4 At building-scale with a private grid

For this option, the grid design is not state-of-the-art but custom made. This means that rather than being directly connected to the public distribution grid, each energy consumer and the PV system are connected to a private grid (building micro-grid) with private sub-meters. This micro-grid is also connected to the public distribution grid at one single point with one specific meter installed and controlled by the local DNO. Viewed from the grid, the building is therefore considered as one single grid user.

In this option, the facility manager is in charge of billing each energy consumer for their energy consumption, which is composed of PV energy and energy supplied to the micro-grid by a conventional energy supplier.

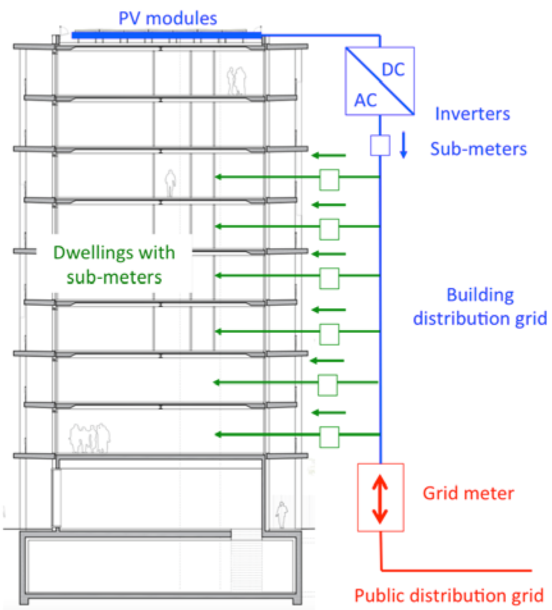

Figure 14 – Proposal of self-consumption at building scale with a private grid

It is necessary to wait for the end of the legal battle between ValSophia and Enedis over the possibility to implement such micro-grid in France to state whether this option is legally feasible or not.

5.5 At block-scale with a private grid

For this option, the grid design is not state-of-the-art but custom made. As for the previous option, each energy consumer and the PV system are not directly connected to the public distribution grid but to a private grid (building micro-grid) with private sub-meters. This micro-grid is not islanded but connected to the public distribution at one single point with one specific meter installed and controlled by the local DNO.

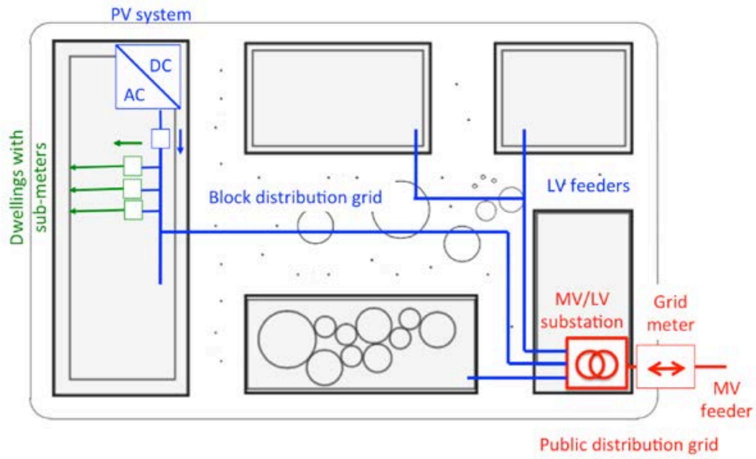

Figure 15 – Proposal of self-consumption at block scale with a private grid

A facility manager is in charge of billing energy consumers for their energy consumption, which is composed of PV energy and energy supplied to the micro-grid by a conventional energy supplier.

Also in this case, it is necessary to wait for the end of the legal battle between ValSophia and Enedis over the possibility to implement such micro-grid in France to state whether this option is legally feasible or not.

6. Legal barriers identified

6.1 Foreword

Smart Cities and Communities projects funded by the European Commission (EC) aim at deploying smart-city solutions with new business models and at identifying legal barriers that prevent the implementation of such new business models. Regarding the collective self-consumption of PV, it seems that what has been achieved in Germany by HEG (see section 3.1. Existing projects / Heidelberg Energiegenossenschaft eG) may not be replicable in all EU member States and at least not in France. To make this happen, an improvement of the legal framework at EU level and also at French level would be necessary.

6.2 EU legal framework

The European Parliament and the Council have published in 2009 a Directive related to common rules for the internal market in electricity (Directive 2009/72/EC)[viii]. Article 28 of this Directive deals with closed distribution systems and states that:

> *1 – [...] a system which distributes electricity within a geographically confined industrial, commercial or shared services site and does not supply household customers [may be classified as a closed distribution system],*
>
> *2 – [...] the operator of a closed distribution system may be exempted from requirements related to [the way] to procure the energy it uses to cover energy losses and reserve capacity in its system [...] and to the approval of access tariffs or the methodologies underlying their calculation,*
>
> *3 – Where an exemption is granted, a user of the closed distribution system may request to have access to the applicable tariffs or the methodologies underlying their calculation [...] reviewed and approved [by the national regulatory authority],*
>
> *4 - Incidental use by a small number of households [...] shall not preclude an exemption being granted.*

So, as a closed distribution system cannot supply household customers (paragraph 1) or just incidentally (paragraph 4), article 28 of the EU Directive 2009/72/EC is used as an argument to prevent collective self-consumption projects.

Therefore, if the EC wants collective self-consumption to be a new business model within Smart-Cities, the EC needs to modify article 28 of the EU Directive 2009/72/EC in order to allow household customers to be supplied by a closed distribution system.

Also, it would be very useful that the EC defines a legal framework for micro-grids in the Electricity Market Design Package planned on November 2016 or in any other another EU Directive related to the electricity market. This could include requirements on the size, the number of users, the maximum load and production power, the legal status (private and/or public), … This would also help to develop new business model for collective self-consumption projects in EU member states.

6.3 French legal framework

The French legal framework for collective self-consumption projects has done a significant step forward in July 2016 with the update of the Energy Code (Law Order of July 2016 related to self-consumption of electricity[ix]).

The French Energy Code has now 8 new articles related to self-consumption:

- Art. L.315-1: definition of self-consumption,
- Art. L.315-2: definition of collective self-consumption (Electricity consumers and PV system must be on the same LV feeder)
- Art. L.315-3: reduced grid fees shall be granted if the PV system has a power lower than 100 kW
- Art. L.315-4: the local DNO is in charge of the split of production data among electricity consumers. The splitting rule is given by the entity in charge of the collective self-consumption project,
- Art. L.315-5: the excess of production power can be injected into the grid and can be either sold to a third-party or given free of charge to the DNO to cover distribution losses,
- Art. L.315-6: the local DNO is in charge of the implementation of the technical and contractual framework of self-consumption projects,
- Art. L.315-7: self-consumption projects shall be declared to the DNO before their commissioning,
- Art. L.315-8: applications rules of these articles will be further detailed in a decree.

Therefore, it is now legally possible to split the production data of a PV system ("Virtual metering") in order to set-up a collective self-consumption project even if application rules of these articles still need to be published in a decree.

Nevertheless, as previously mentioned, this Law Order has the following limitations that could prevent the development of collective self-consumption projects in French Smart Cities:

- Electricity consumers and PV system must be on the same LV feeder,
- Reduced grid fees shall be granted only if the PV system has a power lower than 100 kW,
- The DNO can get the excess of production free of charge if no other third party is willing to buy the energy surplus injected into the grid.

Furthermore, the French Government currently works on the transcription of article 28 of the EU Directive 2009/72/EC related to closed distribution systems. A draft of the Law Order that will update the Energy Code has circulated before the summer 2016. However, it seems that rather than granting exemptions from requirements to closed distribution system as the EU Directive 2009/72/EC does, the French Law Order will aim at preventing the setting-up of private distribution systems that are not considered as closed distribution systems. For instance, the draft Art L 344-11 states that "*the fact of building or commissioning a distribution system that is not qualified as a closed distribution system can be sentenced to one year of detention and a fine of 150.000 euros*". Nevertheless, it is necessary to wait for the final version of the Law Order related to closed distribution system to conclude on this issue.

7. References

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