IEA INTERNATIONAL ENERGY AGENCY

National Survey Report of Photovoltaic Applications in Belgium 2017

PVPS

PHOTOVOLTAIC POWER SYSTEMS PROGRAMME

Prepared by

Gregory Neubourg - APERe

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Foreword

The International Energy Agency (IEA), founded in November 1974, is an autonomous body within the framework of the Organisation for Economic Co-operation and Development (OECD) which carries out a comprehensive programme of energy co-operation among its member countries

The IEA Photovoltaic Power Systems Technology Collaboration Programme (IEA-PVPS) is one of the collaborative R & D agreements established within the IEA and, since 1993, its participants have been conducting a variety of joint projects in the applications of photovoltaic conversion of solar energy into electricity.

The participating countries and organisations can be found on the www.iea-pvps.org website.

The overall programme is headed by an Executive Committee composed of one representative from each participating country or organization, while the management of individual Tasks (research projects / activity areas) is the responsibility of Operating Agents. Information about the active and completed tasks can be found on the IEA-PVPS website www.iea-pvps.org

This report was produced by APERe and funded by :

- The Flemish Energy Agency (VEA)
- The Public Service of Wallonia – Department of Energy and sustainable Building
- The Environment and Energy Agency of the Brussels-Capital Region (Brussels Environment)

Introduction

The objective of Task 1 of the IEA Photovoltaic Power Systems Programme is to promote and facilitate the exchange and dissemination of information on the technical, economic, environmental and social aspects of PV power systems. Task 1 activities support the broader PVPS objectives: to contribute to cost reduction of PV power applications, to increase awareness of the potential and value of PV power systems, to foster the removal of both technical and non-technical barriers and to enhance technology co-operation. An important deliverable of Task 1 is the annual "*Trends in photovoltaic applications*" report. In parallel, National Survey Reports are produced annually by each Task 1 participant. This document is the country National Survey Report for the year 2017. Information from this document will be used as input to the annual Trends in photovoltaic applications report.

The PVPS website www.iea-pvps.org also plays an important role in disseminating information arising from the programme, including national information.

1 INSTALLATION DATA

The PV power systems market is defined as the market of all nationally installed (terrestrial) PV applications with a PV capacity of 40 W or more. A PV system consists of modules, inverters, batteries and all installation and control components for modules, inverters and batteries. Other applications such as small mobile devices are not considered in this report.

For the purposes of this report, **PV installations are included in the 2017 statistics if the PV modules were installed and connected to the grid between 1 January and 31 December 2017, although commissioning may have taken place at a later date**.

1.1 Applications for Photovoltaics

In Belgium, most PV systems are grid-connected distributed systems on buildings. Thanks to the declining prices of PV, some ground-mounted systems were built in 2017, but it is still a small market segment. The same happened with floating PV installations.

The main off-grid systems are road signs with dynamic display.
The residential segment was the most active in 2017 with more than 84 % of the installed capacity. It represents now 63 % of the total installed capacity with almost 460.000 installations (10% households). Commercial and industrial segments represent respectively 18 and 19 %.

1.2 Total photovoltaic power installed

By the end of year 2017, Belgium had about 3.877 installed MWp, an increase of 289 MWp (+7,5 %) compared to 2016. These number are based on the official statistics from the 3 regional regulators (VREG for Flanders, CWaPE for Wallonia and BRUGEL for Brussels). Some small adjustments can still happen (less than 5%) for systems installed during 2017 but not yet declared.

Table 1: PV power installed during calendar year 2016

AC			MW installed in 2017	MW installed in 2017	AC or DC
Grid-connected	BAPV	Residential	289,3	242,7	DC
		Commercial		29,1	DC
		Industrial		17,5	DC
	BIPV (if a specific legislation exists)	Residential	n.d.		M°Y
		Commercial			
		Industrial			
	Utility-scale	Ground-mounted	n.d.		M°Y
		Floating			
		Agricultural			
Off-grid		Residential (SHS)	n.d.		
		Other			
		Hybrid systems			
		Total	289,3		DC

Table 2: Data collection process:

If data are reported in AC, please mention a conversion coefficient to estimate DC installations.	For Flanders, data are reported in AC with a conversion coefficient of 110%. Until 2015, the coefficient was 105 %. All the data have been adapted with the new coefficient For Wallonia data are partially reported in DC and in AC. We took the same conversion coefficient. For Brussels, data are reported in DC.
Is the collection process done by an official body or a private company/Association?	APERe (Association)
Link to official statistics (if this exists)	- Wallonia : o < 10kVA : http://www.cwape.be/?dir=6.1.13 http://www.cwape.be/?dir=6.2.08 o >10kVA : http://www.cwape.be/?dir=3.1.08 - Flanders : http://www.energiesparen.be/cijfers/zonnepanelen - Brussels : https://www.brugel.brussels/documents/statistics/rechercher
	Estimate accuracy: 95%.

Table 3: PV power and the broader national energy market.

MW-GW for capacities and GWh-TWh for energy	2017 numbers	2016 numbers
Total power generation capacities (all technologies) – MW	19.731	19.070
Total power generation capacities (renewables including hydropower) – MW	7198	6.462
Total electricity demand (= consumption) – TWh	81,8	81,5
Total energy demand (= final consumption) – TWh	422	422
New power generation capacities installed during the year (all technologies) – MW	749	360
New power generation capacities installed during the year (renewables including hydropower) – MW	732	360
Total PV electricity production in TWh	3,5	3,23
Total PV electricity production as a % of total electricity consumption	4,3 %	4 %

Table 4: Other informations

	2017 Numbers
Number of PV systems in operation in your country (a split per market segment is interesting)	**≤ 10 kVA:** 459.854 systems **> 10 kVA et ≤ 250 kVA :** 7.009 systems **> 250 kVA :** 1.004 systems **TOTAL** : 467.867
Capacity of decommissioned PV systems during the year in MW	n.d.
Total capacity connected to the low voltage distribution grid in MW	At least 2.427 MWp : All the residential systems. (Some small systems can be connected to MV or HV but it is less than 1 %)
Total capacity connected to the medium voltage distribution grid in MW	n.d.
Total capacity connected to the high voltage transmission grid in MW	At least 2.893 MWp : All systems > 250 kVA

Table 5: The cumulative installed PV power in 4 sub-markets (MWp).

Year	Off-grid (including large hybrids)	Grid-connected distributed (BAPV, BIPV) < 250 MW	Grid-connected centralized (Ground, floating, agricultural…) >250 MW	Other uses (VIPV, wearables…)	Total
2007	nd	24	nd	nd	24
2008		110			110
2009		667			667
2010		1096			1096
2011		2164			2164
2012		2890			2890
2013		3154			3154
2014		3266			3266
2015		3386			3386
2016		3587			3587
2017		3877			3877

1.3 Key enablers of PV development

Since the beginning of the market development, the main enablers for PV development were the financial support schemes. Although, new enablers popped out these last years:

- In Flanders, the government introduced a measure that force all new buildings to have a minimum share of renewable energy. It can be produced by solar thermal, PV, heat pumps or other renewables systems. For PV, the minimum contribution is about 0.7 kWp.
  Since 2014, 85 % of all the new buildings were equipped with PV (60% with PV only, 19 % with a combination of PV & heat pump).
  The two other regions work with energy levels for new buildings. PV helps to lower this level but the correlation is less clear between installed PV capacity and new buildings.
- Electric vehicles are still a very limited part of the existing fleet but the last two years, they are increasing their annual market share.

Table 6: information on key enablers

	Description	Annual Volume (Units)	Total Volume (Units)	Source
Decentralized storage systems	n.d.	n.d.	n.d	n.d.
Residential Heat Pumps	Regional data National Data	4122 945 32 5.099	24.690 8.750 709 34.149	Flanders: - VEA Wallonia: DG04 Brussels: BE

Electric vehicles	All categories (percentage of the total fleet)	2.671 (2,3 %)	10.428 (0,1 %)	Statbel

2 COMPETITIVENESS OF PV ELECTRICITY

2.1 Module prices

There are no official statistics about module prices in Belgium. After have contacted some installers, a typical silicon module price range for 2017 is around 0,35 to 0,50 €/Wp.

2.2 System prices

Table 8: **Turnkey Prices of Typical Applications – local currency**

Category/Size	Typical applications and brief details	Current prices per W
OFF-GRID Up to 1 kW (SHS)		n.d.
OFF-GRID > MW scale		n.d.
Grid-connected Rooftop up to 5-10 kW (residential BAPV)	Range 5 kWp system price	1,20-1,70
Grid-connected Rooftop from 10 to 250 kW (commercial BAPV)	Range based on CWAPE and VEA stats	1,10 - 1,20
Grid-connected Rooftop above 250kW (industrial BAPV)	Range based on CWAPE and VEA stats	0,85 - 1,10
Grid-connected Ground-mounted above 10 MW		n.d.
Other category (hybrid diesel-PV, hybrid with battery…)		n.d.
Floating PV		n.d.
Agricultural PV		n.d.
Residential BIPV (tiles, or complete roof).		n.d.
Industrial BIPV		n.d.

Table 9: National trends in system prices (current) for different applications – local currency

Price (€) /Wp	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Residential PV systems < 10 KW	5,8	5,2	4,2	3,4	2,7	2,3	2,0	1,7	1,6	1,45
Commercial and industrial	-	-	-	-	-	1,4	1,45	1,35	1,2	1
Ground-mounted	-	-	-	-	-	1,3	1,3	1,3	1,1	0,8

2.3 Cost breakdown of PV installations

It appears not possible to obtain this information for commercial reasons. The members of the different PV federations are reluctant to provide this degree of detail.

2.3.1 Residential PV System < 5-10 kW

No reliable data

2.3.2 Utility-scale PV systems > 10 MW

No reliable data

2.4 Financial Parameters and specific financing programs

The support schemes in Flanders for non-residential systems are based on a share of equity of 20 %, a cost of debt of 3 %, and a project return of 5 % on a 15 years economical lifetime.. In Wallonia, the IRR used to fix the support is 7% on a 20 years economical lifetime.

Table 12: PV financing scheme

Average rate of loans – residential installations	1,5 %
Average rate of loans – commercial installations	3 %
Average cost of capital – industrial and ground-mounted installations	4-6 %

2.5 Specific investments programs

Table 13: Specific investment programs

Third Party Ownership (no investment)	Several private companies (installers or gentailers (generator – retailers)) have set up third party ownership solutions for residential, commercial or industrial rooftop PV systems. They usually own the plant for 10-15 years to get all the revenues from the green certificates. Depending on the region, they also add sometimes an annual fee in exchange of all the electricity production.
Renting	
Leasing	Some banks or private companies give the possibility to lease PV installations for professionals. Generally, with an 15 % participation to the investments funds
Financing through utilities	Some utilities have created cooperatives to allow citizens to invest in PV plants they've built.
Investment in PV plants against free electricity	
Crowdfunding (investment in PV plants)	Some cooperatives invest in renewables energy solutions (PV, wind, biomass…). Citizens can buy shares of the cooperative and so indirectly invest in PV systems.
Community solar	
Other (please specify)	

2.6 Additional Country information

Table 14: Country information

Retail Electricity Prices for an household (range)	20 – 31 c€/kWh (APERe)
Retail Electricity Prices for a commercial company (range)	10,87 c€ (EUROSTAT 2017 Band IC)
Retail Electricity Prices for an industrial company (range)	9,10 c€/kWh € (EUROSTAT 2017 Band ID)
Population at the end of 2017 (or latest known)	11,4 million
Country size (km^2)	30 528
Average PV yield (according to the current PV development in the country) in kWh/kWp	900-950 kWh/kWp
Name and market share of major electric utilities.	ENGIE (Electrabel- GDF-Suez) 42,5% EDF-Luminus 17,7 % Axpo Benelux: 5,3 % Eni Gas & Power : 4,9 % Others : 29,6 % (CREG[1])

[1] Common report of the 4 regulators : CREG – CWaPE – BRUGEL – VREG : https://www.creg.be/fr/publications/rapport-rapport-2017

3 POLICY FRAMEWORK

This chapter describes the support policies aiming directly or indirectly to drive the development of PV. Direct support policies have a direct influence on PV development by incentivizing or simplifying or defining adequate policies. Indirect support policies change the regulatory environment in a way that can push PV development.

3.1 Direct support policies for PV installations

3.1.1 New, existing or phased out measures in 2017

3.1.1.1 Climate change Commitments

After COP21, the 4 ministers of Energy (3 regional and 1 federal) worked on an energy pact. The consultation phase started in 2017 but didn't resulted on concrete actions yet.

Next to that process, Regions start to translate the new European directive linked to the 2030 objectives. For Flanders, the objective is to reach 7,4 GWp installed capacity which means an annual growth of 350 MWp. For Wallonia, the objective will be around 3,6 GWp which means an annual growth of 205 MWp. The Brussels Region hasn't fixed their target yet. In total for Belgium, it means an objective of 11 GWp in 2030 with an annual growth of 535 MWp

3.1.1.2 Description of support measures (excluding BIPV, VIPV and rural electrification)

Next to the net-metering on a yearly basis (for small systems), the main support is the system of green certificates (GC). There were some important changes in 2016 depending on the size of the installation and the region where it was installed.

In Flanders

- For small systems (<10 kW):
  Net-metering on yearly basis.
  No green certificates anymore since 2015.
  A "prosumer fee" of around 105 €/KW depending on the Distribution System Operator (DSO) was introduced in July 2015 for all the small PV systems (<10 kW). This fixed fee enables DSO's to charge for the cost of grid use by PV owners, without changing the system of net metering.

- For bigger systems (>10 kW) :
  Big systems have no net-metering or prosumer fee but they benefit from a self-consumption scheme and from an additional green certificate (GC) support scheme to ensure that investors have an IRR of 5 % after 15 years. The support is recalculated every 6 months for new and existing systems.

In Wallonia

- For small systems (<10 kW) :
  The Qualiwatt plan that started in march 2014 was still active : a direct capital subsidy spread on the first 5 years and calculated to obtain a simple payback time of 8 years (5% IRR for a 3kWp installation after 20 years). Besides the financial aspects, this plan also introduces strong quality criteria on the equipment (European norms, factory inspection), the installer (RESCERT trainee) and the installation (standard conformity declaration, standard contract) to give trust back to the new investors. In 2017, there were 8.424 small PV systems installed in Wallonia.
- For bigger systems:
  For big systems, a system of GC reservation controls the development of the market since 2015. The amount of GC/MWh is calculated to obtain a 7% IRR on 20 years. It depends of the system size and varied in 2017 between 40 and 100 €/MWh. It was a strong diminution compared to 2016 (between 90 and 130 €/MWh).

In Brussels

The Brussels Region had already adapted its GC mechanism in 2011 to make it more responsive to market changes. An annual revision ensures a payback on investment of 7 years. There were no changes in 2017 except that the price of the green certificates was higher because of a shortage of GC on the market. The amount of GC for small systems (< 5 kWp) is 3 GC/MWh (285 €/MWh) and 2.4 GC/MWh (228 €/MWh) for all the other systems.

3.1.1.3 BIPV development measures

The Brussels Region has foreseen in the law concerning the support of renewables the possibility to activate a higher support for BIPV in terms of GC but it hasn't been activated yet.

3.1.1.4 Utility-scale measures including floating and agricultural PV

Nothing specific.

3.1.1.5 Rural electrification measures

Nothing specific.

3.1.1.6 Support for electricity storage and demand response measures

Nothing specific.

3.1.1.7 Support for electric vehicles (and VIPV)

There is a capital subsidy in Flanders for electrical vehicles. (between 2.000 and 4.000 €)

Table 15: PV support measures (summary table)

	On-going measures residential	Measures that commenced during 2017 - residential	On-going measures Commercial + industrial	Measures that commenced during 2017 – commercial + industrial	On-going measures Ground-mounted, including floating	Measures that commenced during 2017 – ground mounted, including floating
Feed-in tariffs	No					
Feed-in premium (above market price)	No					
Capital subsidies	Yes (Flanders only)	No	No	No	No	No
Green certificates	Yes (Brussels only)	No	Yes	No	Yes	No
Renewable portfolio standards (RPS) with/without PV requirements	No					
Income tax credits	No	No	Yes	No	Yes	No
Self-consumption	Yes	No	Yes	No	Yes	No
Net-metering	Yes (annual)	No	No	No	No	No
Net-billing	No					
Collective self-consumption and virtual net-metering	No					
Commercial bank activities e.g. green mortgages promoting PV	No					
Activities of electricity utility businesses	No					
Sustainable building requirements	Yes	No	No	No	No	No
BIPV incentives	No					

3.2 Self-consumption measures

Table 16: Self-Consumption Schemes -

			Residential	Commercial/industrial
PV self-consumption	1	Right to self-consume	yes	yes
	2	Revenues from self-consumed PV	Savings on the electricity bill	
	3	Charges to finance Transmission & Distribution grids	Capacity-based fee (Flanders)*	None
Excess PV electricity	4	Revenues from excess PV electricity injected into the grid	Retail Electricity Prices	Only if a PPA is signed. Otherwise = 0
	5	Maximum timeframe for compensation of fluxes	One year	None
	6	Geographical compensation	On site only	None
Other characteristics	7	Regulatory scheme duration	Unlimited	Unlimited
	8	Third party ownership accepted	Yes	Yes
	9	Grid codes and/or additional taxes/fees impacting the revenues of the prosumer	Capacity based fee (Flanders)	None
	10	Regulations on enablers of self-consumption (storage, DSM…)	None	None
	11	PV system size limitations	Up to 10 kW (5 kW in Brussels)	Above 10 kW
	12	Electricity system limitations	None	None
	13	Additional features	Green Certificates for the PV production in Brussels	Green Certificates for the PV production

* In Flanders, the capacity-based fee so called “prosumer tariff” is collected by the DSO. It varies between 78 and 125 €/KW per year. It is charged for all existing and new PV systems smaller than 10 kW (the one who benefits from the net-metering)
Prosumers can avoid this tariff if they ask to install a new meter that counts separately what goes out and what goes in. In that case, they won’t benefit from the net-metering anymore and will have to sell their excess electricity to a retailer.

3.3 Collective self-consumption, community solar and similar measures

End of 2017, there was no measure to allows collective self-consumption, virtual net-metering or community solar. Only a few test projects have been allowed to try it in order to give some feed-back to the politics

3.4 Tenders, auctions & similar schemes

There were no such schemes in Belgium in 2017

3.5 Financing and cost of support measures

All the support measures (green certificates, net-metering, capital subsidy) are impacting the electricity prices for all the electricity users.

For the green certificates, providers must buy a certain amount of GC depending of a regional fixed percentage of their furniture. The costs are reported directly to their customers.

Net metering and capital subsidy (Qualiwatt in Wallonia) are impacting DSO revenues. They also report their losses directly on the customer's bills. In Flanders, the capacity-based fee so called "prosumer tariff" is collected by the DSO.

The tax credit on investment for non-residential PV is supported by the Federal government.

3.6 Indirect policy issues

In Flanders, the government introduced a measure that force all new buildings to have a minimum share of renewable energy. It can be produced by solar thermal, PV, heat pumps or other renewables systems. For PV, the minimum contribution is about 0.7 kWp. The effects of this measure are already visible and kept a minimal PV market alive. Since 2014, 85 % of all the new buildings were equipped with PV (60% with PV only, 19 % with a combination of PV & heat pump)[2].

[2] https://www.energiesparen.be/sites/default/files/atoms/files/cijferrapport-2018.pdf

4 INDUSTRY

TWEED, the Cluster of Energy, Environment and Sustainable Development technologies in the Walloon Region has developed a map of the activities in all the value chain of PV in Wallonia and Brussels. (http://en.rewallonia.be/les-cartographies/solar-photovoltaic/interactive-view/)
IMEC also did a similar job focused on the value chain of PV in Flanders.

4.1 Production of feedstocks, ingots and wafers (crystalline silicon industry)

No productions of feedstocks, ingots or wafers in Belgium.

4.2 Production of photovoltaic cells and modules (including TF and CPV)

Module manufacturing is defined as the industry where the process of the production of PV modules (the encapsulation) is done. A company may also be involved in the production of ingots, wafers or the processing of cells, in addition to fabricating the modules with frames, junction boxes etc. The manufacturing of modules may only be counted to a country if the encapsulation takes place in that country.

There are 4 companies active in modules production in Belgium: Soltech (since 1989), Issol (since 2006), Reynaers (since 2008) and Evocells (since 2014). Soltech, Renaers and Issol produce BIPV solutions (on-demand size and color), Evocells produces classical modules.

All cells are imported.

Total PV cell and module manufacture together with production capacity information is summarised in Table below.

Table 18: Production and production capacity information for 2017

Cell/Module manufacturer (or total national production)	**Technology** (sc-Si, mc-Si, a-Si, CdTe)	**Total Production (MW)**		**Maximum production capacity (MW/yr)**	
		Cell	Module	Cell	Module
Wafer-based PV manufactures					
1 Issol	Si		12,5		20
2 Evocells	Mono-Si Poly-Si		3,92 0,08		16
3 Soltech	Mono-Si Poly-Si		0,8 0,1		10
Total					
Cell/Module manufacturer (or total national production)	**Technology** (sc-Si, mc-Si, a-Si, CdTe)	**Total Production (MW)**		**Maximum production capacity (MW/yr)**	
		Cell	Module	Cell	Module
Thin film manufacturers					
none					
Cells for concentration					
none					
TOTALS			**17,4**		**46**

4.3 Manufacturers and suppliers of other components

Here is a list of active companies in other components

4.3.1 Materials & substrates integration:

Agc, Agfa-Gevaert, Amos, Bekaert, Centexbel, Cookson Electronics,Coretec Engineering, CRM Group, Cytec, Dow Corning, Drytec, Ducatt, Elsyca, Esco Drives, Multitel, OCAS, Saint-Gobain, Solvay, Sibleco, Umicore.

4.3.2 Cell & Modules:

3M, BASF, Cenareo, Derbigum, Ecostream, Fabricom (GDF Suez), Icos Vision System, Issol, IPTE, IZEN, Soltech, Total.

4.3.3 (Smart)PV – Modules:

Eliosys, Laborelec, Melexis, NXP, OnSemi, Soltech.

5 PV IN THE ECONOMY

5.1 Labour places

There is no direct way to have the exact amount of labor places generated by PV in Belgium. No in depth study has been realized yet to determine it.

Nevertheless, we can estimate it based on some parameters from other countries. We see the amount of FTE per MWp in similar European countries varies between 10 and 20. With 289 MWp installed in 2017 we can estimate that there was about of 4.335 direct full-time employment (FTE) jobs.

Table 19: Estimated PV-related labour places in 2016

Research and development (not including companies)	No breakdown
Manufacturing of products throughout the PV value chain from feedstock to systems, including company R&D	
Distributors of PV products	
System and installation companies	
Electricity utility businesses and government	
Other	
Total	4.335

6 BUSINESS VALUE

Table 20: Value of PV business

Sub-market	**Capacity installed *in 2017* (MW)**	**Price per W** *(from table 7)*	**Value**	**Totals**
Off-grid domestic	-	-	-	-
Off-grid non-domestic	-	-	-	-
Grid-connected distributed	**271,8**	**1,45**	*394,11 Million €*	
Grid-connected centralized	**17,5**	**1,15**	*20,125 Million €*	
				414,235 Million €
Export of PV products				*n.d.*
Change in stocks held				*n.d.*
Import of PV products				*n.d.*
Value of PV business				*414,235 Million €*

If possible, please provide some brief comment on the industry value chain in your country or provide references to articles, reports dealing with this topic.

7 INTEREST FROM ELECTRICITY STAKEHOLDERS

7.1 Structure of the electricity system

The Belgian electricity landscape is based on a liberalized market with separation between producers (private and cooperatives), one Transmission System Operators (ELIA – private company designed by the federal state) and eight Distribution System Operators (Mixed companies: public – municipalities - and private).

The electricity retailers (sometimes also producers) have to source a portion of their electricity supplies from renewable energies (RPS system). This portion is different for each region.

Belgium has one federal regulator, the Commission for Electricity and Gas Regulation CREG, and three regional regulators:

- The Walloon Energy Commission (CWaPE) in Wallonia; (renewable electricity quota of 34,03 % at the end of 2017, 37,9% at the end of 2024)
- Brussels Gas and Electricity (BRUGEL) in the Brussels-Capital Region; (Green certificates quota of 7,8 %at the end of 2017, 14% at the end of 2024))
- The Flemish Electricity and Gas Regulator (VREG) in Flanders. (Renewable electricity quota of 20,5% in 2017)

7.2 Interest from electricity utility businesses

Distributed renewable energies as PV, just like rational energy use, generates a loss of income for retailers, historical producers, TSOs and DSOs. So, you could think they would naturally try to slow down the development of PV and other renewables.

However, some DSOs are proactive and implement PV business models for their municipalities. It is for example the case of RESA that has developed a new **cooperation agreement** to support municipalities with their "green" strategies.

Other DSOs (Infrax, ORES) are more active in **research programs** on PV: How to integrate high shares of PV in the net, smartgrid and PV.

As prosumers represents now a consequent market (405.000 clients), retailers start to develop specific products to attract them. For example, Eneco developed a solar tariff where the electricity price is always at night tariff for those who has PV on their roof.

7.3 Interest from municipalities and local governments

The development of renewables energies is a regional competence. The main barriers and key drivers are decided at this level.

Nevertheless, many local initiatives have emerged at municipality level. Municipalities install PV on their roofs thanks to third party ownership. (Auderghem for example)
Other municipalities install PV on their roof with the help of cooperatives, giving the opportunity to their citizens to own a share of the PV installation.

8 HIGHLIGHTS AND PROSPECTS

The Belgian National renewable energy action plan fixed a target of 1,34 GWp installed in 2020 in order to reach the national target of 13 % renewables in 2020 set by the European directive. This objective had already been reached in 2011.

In 2018, the European objective of 32,5 %renewable energy in 2030 will be translated a national energy climate plan. Before, each Region has to propose their own action plan.

In Flanders, the action plan defines an objective of 6,7 GWh of annual production in 2030. It means an installed capacity of 7,4 GWp installed and an annual growth close to 350 MWp.

In Wallonia, the government fixed in their plan (air energy climate plan) an objective of 23,5 % of renewable energy. For the solar PV, the objective is to reach an installed capacity of 3,6 GWp installed and an annual growth close to 205 MWp.

In Brussels, the objective is to produce 91 GWh of solar electricity at the end of 2020 which means a growth of approximatively 17 GWh a year (18 MWp) which is more than tripling the installation rhythm of 2017.