IEA INTERNATIONAL ENERGY AGENCY

**Task 1** Strategic PV Analysis and Outreach

PVPS

# National Survey Report of PV Power Applications in Belgium 2018


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PHOTOVOLTAIC POWER SYSTEMS
TECHNOLOGY COLLABORATION PROGRAMME

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## WHAT IS IEA PVPS TCP

The International Energy Agency (IEA), founded in 1974, is an autonomous body within the framework of the Organization for Economic Cooperation and Development (OECD). The IEA carries out a comprehensive programme of energy cooperation among its 30 member countries and with the participation of the European Commission. The IEA Photovoltaic Power Systems Programme (IEA PVPS) is one of the collaborative research and development agreements (technology collaboration programmes) within the IEA and was established in 1993. The mission of the programme is to "*enhance the international collaborative efforts which facilitate the role of photovoltaic solar energy as a cornerstone in the transition to sustainable energy systems.*"

In order to achieve this, the Programme's participants have undertaken a variety of joint research projects in PV power systems applications. The overall programme is headed by an Executive Committee, comprised of one delegate from each country or organisation member, which designates distinct 'Tasks,' that may be research projects or activity areas. This report has been prepared under Task 1, which deals with market and industry analysis, strategic research and facilitates the exchange and dissemination of information arising from the overall IEA PVPS Programme.

The IEA PVPS participating countries are Australia, Austria, Belgium, Canada, Chile, China, Denmark, Finland, France, Germany, Israel, Italy, Japan, Korea, Malaysia, Mexico, Morocco, the Netherlands, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, and the United States of America. The European Commission, Solar Power Europe, the Smart Electric Power Alliance (SEPA), the Solar Energy Industries Association and the Copper Alliance are also members.

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## WHAT IS IEA PVPS task 1

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 2018. Information from this document will be used as input to the annual Trends in photovoltaic applications report.


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## DISCLAIMER:



Data for non-IEA PVPS countries are provided by official contacts or experts in the relevant countries.
Data are valid at the date of publication and should be considered as estimates in several countries due to the publication date.

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# 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 2018 statistics if the PV modules were installed and connected to the grid between 1 January and 31 December 2018, although commissioning may have taken place later.

## 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 2018, 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 2018 with more than 76 % of the installed capacity. It represents 64 % of the cumulative installed capacity with more than 522 000 installations (11% households). Commercial and industrial segments represent respectively 18 % each.

## 1.2 Total photovoltaic power installed

By the end of year 2018, Belgium had about 4 338 installed MWp, an increase of 434 MWp (+11 %) compared to 2017. 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: Annual PV power installed during calendar year 2018.**

| | | Installed PV capacity in 2018 [MW] | AC or DC |
|---|---|---|---|
| **PV capacity** | Off-grid | 0 | - |
| | Decentralized (<250 kWp) | 395 | DC |
| | Centralized (>250 kWp) | 39 | DC |
| | **Total** | 434 | DC |

**Table 2: PV power installed during calendar year 2018.**

| | | | Installed PV capacity in 2018 [MW] | Installed PV capacity in 2018 [MW] | AC or DC |
|---|---|---|---|---|---|
| **Grid-connected** | BAPV | Residential (≤10 kVA) | 434 | 331 | DC |
| | | Commercial (10<kVA≤250) | | 64 | DC |
| | | Industrial (>250 kVA) | | 39 | DC |
| | | | | | |
| | BIPV | Residential | n.d. | n.d. | |
| | | Commercial | | n.d. | |
| | | Industrial | | n.d. | |
| | | | | | |
| | Utility-scale | Ground-mounted | n.d. | n.d. | |
| | | Floating | | n.d. | |
| | | Agricultural | | n.d. | |
| | | | | | |
| **Off-grid** | | Residential | n.d. | n.d. | |
| | | Other | | n.d. | |
| | | Hybrid systems | | n.d. | |
| | | | | | |
| **Total** | | | 434 | | DC |

**Table 3: 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. Until 2017 a 110% coefficient is used. For installation made in 2018 a 135% coefficient is used for residential PV (< 10 kVA) and a 110% is used for higher power.<br>For Wallonia and Brussels data are reported in DC. |
| Is the collection process done by an official body or a private company/Association? | www.apere.org |
| Link to official statistics (if this exists) | - Wallonia:<br>○ < 10kVA : http://www.cwape.be/?dir=6.1.13<br>http://www.cwape.be/?dir=6.2.08<br>○ >10kVA: http://www.cwape.be/?dir=3.1.08<br>- Flanders:<br>https://apps.energiesparen.be/energiekaart/vlaanderen/zonnepanelen |
| | Estimate accuracy: 95%. |

**Table 4: The cumulative installed PV power in 4 sub-markets.**

| Year | Off-grid [MW] | Grid-connected distributed [MW] (<250 MWp) | Grid-connected centralized [MW] (>250 MWp) | Total [MW] |
|---|---|---|---|---|
| 1992 | 0 | 0 | 0 | 0 |
| 1993 | 0 | 0 | 0 | 0 |
| 1994 | 0 | 0 | 0 | 0 |
| 1995 | 0 | 0 | 0 | 0 |
| 1996 | 0 | 0 | 0 | 0 |
| 1997 | 0 | 0 | 0 | 0 |
| 1998 | 0 | 0 | 0 | 0 |
| 1999 | 0 | 0 | 0 | 0 |
| 2000 | 0 | 0 | 0 | 0 |
| 2001 | 0 | 0 | 0 | 0 |
| 2002 | 0 | 0 | 0 | 0 |
| 2003 | 0 | 0 | 0 | 0 |
| 2004 | 0 | 0 | 0 | 0 |
| 2005 | 0 | 0 | 0 | 0 |
| 2006 | 0 | 4 | 0 | 4 |
| 2007 | 0 | 20 | 5 | 25 |
| 2008 | 0 | 87 | 23 | 110 |
| 2009 | 0 | 453 | 215 | 668 |
| 2010 | 0 | 741 | 356 | 1 097 |
| 2011 | 0 | 1 563 | 603 | 2 166 |
| 2012 | 0 | 2 258 | 634 | 2 892 |
| 2013 | 0 | 2 475 | 682 | 3 156 |
| 2014 | 0 | 2 576 | 692 | 3 268 |
| 2015 | 0 | 2 689 | 701 | 3 390 |
| 2016 | 0 | 2 880 | 712 | 3 592 |
| 2017 | 0 | 3 171 | 734 | 3 905 |
| 2018 | 0 | 3 566 | 773 | 4 339 |

**Table 5: Other PV market information.**

| | 2018 Numbers |
|---|---|
| Number of PV systems in operation in your country | 522 765 ≤10 kVA<br>10 kVA < 7 834 ≤250 kVA<br>1 099 > 250 kVA |
| Capacity of decommissioned PV systems during the year [MW] | 0<br>This amount is based on the data available for Brussel. Nothing was decommissioned in 2018 (0,03% of the total power was decommissioned in 2017 in Brussel's area). |
| Capacity of repowered PV systems during the year [MW] | Unknown |
| Total capacity connected to the low voltage distribution grid [MW] | Unknown |
| Total capacity connected to the medium voltage distribution grid [MW] | Unknown |
| Total capacity connected to the high voltage transmission grid [MW] | Unknown |

**Table 6: PV power and the broader national energy market.**

| | 2017 numbers | 2018 numbers |
|---|---|---|
| Total power generation capacities [GW] | 21 754 | 22 955 |
| Total renewable power generation capacities (including hydropower) [GW] without / with waste | 7 630 / 7 986 | 8 464 / 8 820 |
| Total electricity demand [TWh] (Grid losses included) | 87,3 | 87,1 |
| Total energy demand [TWh] | 422 | 422 |
| New power generation capacities installed in 2018 [GW] | 1 366 | 1 201 |
| New renewable power generation capacities installed in 2018 (including hydropower) [GW] without / with waste | 823 / 815 | 834 / 834 |
| Estimated total PV electricity production (including self-consumed PV electricity) in [GWh] | 3,5 | 3,7 |
| Total PV electricity production as a % of total electricity consumption | 4 % | 4,2% |

## 1.3 Key enablers of PV development

**Table 7: Information on key enablers.**

| | Description | Annual Volume | Total Volume | Source |
|---|---|---|---|---|
| Decentralized storage systems | - | - | - | - |
| Residential Heat Pumps [#] | - | - | - | - |
| Electric cars [#] | Numbers in 1st of August 2018 | 2 692 | 9 244 | https://statbel.fgov.be/ |
| Electric buses and trucks [#] | Numbers in 1st of August 2018 | 285 | 2 982 (included 2 000 special vehicles) | https://statbel.fgov.be/ |
| Other | Hybrid Vehicles In the first of August 2018 | 23 432 | 87 448 | https://statbel.fgov.be/ |

# 2 COMPETITIVENESS OF PV ELECTRICITY

## 2.1 System prices

**Table 8: Turnkey PV system prices of different typical PV systems.**

| Category/Size | Typical applications and brief details | Current prices [€/W] |
|---|---|---|
| Residential BAPV<br>5-10 kW | Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected households. Typically roof-mounted systems on villas and single-family homes. | 1,5 - 1 |
| Small commercial BAPV<br>10-100 kW | Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected commercial buildings, such as public buildings, multi-family houses, agriculture barns, grocery stores etc. | 1,2 – 0,9 |
| Large commercial BAPV<br>100-250 kW | Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected large commercial buildings, such as public buildings, multi-family houses, agriculture barns, grocery stores etc. | 0,95 – 0,85 |
| Industrial BAPV<br>>250 kW | Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected industrial buildings, warehouses, etc. | 0,8 – 0,75 |
| Small centralized PV<br>1-20 MW | Grid-connected, ground-mounted, centralized PV systems that work as central power station. The electricity generated in this type of facility is not tied to a specific customer and the purpose is to produce electricity for sale. | n.d |
| Large centralized PV<br>>20 MW | Grid-connected, ground-mounted, centralized PV systems that work as central power station. The electricity generated in this type of facility is not tied to a specific customer and the purpose is to produce electricity for sale. | n.d |

## 2.2 Financial Parameters and specific financing programs

**Table 9: PV financing information in 2018.**

| Different market segments | Loan rate [%] |
|---|---|
| Average rate of loans – residential installations | 1,5 |
| Average rate of loans – commercial installations | 3 |
| Average cost of capital – industrial and ground-mounted installations | 4-7 |

## 2.3 Specific investments programs

**Table 10: Summary of existing investment schemes.**

| Investment Schemes | Introduced in BELGIUM |
|---|---|
| Third party ownership (no investment) | Yes |
| Renting | Not in 2018 but we see some initiatives in 2019 |
| Leasing | Not in 2018 but we see some initiatives in 2019 |
| Financing through utilities | Yes, via financial cooperatives |
| Investment in PV plants against free electricity | Yes |
| Crowd funding (investment in PV plants) | Yes |
| Community solar | No |
| International organization financing | No |

## 2.4 Additional Country information

**Table 11: Country information.**

| | | | | |
|---|---|---|---|---|
| Retail electricity prices for a household [€/W] | 0,23 – 0,35 (commodity + grid fee + taxes) | | | |
| Retail electricity prices for a commercial company [€/W] | 0,12 | | | |
| Population at the end of 2018 | 11 431 406 | | | |
| Country size [km$^2$] | 33 688 | | | |
| Average PV yield in [kWh/kW] | 900-1000 kWh/kWp | | | |
| Name and market share of major electric utilities. | Names | Electricity production [%] | Share of energy delivered [%] | Number of retail customers [%] |
| | Electrabel | 69 | 42,5 (2017) | 45,2 (2017) |
| | EDF-Luminus | 17 | 17,7 (2017) | 19,5 (2017) |
| | T-Power | 4 | n.d | n.d |
| | E.ON | 0 | n.d | n.d |
| | Lampiris | n.d | 4,9 (2017) | 8,4 (2017) |
| | Eni Gas & Power | n.d | 4,9 (2017) | 8,4 (2017) |
| | Axpo Benelux | n.d | 5,3 (2017) | n.d |
| | Other | 10 | 24,7 (2017) | 18,5 (2017) |

# 3 POLICY FRAMEWORK

**Table 12: Summary of PV support measures.**

| | **On-going measures in 2018 – Residential** | **Measures introduced in 2018 – Residential** | **On-going measures in 2018 – Commercial + Industrial** | **Measures introduced in 2018 – Commercial + Industrial** | **On-going measures in 2018 – Centralized** | **Measures introduced in 2018 – Centralized** |
|---|---|---|---|---|---|---|
| Feed-in tariffs | - | - | - | - | - | - |
| Feed-in premium (above market price) | - | - | - | - | - | - |
| Capital subsidies | - | - | - | - | - | - |
| Green certificates | Yes for Brussels area only | - | Yes | - | Yes | - |
| Renewable portfolio standards (RPS) with/without PV requirements | - | - | - | - | - | - |
| Income tax credits | - | - | Yes for some | - | Yes for some | - |
| Self-consumption | Yes | - | Yes | - | Yes | - |
| Net-metering | Yes | - | - | - | - | - |
| Net-billing | Yes (in Brussels) | - | - | - | - | - |
| Collective self-consumption and virtual net-metering | - | - | - | - | - | - |

| | | | | | | |
|---|---|---|---|---|---|---|
| Commercial bank activities e.g. green mortgages promoting PV | - | - | - | - | - | - |
| Activities of electricity utility businesses | - | - | - | - | - | - |
| Sustainable building requirements | - | - | - | - | - | - |
| BIPV incentives | - | - | - | - | - | - |

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. This system finished in the end of June 2018.
- 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 National targets for PV

The Belgian National Renewable Climate Energy plan remains not totally clear as different regions have different scenario and as it is not always specified clearly what it dedicated to PV.

Anyway, the following targets for Photovoltaic development in Belgium seems trustfully

| | Installed capacity 2020 | Installed capacity 2030 |
|---|---|---|
| Flanders | 4 GW | 7 GW |
| Wallonia | 1,4 GW | 3,8 GW |
| Brussel | 0,1 GW | 0,2 GW |
| Belgium | 5,5 GW | 11 GW |

## 3.2 Self-consumption measures

**Table 13: Summary of self-consumption regulations for small private PV systems in 2018.**

| | | | |
|---|---|---|---|
| PV self-consumption | 1 | Right to self-consume | Yes |
| | 2 | Revenues from self-consumed PV | No except savings from electricity bill |
| | 3 | Charges to finance Transmission, Distribution grids & Renewable Levies | No except capacity-based fee in Flanders |
| Excess PV electricity | 4 | Revenues from excess PV electricity injected into the grid | No if you have the benefit of net metering.<br>Yes, if you do not have the net metering system. |
| | 5 | Maximum timeframe for compensation of fluxes | One year under the net metering system |
| | 6 | Geographical compensation (virtual self-consumption or metering) | No, on site only |
| Other characteristics | 7 | Regulatory scheme duration | unlimited |
| | 8 | Third party ownership accepted | Yes |
| | 9 | Grid codes and/or additional taxes/fees impacting the revenues of the prosumer | Not yet in 2018 except a capacity-based fee in Flanders |
| | 10 | Regulations on enablers of self-consumption (storage, DSM…) | No |
| | 11 | PV system size limitations | Yes <= 12 kWc |
| | 12 | Electricity system limitations | Yes <= 10 kVA |
| | 13 | Additional features | Green certificates for production in Brussel |

## 3.3 Collective self-consumption, community solar and similar measures

There was the beginning of regulation on collective self-consumption in 2 of the 3 regions in Belgium.

2 new articles were put on the Brussel's electric regulation rule allowing pilot projects to be set up, as it was already the case in the Walloon region. These articles allow the development of new project in collective self-consumption.

The Walloon government worked on a project of decree (not finished in 2018) that could allow renewables energy communities in the future.

## 3.4 The "Solar click" initiative

In the Brussel's area, the regional government started the solar-click project in 2018. The global goal of this project is to finance the installation of more than 85.000 m² of solar panels into the roofs of 150 public buildings until the end of 2020.

In 2018, 34 public roofs were equipped.

## 3.5 Retrospective measures applied to PV

There is a PV-tax, proportional to PV power, running in Flanders, this tax represents a grid-fee that compensate the yearly net metering system that erase totally the financial contribution from prosumers to grid costs.

A similar tax is planned to start in 1st January 2020 in the Walloon region. The electricity regulator claimed for this tax / grid costs contribution to start on that time, but political decision is still unclear.

In Brussel, the end of the net metering on grid costs will be effective in 1st January 2020 for all prosumers (they will keep the net metering for commodity), no grand fathering.

## 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.

## 3.7 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.

# 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 3 companies active in modules production in Belgium: Soltech (since 1989), Issol (since 2006) and Evocells (since 2014, but started with the Final24 name). Soltech 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 14: PV cell and module production and production capacity information for 2018.**

| Cell/Module manufacturer | Technology | 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<br>Poly-Si | | 3,92<br>0,08 | | 16 |
| **3 Soltech** | Mono-Si<br>Poly-Si | | 0,8<br>0,1 | | 10 |
| 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, Evocells.

### *4.3.3 (Smart)PV – Modules:*

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

# 5 PV IN THE ECONOMY

This chapter aims to provide information on the benefits of PV for 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 434 MWp installed in 2018 we can estimate that there was about of 6.000 direct full-time employment (FTE) jobs.

**Table 15: Estimated PV-related full-time labour places in 2018**

| Market category | Number of full-time labour places |
|---|---|
| Research and development (not including companies) | No breakdown |
| Manufacturing of products throughout the PV value chain from feedstock to systems, including company R&D | No breakdown |
| Distributors of PV products | No breakdown |
| System and installation companies | No breakdown |
| Electricity utility businesses and government | No breakdown |
| Other | No breakdown |
| Research and development (not including companies) | No breakdown |
| Manufacturing of products throughout the PV value chain from feedstock to systems, including company R&D | No breakdown |
| **Total** | **6.000** |

## 5.2 Business value

**Table 16: Rough estimation of the value of the PV business in 2018 (VAT is excluded).**

| Sub-market | Capacity installed in 2018 [MW] | Average price [EU/W] | Value | Sub-market |
|---|---|---|---|---|
| Off-grid | | | | |
| Grid-connected distributed | 395 | 1,2 | 474 000 000 | |
| Grid-connected centralized | 39 | 0,8 | 1 200 000 | |
| Value of PV business in 2018 | | | | 475 200 000 |

# 6 INTEREST FROM ELECTRICITY STAKEHOLDERS

## 6.1 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;
- Brussels Gas and Electricity (BRUGEL) in the Brussels-Capital Region;
- The Flemish Electricity and Gas Regulator (VREG) in Flanders.

## 6.2 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.

In 2018 we can also see that all the big electricity supplier have integrate a company that sell PV system on roof of citizens as well as on the roofs of companies.

## 6.3 Interest from municipalities and local governments

Some municipalities install PV on their roofs thanks to third party ownership.

We can also observe that the Brussels Government is investing a lot under the so called “solar-click” project to put PV on the roof of public buildings.

# 7 HIGHLIGHTS AND PROSPECTS

## 7.1 Highlights

Installation market recovered quite good and stable numbers in 2018, giving hopes on a stable level of installation market.

Brussel was, relatively to its size, the most dynamic, regarding its size and it's urban characteristics, supported by still high amount of incentives and the fall of the PV costs.

## 7.2 Prospects

Discussions about the implementation of collective self-consumption started in the three regions of Belgium in 2018, with different strategies going from beginning of big regulation to call for funded pilot projects.