

Residential Prosumers in the European Energy Union

EAHC/2013/CP/04

Mapping the legal and regulatory framework in the 28 Member States, Iceland and Norway

Belgium



This study is part of the mapping of the legal and regulatory framework for residential prosumers in the 28 Member States, Iceland and Norway, within the project on Residential Prosumers in the European Energy Union EAHC/2013/CP/04, and carried out by Milieu Ltd (Belgium), Chaussée de Charleroi, 112, B-1060 Brussels, tel: +32 (0)2 506 1000; web address: www.milieu.be

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Disclaimer: The information and views set out in this study are those of the authors and do not necessarily represent the official views of the Commission.

National report on the regulatory framework for residential prosumers: Belgium

General Description of the national legal and regulatory framework

General

The **Special Act of 8 August 1980 on the institutional reform (BWHI)**¹, as amended, lays down the division of competences between the Federal State, the three Communities and the three Regions. The regions have the competence over the distribution of energy (but not the transport), new energy, green energy, efficient use of energy and energy savings, while the federal government has jurisdiction over the production and transmission of energy.

Solar photovoltaic panels with an installed capacity of <10 kWp are the most popular renewable energy source for self-consumption in Belgium. The report will focus on this source.

1. What types of residential prosumers are there in your country on the basis of type of RES used and size of the installation

Answer:

In 2015, the Belgian photovoltaic park, with an installed capacity of around 363,000 solar PV units, reached 3,200 MW, producing 3.2 TWh of solar electricity - equal to 4% of total EU electricity consumption. However, the infrastructure is very different between the three regions. The installed capacity is as follows²:

- Flemish Region: 2,310 MWp (72%);
- Wallonia: 838 MWp (26%);
- Brussels: 51 MWp (2%).

Around 60% of the total installed capacity in the photovoltaic park in Belgium is characterised by small (<10 kWp) installations, which produce for self-consumption. As a result, one in 13 Belgian households is a solar PV prosumer with an installation of <10 kWp. In other words, there are around 350,000 domestic solar generation units in Belgium, meaning that 7% to 12% of Belgian households are not just consuming electricity, but also producing it.

Further, there are also some small wind turbines on the market in Belgium, for own use. A 'small windmill' is a small wind turbine for residential areas or buildings. They have a maximum height of 15 meters and maximum power of 25 kW³. They are sometimes known as urban wind turbines and are mostly placed by families who are passionate about green energy. However, the current generation of small windmills does not produce sufficient energy in relation to the financial investment. Therefore, this type of residential prosumers is not further taken into account in this report.

The above has been corroborated in the definition of 'prosumers' as laid down in the Q&A document from Eandis⁴: '[...] Prosumers are hence network users who have their own production plant (usually solar panels) with a power of maximum 10 kVA.[...]'

¹ *Bijzondere wet van 8 augustus 1980 tot hervorming der instellingen*, B.S. 15.08.1980.

² APERe 2016, *Le photovoltaïque en 2015: production record, marché timide*, viewed 11 December 2016, <http://1soue.r.ca.d.sendibm2.com/8q3d5oirdnf.html>.

³ Wind-energie.be, *Kleine windmolen: prijs & rendement*, viewed 11 January 2017, <http://www.wind-energie.be/kleine-windmolen>.

⁴ Eandis 2015, *Het prosumementarief. Veelgestelde vragen*, viewed 11 December 2017, http://www.eandis.be/sites/eandis/files/1507-faq_prosumementarief.pdf.

2. What is the institutional framework & division of competences regarding residential prosumers in your country?

Answer:

Belgium is a Federal State composed of three Communities (Dutch-speaking, French-speaking, German-speaking) and three Regions (Brussels-Capital, Flemish Region and Walloon Region) and is administratively further organised into provinces and municipalities. The competencies regarding energy policy are shared between the federal government and the three Regions. The distribution of competences in energy matters between the federal government and the regions is defined by Article 6 § 1, VII of the BWHI. The regions are responsible for, with regard to energy policy, the regional aspects of energy, and in any case:

- a) the distribution and local transport of electricity through networks with a nominal voltage less than or equal to 70,000 volts;
- b) the public distribution of gas;
- c) the use of mining gas and gas from blast furnaces;
- d) the networks for remote heat;
- e) the valorisation of heaps;
- f) the new energy sources with the exception of those which are related to nuclear energy;
- g) the recovery of energy by industry and other users;
- h) the rational use of energy;
- i) the tariffs for the use of the electricity and gas network.

The federal government has jurisdiction over those matters which require equal treatment at national level because of their technical and economic indivisibility, in particular:

- a) the national equipment program in the electricity sector;
- b) the nuclear fuel cycle;
- c) the main infrastructures for the stocking; the transport and the production of energy.

Therefore, and in the context of this project, the regions have the competence over the distribution of energy (but not the transport), new energy, green energy, efficient use of energy and energy savings, while the federal government has jurisdiction over the production and transmission of energy. The federal government is also in charge of offshore wind, ocean energy and biofuels standards⁵.

It is further to be noted that, in Belgium, the municipalities own and operate much of the electricity distribution network. Hereto, they often organize themselves into inter-municipal cooperatives, which are, on their turn, subsumed by a distribution system operator.

⁵ For further details, see answer to question ‘Does the competence to determine the inter-connection configuration lie at State level or at a regional/lander level?’ below.

Specific Questions on the regulatory framework for residential prosumers**3. What is the regulatory framework for residential prosumers in your country?****General***Flemish Region*

The Flemish legislation on (renewable sources of) energy is mainly laid down in the Energy Decree⁶ and the implementing Energy Decision⁷. The Electricity Distribution Grid Code⁸ contains the rules and regulations for the management of and access to the electricity distribution networks and the associated closed distribution networks for electricity, located in the Flemish Region.

The National Action Plan for Renewable Energy⁹ does not include any objectives for residential prosumers, while the Energy Policy Briefing 2016-2017¹⁰ of the Flemish Parliament just mentions that the regulatory framework for self-consumption should be further worked out.

The term ‘prosumers’ is used in Flemish Region when dealing with individuals who consume and produce their own energy in a decentralized production unit with AC-power < 10 kVA.

Walloon Region

There is no specific regulatory framework addressing the question of prosumers in the Walloon Region. Several legislations are relevant for that matter and are listed under question 3.1 below.

3.1. What is the existing legislative framework regulating Renewable Energy Projects in your country?**Answer:***Flemish Region*

- **Energy Decree**

The Decree of 8 May 2009 laying down the general provisions on energy policy (‘Energy Decree’), in particular Title VII ‘Environmental-friendly energy production and rational use of energy’ and Title VIII ‘Concessions for the promotion of the rational use of energy, the rational management of energy, the use of renewable energy sources and the application of flexibility mechanisms’ form the legal basis for the Flemish support regime for the use of renewable energy sources. The support regime for electricity production from renewable energy sources consists in the concession of green certificates.

⁶ Decreet van 8 mei 2009 houdende algemene bepalingen betreffende het energiebeleid (aangehaald als ‘het Energiedecreet’), B.S. 07.07.2009.

⁷ Besluit van de Vlaamse Regering van 19 november 2010 houdende algemene bepalingen over het energiebeleid (aangehaald als ‘het Energiebesluit’), B.S. 08.12.2010.

⁸ VREG 2015, Technisch Reglement voor de Distributie Elektriciteit in het Vlaamse gewest, viewed 11 January 2017, http://www.vreg.be/sites/default/files/tdre_versie_5_mei_2015.pdf.

⁹ FOD Economie, KMO, Middenstand en Energie 2010, BELGIË: Nationaal actieplan voor hernieuwbare energie, viewed 11 December 2016, http://economie.fgov.be/nl/binaries/NREAP-BE-v25-NL_tcm325-112992.pdf.

¹⁰ Vlaamse Parlement 2016, Beleidsbrief. Energie 2016-2017, viewed 11 December 2016, http://www2.vlaanderen.be/economie/energiesparen/beleid/Beleidsbrief_Energie_2016_2017.pdf.

- **Energy Decision**

Further implementation of the Energy Decree is given by the Decision of the Flemish Government of 19 November 2010 laying down general provisions on energy policy ('Energy Decision'), in particular Title VI 'Environmental-friendly energy production and rational use of energy' and Title VII 'Concessions for the promotion of the rational use of energy, the use of renewable energy sources and the application of flexibility mechanisms'.

- **Electricity Distribution Grid Code**

Article 4.2.1 of the Energy Decree states that the Flemish regulator of the electricity and gas market (VREG) needs to establish a Technical Regulation on Electricity Distribution in the Flemish Region. According to Article 4.1.18 of the Energy Decree, this **Electricity Distribution Grid Code** must also include provisions about those producers and purchasers who have the right to access the electricity distribution network for, respectively, the use and injection of electricity.

Walloon Region

- **Walloon Code of Spatial Planning, Urban Planning, Heritage and Energy ('CWATUPE')**

The Walloon Decree of 19 April 2007¹¹ lays down the Walloon Code of Spatial Planning, Urban Planning, Heritage and Energy. The Code is the legal basis of the Walloon energy policy.

- **Electricity Market Decree**

The Walloon Decree of 12 April 2001¹² on the organisation of a regional electricity market constitutes the regulatory framework of "self-production" of energy. Article 2 (2) defines 'self-producer' as 'any physical or legal person producing electricity mainly for its own use'.

- **Decision on renewable energy and cogeneration sources**

The Walloon Government Decision of 30 November 2006¹³ establishes the regulatory framework on the promotion of electricity produced with renewable energy or cogeneration sources. The support regime for electricity production from renewable energy sources consists in the concession of certificates, the obtainment of particular subsidies and compensation for energy injected on the grid.

- **Technical regulation on the management of electricity distribution network**

The Walloon Government Decision of 3 March 2011¹⁴ contains the technical regulation for the management of electricity distribution networks in Walloon Region and to access them. The decision establishes the requirements and conditions for accessing the electricity distribution network, including from small residential units.

¹¹ Walloon Code of Spatial Planning, Urban Planning, Heritage and Energy – Decree of 19 April 2007, Article 2 (Code wallon de l'Aménagement du Territoire, de l'Urbanisme, du Patrimoine et de l'Energie - Décret du 19 avril 2007, art. 2), <https://wallex.wallonie.be/index.php?doc=1423>.

¹² Decree of 12 April 2001 on the organisation of a regional electricity market (Décret relatif à l'organisation du marché régional de l'électricité), <https://wallex.wallonie.be/index.php?doc=9075&rev=8194-13090>.

¹³ Walloon Government Order of 30 November 2006 on the promotion of electricity produced with renewable energy or cogeneration sources (Arrêté du Gouvernement wallon relatif à la promotion de l'électricité produite au moyen de sources d'énergie renouvelables ou de cogénération), <https://wallex.wallonie.be/index.php?doc=8946&rev=8067-18085>.

¹⁴ Walloon Government Order of 3 March 2011 approving a technical regulation for the management of electricity distribution networks in Walloon Region and to access them (Arrêté du Gouvernement wallon approuvant le règlement technique pour la gestion des réseaux de distribution d'électricité en Région wallonne et l'accès à ceux-ci), <https://wallex.wallonie.be/index.php?doc=19977&rev=20974-13168>.

3.2. Does the Renewables National Action Plan include any objectives for residential prosumers (if so, please specify)

Answer:

The **National Action Plan for Renewable Energy** in Belgium is in accordance with Directive 2009/28/EC and dates from November 2010. The Action Plan does not use the word ‘(residential) prosumers’ – even though this word is used in Flemish (*prosumenten*) – and does not include any objectives for residential prosumers. The plan limits itself to referring, at some points, to consumers who can invest in renewable energy. In particular:

- Both the regions and the federal government need to provide information about the granting conditions, the type and the extent of the support measures for consumers and professionals related to investments in renewable energy (cf. Article 14(2) 2 and 4 of Directive 2009/28/EC);
- An overview is given of the various support measures available for, amongst others, consumers of renewable energy.

Flemish Region

The **Energy Policy Briefing 2016-2017 of the Flemish Parliament** includes a small section on smart meters. In the subsection ‘Planning 2017’, a reference is made to prosumers. This section states the following:

‘Based on the concept note “Smart Meters”, the relevant regulations will be adapted in order to roll-out smart meters in Flemish Region. As far as the energy prosumer adapts the dimensions of his installation to his own consumption and consumption profile, and enlarges his self-consumption with, for example, a battery as buffer and in this way limits his injection, then the potential of the network to further receive PV increases. The regulatory framework for energy storage and self-consumption should be further worked out.’ Thus, self-consumption is on the agenda of the Flemish Parliament for the year 2016-2017.

Walloon Region

As for the Walloon Region, no reference to self-producer or prosumer is made in the regional energy policy 2014–2019¹⁵. The regional energy policy is built around three main axis: (i) supporting energy efficiency; (ii) ensuring energy access for everyone within an efficient market and (iii) developing renewable energies for the benefit of the community. Three actions can however be linked to the regulatory framework applicable to prosumers, which do not suggest further support to prosumers for the period 2014-2019. The Government commits itself to assess and review supporting mechanisms in order to manage costs for consumers and to ensure a stable framework for investments by [...]:

1. reducing the unbalance on the market of green certificates and by examining the possibility to support renewable energies through other mechanisms than green certificates market;
2. strengthening the integration of renewable energy on the market in order for the production to further correspond to the needs and for reducing the collective costs;
3. controlling the costs of strengthening and developing the networks needed to host production of renewable energies and defining balanced criteria of economically reasonable connection of renewable energies.

¹⁵ Gouvernement wallon, *Déclaration de politique régionale 2014-2019 – Chapitre XXIII « Oser, Innover, Rassembler »*, http://www.wallonie.be/sites/wallonie/files/publications/dpr_2014-2019.pdf (last accessed on 27.02.2017).

3.3. Is there a definition (legal or regulatory) of residential prosumers (or self-consumption) in your country? If so, state it and describe the elements of this definition?

Answer:

Flemish Region

Due to the introduction of a ‘prosumer tariff’, as one of the distribution network tariffs, in December 2014, the term ‘prosumers’ (*prosumenten*) was introduced on a wide scale within the Flemish energy landscape. The term has not been legally defined, but Eandis (one of Flemish Region’s system operators) has a Q&A document on its website about the prosumer tariff and the first question on that document is ‘what are prosumers?’¹⁶.

The answer is as follows: ‘The VREG defines a prosumer as ‘an electricity distribution network user with access point for usage from the low-voltage grid, and with a decentralized production unit, with an **AC-power less than or equal to 10 kVA**, which allows him to inject electricity into the electricity distribution network’. Prosumers are hence network users who have their own production plant (usually solar panels) with a power of maximum 10 kVA. Through this plant, they can consume part of the electricity they produce themselves. In case they consume at certain points in time less than they produce, then the net surplus is automatically injected into the distribution network. Most prosumers dispose of a regular electricity meter from Eandis, which counts in kilowatt hours (kWh). That usage counter serves as the basis for the final invoice from the energy supplier. When there is an electricity surplus, then the counter counts backwards. This means that the actual use and injection are not measured separately, but that the electricity meter automatically deducts the injection from the total usage.’

A VREG webpage about the prosumer tariff states that ‘prosumers are consumers who produce themselves (part of) their energy’¹⁷.

Thus, the term ‘prosumers’ is used in Flemish Region when dealing with individuals who consume and produce their own energy in a decentralized production unit with AC-power < 10 kVA.

Walloon Region

In the Walloon Region, the term “residential prosumer” is not used. However, Article 2 (2) of the Electricity Market Decree defines “self-producer” as “any physical or legal person producing electricity mainly for its own use”.

4. What are the permitting requirements for each type of residential prosumer?

General

Flemish Region

Flemish Region recognizes certain forms of self-consumption, as the installation of solar panels or solar water heaters is exempt from a building or planning permit (under certain conditions). The installation of solar panels further needs to adhere to certain requirements related to insulation, inspection and registration.

¹⁶ Eandis, 2015.

¹⁷ VREG, *Prosumemententariet. Voor wie en waarom?*, viewed 11 December 2016, <http://www.vreg.be/nl/prosumemententariet>.

Walloon Region

Regardless of the capacity of the installation, a building permit and a licence to produce electricity is required under the Walloon legislation. The building permit gives permission to build the requested structure and will be issued after having checked implementation and application with planning regulations and good spatial planning. The building permits are granted after a five steps procedure (three when no EIA is done). Producing electricity requires holding a licence delivered by the ministry according to Article 30 of the Electricity Market Decree. The section on Question 4.1 outlines how those requirements apply in the context of residential installation of renewable energies (solar panels).

Prosumers are not reimbursed for the electricity that they produce in surplus. The existing compensation mechanisms only allow self-producers to deduct the injected energy from the self-producer's energy consumption. Section 4.2 provides further information on this aspect.

4.1. Does your country recognize certain forms of self-consumption and subject prosumers to certain

- requirements,
- application fees and
- one-off costs

in order to give them a permit or licence to generate energy?

Answer:*Flemish Region*

As the absolute majority of Flemish residential prosumers are those who have installed solar panels, the permitting requirements here set out will be restricted to this type of self-consumption¹⁸.

- **Planning Permit**

The Flemish Code on Spatial Planning of 15 May 2009 ('Flemish Zoning Code')¹⁹ includes a Title IV 'Permitting policy', which lays down the rules on the building or planning permit.

The exemptions to the requirement of a building permit are laid down in the Decision of 16 July 2010 of the Flemish Government on the Determination of the Transactions for which no Planning Permission is Required²⁰.

Both the Flemish Zoning Code and its implementing decisions have been amended several times. Articles 2.1 and 3.1 of the Decision of 16 July 2010 state that the installation of solar panels or solar water heaters is exempt from a permit if the installation on a flat roof does not exceed one meter above the eaves. The installation of solar panels is exempt from a permit if the installation on a sloping roof is integrated in the inclined roof surface. In short, a building permit is, in most circumstances, not required for the installation of solar panels, unless this is explicitly required because the building, for example, is protected heritage.

¹⁸ Large wind turbines need to adhere to numerous legislative requirements (e.g. permitting, EIA, noise, nature, location, safety), which are beyond the scope of 'residential prosumers' – even though large REScoops will cooperate in the installation of wind turbines.

¹⁹ The non-consolidated version of the Flemish Zoning Code is laid down in *Decreet van 18 mei 1999 houdende de organisatie van de ruimtelijke ordening*, B.S. 08.06.1999.

²⁰ *Besluit van de Vlaamse Regering van 16 juli 2010 tot bepaling van handelingen waarvoor geen stedenbouwkundige vergunning nodig is*, B.S. 10.09.2010.

- **Insulation Condition²¹**

When installing solar panels on a residential building (i.e. any building intended for individual or collective occupancy), one must meet the insulation condition. The insulation condition does not apply if installing solar panels on, for example, a stable, a commercial building, a detached garage or a shed.

This condition implies that the thermal resistance (R_d) of the entire roof and / or attic floor amounts to at least three $\text{m}^2 \text{ K/W}$. If the roof and attic floor were both insulated and lay one above the other in the same non-heated room (i.e. the attic is only used as storage room), then R_d values may be added up.

If insufficient insulation is present, then one is not entitled to the guaranteed minimum support from the network operator.

- **Inspection**

The RGIE (General Regulations on Electrical Installations) -inspection must take place before the solar panels are operational. This inspection examines whether it is safe to start up the solar panels.

The RGIE verification report needs to be produced by an approved inspector. The report contains at least: the date of inspection; the number, type, serial number and maximum AC power of the inverter; the number of the peak power of the solar panels; the serial number of the output meter and the meter reading at the time of the inspection; the MIS-marking, which is arranged on the output meter – each output meter must be calibrated in accordance with the Royal Decree of 13 June 2006 on Measuring Instruments.

The RGIE verification report is important as it determines the commissioning date and, for small installations, the start date for granting certificates.

- **Registration**

Installations with a maximum AC power less than or equal to 10 kW can be started up after the RGIE verification and when connected to the grid.

If green certificates can no longer be attributed to the installation, then the installation only needs to be registered at the network operator.

If the installation still has the right to receive green certificates, then the connection first needs to be registered at the VREG and then at the network operator. Those installations will receive a PV number (which is necessary to complete the registration at the network operator).

Every network operator decides the documents which are necessary for the registration. These normally involve: the RGIE verification report, an electric one-wire scheme, the certificate of the manufacturer of the inverter(s). Most network operators have a registration form available on their website.

- **Further Specific Regulations**

The following specific regulations need to be taken into account when wanting to install a PV installation of less than or equal to 10kVA:

- C10/11 - Specific technical connection requirements for decentralized production units that work in parallel with the distribution network (operator: Synergrid);
- C1/107 - General technical requirements for the connection of a user to the low-voltage network, if injection at low voltage (operator: Synergrid);

²¹ This condition applies only to equipment installed and tested after 14 June 2015. It is a prerequisite for installations that are entitled to certificates.

- C2/112 - Technical requirements for connection to the high-voltage grid, if injection at medium voltage (operator: Synergrid);
- C10/19 - Connecting interfering taxes in low voltage (operator: Synergrid);
- Electricity Distribution Grid Code (VREG);
- General Regulations on Electrical Installations or RGIE;
- Connection Regulations distribution system operator (operator: Eandis).

Walloon Region

Regardless of the capacity of the installation, a building permit and a licence to produce electricity is required under the Walloon legislation.

Building permit

No building permit is required for the installation of solar panel (Article 262, al. 2 CWATUPE) if the solar installation meets the following conditions:

1. does not derogate to the sectorial plan;
2. supplies power to a building, construction or installation located on the same real estate;
3. does not extend beyond the rooftop.

Should the installation fail to meet one of those requirements, a building permit is required. When a building permit is required, an application fee must be paid to the municipality delivering the permit. The municipality determines the amount of the allowance (approx. 25€ - 200€). In the case where the solar power installation would derogate to the sectorial plan, such installation can be granted a building permit under the conditions that (Art. 111 CWATUPE):

1. it supplies power to a building, construction or installation located on the same real estate;
2. it respects the landscape.

Licence for electricity production

Producing electricity requires holding a licence delivered by the ministry according to Article 30 of the Electricity Market Decree. Two categories of licences exist: general and limited. Self-producers must hold a “limited licence for ensuring self-consumption”. The requirements for obtaining that licence are laid down in the Order of 21 March 2002 on the licence for electricity production. In order to obtain such licence, a self-producer must be an effective resident of Belgium or another Member State of the EEA (Art. 2); and submit a written request to the CWaPE (Art. 12-16 quater). The research did not identify the application fees for such licence.

- 4.2. Does the national legal/regulatory framework determine the contractual conditions under which prosumers are allowed to feed or sell their surplus back into the grid or to other consumers?

Answer:

In both regions, prosumers are not reimbursed for the electricity that they produce in surplus²².

²² VREG, *Vergoeding overtollige elektriciteit?*, viewed 11 January 2017, <http://www.vreg.be/nl/vergoeding-overtollige-elektriciteit>.

5. What are the rules applicable to the access to the grid?

General

Flemish Region

Plant operators have to apply for grid connection to the distribution grid operator. Two different procedures apply depending on the access capacity: simple access procedure for an access capacity less than 25 kVA and a technical access procedure (to be emitted by an accredited controller and then transferred to the distribution grid operator) of installations with higher capacities requiring a feasibility study. During application, preferential status is granted to renewable energy. The plant operator has to cover a fixed amount of costs determined by law, any excess costs are covered by the distribution grid operator.

Plants have to apply for a delivery permit in order to make use of the grid. Having a permit, an application has to be filed to the distribution grid operator. Minor procedural differences apply according to voltage capacity (<30 kV, ≥ 30 kV). Five days after a complete application has been received, grid usage is disapproved or approved. Use of grid can be curtailed on grounds of safety, reliability and efficiency (emergency curtailment) but need to be communicated by the distribution grid operator, who also is obliged to compensate losses. In case of congestion the distribution grid operator is obliged to undertake all measures at his disposal to enforce the safe, reliable and efficient functioning of the grid by giving access priority to electricity generated from renewable energy in case of congestion.

Walloon Region

Producing electricity in the Walloon Region requires holding a licence delivered by the ministry according to Article 30 of the Electricity Market Decree. Two categories of licences exist: general and limited. Self-producers must hold a “limited licence for ensuring self-consumption”. The requirements for obtaining that licence are laid down in the Order of 21 March 2002 on the licence for electricity production. In order to obtain such licence, a self-producer must be an effective resident of Belgium or another Member State of the EEA (Art. 2); and submit a written request to the CWaPE (Art. 12-16 quater). All forms are available on the website of the CWaPE²³.

Regarding the connection to the electricity distribution grid, each application for a connection grid shall be submitted to the Distribution System Operator appointed to the area to which belongs the plant operator. Connection applications for installations with a capacity over 25 MVA shall be submitted to the Transmission System Operator Elia.

The access to the grid is conditioned to the prior conclusion of an access agreement between the grid operator and the designated supplier of the plant operator (Art.76, Decision of 3 March 2011). A grid access application shall be submitted by the designated supplier and approved by the grid operator before signing a grid access agreement (Art.125, Decision of 3 March 2011). Such application requires an orientation study or detailed study.

The costs of the orientation study as well as the costs of the detailed study are borne by the applicant according to the prices given by the CWaPE (Art. 69 and 77, Decision of 3 March 2011). The research did not identify the application fees for such licences and agreements.

5.1. What is the inter-connection configuration used for each type of residential prosumer?

²³ CWaPE, Solwatt, Formulaires, <http://www.cwape.be/?dir=6.1.02> (last accessed on 27.02.2017).

Answer:*Flemish Region*

Article 4.2.1 of the Energy Decree states that the VREG needs to establish a Technical Regulation on Electricity Distribution in the Flemish Region. According to Article 4.1.18 of the Energy Decree, this Electricity Distribution Grid Code must also include provisions about those producers and purchasers who have the right to access the electricity distribution network for, respectively, the use and injection of electricity.

The Electricity Distribution Grid Code does not include any specific provision that is directed towards prosumers. In fact, it is the system operator who ensures the safe connection of local renewable energy installations to the grid.

Further, the C10/11 Specific Technical Connection Requirements for Decentralized Production Units that Work in Parallel with the Distribution Network (Synergrid)²⁴ state that the ‘decentralized production units’ can only be connected to the grid after having received written confirmation from the distribution system operator. However, an exception is foreseen for ‘small decentralized production installations’: these do not need to apply for connection but only need to register the installation before it can be taken into operation. Small production installations are those which comply with the following conditions:

- The individual capacity of each single-phase production plant ≤ 5 kVA;
- For a single-phase connection to the public distribution system, the overall capacity of the production installations at the connection point remains ≤ 5 kVA;
- In a three-phase connection to the public distribution system, the overall capacity of the production installations at the connection point remains ≤ 10 kVA. Moreover, the production imbalance between the phases is at all times ≤ 20 A;
- The production installation is equipped with an automatic separation system.

Walloon Region

Article 6bis of Walloon Decision on renewable energy and cogeneration sources states that the CWaPE will establish the procedure applicable to producers of electricity with an installation of solar panels with a capacity below or equal to 10kW who wish to connect themselves to the grid. The Walloon Government Decision of 3 March 2011 contains the technical regulation for the management of electricity distribution networks in Walloon Region and to access them. The decision establishes the requirements and conditions for accessing the electricity distribution network, including from small residential units.

The Technical regulation does not include any specific provision on prosumers (or “self-producers”). It does however state that any decentralised production unit must comply with the technical requirement Synergrid C 10/11 “Specific Technical Connection Requirements for Decentralized Production Units that Work in Parallel with the Distribution Network”²⁵ (see description in the paragraph above on the Flemish Region).

²⁴ Synergrid, *Technische voorschriften Electriciteit*, viewed 11 December 2016, <http://www.synergrid.be/index.cfm?PageID=16832#>.

²⁵ SYNERGRID, « Prescriptions techniques spécifiques pour les installations de production décentralisées fonctionnant en parallèle sur le réseau de distribution », http://www.synergrid.be/download.cfm?fileId=C10-11_FR_120604.pdf (last accessed on 23.02.2017).

5.2. Does the competence to determine the inter-connection configuration lie at State level or at a regional/lander level?

Answer:

As has been referred to above in the answer to question 2, both the three Regions and the Federal State have competences over energy infrastructure.

In particular, the *federal government* is responsible for ‘matters which require equal treatment at national level due to their technical and economic indivisibility’, i.e. the matters for which a coordinated approach at national level is necessary. This applies particularly to the transport of energy, in particular the transmission system from 150 kV to 380 kV operated by Elia. Elia has a legal monopoly as the manager of the Belgian transmission system for electricity. This license is valid for a renewable period of 20 years. The federal government also sets the tariff policy for both the transmission system operator and the distribution system operators. The basic legislation which applies at the federal level is the Act to amend the Electricity Act of 29 April 1999 on the organization of the electricity market, which was published in the Belgian Official Gazette on 8 January 2012.

The *regions* are responsible for the distribution and local transmission of electricity via networks with a nominal voltage up to 70 kV. There is a distinction between networks with a voltage of 70 kV and systems with a lower voltage. Analogous to the distribution systems (voltage below 70 kV), the networks which establish the connection identified with the federal transmission network (with a voltage of 70 kV) are indicated as:

- Local transmission network (Wallonia);
- Regional transmission network (Brussels Capital Region);
- Local transport network (Flemish Region).

The regions are also responsible for renewable energy sources (except the offshore wind farms that fall under federal jurisdiction) and the rational use of energy.

Transmission system operators (TSOs) are responsible for the safe and efficient management of the transmission systems at high and very high voltage. Belgium has a single transmission system operator (TSO), Elia, which is also the operator of the networks which establish the connection identified with the federal transmission network listed above. However, the electricity market does not stop at the borders. The transmission systems of the European countries are interconnected. Therefore, the countries can help each other and cross-border trade becomes possible. Cooperation between TSOs is therefore crucial. At the European level, the TSOs are united in the international association ENTSO-E (European Network of Transmission System Operators for Electricity), which acts as the reference body for the European Commission. Further, Coreso - the joint technical coordination centre for several TSOs (including Elia) in Central-Western-Europe - supplies continuous real-time analysis services for the safety and security of the networks.

5.3. Are there any rules to ensure that prosumers are inter-connected to the distribution network/the grid?

Answer:

Flemish Region

Article III.3.3.29 § 4 of the Electricity Distribution Grid Code ensures that the connection to the grid of renewable energy installations cannot take longer than 24 months (without prejudice to

exceptional circumstances). Also, all applications for access to the grid of a renewable energy installation have priority.

Flemish legislation does not refer to the need to develop interconnections with other countries in order to facilitate residential prosumers' active involvement.

Walloon Region

The distribution system operator shall give priority to installations using renewable energies. This applies to the orientation study as well as to the grid connection (Art. 72, 81 and 90 Decision of 3 March 2011). Articles 80-84 of the Decision of 3 March 2011 establish the timeframes for each step of the procedure towards grid connection. In a nutshell (not providing details of alternative timeframes in case of additional complexities or delays), according to Article 80 of the Decision of 3 March 2011, within 10 workdays of the reception of the connection request, the distribution network operator must assess the completeness of the request and inform the applicant on its status. When the application is complete and fees of the orientation study paid, the distribution system operator grants a 'booked' capacity. Within 30 workdays of the reception of a complete application and payment of the detailed study, the distribution system operator provides the applicant with a technical and financial proposal for connection (Art. 82 Decision of 3 March 2011). Within 10 workdays of the agreement by the applicant of the technical and financial proposal for connection, the distribution system operator presents a connection agreement to the applicant (Art. 83 (1) Decision of 3 March 2011). As soon as the distribution system operator receives the signed contract and related payment, the booked capacity is definitively granted to the applicant (Art. 83(3) Decision of 3 March 2011).

5.4. What are the grid access and grid use principles and rules for the energy generated by each type of residential prosumer?

Answer:

Flemish Region

According to Article IV.5.3.1 § 1 of the Electricity Distribution Grid Code, the electricity distribution system operator shall take the necessary measures to ensure the safe, reliable and efficient management of the electricity flows on the electricity distribution network. In case of congestion, he grants priority access to qualitative renewable energy installations. In Flemish Region, the grid operator is obliged to adapt the prosumer's meter in order to enable him to participate in the net metering scheme. Distribution grid operators are responsible to implement grid extensions, if needed.

Walloon Region

The electricity distribution system operator shall guarantee the exploitation, maintenance and development of the network, including interconnections with other electrical networks in order to ensure reliable and continuous supply (Article 11(2), Electricity Market Decree). In case of congestion, the system operator shall give priority to installations using renewable energy sources or installations of quality cogeneration (Art. 11(2), 2ⁿ indent, 8°, Electricity Market Decree).

5.5. What are the network costs and charges for each type of residential prosumer?

Answer:

Initially, self-generators were not obliged to finance grid access, extension or use. But with the rising number of small-scale solar PV units, the regions have introduced several burdens charging self-generators with costs related to the maintenance of the overall network system. A prosumer tariff has been introduced on 18 December 2014 by the distribution network operators. The retroactive introduction was justified with an allegedly unfair behaviour of net metering participants who escape from paying parts of the consumption-based network fee.

The tariffs vary per operator and per region but, on average, 62.9 to 83.99 EUR will have to be paid per unit of installed capacity (kVA) by the network users²⁶. The new prosumer tariff deducts between 35% and 60% from a typical net metering system's benefits. Therefore, it can be regarded as a serious encroachment. The prosumer tariff will be included, from 1 July 2015, in the invoice of the electricity supplier.

Flemish Region

In January 2013, a grid injection fee was greenlighted in the Flemish Region for the duration of three years applying to new and existing solar PV units below 10 kW operating under the net metering scheme. Besides a fixed annual fee of up to 66 euro per kW of installed capacity, the regulation presupposed the installation of a smart meter at the expense of the solar PV system owner. The Brussels Court of Appeal ruled in November 2013 that this network fee was discriminating and that there was no legally approved calculation methodology behind it. As a consequence, a revised 'prosumer tariff' without smart meter was approved by the regional regulator VREG.

In the meantime, the Association of Owners of Solar Panels "vzw Zonstraal" has started court proceedings against the prosumer tariff. A first interim court decision related to the competence of the court, and the case is momentarily 'on hold'. The VREG also started to review again the prosumer tariff system and is working on a "capacity tariff", which should allow a better and fairer calculation. A solution is only envisaged for 2018²⁷.

Walloon Region

On the basis of Article 10 (2) of the Decree of 21 December 2016 of the Walloon Government on the budget for the year 2017, 42c€ (eurocent) per MWh produced between 1st January and 31 December 2017 and covered by the green certification scheme shall be due by the owner of installations with a capacity >10KW to the CWaPE²⁸.

Although no legal basis was identified, it appears from press releases and professional websites²⁹ that any self-producer owning an installation with a capacity ≤ 10KW connected to the grid must pay a connection allowance (or 'prosumer tariff') of 55€/ KWp. This would amount to a yearly allowance of 110€ for owners of 5 KWp installations; 385€ for owners of 10KWp installations.

²⁶ The tariffs are calculated on the basis of own consumption of solar energy during 28% of the time and an injection during 72% of the time.

²⁷ FUTECH 2015, *Prosumementarief ruimt plaats voor capaciteitstarief*, viewed 11 December 2016, <http://www.futech.be/prosumementarief-ruimt-plaats-voor-capaciteitstarief/>.

²⁸ CWaPE, «Redevance 2017 pour les producteurs d'électricité verte exploitant une installation d'une puissance supérieure à 10 kW», 02.02.2017, available at : <http://www.cwape.be/?dir=3&news=635> (last accessed on 23.02.2017).

²⁹ Guide-panneaux-photovoltaïques.be, "Une nouvelle redevance pour le photovoltaïque: quels effets sur la rentabilité? », <http://www.guide-panneaux-photovoltaïques.be/une-nouvelle-redevance-pour-le-photovoltaïque-quels-effets-sur-la-rentabilite/> (last accessed on 27.02.2017).

Owners of small installations (under 3 KWp) are exempted from such tariff for an initial period of seven years.

6. What are the incentives (e.g. through taxes or tariffs) for each type of residential prosumers?

General

Flemish Region

Most prosumers dispose of a regular electricity meter from Eandis which counts in kilowatt hours (kWh). That usage counter serves as the basis for the final invoice from the energy supplier. When there is an electricity surplus, then the counter counts backwards. This means that the actual use and injection are not measured separately, but that the electricity meter automatically deducts the injection from the total usage.

Walloon Region

Prosumers are not reimbursed for the electricity that they produce in surplus.

However, it cannot be forgotten that most prosumers dispose of a regular electricity meter from Eandis which counts in kilowatt hours (kWh) (see description above). When there is an electricity surplus, then the counter counts backwards, as has already been mentioned under answer to question 3.3.

6.1. Does your country apply specific tariffs to prosumers

- to charge them for the electricity they draw from the grid for consumption?
- or to compensate them for the electricity they feed back into the grid?

Answer:

Flemish Region

As any other electricity consumer, an energy supply tariff needs to be paid (which is calculated on the basis of (compensated) energy usage) and a network tariff – for the transport and distribution of energy (which is calculated on the basis of (compensated) energy usage).

Prosumers are not reimbursed for the electricity that they produce in surplus.

However, it cannot be forgotten that most prosumers dispose of a regular electricity meter from Eandis which counts in kilowatt hours (kWh). That usage counter serves as the basis for the final invoice from the energy supplier. When there is an electricity surplus, then the counter counts backwards, as has already been mentioned under answer to question 3.3. This means that the actual use and injection are not measured separately, but that the electricity meter automatically deducts the injection from the total usage.

Walloon Region

Walloon compensation and support schemes exist for prosumers. The conditions for certification and compensation depends on the capacity of the installation (below or above 10KW).

Capacity > 10KW

- Compensation

For a self-producer with an installed capacity over 10KW to benefit from a monetary compensation for the difference between the quantity of energy taken from the network and the energy injected into the network, the self-producer must, according to Art. 6bis of the Decision of 30 November 2006:

- Preliminary “booking” of green certificates to the CWaPE;
- Orientation study or detailed study by the network operator;
- Individual authorisation by the CWaPE in case a direct line is considered;
- register and certify its installation as “certified installation of green electricity” by the Walloon Commission for Energy (‘CWaPE’);
- Request for green certificates and labels of guaranteed origin to the CWaPE.

No readily available information was identified regarding the costs of this procedure.

- Registration and certification

In order to be recognized as “green” producer and to benefit from green certificates and labels of guaranteed origin needed for compensation, the self-producer must get a:

1. Connection request and contract in line with the Technical regulation on the management of electricity distribution network of 3 March 2011. The request must be preceded by an orientation study assessing the feasibility of the project. It eventually leads to a connection contract specifying the rights and obligations of the network operator and electricity producer.
2. Certification of the installation under the certificate of guaranteed origin granted by one of the bodies certified by the CWaPE.

No readily available information was identified regarding an estimate of the costs of this procedure and studies.

Capacity ≤ 10KW

Depending on the entry into service of the solar installation, two types of supporting mechanisms exist in the Walloon Region for solar installations with a capacity up to 10KW: “Solwatt” and “Qualiwatt”. Solwatt applies to installations put in service before 1st March 2014; Qualiwatt applies to installations put in service after that date. The paragraphs below only detail the requirements of the scheme applicable to newly connected installations: Qualiwatt. Qualiwatt requires the solar panels to have passed the RGIE inspection (see above).

- Annual premium

Qualiwatt foresees the instalment of an annual premium (during the first five years) by the network operator to the self-producer. The amount of the premium is set by the CWaPE on the basis of a published methodology that guarantees a return on investment of 8 years³⁰.

- Premium for protected clients and self-producers with precarious income

An additional premium is offered to protected clients and self-producers with precarious income in order to ensure, beside a ROI of 8 years, a rate of return of 6.5%.

³⁰ CWaPE, « Principes – Qualiwatt », <http://www.cwape.be/?dir=6.2.01> (last accessed on 23.02.2017) ; CWaPE, « Methodologie – Qualiwatt », <http://www.cwape.be/?dir=6.2.07> (last accessed on 23.02.2017).

- Compensation

Small self-producers with a production unit of green energy with a capacity of $\leq 10\text{KW}$ can benefit from a compensation for the difference between the quantity of energy taken from the network and the energy injected into the network. The compensation allows to deduct the injected energy from the self-producer's energy consumption.

6.2. Does your country

- tax prosumers in a specific way
- allocate to them a certain part of the cost to upgrade the grid to accommodate the extra generation they feed into the grid

Answer:

No, apart from the prosumer tariff, which is regarded as a tax by some³¹, the Flemish Region does not tax prosumers in a specific way. A tax deduction for solar PV existed on the federal level³². This has, however, been deleted, without compensation on the regional level.

Further, it is to be noted that municipalities may introduce their own taxes or subsidies on generated renewable electricity.

In the *Flemish Region* nearly one in three municipalities gives local subsidies for solar energy, usually a percentage of the investment cost with a ceiling of 250 EUR to 1,000 EUR³³. In practice, this limit is always achieved and so this actually constitutes a fixed premium.

As for the *Walloon Region*, distribution grid operators are responsible to implement grid extensions, if needed.

7. A. What are the conditions that may encourage or act as barriers for residential prosumers (to entry into activity or during functioning)?

General

Flemish Region

The Flemish Government created, through the Royal Decree of 16 July 2002 on the Establishment of Mechanisms to Promote Electricity from Renewable Energy Sources³⁴, a system to stimulate investments in solar energy. The system encourages investments in green energy, which reflects a long-term vision. This system aims to reach a determined rate of return on investment for power plant operators in function of the current cost of development and the

³¹ See, e.g. 3E, 'Crucial energy choices in Belgium – an investigation of the options. Our energy future', June 2014, p. 29.

³² Since 1 January 2003, certain energy-reducing investments could rely on a tax deduction, from which the owner or tenant could benefit (*Wet van 10 augustus 2010*, B.S. 20.09.2001). From the fiscal year 2010, the Economic Recovery Act (*Economische herstellwet van 27 maart 2009*, B.S. 07.04.2009) provided for the spreading of the tax reduction over four years for houses having at least five years. This is especially interesting for expensive investments, such as installing a PV system. For expenses in 2010, 40% of the investment is eligible for tax reduction, with a limit of 3,600 EUR for solar water heaters and photovoltaic solar panels. This 'enhanced' deduction was abolished for expenses from the tax year 2011.

³³ Ultrasolar, *Fotovoltaïsche zone-energie*, viewed 12 January 2017, <http://www.ultrasolar.be/belastingvermindering-particulieren>. However, Vlaams Energieagentschap, *Zoek uw subsidie*, viewed 11 January 2017, <http://www.energiesparen.be/subsidies/subsidiemodule> includes a very user-friendly way to search for subsidies per municipality and, from a quick search, no municipality could be found that still had subsidies available for PV panels.

³⁴ *Koninklijk besluit van 16 juli 2002 betreffende de instelling van mechanismen voor de bevordering van elektriciteit opgewekt uit hernieuwbare energiebronnen*, B.S. 23.08.2002.

wholesale electricity market price. Additionally, the system increased the number of sales of solar panels, which decreased their price and thereby turned the investment in solar panels advantageous.

In particular, Article 7.1.1 of the Energy Decree lays down the principle that green certificates (*groenestroomcertificaat*) are given to the owners of a production plant that produces electricity from renewable energy sources. For a given amount of electricity that the solar panels produce (or any other renewable energy production plant), the prosumer will be given a green certificate from VREG. Until 2013, one green certificate was given for 1,000 kWh. For solar panels installed from 2013 onwards, the required amount of electricity for a certificate depends on a technology- and capacity-specific 'banding factor'³⁵. It does not matter whether the prosumer consumes the generated electricity or injects it to the net. The banding factor changes approximately every six months and since the factor was often set very low or at zero, small solar PV units hardly reached the minimum threshold of 1,000 kWh necessary for receiving one certificate. Legally, installations in Flemish Region are entitled to receive certificates during up to 15 years.

The collected certificates can then be traded for a guaranteed exchange value (also called 'minimum support' or *minimumsteun*).

According to Article 7.1.6 of the Energy Decree, the network operator is obliged to purchase the prosumer's green certificates at a certain price (minimum support), if the prosumer requests so. There are a number of conditions:

- The installation needs to be registered at the network operator;
- The solar panels need to be properly connected to the distribution system;
- Each certificate can only be sold once to the network operator;
- The production installation needs to be located in the Flemish Region.

The minimum support is laid down in the Energy Decree, and can also be specified in a contract with the network operator³⁶. During the term of the contract, the minimum price for green certificates cannot be changed. In addition, the network operator must enter into this contract if the prosumer asks for it – but he can wait until the installation is correctly connected. This is stipulated in the Energy Policy Agreement between the Flemish Government and VREG (in accordance with Article 7.7.1 of the Energy Decree)³⁷. An Energy Policy Agreement is used as an instrument to stimulate the rational use of energy and the use of renewable energy sources. One of the goals of the Agreement is to introduce a recorded minimum value for green certificates³⁸.

It must be noted that the minimum support price has been decreasing steadily over the years, until they have finally been phased out: solar panels with maximum 10 kw and which have been certified since 14 June 2015 no longer receive green certificates.

³⁵ The banding factor is reviewed every six months, to ensure consistency with the targeted rates of return for the technology used.

³⁶ A model contract is available here: <http://www.vreg.be/nl/uw-netbeheerder-betaalt>, viewed 11 December 2016.

³⁷ The Energy Policy Agreement states that the production of electricity from renewable energy sources (green power) has increased substantially since the introduction of the green certificate system: from approximately 170 GWh in 2000 to 1,500 GWh annual production capacity at the end of 2005 (including the organic fraction of waste). This production is in line with the annual domestic consumption of about 1 million Flemish people. Despite this strong growth, the investment climate remains subject to the regulations governing the certificate system and the value of the certificates is determined by market forces or regulation. Investors and financial institutions fear a change in the regulations, market fluctuations or legal uncertainty. Since the planning, realization and depreciation of investments in green energy run over very long periods of walking, a stable investment climate in the long term is very important. The further growth of green energy can therefore be strongly encouraged by agreements that ensure a stable investment climate and thus complete the regulatory framework.

³⁸ VREG, *Energiebeleidsovereenkomst tussen de Vlaamse Regering en de elektriciteitsdistributienetbeheerders ter ondersteuning van de groenestroomproductie in het Vlaamse Gewest*, viewed 11 December 2016. http://www.vreg.be/sites/default/files/uploads/groenestroom_beleidsovereenkomst.pdf.

Further support is given indirectly to those prosumers that install solar panels at the time of a new build: solar panels will decrease the energy level of the house with 20 points. If this leads to subsiding under the E-level of 20, then the network operator will grant the prosumer a premium in Flemish Region. This premium is 1,800 EUR for an E-20. For every point that you ameliorate, you get another 50 EUR extra³⁹. However, the E-level premium is abolished for building applications from 1 January 2017.

In addition, the Flemish government grants a discount of 50% on the property tax during 5 years on an E-level of 90, due to a deep energetic renovation. You can get up to 100 percent discount for an E-level of 60. This new measure is applicable from 2017 – and has not yet been approved by the Flemish Parliament.

Finally, energy loans are available to finance the works which will lead to a decrease in energy in the home – see Article 7.2.21 Energy Decision. The installation of solar panels is one of those works and one can borrow a maximum of 10,000 EUR. This has to be repaid over a period of 5 years, with an interest rate of 0% (for certain vulnerable target groups) or 2%⁴⁰.

Walloon Region

1. In the Walloon region, renewable electricity generation is promoted through a quota system based on green certificates. Electricity suppliers are obliged to prove, by submitting certificates, that a certain statutory and continuously increasing proportion (quota) of the electricity they supply was generated from renewable sources. The minimum price per certificate is guaranteed by statutory law.
2. Photovoltaic installations of less than or equal to 10 kW are eligible to the QualiWatt subsidy, which is allocated by the distribution system operators based on the amount of power produced. QualiWatt foresees the instalment of an annual premium (during the first five years) by the system operator to the self-producer. The amount of the subsidy is set by the CWaPE on the basis of a published methodology that guarantees a return on investment of 8 years, along with a return rate of 5% over the lifetime of the PV installation (corresponding to at least 20 years) (Art. 4, Decree of 23 January 2014). The amount of the subsidy is calculated on the basis of the average cost per kWp of an installation of 3kWp. For the period from 1 January 2016 to 30 June 2016, the subsidies amount to between € 171.30 and € 209.05 per kWp. These installations may also benefit from the net-metering support scheme. An additional premium is offered to protected clients and self-producers with precarious income in order to ensure, beside a ROI of 8 years, a rate of return of 6.5%.
3. Small self-producers with a production unit of green energy with a capacity of ≤ 10 KW can benefit from a compensation mechanism for the difference between the quantity of energy taken from the network and the energy injected into the network (net-metering). The compensation allows to deduct the injected energy from the self-producer's energy consumption.

³⁹ Agentschap Informatie Vlaanderen, *E-peilpremie voor energiezuinige nieuwbouw*, viewed 11 December 2016, <http://www.vlaanderen.be/nl/bouwen-wonen-en-energie/bouwen-en-verbouwen/e-peilpremie-voor-energiezuinige-nieuwbouw> and Eandis 2016, *REG-premieaanvraag 2016. Nieuwbouw woning, wooneenheid of woongebouw*, viewed 11 December 2016, http://www.eandis.be/sites/eandis/files/documents/9021068-energieprestatiepeil_2016.pdf.

⁴⁰ Vlaams Energieagentschap, *Energielening 2016*, viewed 11 December 2016, <http://www.energiesparen.be/energielening>. 8447 energy loans have been approved since the beginning of 2015.

B. What are the conditions that may act as barriers for residential prosumers (to entry into activity or during functioning)?**General**

The remuneration schemes for small solar PV units below 10 kW under the net metering scheme are not generous any more, but still amortisation is possible with a fair and secure return on investment for prosumers. However, prosumers became distrustful after the frequent changes and cuts. After the cuts in 'green certificates' prices and retroactive 'prosumer tariff' in the Flemish Region, they fear further taxes and other charges on their investment which lead to a decreased number of installations. In a survey commissioned by Test-Aankoop under the CLEAR project, 64% of all respondents said that an extra fee like the 'prosumer tariff' prevents them from investing in a solar PV system⁴¹.

The frequent changes in the complex support schemes and the retroactive changes clearly undermine prosumers' position in the legal framework for renewable self-generation. The outcome of support scheme payments partially becomes incalculable. The framework increasingly fails to deliver transparency and predictability. In the case of the 'green certificates', prosumers hardly can estimate the economic viability of an investment in solar PV.

From the CLEAR project⁴², it emerged that Belgian respondents have a positive attitude towards RES, but that the intention to invest in Renewable Energy Systems is rather low⁴³. 73% considers it important to be economical with energy. However, one out of three respondents showed they did not want to compromise on comfort. Two out of five of the Belgian respondents believed a RES to be an option for them, although one out of five does not feel Renewable Energy Systems are suited for them. A typical barrier prior to installing RES is the investment cost. Up to 56% of respondents that do not have the intention of investing in RES indicated that they would not consider installing RES due to high installation costs. Concern for the environment and financial advantages (lower energy costs & the increase of property value) are the two most important drivers to invest in Renewable Energy Systems.

7.1. What are the metering systems for each type of residential prosumer? Do these systems provide adequate conditions for prosumers integration in the market?

Answer:

All regions in Belgium have chosen the net metering scheme for systems up to 10kW (10kVA). Net metering is a regulatory framework under which the excess electricity injected into the grid can be used at a later time to offset consumption during times when their onsite renewable generation is absent or not sufficient. In other words, under this scheme, prosumers use the grid as a backup system for their excess power production. No remuneration is foreseen for the excess electricity generation that is injected into the grid. Net metering schemes have proved to be effective to jump-start distributed generation markets⁴⁴. Under this model, prosumers are using the grid to artificially store electricity produced at one point of time to consume it at another

⁴¹ GfK 2015, *CLEAR – WP2.2 Consumer survey 2 – Identification of best approach to implement the group offer. Report Belgium*.

⁴² CLEAR is a project initiated by the European Commission that enables Consumers to Learn about, Engage with and Adopt Renewable energy technologies.

⁴³ CLEAR 2015, *Belgian respondents aren't fully convinced yet of Renewable Energy*, viewed 11 December 2016, http://www.gfk.com/fileadmin/user_upload/dyna_content_import/2015-09-01_press_releases/data/be/Documents/Press%20Release%20GfK%20Renewable%20Energy%2020150610.pdf.

⁴⁴ European Commission 2015, *Commission Staff Working Document, Best practices on Renewable Self-consumption, Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions 'Delivering a New Deal for Energy Consumers'*, COM(2015)339 final, SWD(2015)141 final, viewed 11 December 2016, http://ec.europa.eu/energy/sites/ener/files/documents/1_EN_autre_document_travail_service_part1_v6.pdf.

point of time, without reflecting the value of electricity which may vary substantially between the time periods.

Flemish Region

Article V.2.4.2. § 1 of the Electricity Distribution Grid Code states the following: ‘The electricity distribution network user must request, for production installations with a maximum AC power of 10kVa, at the expense of the electricity distribution network operator, that the measuring system shall be adjusted in such a manner that the electrical output of the installation is injected into the electricity distribution network can be billed with the electricity consumption’.

Thus, anyone who produces energy and possesses an installation with an AC power (alternating current) of up to 10 kVA, is entitled to a meter with a rotating back counter. This allows to subtract the consumed energy from the produced energy. A rotating back counter works in two directions: if one uses electricity from the grid, then the meter reading increases; if excess electricity is injected into the grid; then the meter reading decreases.

A prosumer (as well as a consumer) can choose between a single and a dual meter. With a single meter, electricity consumption is registered on one meter, whether day or night. With a dual meter, consumption is separated as the day meter measures electricity consumption between 6 and 21h, while the night meter measures between 21 and 6h and the weekend readings. The dual meter automatically switches between day and night readings and night consumption is cheaper than day consumption.

Solar panels only produce energy during the day. The night counter will only turn back during the weekend. Any shortfall in the night counter cannot be compensated by a surplus from the day counter. Therefore, if more energy is self-produced than consumed, it might be advantageous to switch to a single meter with a rotating back counter.

Walloon Region

According to Article 34 of the Electricity Market Decree the network system operator must, upon request of final customers, place a metering system adapted to the customer’s profile. Moreover Article 153 of the Decision of 3 March 2011 prescribes that any access point to the distribution system entails a metering system to determine the active and/or reactive energy injected into or pulled out from the distribution system. A residential building that gets a new connection to the grid or that undergoes substantial renovation, must be equipped of an individual metering system. There is however no provision in the current regulatory framework that ensures that meter or meters can account for electricity put into the grid from the final customer’s premises in other situations.

As highlighted above, while the compensation mechanism allows prosumers, under certain conditions, to deduct the self-produced energy from their energy consumption, prosumers are not compensated for the energy that they produce in surplus.

Dual metering systems are available also in the Walloon Region – with high-load hours during weekdays and low-load periods during the night and week-end. The exact times delimiting high-load and low-load periods are determined at the municipal level.

7.2. What are the billing conditions for each type of residential prosumer

Answer:

In Belgium, all regions have chosen a netmetering⁴⁵ scheme for systems up to 10kW (10kVA) but no remuneration is foreseen for the excess electricity generation that is injected into the grid. Net metering schemes have proved to be effective to jump-start distributed generation markets⁴⁶. Under this model, consumers with self-generation are using the grid to artificially store electricity produced at one point of time to consume it at another point of time, without reflecting the value of electricity which may vary substantially between the time periods.

Self-generators who participate in the net metering scheme in *Flemish Region* reduce their electricity bill by the amount of kilowatt-hours fed into the grid, so called netting. The self-generator's meter just runs backwards. Only the annual net consumption is invoiced by the supplier and if annual production exceeds the self-generators' electricity import from the grid, his/her bill will be zero. Once a prosumer's annual bill is totally compensated under the net metering scheme, no further remuneration is paid for any kilowatt-hour fed into the grid.

In the *Walloon Region*, small self-producers with a production unit of green energy with a capacity of $\leq 10\text{KW}$ can benefit from a compensation mechanism for the difference between the quantity of energy taken from the network and the energy injected into the network (net-metering). The compensation allows deducting the injected energy from the self-producer's energy consumption.

7.3. Are there measures to encourage the creation of energy communities at municipal level, or other schemes to encourage inclusive development of the market?

Answer:

The liberalisation of the energy market was intended to bring greater competition into electricity and gas markets in the interest of creating more competitive markets and reductions in price by privatisation. Since 1 July 2007, all consumers in the EU have the right to choose their energy supplier. The market opening due to the liberalisation of the energy market has seen the entry of new actors, including citizens. Community-owned energy projects (so-called 'community power' projects) have the potential to transform our energy system. Communities and cooperatives all over Europe are creating projects where they own and are actively involved in running an energy resource.

In Belgium, the liberalisation merely transformed the monopoly into an oligopoly that did not lead to a decrease in prices and a large choice for consumers. Due to the dissatisfaction of consumers and their desire to better control the prices and sources of their energy, most of the community projects that emerged were initiated by REScoops. REScoop is short for Renewable Energy Sources Cooperative. A REScoop is a group of citizens that cooperates in the field of renewable energy, developing new production, selling renewable energy or providing services to new initiatives. The philosophy behind engagement in these activities is that 100% of the electricity being supplied should be from renewable energy sources. This cooperation can take many forms, nevertheless, the ability to raise capital through local citizens investing in a project is particularly pertinent for REScoops because it allows to directly engage with the local

⁴⁵ Net metering is a regulatory framework under which the excess electricity injected into the grid can be used at a later time to offset consumption during times when their onsite renewable generation is absent or not sufficient. In other words, under this scheme, consumers use the grid as a backup system for their excess power production.

⁴⁶ Commission Staff Working Document, Best practices on Renewable Self-consumption, Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "Delivering a New Deal for Energy Consumers" COM(2015)339 final, SWD(2015)141 final.

community: not only consult with the citizens or inform them, but to give them the option of being the actual owners of the project.

Belgian REScoops are members of the Federation of groups and cooperatives of citizens for renewable energy in Belgium (REScoop.be), which was created in 2010. Renewable energy sources include wind, solar, hydro-electric and tidal power as well as geothermal and biomass, but the community-owned RES plants have so far mainly been focusing on wind energy. Some of the REScoops already have projects, others are still in the early start-up stages.

The following REScoops are active in *Flemish Region*: BeauVent, BronsGroen, Campina Energie, Core, EnerGent, Ecopower, Volterra, Pajopower and ZuidtrAnt. Ecopower is the largest Belgian REScoop, with nearly 50,000 members who jointly own 17 large wind turbines, 322 solar installations, three small-scale hydro power installations, 1 cogeneration installation and a wood pellet factory. Together, these installations produce 55,000,000 kWh per year and Ecopower supplies the energy to their members at a reasonable price. Ecopower only supplies to its customers the energy it produces from its own installations. This cooperative sees 600 new applications registered every month, with a waiting queue of several weeks. The lower prices offered by most REScoops are seen as a confirmation of the high margins generated by the mainstream operators and obviously increase the interest of citizens in becoming consumers of a REScoop.

An article on REScoops brings some very interesting insights⁴⁷. The most important ones are highlighted hereunder:

- **Some positive notes about REScoops**

REScoops seem particularly efficient in terms of environmental preservation (green energy, rational use of energy), economic settings (price, sustainability, etc.) and citizen involvement. Indeed, REScoops are conceived as multi-stakeholder and cooperative schemes involving citizens, municipalities and local economic players.

Three types of consumer concerns were highlighted: the “environmental quality” of the electricity; the efficiency of RES facilities such as windmills; and the generation of huge profits on the back of consumers as well as landscape destruction.

On the first point, it clearly appeared that REScoops reached outstanding records in terms of green energy production. The 100% green origin of the energy and the excellent transparency about the energy sources, being most of the time directly produced by REScoops (and not bought from other suppliers), attracted support from both ecologically-minded consumers and environmental NGOs. In Belgium, for instance, Greenpeace promoted the environmental records of Ecopower as ‘best-in-class’ among the Belgian electricity providers, thereby increasing consumers’ interest. Moreover, REScoops were able to obtain social acceptance for the construction of renewable energy production facilities (typically windmills).

On the criticism relating to the inherent characteristics of windmills, REScoops did not offer an alternative regarding mainstream corporations: the windmills were the same. However, by having citizens, most of which live nearby the windmills, as owners of the organization, REScoops were able to organize the process in a very different way. They seemed better able to convincingly inform citizens about the real assets and risks of windmills. Through REScoops, citizens also had the ability to participate in the decision-making concerning for instance the location of the windmills. But more fundamentally, it is the democratic dimension and the absence of profit-maximizing shareholders which provided assets to REScoops, by invalidating

⁴⁷ Benjamin Huybrechts & Sybille Mertens, *The challenges of diffusing socially innovative organizational models: the case of renewable energy source cooperatives (REScoops)*, viewed 11 December 2016, <http://www.ces.ulg.ac.be/uploads/Huybrechts%20Mertens%20REScoops.pdf>.

the criticism relating to the appropriation of public resources (such as air) by corporate players. REScoops hence provide a valuable answer to the consumer concerns highlighted above.

Beyond the production and distribution of renewable energy, REScoops contributed to responding to the climate crisis through reducing consumption. The promotion consumption reduction clearly appeared as a quasi-public good. REScoops were able to substantially reduce such consumption (from 20 to 30% decrease)⁴⁸.

- **Barriers to entry**

The high costs of acquiring windmills and other RES facilities was mentioned above as the main obstacle for setting up REScoops. This required innovative solutions such as combining citizen investment, public funds and bank credits. At further stages, access to capital was less problematic, especially when REScoops distributed their electricity. Indeed, coops such as Ecopower then linked consumption with investment (at least one share), thereby raising its capital together with its consumer base.

Second, for producing RES, another critical resource that was reported was access to locations for RES facilities, typically suitable lands or sea concessions for windmills. The lack of access to locations was a serious barrier to entry. Promoters played the role of intermediaries, buying lands suited for windmills, obtaining the construction permits, and then selling everything to large groups. The interviewees perceived this as a speculation strategy, disabling a real competition among RES exploiters.

Another barrier to entry was the lack of transparent information enabling the public authority to compare among different offers. In the Belgian legislation for example, sales of lands and authorizations of windmill and other RES projects are too small to fall under the public procurement scheme. Hence, there is no systematic comparison of the offers and coops thus have less chance to put forth their assets. Moreover, as most municipalities are involved in “inter-municipal partnerships” for the management of energy and many other issues, decisions are taken according to the governance mechanisms of these partnerships. Often, Electrabel, as the historic Belgian public energy company, still held seats on the Board of these inter-municipal arrangements, even after the liberalization of the market. Several REScoop leaders suggested that this was a serious obstacle, as Electrabel representatives tended to favour their own RES solutions.

Finally, there are also some cognitive barriers:

- Lack of awareness of RES as public goods with a high potential of involvement of and return to the community. This may be linked to the lack of knowledge about RES in general;
- Total ignorance of municipalities and local governments regarding the potential benefit they would enjoy when getting involved in a coop;
- Most people did not understand the assets of this model for the production and distribution of renewable energy.

7.4. Are there rules facilitating the creation of energy cooperatives to provide a legal entity to energy communities? Are there measures facilitating other type of schemes and if so which ones?

⁴⁸ For instance, the customers of Ecopower diminished their average level of energy consumption in the initial three years from 4,000 kWh/year to less than 3,000 kWh/year.

Answer:

- **REScoops**

The following pieces of legislation have been enacted to promote the use of cooperative entrepreneurship:

- 1) Royal Decree of 8 January 1962 laying down the conditions for recognition of national associations of cooperative communities and cooperative societies
- 2) Law of 10 July 1955 establishing the National Council for Cooperation

These pieces of legislation enshrine principles for the operation and recognition of cooperative companies in Belgium.

The existence of an exemption of the prospectus publication for cooperatives plays an important part in facilitating the financing of REScoops. Indeed, when registered and approved by the National Cooperative Council of Belgium, public offerings can be undertaken by cooperatives without prospectus as long as the total sum of the offering does not exceed 5,000,000 EUR a year in capital from the public. See Article 18 Law of 16 June 2006 on Public Offering of Financial Instruments.

- **Community ownership**

Regional and local governments are also trying to do more to promote community ownership. In Oost-Vlaanderen and Limburg, two provinces in Flemish Region, it was decided that future wind projects will need to include direct participation (not financial participation) by the local population which amount to at least 20% (10% local municipality and 10% citizens) in ownership and management of large wind turbines. These decisions were largely motivated by the perceived need to reallocate burdens and benefits of wind development to benefit communities. The project developers, on their turn, need to contribute to a local fund that will aim at ameliorating the immediate vicinity of the wind turbines.

Citizens and companies are receiving the support of REScoop.be while the Flemish Energy Agency is the chosen partner for the municipalities.

The operational aspects of this 'direct participation' model are currently being developed at the local level, but there are many hurdles still to be overcome. In fact, the Decision of the Province of Oost-Vlaanderen of 5 December 2013 (making the 20% participation mandatory) has been annulled in June 2014 by the Flemish minister due to a lack of a legal base and incompatibilities with current Flemish and European regulations⁴⁹. On the other hand, the Decision of the Province of Limburg of 20 November 2013 still stands.

7.5. What are the procedures/provisions for establishing cooperatives for prosumers? Are they more simple/less costly than those for other schemes?

Answer:REScoops

All Belgian REScoops are founded on the following 7 cooperative principles:

1. **Voluntary and Open Membership.**

Co-operatives are voluntary organisations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political or religious discrimination.

⁴⁹ For more information about the case of Oost-Vlaanderen, see: <http://www.energielandschap.be/wind>. See also the answer of the Vice Minister-President of the Flemish Government to the request no. 142 of 29 January 2015 of Robrecht Bothuyne.

2. Democratic Member Control.

Co-operatives are democratic organisations controlled by their members, who actively participate in setting their policies and making decisions. Men and women serving as elected representatives are accountable to the membership. In primary co-operatives members have equal voting rights (one member, one vote) and co-operatives at other levels are also organised in a democratic manner.

3. Member Economic Participation.

Members contribute equitably to, and democratically control, the capital of their co-operative. At least part of that capital is usually the common property of the co-operative. Members usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for any or all of the following purposes: developing their co-operative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the co-operative; and supporting other activities approved by the membership.

4. Autonomy and Independence.

Co-operatives are autonomous, self-help organisations controlled by their members. If they enter to agreements with other organisations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their co-operative autonomy.

5. Education, Training and Information.

Co-operatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their co-operatives. They inform the general public - particularly young people and opinion leaders - about the nature and benefits of co-operation.

6. Co-operation among Co-operatives.

Co-operatives serve their members most effectively and strengthen the co-operative movement by working together through local, national, regional and international structures.

7. Concern for Community.

Co-operatives work for the sustainable development of their communities through policies approved by their members.

Further, a cooperative wind project of citizens must meet the following criteria:

1. Local roots:

The company building and operating the project is completely open to participation by local residents, local civil society, the municipality and its agencies and ordinary people in general: before, during and after the realization of the project. That way they can appropriate the project and the link between energy needs, the necessary production of renewable resources and local economic value becomes clear.

2. Non-speculative:

The renewable energy project is realized to be exploited and not for resale. The return on capital is limited. The project provides access to energy at a fair and transparent price. Part of the surplus is spent on education and information and investment in new projects. To the extent possible, the other developers with whom there is a collaboration, the co-investors and their contractors also respect these rules in the construction and operation of this renewable energy project.

3. Independent:

The company building and operating the project is autonomous and is not controlled by governments or other companies. The mechanism of cooperation and solidarity that is used for

the investment and the objectives of the projects, is part of the social and cooperative economy, and puts these companies on the one hand outside the public sector (managerial autonomy) and outside the pure private companies who cannot sign the charter.

4. Democratic:

Companies realizing and operating such projects, and to the extent possible, the project partners (developers, consultancies, banks, contractors, ...) are democratically organized, are of the cooperative type or are operating according to the cooperative principles, transparent and clear. They guarantee the preservation of the objectives of the project throughout its duration. The elected board of these companies should allow the co-operative members control production costs and ensure transparency in the operation and finances.

5. Ecological:

The company carrying out and operating the project commits sustainably and voluntarily for the environment, ranging from global issues (climate change, biodiversity loss, pollution, ...) to the problem at the local level (land use, wind, rivers, local impact, ...). To the extent possible, the developers and co-investors of the project and their contractors (engineering companies, manufacturers, installers,...) also respect this line.

6. Economical handling space:

Even renewable resources are limited. The development and realization is subject to prior study and planning. Several project proposals will be considered on their merits: urban planning, environmental and socio-economical.

Finally, REScoop.eu empowers citizens and cooperatives in their fight for energy democracy. They try to achieve this by:

- Representing the voice of citizens and renewable energy cooperatives to European policy makers.
- Supporting the start-up of new REScoops. We provide them with useful tools and put them in contact with our network of mentors.
- Providing services to the European REScoops. We are currently working on financing, IT, e-car sharing and academics.
- Promoting the REScoop business model throughout Europe and beyond.

Group purchases

An increasing amount of 'group purchases' are being organised in Flemish Region⁵⁰. These group purchases are organised by the provinces, Test Aankoop and Greenpeace. A group purchase aims at gathering as much (future) prosumers as possible to purchase solar panels, against advantageous tariffs.

Candidates need to register for a group purchase within a predetermined period. Qualified solar panel distributors then send out their best offer. Each prosumer will receive an individual offer from the distributor who came out of the auction as 'best buy' for the installation of a qualitative and complete solar panel system (inclusive of inspection, installation and registration). Then, a decision as to whether or not the offer is accepted needs to be made⁵¹.

⁵⁰ All possible group purchases are available at: <http://www.samengaanwegroener.be/>.

⁵¹ For an example, see the group purchase offer from the Province of Antwerp: <https://samenzonnepanelen.ichoosr.com/product/customizableinfo.rails?actionId=491&infoTextId=388>, viewed 11 December 2016.

8. Other questions on the regulatory framework

8.1. The complaint handling procedures for each type of residential prosumer

Answer:

There is no specific complaint handling procedure for residential prosumers.

In case of complaints, the prosumer first needs to submit a written complaint to the supplier or network operator. The term to handle the complaint is around one month. The prosumer needs to await the answer and, in case he does not agree, can submit a complaint to the Ombudsman for energy.

The Royal Decree of 18 January 2008 on the Energy Ombudsman⁵² states the following:

‘Article 2 The end user who wishes to make a complaint regarding an electricity or gas company can submit an application to the ombudsman by letter, fax or electronic mail.

Article 3 If the ombudsman does not or not further examine a complaint, he shall inform the complainant thereof in writing, stating the reasons, within twenty working days from the date of receipt of the complaint.

Article 4 The ombudsman informs the electricity or gas company against whom the complaint has been submitted. The latter has the right of access to the file compiled by the ombudsman. If that file contains confidential information, it will be taken out beforehand. The electricity or gas company can communicate its views in writing.

Article 7 After examining the complaint, the ombudsman tries to find an amicable solution between the parties. If he does not succeed, he will bring a recommendation to the electricity and gas industries and provide a copy to the complainant. That recommendation is given within forty working days from the date of receipt of the complaint. The deadline can only be extended once for the same period and provided that the parties are informed of it before the expiry of that period.

Article 8. If the electricity or gas company does not follow the recommendation, it has a period of twenty working days to notify its reasoned decision to the complainant and to the ombudsman.’

The Energy Ombudsman is an independent federal authority with legal personality which is responsible for the distribution of questions and complaints regarding the functioning of the electricity (and gas) market and the handling of disputes between end-users and the electricity (and gas) businesses. Every end-user (any natural or legal person purchasing electricity or natural gas for their own use) may appeal to the Energy Ombudsman. This category includes residential customers, self-employed artisans, merchants, SMEs, associations, associations of co-owners, etc.

The tasks of the Ombudsman are laid down in Article 27 of the Act of 29 April 1999 on the Organisation of the Electricity Market and the Royal Decree of 18 January 2008 on the Energy Ombudsman.

8.2. Are there any specific redress procedures available only to residential prosumers?

Answer:

There are no specific redress procedures available only to residential prosumers.

⁵² Koninklijk besluit van 18 januari 2008 betreffende de ombudsdienst voor energie, B.S. 12.02.2008.

Country fiche (Summary and ranking)

The **country fiche** below summarises the information from the report and ranks the **level of favourable impact** of measures in relation to its favourable impact to the take up of residential prosumers.

Country fiche	Ranking Low/Medium/High
General Description of the national regulatory framework - Types of residential prosumers Solar photovoltaic panels with an installed capacity of <10 kWp are the most popular renewable energy source for self-consumption in the Belgian institutional framework. - Applicable legislation, plans and objectives The regions have the competence over the distribution of energy (but not the transport), new energy, green energy, efficient use of energy and energy savings, while the federal government has jurisdiction over the production and transmission of energy. The federal government is also in charge of offshore wind, ocean energy and biofuels standards. <i>Flemish Region</i> The Flemish legislation on (renewable sources of) energy is mainly laid down in the Energy Decree and the implementing Energy Decision. The National Action Plan for Renewable Energy does not include any objectives for residential prosumers, while the Energy Policy Briefing 2016-2017 of the Flemish Parliament just mentions that the regulatory framework for self-consumption should be further worked out. <i>Walloon Region</i> There is no specific Walloon legislation on prosumers. The Walloon legislation on (renewable sources of) energy is mainly laid down in Walloon Code of Spatial Planning, Urban Planning, Heritage and Energy ('CWATUPE'), the 2001 Electricity Market Decree, the 2006 Decision on renewable energy and cogeneration sources and in the 2011 Technical regulation on the management of electricity distribution network. The National Action Plan for Renewable Energy does not include any objectives for residential prosumers. Neither does the Walloon Regional Energy Policy 2014-2019. - Definition of residential prosumers <i>Flemish Region</i> Due to the introduction of a 'prosumer tariff', as one of the distribution network tariffs, in December 2014, the term 'prosumers' (<i>prosumenten</i>) was introduced on a wide scale within the Flemish energy landscape. The term has not been legally defined, but Eandis (one of Flemish Region' system	Low

operators) has a Q&A document on its website about the prosumer tariff and the first question on that document is ‘what are prosumers?’	
<i>Walloon Region</i> In the Walloon Region, the term “residential prosumer” is not used. However, Article 2 (2) of the Electricity Market Decree defines “self-producer” as “any physical or legal person producing electricity mainly for its own use”.	
Specific Questions on the regulatory framework for residential prosumers Permitting requirements for each type of residential prosumer The <i>Flemish Region</i> recognizes certain forms of self-consumption, as the installation of solar panels or solar water heaters is exempt from a building or planning permit (under certain conditions). The installation of solar panels further needs to adhere to certain requirements related to insulation, inspection and registration. The <i>Walloon Region</i> recognizes certain forms of self-consumption, as the installation of solar panels or solar water heaters is exempt from a building or planning permit (under certain conditions). The installation of solar panels further needs to adhere to certain requirements related to registration and licencing for electricity production. Rules applicable to the access to the grid <i>Flemish Region</i> Plant operators have to apply for grid connection to the distribution grid operator. Two different procedures apply depending on the access capacity: simple access procedure for an access capacity less than 25 kVA and a technical access procedure (to be emitted by an accredited controller and then transferred to the distribution grid operator) of installations with higher capacities requiring a feasibility study. During application, preferential status is granted to renewable energy. The plant operator has to cover a fixed amount of costs determined by law, any excess costs are covered by the distribution grid operator. <i>Walloon Region</i> Producing electricity in the Walloon Region requires holding a licence delivered by the ministry according to Article 30 of the Electricity Market Decree. Two categories of licences exist: general and limited. Self-producers must hold a “limited licence for ensuring self-consumption”. The requirements for obtaining that licence are laid down in the Order of 21 March 2002 on the licence for electricity production. In order to obtain such licence, a self-producer must be an effective resident of Belgium or another Member State of the EEA (Art. 2); and submit a written request to the CWaPE (Art. 12-16 quater). During application, preferential status is granted to renewable energy. Incentives (e.g. taxes and tariffs) for each type of residential prosumers <i>Flemish Region</i>	High High Low

Most prosumers dispose of a regular electricity meter from Eandis which counts in kilowatt hours (kWh). That usage counter serves as the basis for the final invoice from the energy supplier. When there is an electricity surplus, then the counter counts backwards. This means that the actual use and injection are not measured separately, but that the electricity meter automatically deducts the injection from the total usage.

Walloon Region

As any other electricity consumer, an energy supply tariff needs to be paid (which is calculated on the basis of (compensated) energy usage) and a network tariff – for the transport and distribution of energy (which is calculated on the basis of (compensated) energy usage).

Prosumers are not reimbursed for the electricity that they produce in surplus. They can however benefit from a compensation for the difference between the quantity of energy taken from the network and the energy injected into the network under certain conditions. Premiums moreover exist for prosumers with an installed capacity $\leq 10\text{KW}$.

Conditions encouraging residential prosumers

High

Flemish Region

The Flemish Government created a system to stimulate investments in solar energy. The system encourages investments in green energy, which reflects a long-term vision. This system aims to reach a determined rate of return on investment for power plant operators in function of the current cost of development and the wholesale electricity market price. Additionally, the system increased the number of sales of solar panels, which decreased their price and thereby turned the investment in solar panels advantageous. This system is called *groenestroomcertificaten*.

Further support is given indirectly to those prosumers that install solar panels at the time of a new build. In addition, the Flemish governments grants a discount on the property tax in case the E-level of the house, due to deep energetic renovation, does not reach a certain threshold. Finally, energy loans are available to finance the works which will lead to a decrease in energy in the home.

Walloon Region

In the Walloon region, renewable electricity generation is promoted through a quota system based on green certificates. The minimum price per certificate is guaranteed by statutory law. Moreover photovoltaic installations of less than or equal to 10 kW are eligible to the Quali watt subsidy, which is allocated by the distribution system operators based on the amount of power produced. Finally, as highlighted above, small self-producers with a production unit of green energy with a capacity of $\leq 10\text{KW}$ can benefit from a compensation mechanism for the difference between the quantity of energy taken from the network and the energy injected into the network (net-metering). The compensation allows to deduct the injected energy from the self-producer's energy consumption.

Conditions acting as barriers for residential prosumers

The remuneration schemes for small solar PV units below 10 kW under the net metering scheme are no longer generous, however, amortisation is possible with a fair and secure return on investment for prosumers. Nevertheless, prosumers became distrustful after the frequent changes (e.g. introduction of the prosumer tariff) and cuts (e.g. cuts in the green certificates).

Metering systems for each type of residential prosumer

All regions in Belgium have chosen the net metering scheme for systems up to 10kW (10kVA). Net metering is a regulatory framework under which the excess electricity injected into the grid can be used at a later time to offset consumption during times when their onsite renewable generation is absent or not sufficient. In other words, under this scheme, prosumers use the grid as a backup system for their excess power production. No remuneration is foreseen for the excess electricity generation that is injected into the grid. Net metering schemes have proved to be effective to jump-start distributed generation markets. Under this model, prosumers are using the grid to artificially store electricity produced at one point of time to consume it at another point of time, without reflecting the value of electricity which may vary substantially between the time periods.

Billing conditions for each type of residential prosumer

Self-generators who participate in the net metering scheme in the Flemish Region reduce their electricity bill by the amount of kilowatt-hours fed into the grid, so called netting. The self-generator's meter just runs backwards. Only the annual net consumption is invoiced by the supplier and if annual production exceeds the self-generators' electricity import from the grid, his/her bill will be zero. Once a consumer's prosumer's annual bill is totally compensated under the net metering scheme, no further remuneration is paid for any kilowatt-hour fed into the grid.

Measures to encourage the creation of energy communities at municipal level

REScoops and community ownership.

Rules facilitating the creation of energy cooperatives (simplicity/cost as compared to other schemes/Commonality of cooperatives as the legal status for energy communities)

Most of the community projects that emerged in Belgium were initiated by REScoops. A REScoop is a group of citizens that cooperates in the field of renewable energy, developing new production, selling renewable energy or providing services to new initiatives. The philosophy behind engagement in these activities is that 100% of the electricity being supplied should be from renewable energy sources. This cooperation can take many forms, nevertheless, the ability to raise capital through local citizens investing in a project is particularly pertinent for REScoops because it allows to directly engage with the local community: not only consult with the citizens or inform them, but to give them the option of being the actual owners of the project.

Belgium has enacted legislation to promote the use of cooperative entrepreneurship. Further, the existence of an exemption of the prospectus publication for cooperatives plays an important part in facilitating the financing of REScoops. All Belgian REScoops are founded on the following 7 cooperative principles: 1. Voluntary and Open Membership. 2. Democratic Member Control. 3. Member Economic Participation. 4. Autonomy and Independence. 5. Education, Training and Information 6. Co-operation among Co-operatives. 7. Concern for Community.	
Further aspects on the regulatory framework • Complaint handling procedures for residential prosumers In case of complaints, the prosumer first needs to submit a written complaint to the supplier or network operator. The term to handle the complaint is around one month. The prosumer needs to await the answer and, in case he doesn't agree, can submit a complaint to the Ombudsman for energy. • Redress procedures available only to residential prosumers None.	Low

Executive summary

Solar photovoltaic panels with an installed capacity of <10 kWp are the most popular renewable energy source for self-consumption in the Belgian institutional framework. The regions have the competence over the distribution of energy (but not the transport), new energy, green energy, efficient use of energy and energy savings, while the federal government has jurisdiction over the production and transmission of energy. The federal government is in charge of offshore wind, ocean energy and biofuels standards.

The regional legislations **do not contain specific provisions on prosumers**. The Flemish region has introduced the concept of 'prosumer tariff' but there is no legal definition of it. The Walloon region has developed the concept of 'self-producer.' Prosumers are mainly impacted by the legislation on renewable energy sources. Both the Flemish and Walloon regions indirectly recognize certain forms of self-consumption: the installation of solar panels or solar water heaters is exempt from a building or planning permit (under certain conditions), the installation of solar panels further needs to adhere to certain requirements related to registration and licencing for electricity production and financial incentives exist (see below). Access to the grid is granted through two possible procedures depending on the access capacity. During the application, a preferential status is granted to renewable energy.

Prosumers are **not reimbursed** for the electricity that they produce in surplus. They can however benefit from a compensation for the difference between the quantity of energy taken from the network and the energy injected into the network under certain conditions (net metering scheme). **Incentives exist** for investments in solar energy (e.g. green certificates, discount on property tax, energy loans). The remuneration schemes for small solar PV units below 10 kW under the net metering scheme are no longer generous after modifications to the regulatory framework (introduction of the prosumer tariff in 2014, gradual cuts in green certificates). Most of the Belgian community energy projects were initiated by **REScoops**: groups of citizens that cooperates in the field of renewable energy, developing new production, selling renewable energy or providing services to new initiatives.