



The Consumer Voice in Europe



Tenants United: participation across borders

TENANTS' ACCESS TO SOLAR SELF-CONSUMPTION

Policy recommendations on strengthening the social dimension of the Energy Union

Joint BEUC/IUT policy paper



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Why it matters to consumers

Four out of five Europeans live in a region where producing solar electricity on the rooftop of the building they are living in is cheaper than buying electricity on the market. Consumers could cut their energy bills by generating their own solar electricity. However, the policy currently focusing only on homeowners excludes around 150 million Europeans living as tenants.

Summary

The European Commission's Energy Union strategy¹ aims to pave the way for consumers to fully benefit from new technologies and future energy markets. Regardless of being homeowners or tenants, all consumers should be able to access those benefits.

Our energy supply is becoming cleaner and less centralised. This is due in large part to decreasing investment costs of renewable self-generation technologies, such as solar photovoltaic (PV) installations. Detached homeowners have been the first to take up and benefit from solar electricity self-generation, particularly where public incentive schemes have been set up. But other parts of society have so far been unable to access this source of energy, including tenants in multi-storey buildings. As many as around 150 million Europeans, i.e. 30% of the EU population, are tenants.² Many of them live in multi-storey dwellings.

Tenants are the blind spot of renewable energy policies

The EU is currently looking into ways to empower consumers to become more active in energy markets. But tenants seem still to be the blind spot of solar PV policies for instance. Policy makers, both at EU and national level, should make it easier for tenants who live in multi-storey buildings to benefit from solar electricity that has been generated on their buildings' premises. This could also be one of the solutions to energy poverty.

Create a space for new business models with a dedicated long-term strategy

Tenants should have the opportunity to opt, on a voluntary basis, for solar self-consumption.³ Support schemes should allow to tap the local solar energy potential to cover different consumers' specific demand and engage in energy markets. They should not focus only on single groups like homeowners neither should they hinder export of electricity to the grid.⁴ The future EU regulatory framework should enable all consumers, including tenants, to access solar electricity and allow innovative business models to emerge.

¹ European Commission: Energy Union Package. COM(2015) 80 final, February 2015; European Commission: Delivering a New Deal for Energy Consumers, COM(2015)339 final, July 2015.

² Eurostat: Housing statistics, http://ec.europa.eu/eurostat/statistics-explained/index.php/Housing_statistics, 11 May 2016.

³ We understand self-consumption as the use of power and/or heat generated on the premises. Self-generation entails self-consumption but also eventually feeding excess electricity production into the grid. Not only the operator and owner of the power plant can self-consume. Groups of consumers who do not necessarily own the power plant could also engage collectively in self-consumption. Technically self-consumption could group all private or commercial consumers having the same grid connection point.

⁴ BEUC: [A welcome culture for consumers' solar self-generation](#), BEUC-X-2016-001, January 2016.

Enable tenants to benefit from renewables

In this paper, BEUC provides an analysis of several models that allow tenants to self-consume solar electricity.⁵ We assess the degree of tenants' involvement in ownership, in operation and management decisions. This assessment also includes the transparency of costs and benefits, the administrative burden and the risks tenants are confronted with. As there is no 'silver bullet' to solve the challenge of bringing solar electricity to tenants, all initiatives should benefit from an EU legislation that builds on the principles summarised in the box below.

What should be improved in future legislation?


- **Establish a right to self-generate, self-consume and export renewable electricity to the grid collectively. Prohibit any direct or indirect ban**, e.g. included in technical rules, contracts or badly designed support schemes.
- **Ensure consumers who self-generate, self-consume and export electricity individually or collectively are protected against inappropriate levies.** The consumption of solar electricity produced on premises should be kept free of charge.
- **Simplify tenant models by treating any supply of electricity within tenant models as being self-consumption** and not as retail electricity delivery.
- **Combat ongoing market distortions with targeted support schemes as well as by preserving priority grid access and priority dispatch of renewable power plants** without limits on the size of capacity or technology.
- **Guarantee that tenants always enjoy the same established consumer rights as customers of a retail electricity supplier**, in particular with regard to switching, to clear and fair terms of the contract.

⁵ Based on a background paper commissioned by BEUC – Nümann, Peter: Access to solar. A legal framework for tenants in multi-storey buildings to obtain solar electricity. A report commissioned by BEUC, January 2017, BEUC-X-2017-001.

1. Strengthening the social dimension of the Energy Union

Tenants' access to solar self-consumption is not only a question of equal footing with home-owners. It can also be a way to combat energy poverty and strengthen the social dimension of the Energy Union.

In its recommendations on self-consumption, the European Commission highlights that "business models and financial instruments need to be developed to make self-consumption widely accessible to all consumers from all income levels, including special programmes for vulnerable consumers."⁶ With regard to self-consumption, the European Commission's proposals for a revised Renewable Energy Directive strives to allow citizens living in apartments to benefit from the same rights as households living in single family homes.⁷ Thanks to massively decreasing generation costs, solar electricity has reached grid parity.⁸ As a result, four out of five Europeans live in a region where generating solar electricity on their rooftop is cheaper than importing it from the grid. This can be an opportunity for consumers to cut their energy bills.



The EU's leading solar PV market, Germany, is at the same time the EU's largest nation of tenants with 47.6% of the population being tenants.

In two other big countries with early grid parity and established solar PV markets, the share of people living in multi-storey dwellings is very high: Spain is the EU leader in terms of population living in flats with 66.5%. In Italy, 50.8% live in flats.

Eurostat: Housing statistics,
http://ec.europa.eu/eurostat/statistics-explained/index.php/Housing_statistics, 11 May 2016

All households, not just homeowners but also tenants, should be able to benefit from the lower cost of solar electricity generation. While investment costs for solar PV continue to decrease, self-consumption for tenants cannot take off by itself.⁹ Limiting policies to owners of detached houses would exclude millions of consumers: 30% of the EU population in 2014 were tenants, 40% of the EU population lived in a flat.

This paper focuses on the conditions for tenants, mostly living in such flats in multi-storey dwellings. To some extent, the tenant models that we described in *chapter 2* could also be adapted to homeowners living in multi-storey dwellings. For instance, tenants and/or homeowners could set up a cooperative that owns and/or operates the PV power plant as a third party. However, this paper does not touch upon such cases.

Given that many Member States do not provide sufficient support schemes for solar electricity fed into the grid, mere export currently does not pay off in the EU. Low wholesale market prices alone cannot pay off the initial investment. It needs self-consumption to make solar PV projects economically viable. The more expensive electricity import from the grid is substituted, the faster the project can be amortised.

But if self-consumption is not allowed while export to the grid does not generate fair remuneration, roofs of multi-storey dwellings would remain unused, despite being a potential source of cheap electricity. This is even more paradoxical when bearing in mind that:

⁶ European Commission: Best practices on Renewable Energy Self-consumption. SWD(2015) 141, 15 July 2015.

⁷ COM(2016)767, recital 53, article 21(2), 30 November 2016.

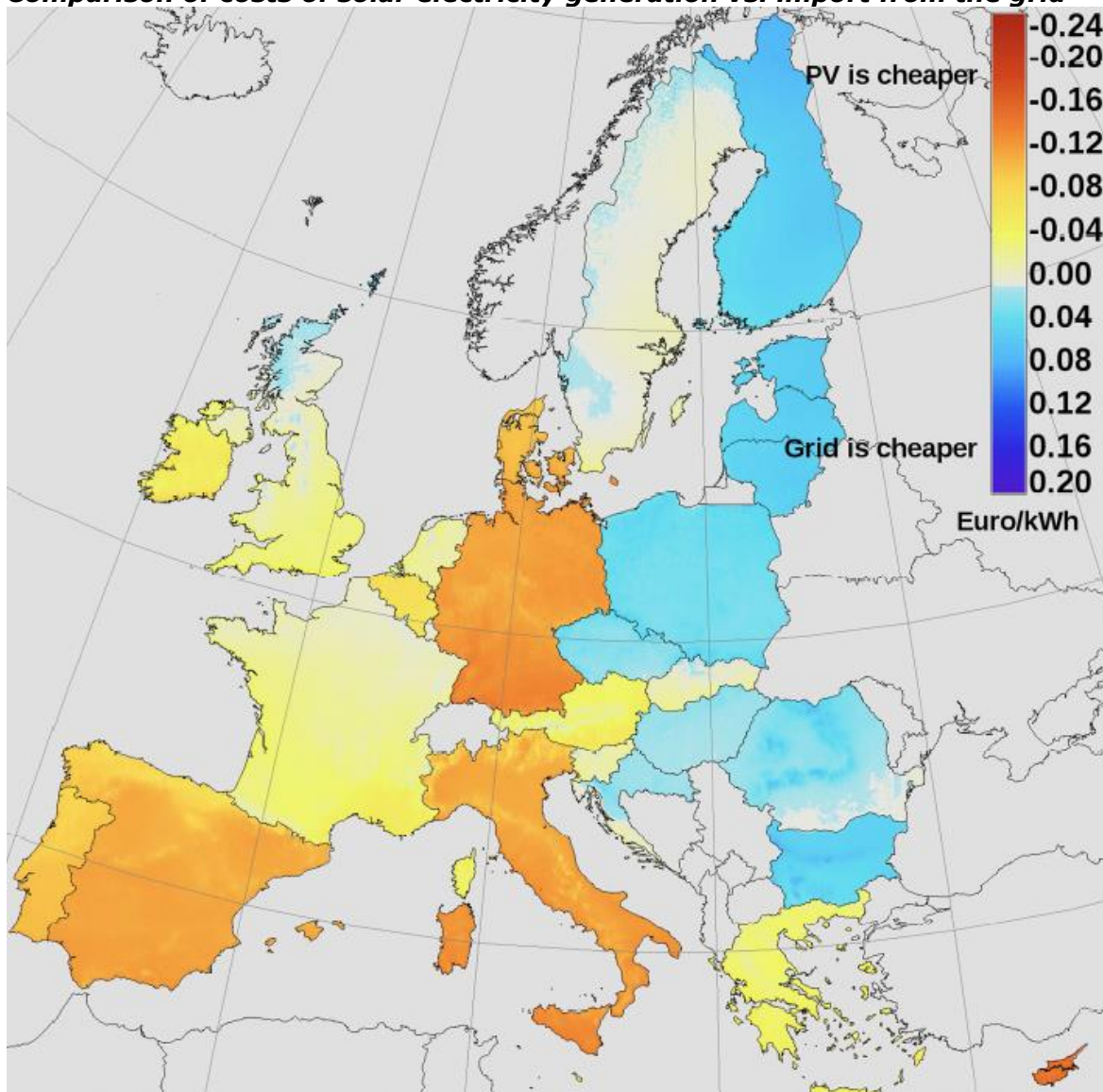
⁸ This is the turning point when the cost of solar kilowatt-hours equals the average retail electricity price.

⁹ BEUC gathered expertise on solar self-generation with its mapping report '[Current practices in consumer-driven renewable electricity markets](#)', BEUC-X-2016-003, January 2016.

- Tenants, as potential consumers, live right under the location of a potential PV power plant, often paying relatively high retail electricity prices;
- In case public support schemes like feed-in tariffs are in place, tenants who self-consume solar electricity reduce exports of excess electricity to the grid, thus reduce the volume of financial support to be allocated to PV power plant operators.

In a nutshell, tenants could be in a position to make investments in PV power plants economically viable and, to some extent, make financial support schemes for solar electricity partially superfluous.

Comparison of costs of solar electricity generation vs. import from the grid¹⁰



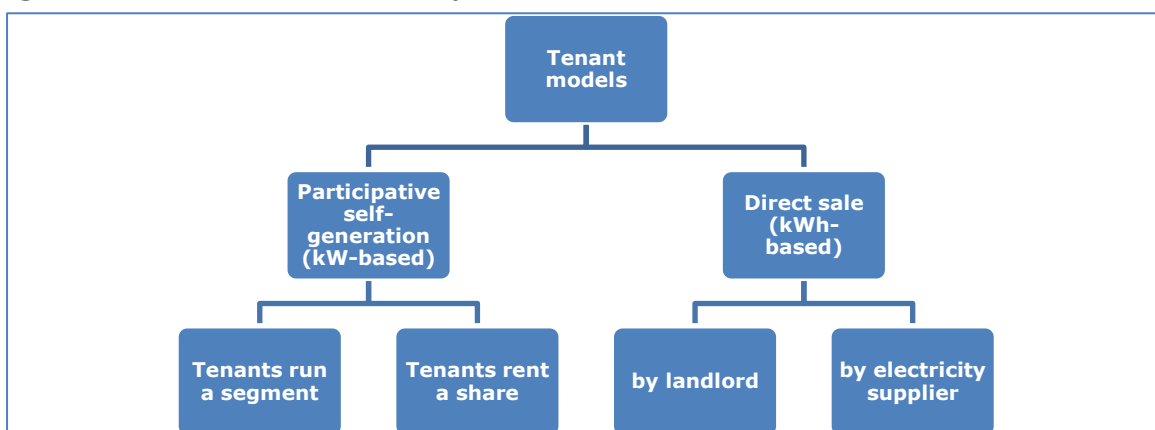
¹⁰ For 80% of EU households, self-generation of solar electricity would be cheaper than buying it from the grid. Joint Research Centre (JRC): Cost Maps for Unsubsidised Photovoltaic Electricity 2014, September 2014. Assumptions: 1,400 euro/kW system price plus national VAT rate, levelised cost of electricity generation with 20 years payback, 5% p.a. interest, 2%/year maintenance. The actual spread between the retail price on the one hand and the levelised generation cost of solar PV electricity may differ because the JRC model applied EU average data and did not take into account any eventual public support granted (e.g. tax exemptions) that could increase or decrease retail prices respectively generation cost.

2. Assessment of four tenant models from a consumer perspective

In order to assess consumer-friendly approaches that allow tenants to engage in solar self-consumption, BEUC commissioned a detailed background paper.¹¹ The background paper presents four tenant models that refer to existing practices.

BEUC's previous comparison of national renewable energy policies showed that while homeowners already face difficulties when starting solar self-generation, it becomes even more complicated for tenants who usually have no opportunity to engage with this technology. Despite the huge social potential¹², only a limited number of solar PV projects in the EU have targeted tenants.¹³

Fig. 1: Tenant models assessed by BEUC



The first and second model can be described as participative self-generation. Both models focus on the installed capacity, the kilowatt (kW) of the solar panel. These models require a relatively high level of involvement by the tenants. The two other models can be classified as direct sale models. They resemble usual retail electricity tariffs since tenants receive a bill based on the kilowatt-hours they have consumed.

Direct sale models are simpler and less risky for tenants but provide less control

From a consumer perspective, direct sale models generally represent a lower risk for tenants. These contracts provide a higher level of transparency with regard to costs and benefits. Moreover, the administrative burden tends to be much lower. However, a broader definition of self-generation and self-consumption is required to include these models. Self-generation and self-consumption should not be limited to the owner of the solar power plant.

¹¹ Nümann, Peter: Access to solar. A legal framework for tenants in multi-storey buildings to obtain solar electricity. A report commissioned by BEUC, January 2017, BEUC-X-2017-001.

¹² The European Commission stressed the social dimension of tenants' access: "There is an important potential for renewable energy production in apartment buildings that can be realised if self-consumption is allowed also at a multi-dwelling building level, and if cost-efficient procedures are in place for residual electricity needs. Furthermore, access to capital and/or financing is a key determinant of whether or not residential consumers can enjoy the benefits of self-consumption.", see: European Commission: Best practices on Renewable Energy Self-consumption. SWD(2015) 141, 15 July 2015.

¹³ For research on best practice see the EU-funded PV Financing project, <http://www.pv-financing.eu>.

The following table summarises the assessment of the tenant models and ranks their consumer-friendliness. The *subchapters 2.1 to 2.4* then explain the functioning of the four models more in detail.

Overview of tenant models

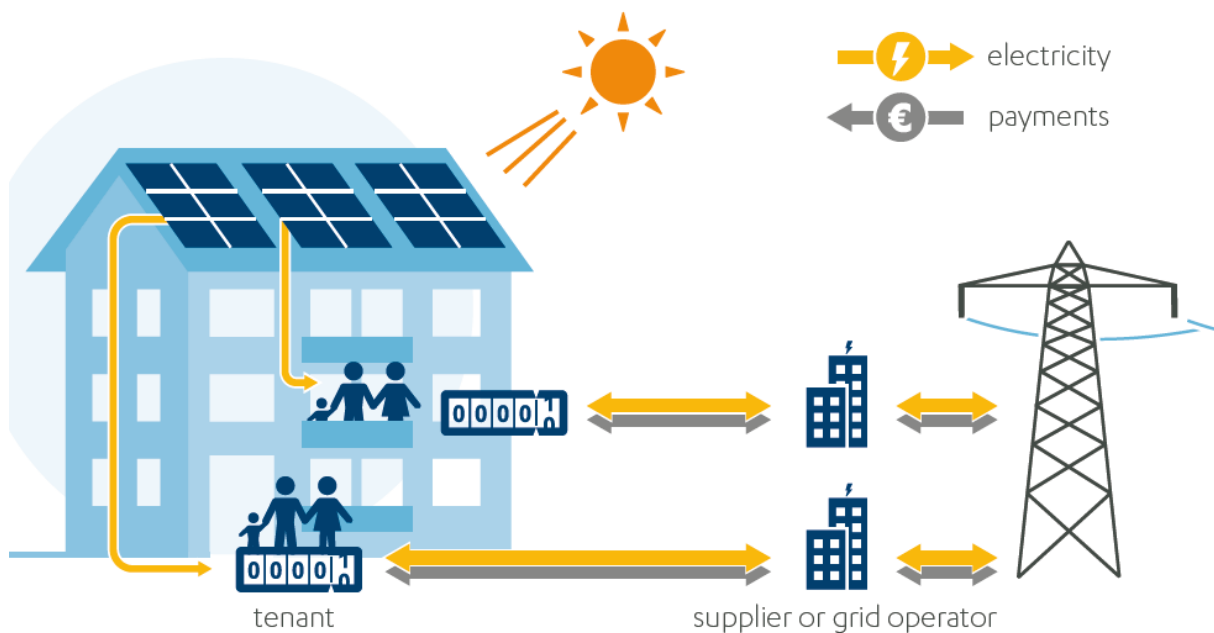
	Segmented self-generation	Shared self-generation	Direct sale by the landlord or by a contractor	Direct sale by an electricity supplier
Who's the owner of the power plant?	Landlord (or tenants) or third party	Landlord or third party	Landlord or contractor or third party	Landlord or third party or supplier
Who's responsible for the technical operation of the power plant?	Tenant	Landlord	Landlord	Supplier or landlord
How are tenants invoiced?	Use of their segment through a monthly rent + individual retail tariff by supplier	Use of their share included in rent + individual retail tariff by supplier	In-house solar electricity tariff + individual retail tariff by supplier	In-house retail electricity tariff by supplier only
Can tenants actively participate in operations and management decisions?	yes	yes, but in a more abstract manner	only passively by adjusting consumption, if information and appropriate tariff is provided	only passively by adjusting consumption, if information and appropriate tariff is provided
Self-consumption rate	Disadvantageous	Advantageous	Good if many tenants opt in	Good if many tenants opt in
Uncertainty on tenants' cost and benefits	Depending on irradiation and consumption	Depending on transparent cost allocation, irradiation and consumption	Low	Low
Tenants' administrative burden	High	Average	Average	Low
Level of tenants' risks	High	Average	Low	Low

2.1. Segmented self-generation

In the first model, tenants become operators of 'their' solar power plant. Although living in a multi-storey dwelling, the tenant could take over the role of a homeowner living in a detached house, responsible for a stand-alone segment of the PV power plant. For instance, a 20 kilowatt (kW) installation could be split up into 20 segments of 1 kW to allow each of the 20 tenants to technically and economically run one single power plant. It is up to the tenant to sell excess electricity to the grid. The tenant would also need to find a supplier that covers his or her electricity demand when solar electricity is not produced by the segment.

The share of the electricity that is self-consumed will be rather low. With a stand-alone segment for a single household, most of the solar electricity will have to be exported to the grid. During some hours of the day, solar electricity generation largely exceeds the single household's demand. The limited segment of the power plant alone however cannot cover all the household's demand during other hours. In this situation as well as during night time, tenants will continue to purchase electricity via the grid from a supplier chosen individually by them.

Segmented self-generation: Tenants run a segment



On the one hand, segmented self-generation guarantees technical and economic transparency for the tenant, especially in terms of output, consumption and revenues. On the other hand, the model has some obvious drawbacks when it comes to a cost-benefit analysis: compared with the three other models, the segmented self-generation probably requires the most effort from the tenant to administrate and operate 'his' or 'her' power plant. As the tenant may not consume all electricity produced, a high amount of electricity will have to be exported to the grid. If there is no adequate remuneration for the export, this model will not pay off within a reasonable time period.

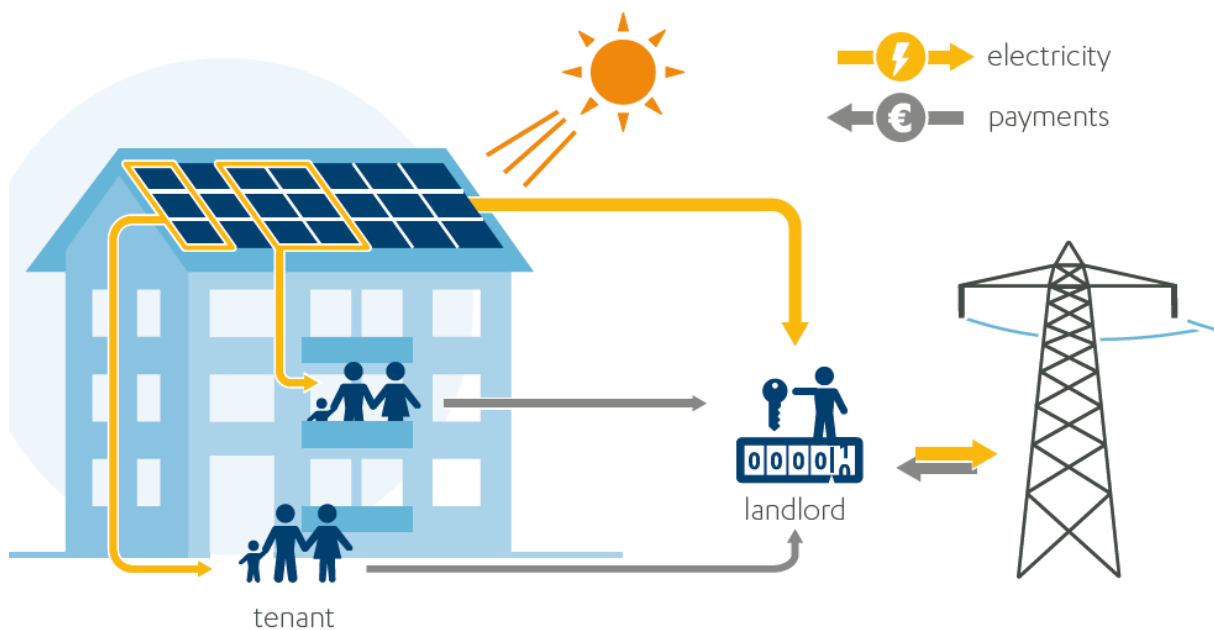
2.2. Shared self-generation

Another way to make self-generation work for tenants is to rent the PV power plant on the roof to the tenants as a shared device. In contrast to segmented self-generation, the landlord is responsible for the technical operation. The power plant feeds the whole internal

grid of the multi-storey dwelling, meaning the solar electricity first flows through the cables within the building. Each tenant shares its usage to the extent he or she consumes solar electricity during production time. If a tenant switches on the washing machine during daylight, solar electricity will automatically be used first. Other tenants will also automatically consume solar electricity until the output of the panels would be fully absorbed within the internal grid of the multi-storey dwelling. Only starting from this moment in time tenants would start purchasing electricity via the grid from a supplier chosen individually by them. Instead of a separate consumption-based billing, the cost of self-consumed solar electricity however is already covered through the monthly rent for the flat.

Technically, this model maximises the self-consumption rate of the overall solar electricity generation in the entire multi-storey dwelling. As a consequence, less excess electricity will have to be fed into the grid. Tenants can increase the value of self-generated electricity. The more electricity they self-consume, the less electricity they need to buy from their supplier.

Shared self-generation: Tenants rent a share



Since the tenants pay a lump sum to landlord, the landlord receives a stable revenue to refinance the investment into the solar power plant. It however raises the question of the exact benefit each tenant will gain through the rental. A calculation of this benefit can only be an estimated projection of the solar PV power plant's production as well as of the electricity demand of each tenant. This has to be calculated and communicated in a transparent way. Cost allocation as well as the distribution of revenues from the sale of excess electricity to the grid must be transparent and balanced.

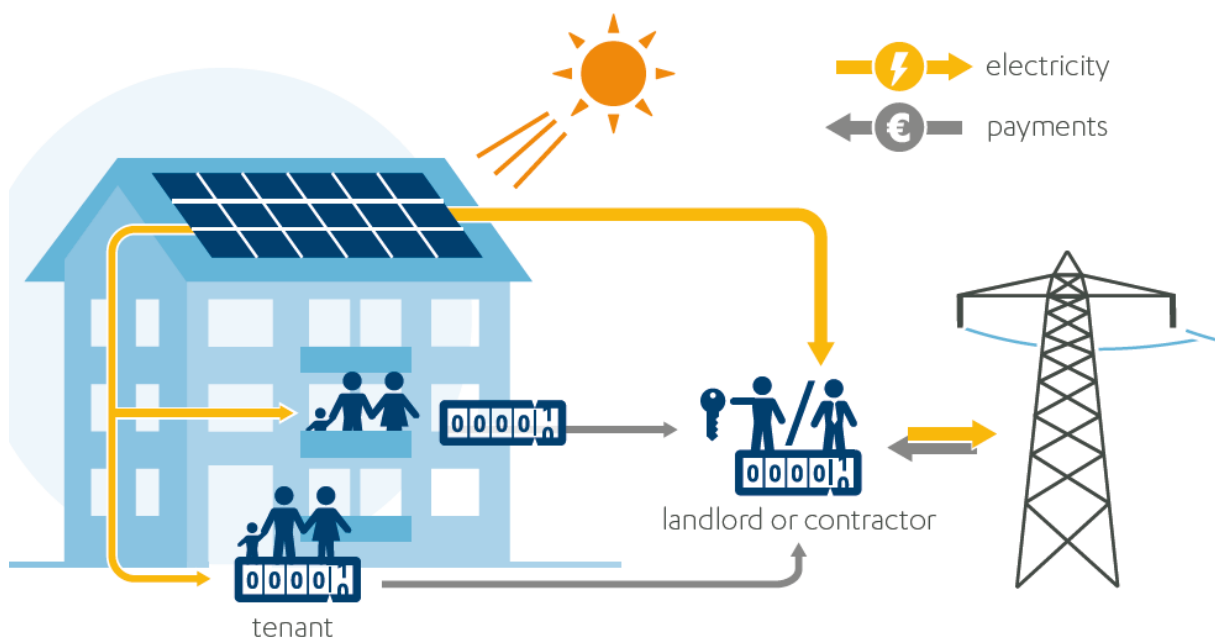
2.3. Direct sale by a landlord or contractor

In contrast to the first and second model, the direct sale models are comparable with a standard retail electricity tariff offered to households. The power plant feeds the whole internal grid of the multi-storey dwelling. Tenants can opt for an in-house solar tariff offered by the landlord or by a contractor. They automatically consume the solar electricity from the rooftop. Only the electricity demand going beyond the self-generated supply is

covered by a supplier chosen by each tenant. Existing consumer rights related to retail electricity tariffs apply.

The direct sale by the landlord or by a contractor entails neither any major risks nor big administrative efforts for the tenant. Tenants however are less involved in the operations and management decisions. They can only engage in a rather passive way by adjusting their consumption to variable supply of solar electricity. This requires sufficient information and a tariff that allows tenants to save money by adapting their consumption pattern.

Direct sale by the landlord or by a contractor



The functioning of this tenant model may be put into question because of legal constraints. The electricity supplier selling to the tenant needs to accept that its customer also buys electricity from the landlord or a contractor. In case the landlord or a contractor does not only sell solar electricity to tenants but also imports electricity from the grid, roles may change. Landlord and contractor could be regarded as electricity suppliers because they resell electricity. Unintended or not, the electricity supplier as a reseller would change its legal role. This implies the supplier has to respect additional rules regarding trade in wholesale markets.¹⁴

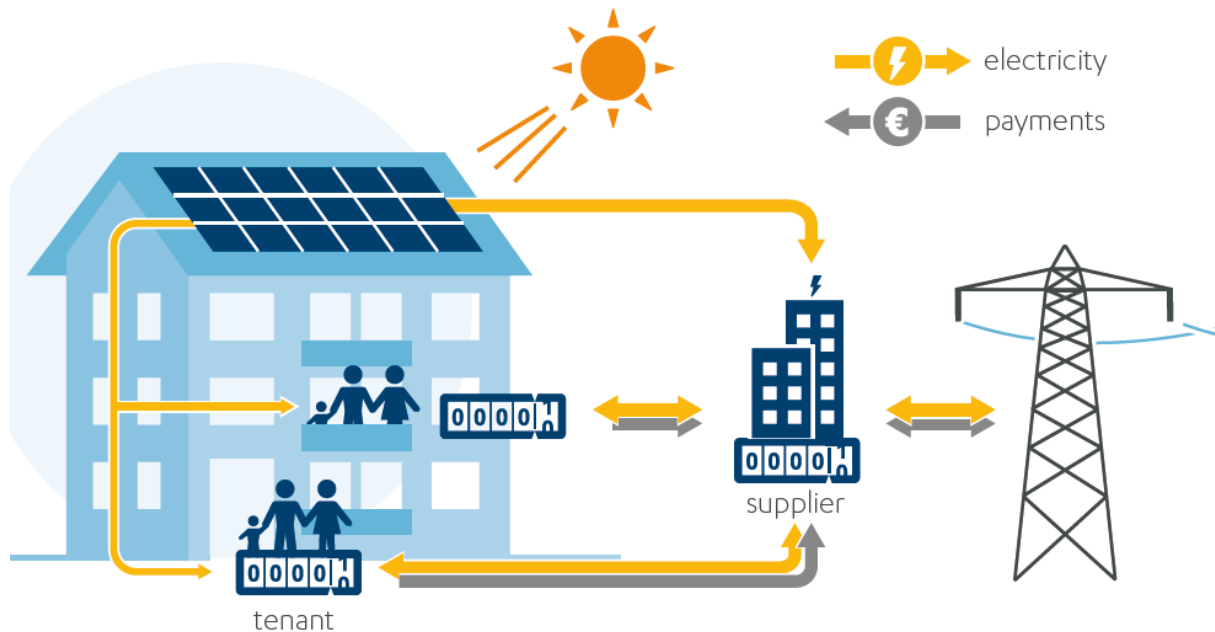
2.4. Direct sale by an electricity supplier

In this model, direct sale is not organised by the landlord or a contractor but by an external retail electricity supplier. The supplier buys all the self-generated electricity from the landlord or any other operator of the PV power plant. The supplier physically always exports the entire solar electricity production to the grid but legally delivers the electricity right back. Like in the case of shared self-generation and direct sale by the landlord, the grid is spared since the physical transport of electricity through the grid to the tenants is reduced.

¹⁴ Regulation (EU) 1227/2011 of 25 October 2011 on wholesale energy market integrity and transparency (REMIT) requires registration, publications and reporting to monitor market participants in the wholesale market. The aim of the regulation is to prevent large-scale insider transactions. However, in the case of direct sale models by landlords or contractors, the above-mentioned scenario would be a transaction to a small-scale unit, usually limited to one single building.

This is the simplest model because only one single tariff is sold to tenants, combining self-consumed solar electricity and imported electricity from the grid. Concerning the contractual relation between tenants and supplier, the model can be regarded as usual retail tariff where all existing consumer rights apply.

Direct sale by a retail electricity supplier



This model can overcome drawbacks of the direct sale model run by the landlord. The landlord (or any other operator) is relieved of the duties of contracting, billing and distribution after selling the self-generated electricity to the supplier. A retail electricity supplier could also take care of local distribution and the sale of exported excess electricity, for instance to neighbours.

3. Policy recommendations

Current rules of energy markets often are written for the big utilities. With a rising share of distributed renewable generation, household consumers engage in self-generation and other activities such as demand response schemes. Existing consumer rights need to be preserved and expanded in order to cover consumers' new activities. EU legislation needs to secure a dedicated framework, a 'bike lane' for these new cyclists of energy markets.

Tenant models offer household consumers an opportunity to engage collectively. This kind of aggregation is completely new on European electricity markets. An appropriate regulatory framework is needed for these new models to take off.

Endow tenants with a right to self-generate, to self-consume and feed-in

EU legislation should avoid that legal and contractual terms and conditions restrict self-generation or self-consumption. It is essential for tenants' access to self-generation that self-generation is not understood in a narrow sense, which would limit the scope of self-generation to homeowners of detached houses or to commercial consumers. The EU needs a broad definition of prosumer rights. This means that self-consumption is not only allowed to the owner of the power plant. The tenant models described in this paper require a wider understanding that includes self-consumption of electricity generated by a landlord, a contractor, a supplier or by a third party such as a cooperative. **A right to self-generate, self-consume and export renewable electricity to the grid should be enshrined in future EU legislation. It should encompass the possibility to use these rights not only as a single consumer but also collectively.**

Don't tax home-grown tomatoes: Keep self-consumption free from charges

EU law should ensure that legal and contractual terms and conditions do not impose inappropriate levies on self-generation and self-consumption of renewable electricity. Self-consumption, either of electricity self-generated by the tenant or generated by a third party on premises, should be included in such provisions and treated in the same way. Inappropriate levies on generation and consumption of renewable energy on site limits self-consumption on site. Putting taxes on vegetables grown by households in their gardens would be regarded as disproportionate. For self-grown solar electricity, such financial burdens however are common in many Member States. Some charges have even been introduced retroactively.¹⁵ These kinds of **charges discriminate against self-consumption in favour of importing electricity from the grid.**

A welcome culture for tenant models: Simplify rules for tenant models

At the moment, tenants' access to solar self-consumption is, legally-speaking, almost a no man's land. The fact that self-generation policies are mainly designed for owners of detached houses makes it hard for tenants to access this solar electricity. Simplified rules for tenant models should be a part of the welcome culture for consumers' self-generation. **Self-generation and the consumption of renewable electricity generated locally¹⁶ behind the same grid connection point should be exempted from any**

¹⁵ See for instance the prohibitive network tariffs and other hurdles in Belgium and Spain in BEUC: Current practices in consumer-driven renewable electricity markets. BEUC mapping report, 6 January 2016, BEUC-X-2016-003, http://www.beuc.eu/publications/beuc-x-2016-003_jmu_current_practices_in_consumer_driven_renewable_electricity_markets.pdf.

¹⁶ When discussing 'local supply' and 'local consumption' or 'locally generated renewable electricity', we refer to the broader definition of self-consumption that goes beyond the idea of having one single owner and operator in one single building. The local use implies that in the neighbourhood, several consumers should be able to

requirements and obligations applicable to retail electricity suppliers. Local supply behind the same grid connection point should be treated as self-consumption and not as a delivery in the sense of wholesale energy market rules. Against this backdrop, when running a tenant model, the landlord, contractor or supplier should not become a trader but remain a consumer from the point of view of any other retail electricity supplier. In case a landlord, a contractor or a third party offers solar electricity for self-consumption to a limited number of tenants, the established registration or licensing procedures that apply to nation-wide retail electricity suppliers are inappropriate.

Strengthen priority grid access and priority dispatch to reduce tenants' risks

The economic viability of tenant models is in question without adequate revenue from selling excess electricity. For this reason, priority grid access and dispatch is key. The revised Electricity Market Directive and the Electricity Market Regulation¹⁷ generally should keep provisions for priority grid access and priority dispatch for renewable power plants as established in the Renewable Energy Directive.¹⁸ Tenant models should be able to make use of a simplified grid connection procedure and be protected from delays or restrictions. Tenant models have the potential to spare the grid from some transmission of electricity through a high self-consumption rate and load shifting. In order to trigger this flexibility, the network tariffs should reflect the real grid use. The more (self-)consumers contribute to grid stability, the lower their network tariff. In case they actively reduce their electricity demand from the grid during periods of peak demand, for instance, they help to ease off the supply system. The behavioural change would then be rewarded, for example, through a temporarily lower network tariff.

We consider such an approach as more constructive than obliging self-generators to take over full balancing responsibilities. If tenant models would be forced to do so, it could lead to disproportionate transaction costs. Small projects have not necessarily the knowledge or infrastructure to respond to such requirements in a cost-efficient way.

Secure a fair contractual framework for tenants engaging in new models

Tenants joining self-generation projects should always enjoy the same consumer rights as customers of a retail electricity supplier. Tenants participate on a voluntary basis and must always have the possibility to opt out. Several consumer rights need to be highlighted against the backdrop of the different models (see *chapter 2.1 to 2.4*). Fair rules and transparency must be provided for self-generation established in connection with the lease of a flat or house for private use. The landlord should not be allowed to set a disproportionately high rent (or rent increase) that exceeds the value of the tenant's share in the power plant. The landlord should be obliged to provide a clear calculation of the prospective benefit for the tenant.

Clear and fair terms of contract as well as a transparent structure of the rent for the power plant and the calculation of surcharges, fees or other costs must be provided. These provisions should also include clear information on the necessity to have a retail electricity supplier for the additional electricity. At the same time, tenants need to be informed about their eventual liability as well as about terms and consequences in case of underperformance of the power plant (e.g. in case of repair and interruption of supply). Even if a landlord, contractor or supplier could be exempted from administrative burdens of a wholesale market trader, all direct sale models have to comply with established consumer rights on retail tariffs. This entails in particular the right to switch and the purely voluntary character of tenants' involvement.

participate in self-consumption models. We assume that this always happens behind the same grid connection point, for instance in a micro-grid.

¹⁷ European Commission: Proposal for a Directive on common rules for the internal market in electricity, COM(2016) 864; European Commission: Proposal for a regulation on the internal market for electricity, COM(2016) 861, 30 November 2016.

¹⁸ Directive 2009/28/EC on the promotion of the use of energy from renewable sources, 23 April 2009, art. 16.



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