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Executive Summary

This report puts forward a series of suggested policy changes that could be beneficial, both at EU and national level, to allow the adoption of new solar business models, lower the cost of capital and increase deployment in a lower subsidy environment. Ten changes are put forward in this report:

1. Create a financial mechanism to reduce the cost of capital for renewables across the EU, such as by getting the European Investment Bank to guarantee specific support schemes in high cost of capital Member States.
2. Include a commitment in the revised Renewable Energy Directive to ensure the stability of financial support, and widen this to include other non-financial retroactive changes that can negatively impact existing projects.
3. Avoid grid and connection charges that disincentivise consumers from investing in solar, storage and other distributed generation.
4. Ensure renewables are not subject to unfair curtailment due to a lack of flexibility in the system and/or grid congestion. Priority access should be maintained until an alternative viable market mechanism is available, and any curtailment must be fully compensated.
5. Ensure there is a framework for self-consumption in all EU Member States and that self-consumers are not subject to unnecessary administrative procedures.
6. Ensure that there is a framework for Power Purchase Agreements in all Member States and that all consumers are allowed to have more than one electricity supplier.
7. Encourage the mini-utility Power Purchase Agreement model by making it easier for suppliers who only supply a single corporate entity to get a supply license.
8. Help mitigate off-taker risks in the commercial sector by ensuring it is possible to ‘lift and shift’ a solar PV system elsewhere and consider innovative financial mechanisms to address this.
9. Support tenants and the rented segment by ensuring it is possible to implement the leasing model where a third party owns the PV installation and leases it to the occupiers of the building.
10. Support multi-occupancy buildings by ensuring that a single PV installation can supply more than one consumer or metering point.

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Introduction: financing solar PV in Europe

It is estimated that the European solar photovoltaics (PV) market could in a best case scenario more than double in terms of annual deployment by 2020[1]. There is real potential for solar deployment in the EU over the coming years. This report will look at the policy and regulatory changes which are needed to boost the sector over the course of this period.

Ensuring that the right regulatory framework is in place to allow developers and consumers to implement cutting edge business models that reduce risk and lower the cost of finance is key.

Solar is particularly sensitive to the perception of political risk in a country. Like many other renewables solar is very capital intensive, with low operating costs. The high up-front cost is one of the barriers to investing in solar. In addition to this the revenues are spread out over 20 years or more. An investor has to go “all in” today and be sure that the project is going to be generating revenue in 2035 and beyond. Policy can help bring investor confidence in a market and reduce the perception of political risk.

Deploying new and innovative financing mechanisms and business models can overcome high up-front costs. There are two core business models for solar in Europe. The first is the self-consumption model, where the power consumer owns the PV system on the roof of its building and saves money on electricity bills as well as selling excess power back to the grid. The second is the Power Purchase Agreement model, where the owner of the installation signs a contract with a consumer or reseller to sell them a certain amount of power at a set price over a set period of time. More information and other more specific business models such as the cooperative model and the Virtual Power Plant model are available in previous PV Financing reports[2].

The PV Financing project has shown that the cost of capital or finance is usually the single biggest cost component in the Levelised Cost of Electricity (LCOE) of PV. This is particularly

[1] SolarPower Europe analysis assuming High Scenario. SolarPower Europe “Global Market Outlook for solar power 2016-2020”, June 2016. Full report available here: http://www.solarpowereurope.org/insights/global-market-outllook/

[2] For more information on business models and financing schemes, please see the separate PV Financing report: SolarPowerEurope “EU-wide solar PV business models: guidelines for implementation”, January 2017. Available here: http://www.solarpowereurope.org/insights/eu-wide-solar-pv-business-models/, p. 39.

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the case with projects that have long-term tenors or loans. About a third of a typical solar LCOE is the cost of finance.[3] As the EU strives to meet its renewables targets of 20% of gross final energy consumption by 2020 and at least 27% by 2030[4], business models, financing and the cost of capital are becoming more and more important.

This report is being published just after the European Commission published its proposals for the Clean Energy for all Europeans package – informally known as the Winter Package – including a draft revision of the Renewable Energy Directive and an Electricity Market Design package. Many of the suggested changes below are within this context.[5]

This paper builds on the previous work done as part of the PV Financing research project, which can be viewed on the website www.pv-financing.eu. Seven national policy advisory papers detailing the policy changes required in Austria, France, Germany, Italy, Spain, Turkey and the United Kingdom have been published in the respective national languages[6] and many of the suggested changes are reflected in this paper.

This paper lists the barriers that can be solved through policy and regulatory changes, and is of course not exhaustive – there are many other potentially useful policy changes not listed here. This is intended merely as a contribution to the policy debate at EU and national level and does not represent the official view of SolarPower Europe and its members.

Part I will look at recommended policy changes that will benefit the PV sector as a whole. Parts II and III will then look at policy changes that can help encourage specific business models and application segments or sub-markets. In each case a description of the barrier is provided and specific regulatory changes are suggested.

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[3] BSW-Solar, "PV Investor Guide: New business models for photovoltaics in international markets", August 2014, p 22.
[4] SolarPower Europe is calling for the EU 2030 renewables target to be revised upwards to 35%.
[5] European Commission "Clean Energy for all Europeans package", November 2016. Available here: https://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition
[6] The national PV Financing Policy Advisory Papers can be downloaded here: http://www.pv-financing.eu/advisory-papers/.

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Part I: General policy changes for solar PV

1. A financial mechanism for reducing the cost of capital across the EU

There are big variations in the cost of capital for PV projects across the EU – as indeed is the case for all renewables[7]. Estimations within the PV Financing project vary from 2.4% debt all-in rate for solar self-consumption projects in the UK to 7.08% in Spain[8]. Recent analysis as part of the Pricetag project showed that in South East Europe alone the cost of capital for solar varies from 4.5% in Slovakia to 12.4% in Greece[9]. The DIA-CORE project showed that for onshore wind, which has a similar profile to solar, the WACC varies from as little as 3.5% in Germany to 12.0% in Greece and Croatia. This spread is largely due to perceptions of political risk, the extent to which there is a policy framework for renewables in place, the level of competition between providers of finance and the general economic situation in that country[10].

As was outlined above, about a third of a typical solar LCOE is the cost of finance.[11] Analysis has shown that if you equalised the cost of capital across the EU you could save EUR 34 billion of taxpayers' money[12] and save EUR 160 billion of public and private investments[13] between now and 2030. In addition, between 2013 and 2015 two-thirds of the renewable investment in the EU went to the UK and Germany[14], politically safe low cost of capital countries. Bringing

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[7] DiaCore project "Assessing Renewables Policy in the EU", p. 18. Available here: http://www.diacore.eu/images/files2/DIA-CORE_Final_Brochure.pdf.
[8] Estimates taken from cash flow models for each country, where interest rate estimates were taken from a series of interviews with market players conducted in mid 2015. The Excel cash flow models for each country (PPA and self-consumption) can be downloaded in the bottom right hand corner of this page: http://www.pv-financing.eu/tools/.
[9] Ecofys/Eclareon "Mapping the cost of capital for wind and solar in South Eastern European Member States", January 2017. Available here: http://www.ecofys.com/en/publications/mapping-the-cost-of-capital-for-wind-and-solar-energy/.
[10] Agora Energiewende "Reducing the cost of financing renewables in Europe", September 2016. Availabler here: https://www.agora-energiewende.de/fileadmin/Projekte/2016/De-Risking/Agora_RES-Derisking.pdf.
[11] BSW-Solar, "PV Investor Guide: New business models for photovoltaics in international markets", August 2014, p 22.
[12] Ibid.
[13] European Commission analysis.
[14] Ibid.

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down the cost of capital in certain Member States would allow renewables deployment to be more evenly spread around the EU.

Suggested regulatory change: A new EU-level financial instrument to reduce and equalise the cost of capital across the Member States could help to overcome this barrier. The proposed revision of the Renewable Energy Directive[15] requires that the Commission creates "financial instruments, especially in view of reducing the cost of capital for renewable energy projects". (Options for national level financial instruments are discussed at the end of this section.)

An example of an EU-level instrument is the EU Renewable Energy Cost Reduction Facility as proposed by think-tank Agora Energiewende[16], where the European Investment Bank (EIB) would back specific national support schemes and bring down the cost of finance for projects within that support scheme. This would be a voluntary contractual mechanism which countries with high costs of capital could choose to enter into. It would involve the Member State in question signing a contract with the EIB (or some other creditworthy EU institution) agreeing to the terms of the support scheme(s) in that country and the conditions for EIB backing. Any renewable project that then received funding from that support scheme would receive a parallel guarantee contract from the EIB stating that, if the Member State for any reason failed to pay the promised subsidy payments, the EIB will step in and make the payments in its place. If the EIB were required to make these guarantee payments, the EIB would then reclaim the sum of the payments from the Member State concerned, as agreed in the contract between the EIB and the Member State.

The contract between the EIB and the Member State would also cover non-financial aspects of the regulatory framework for renewables in that country i.e. permit granting and grid connections, and could set a maximum volume of projects in MW that would be covered under the mechanism so as to cap the maximum liability. An initial assessment has found that there are 18 Member States with high costs of capital that could potentially benefit from such a

[15] Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources. Available here: http://ec.europa.eu/energy/sites/ener/files/documents/1_en_act_part1_v7_1.pdf.

[16] Agora Energiewende "Reducing the cost of financing renewables in Europe", September 2016. Availabler here: https://www.agora-energiewende.de/fileadmin/Projekte/2016/De-Risking/Agora_RES-Derisking.pdf.

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mechanism. A pilot of such a mechanism could be included in the extension of the European Fund for Strategic Investments (EFSI 2.0)[17].

Of course this is not the only idea as to how Member States can reduce the cost of capital. An alternative idea is that Member States could issue 'sovereign renewables bonds' or 'sovereign climate bonds'[18] where the interest rates on the bonds would be linked to renewables or carbon dioxide reduction targets. Governments could set a rate of return on their bonds where the higher the percentage of renewables, the less interest the government pays. Governments could use the instrument to add credibility to their commitment to renewables policies and therefore help to reduce the cost of capital for renewables in that country. Businesses could use these sovereign renewables bonds to hedge or insure themselves against changing government policy.

2. A commitment to avoid future retroactive changes

Retroactive regulatory change that reduces or abolishes the revenues of existing projects is the worst thing that can possibly happen for renewables finance. It increases the political risk and cost of capital in a country for years thereafter. This has occurred in the past for solar in Spain, the Czech Republic, Bulgaria, Greece and Italy[19], and indeed costs of capital for renewables in each of those countries are now consistently high at 7-12%[20]. The PV Financing Country Report on Regulatory Barriers for Spain identifies regulation changes, retroactive policies and mistrust from market players as key barriers in that market[21].

A less extreme but still important issue is the instability of regulatory frameworks in general. In Italy for example a tax rebate is available for new residential systems which allows the owner

[17] For more information on the European Fund for Strategic Investments, please see: https://ec.europa.eu/growth/industry/innovation/funding/efsi_en

[18] Official Monetary and Financial Institutions Forum "The case for sovereign climate bonds", January 2017. Available here: https://www.omfif.org/analysis/commentary/2017/january/the-case-for-sovereign-climate-bonds/

[19] Keep on Track project "Policy paper on retrospective changes to RES legislation and national moratoria", May 2013. Available here: http://www.keepontrack.eu/contents/publicationsbiannualnationalpolicyupdatesversions/kot-policy-paper-on-retrospective-changes-to-res-support.pdf

[20] DiaCore project "Assessing Renewables Policy in the EU", p. 18. Available here: http://www.diacore.eu/images/files2/DIA-CORE_Final_Brochure.pdf.

[21] PV Financing "Country report on regulatory barriers (update) – Spain" (D6.2), June 2016. This was a non-public deliverable, please contact the authors Creara for more information.

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to spread the rebate over ten years. However the availability of this tax rebate is only ever confirmed for a year at a time, creating instability and preventing businesses from planning ahead.

Suggested regulatory change: It is critical that the proposal for an article on the stability of financial support in the revised Renewable Energy Directive is maintained in the final piece of legislation. The article requires Member States to ensure that there are no changes that negatively impact the economics of existing projects that benefit from support. It would be beneficial if this article could be widened further, to cover not just support schemes but also curtailment and grid access rules, taxation, surcharges and grid fees. All of these have the potential to negatively impact the economics of projects.

With regards to ensuring the stability of support, the fact that the Commission has proposed in the Renewables Directive that Member States are to publish plans three years ahead on support scheme budgets, timing and capacity is positive. A recent report showed that even if a country has low cost of capital, deployment will remain low if there isn't a reliable support scheme[22]. Member States should also have the possibility, if necessary, to hold technology specific tenders, to ensure a diverse mix of renewables in the system and ensure a good geographical distribution of technologies within their territories.

3. Avoid grid charges that disincentivise solar

The design of grid fees can have a fundamental impact on self-consumption and PPA business models. As was shown in the Impact Assessment that accompanied the new Renewables Directive[23], Belgium, Spain, Italy, Latvia, Lithuania, Hungary, Portugal and Sweden all have some form of grid fees on self-consumed solar electricity. Disproportionately high grid charges on self-consumed solar electricity can strongly disincentivise prosumers from investing in self-consumption and generating their own electricity.

[22] Ecofys "Mapping the cost of capital for wind and solar energy in South East European Member States", January 2017. Available here: http://www.ecofys.com/en/publications/mapping-the-cost-of-capital-for-wind-and-solar-energy/.
[23] European Commission "Impact Assessment accompanying the proposal for a directive on renewables", p. 141. Available here: http://ec.europa.eu/energy/sites/ener/files/documents/1_en_impact_assessment_part1_v4_418.pdf.

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Furthermore, the Netherlands has capacity-based grid charging and France combines volume and capacity-based charging for commercial customers[24]. In Italy there are currently variable and fixed (capacity-based) levies on electricity bills. In Austria the government is debating the introduction of a small grid charge for prosumers – a charge on self-consumed electricity. In Portugal self-consumption systems will have to contribute to partial grid costs once the total self-consumption capacity reaches 3% of total capacity.

Suggested regulatory change: Distribution grid tariffs should incentivise the energy transition and incentivise consumers to invest in solar, storage and other technologies, and not be a barrier to such investment. Smart meters and the digitalisation of the grid should allow for increasingly intelligent distributed solar which will then allow for a balance between volumetric and capacity-based grid tariffs. This balance may evolve over time with increasing penetration of solar in the electricity system - grid tariffs are adjusted every 4-5 years.

Initial analysis has shown that provisions within the Market Design package on network charges ensure there will be no discrimination for energy storage and demand response but does not offer the same protection from discrimination to solar. This needs to be fixed so that network charges do not disincentivise distributed generation and self-consumption. Self-generators and prosumers need to be protected from prohibitive grid charges.

4. Ensure renewables are not subject to unfair curtailment

In markets where there is a lack of flexibility and where the network needs upgrading, there is a risk that a solar generating asset may not be able to sell electricity in the market and may not be fully compensated for this. This could occur, for example, due to network or grid issues. This could have a major impact on the expected revenues and therefore bankability of a project. In Germany curtailment of solar is widespread, although compensation is provided. In one region of Austria the grid operator regularly curtails PV systems above 5kWp and no financial compensation is paid for that curtailment. This is a barrier to investment in PV in that region.

[24] CEDEC “Distribution grid tariff structures for smart grids and smart markets”, March 2014. Available here: http://www.cedec.com/files/default/cedec%20leaflet%20grid%20tariffs-final-140403-1.pdf

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Suggested regulatory change: As part of our efforts to decarbonise the system we should make the most of solar and renewable generated electricity when it is readily available. Priority dispatch and priority access for renewables should be maintained unless the readiness of markets and networks shows that carbon and renewables targets would still be achieved and that viable market-based mechanisms and compensation mechanisms are available to replace priority access.

The European Commission's analysis has shown that removing priority dispatch and access will increase the CO_2 emissions from electricity generation by 11%[25], which shows why the renewables and carbon target criteria is important. Priority access is particularly critical as this dictates which generator gets access to the grid in times of congestion. And if curtailed, generators should be compensated for lost revenues. Furthermore, full transparency is required around "must-run arrangements" between TSOs and inflexible power plants and a strategy is needed to increase flexibility and phase out inflexible capacity as quickly as possible.

Part II: Policy changes for specific business models

5. Encourage self-consumption models and remunerate excess solar electricity

Many Member States have frameworks that incentivise the uptake of self-consumption business models. That can take the form both of individual self-consumption and collective self-consumption through energy communities. However nine EU Member States do not currently have a legal framework for self-consumption – namely Bulgaria, the Czech Republic,

[25] European Commission, "Impact Assessment accompanying the proposal for a regulation of the European Parliament and of the Council on the internal market for electricity", November 2016. Available here: https://ec.europa.eu/energy/sites/ener/files/documents/mdi_impact_assessment_main_report_for_publication.pdf.

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Estonia, Finland, Ireland, Luxembourg, Romania and Slovakia[26]. Others like Spain have frameworks that dis-incentivise this business model.

Suggested regulatory change: As stated in the proposed Renewables Directive, all renewable self-consumers should have the right to generate, consume, store and sell their self-generated electricity, both individually and through energy communities. The draft directive then goes on to state that they should not be subject to disproportionate charges that are not cost-reflective – however this should be made stronger by adding a requirement that the charges should be done in a way such that consumers are still incentivised to become prosumers. Consumers should not be required to become electricity traders or suppliers in order to sell their excess power, as is the case in Spain. This is particularly important for community energy groups, who do not have the means to deal with complicated administrative processes in the same way as utilities, licensed suppliers and commercial developers. Self-consumers should be able to get *at least* the market value (and more in the case of support schemes) for excess electricity, and this needs to be included in the final Renewables Directive. The PV Financing project has shown that the cost of capital will come down if there is a low-risk, government guaranteed revenue stream for excess electricity.

In Austria there is a settlement centre for renewable energy which has to by law purchase excess electricity from self-consumers that engage in self-generation at a pre-set (low) market price. Other Austrian utilities can offer slightly higher prices for excess electricity, as a way of attracting customers. This could be an interesting model for other countries.

6. Encourage Power Purchase Agreement business models

There are many countries such as the UK, Germany, Italy, the Netherlands where corporate PPAs with a power consumer (within the same building or off-site) are relatively common. In some countries such as Sweden this business model is still relatively rare but growing. However corporate PPAs are not currently authorised or have not been legislated for in France, Spain and Turkey. In Spain it is almost impossible to sell power direct in a PPA – it is an unregulated space, almost no-one is willing to fix a price for more than one or two years ahead

[26] European Commission "Impact Assessment accompanying the proposal for a directive on renewables", p. 141. Available here: http://ec.europa.eu/energy/sites/ener/files/documents/1_en_impact_assessment_part1_v4_418.pdf.

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and power consumers cannot have more than one supplier per consumption point[27]. Austria allows on-site direct wire PPAs but not off-site PPAs. In France it is very difficult to get permission for private wire connections. In Denmark an on-site corporate PPA is classed as a small utility, requiring a supply license, and the electricity is subject to energy taxes, levies and VAT. In Turkey the power consumer, operator and investor cannot be different entities for projects less than 1MW in size.

Suggested regulatory change: The Commission's proposal for the revised Renewable Energy Directive states that "Member States shall remove administrative barriers to corporate long-term power purchase agreements to finance renewables and facilitate their uptake". This could be expanded further, and the directive should be amended so that all consumers, even small domestic consumers, should be allowed to have more than one electricity supply contract[28]. This will allow residential PPA models as currently available in the US to be implemented more easily in Europe. National regulators should also remove barriers to private wires, with particular attention to barriers for small-scale and community energy projects.

7. Encourage the mini-utility model

The mini-utility business model is where the generator sells power to a licensed supplier wholly owned by the corporate consumer (or the generator), called a trading SPV or mini-utility. The mini-utility then contracts to sell the power on to the corporate power consumer. This business model is currently in use in Ireland in the wind sector and in the US. However the high up-front costs (often about EUR 1 million) of obtaining a supply license are a barrier, and so this model usually only works for large consumers.

Suggested regulatory change: Regulatory authorities should make it easier and cheaper for mini-utilities who only supply a single corporate entity (even if that is an off-site consumer in

[27] PV Financing "National Policy Advisory Paper: Spain", Creara, January 2017. Available here: http://www.pv-financing.eu/wp-content/uploads/2017/01/ES-Policy-Advisory-Paper-PVF-D6.3.pdf.
[28] Recital 20 of the Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity" states that: "In order to develop competition in the internal market in electricity, large non-household customers should be able to choose their suppliers and enter into *contracts with several suppliers* to secure their electricity requirements. Such customers should be protected against exclusivity clauses the effect of which is to exclude competing or complementary offers."

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another part of the country) or a small number of consumers (even if they are in different locations) to get a supply license.

Part III: Policy changes for application segments

8. Commercial segment: help mitigate off-taker risks

A major barrier to building-mounted commercial solar PPAs is the perceived risk that the power consumer in the building could change, move away or go bankrupt.

Suggested regulatory change: To mitigate off-taker risks regulatory authorities should ensure that the "lift and shift" option (i.e. removing the PV system from the roof and transferring it elsewhere) is a theoretically viable option as a last resort, as recommended in the EU-level PV Financing implementation guidelines[29]. This should include the right to continue receiving the same level of support once the modules are re-located, as will be the case in the UK for medium and large installations as of 2019[30]. In the US homeowners moving within a single utility district or who have permission from their utilities can take their PV panels with them when they move as long as they pay a re-installation fee[31]. It may also be possible to use innovative financial mechanisms and state-backed guarantees to help reduce off-taker risks, and it would be useful to look into this area further.

9. Rented buildings segment: encourage the leasing model

Rented homes and commercial buildings have the disadvantage of complex legal rights issues, as the permission of both the tenant and the landlord are required to install a PV system. The two major barriers are often that landlords are not allowed to sell electricity to third parties e.g. tenants and that, because of the landlord/tenant dilemma, the landlord has no incentive to invest in PV if the benefits go to the tenant.

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[29] SolarPower Europe "EU-wide solar PV business models: guidelines for implementation", January 2017, p. 26. Available here: http://www.solarpowereurope.org/insights/eu-wide-solar-pv-business-models/

[30] UK Department of Energy and Climate Change "Transferability of building mounted solar PV installations", March 2015. Available here: https://www.gov.uk/government/consultations/transferability-of-building-mounted-solar-pv-installations.

[31] For more info see here: http://www.solarcity.com/residential/solar-energy-faqs/buying-selling-solar-homes.

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Suggested regulatory change: Leasing financing schemes where a third party pays for the installation of the system and the tenant pays a monthly fee in return for the solar electricity generated is one of the ways to overcome this barrier and allow the tenant to use the electricity. Third parties should be allowed to own renewable self-consumers' installations, and the draft Renewables Directive and national property legislation should be amended to reflect this. Regulations that stipulate that the power consumer has to also be the owner of the PV system in order to receive certain benefits, such as in Denmark, Spain and Turkey, should be amended as this precludes leasing. Finally, both national and European energy performance of buildings regulations[32] should be strengthened for landlords in the rented segment (as well as in new build and social housing). Strengthening them could involve requiring more on-site renewable electricity generation and higher energy efficiency standards, or simply higher Energy Performance Certificate requirements. These could be set as criteria in order for landlords to be given permission to rent their buildings.

10. Multi-occupancy buildings segment: allowing multiple power consumers

A barrier for residential and commercial multi-occupancy buildings in many countries is the restrictions on a single PV installation selling power to multiple consumers or metering points. Italy and Austria are examples of this, and this was one of the main conclusions of the PV Financing research project in these countries. In some countries power cannot be transferred and sold from the roof of a building to apartments within that building because from a legal perspective it is considered to have used the public grid and therefore requires a supply license, is subject to grid charging or is simply not legally permitted. In France power can only be sold to more than one consumer if the generators and consumers are part of a single legal entity, as set out in the new collective self-consumption framework.

[32] Such as in the Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/31/EU on the energy performance of buildings. Available here: http://ec.europa.eu/energy/sites/ener/files/documents/1_en_act_part1_v10.pdf.

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Suggested regulatory change: The draft Renewables Directive states that consumers living in a single apartment block or located in the same commercial or shared services site should be considered as being an individual self-consumer, which is very welcome.

This provision should be made more specific so that is allows for a single PV installation to supply more than one metering point (a maximum number could be stipulated) and still benefit from support and be exempted from taxes, surcharges and grid tariffs. The Renewables Directive could also be amended to specify that consumers within a shared building should be allowed to use shared wires and cables within that building to transfer electricity from roof to metering point without being considered to have used the public grid. This is currently the case in Germany and is being considered in Austria.

Smart meters are a key enabler for multi-occupancy PV business models as they are essential for the accurate metering and billing of the solar electricity. This is yet another reason for governments to continue the widespread roll out of smart meters and subsidise them where necessary, although this should of course always be subject to a positive cost-benefit analysis.

Conclusions

The policy outlook is broadly positive for solar at EU level thanks to the publication of the Clean Energy for all Europeans package. By mid-2018 there should be clarity on what the EU-level regulatory framework is going to be over the next ten years or so, and we hope some of the barriers above will have been removed. This should help shape a positive framework for solar at national level.

Furthermore, a number of the policy changes detailed above are national competences. It is hoped that this paper will therefore act as a useful contribution to the policy debate in the EU Member States that were not covered in the PV Financing research project. For Austria, France, Germany, Italy, Spain and the United Kingdom please refer to the national PV Financing Policy Advisory Papers, available in the national languages[33].

[33] The national PV Financing Policy Advisory Papers can be downloaded here: http://www.pv-financing.eu/advisory-papers/.

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As the European PV industry gains more experience in different markets and business models across Europe, and as the debate at EU level proceeds, undoubtedly more policy barriers will surface that will require attention from regulators. It would be useful therefore to continually update this work in line with changing circumstances.

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