PHOTOVOLTAIC OBSERVATORY

POLICY RECOMMENDATIONS

2011

EPIA

European Photovoltaic Industry Association

Observing PV policies in Europe

Climate change and the perspective of fossil fuel scarcity have strengthened the need to promote renewable energies. The deployment of solar photovoltaic electricity (PV) is playing a crucial role in helping the EU meet its commitment in fighting climate change and ensure security of supply, reducing Europe's dependency on energy imports. Further to this, the global economic situation requires ensuring the best use of financial incentives, even if they are not directly paid by taxpayers. To help tackle these important issues, the European Photovoltaic Industry Association (EPIA) advocates sustainable policies in order to keep the PV industry and market on a sustainable yet accelerated growth path.

In the context of the fast evolution of the European PV market in recent years, the need to permanently monitor market dynamics has led to the creation of the Photovoltaic Observatory. The Photovoltaic Observatory identifies recommended conditions for market development and best practices for the sustainable development of PV by basing its analysis on examining existing policies of several key countries. The Photovoltaic Observatory also focuses on relevant regulatory issues, financial incentives, administrative barriers and grid connection procedures.

The Photovoltaic Observatory aims to:

- Identify best practices among existing support policies in Europe
- Promote market transparency and PV deployment in the energy sector across Europe
- Advise national decision makers on the successful implementation of their support policies
- Ensure the accelerated development of the market and the industry in a sustainable way

The methodology of the PV Observatory is based on the systematic study of regulatory frameworks in European countries and their impact on market development.

In this respect, the administrative barriers analysis refers partly to the PV LEGAL project (www.pvlegal.eu) while financial schemes are analysed using, among other indicators, the Internal Rate of Return (IRR) methodology. The system price evolution is also assessed on a regular basis.

The complete analysis of the market conditions is realised, according to three main areas:

- Financial competitiveness of PV: analysis of the financial support schemes and their sustainability
- Administrative process to install a PV system: analysis of the administrative framework
- Ease of connecting the PV system to the grid: analysis of the grid connection process

About Epia

With over 240 Members drawn from across the entire solar photovoltaic sector, the European Photovoltaic Industry Association is the world's largest photovoltaic industry association and represents about 95% of the European photovoltaic industry. EPIA Members are present throughout the whole value-chain: from silicon, cells and module production to systems development and PV electricity generation as well as marketing and sales. EPIA's mission is to deliver a distinct and valuable service driven from the strength of a single photovoltaic voice.

Get additional information on:
www.epia.org/pvobservatory

1 Implementing sustainable support mechanisms

As the experience from PV markets behaviour of the last decade in Europe has shown; priority access to the grid for renewable energy sources, the optimal design of support schemes and the reduction of administrative barriers are the key market drivers for sustainable development. The PV industry monitors market and technology developments in order to recommend the most adequate support mechanisms and limit the impact on the price of electricity for all consumers.

Key Recommendation 1: Use Feed-in Tariffs or similar mechanisms

Feed-in Tariff (FiT) laws introduce the obligation for utilities to conclude purchase agreements for the solar electricity generated by PV systems. The cost of solar electricity purchased is passed on through the electricity bill to the consumer and therefore does not negatively affect government finances. In markets, where FiTs were introduced as reliable and predictable market mechanisms, they have proven their ability to develop a sustainable PV industry that in return has progressively reduced costs towards grid parity. In order to be sustainable, it is critical that FiTs are guaranteed for a significant period of time (at least 20 years), without any possibility of retroactively reducing them.

Feed-in Premium (FiP) is a new support mechanism that may prove to be a viable alternative to FiTs. However, the FiP concept is new and is yet to be proved. It should carefully be considered and worked out in more detail before it is tested on the market. Under the FiP, utilities pay a premium on top of the price of electricity while the invoice of the consumer is reduced by the amount of PV electricity produced. If electricity produced by PV exceeds consumption, the difference should be eligible for a Feed-in Tariff.

With the growing penetration of PV in many countries, support policies can be fine-tuned in order to drive the development of a specific market segment where this is relevant. Direct consumption premiums, additional incentives for Building Integrated PV (BIPV), compensation for regional irradiation variations, orientation premiums such as East or West-oriented PV systems as well as storage premiums are all examples of possible additional provisions.

Key Recommendation 2: Ensure transparent electricity costs for consumers

As the cost of renewable energy sources such as PV is very transparent to the consumer through the FiT component on the electricity bill, the same transparency should exist for the cost of electricity from other conventional sources. These typically benefit from significant government support schemes that are not always reflected in the electricity price but are financed through other public means; in particular taxes paid by the same consumers but not accounted for on their electricity bill. On average, estimates suggest that conventional sources of electricity generation benefit from seven-times as much support as renewable energy sources. In addition the lack of transparent carbon costs indirectly supports non renewable energies.

The increased mix of energy from renewable sources such as PV has raised a greater awareness among consumers about the need to increase the efficiency of their electricity consumption. So while the FiT has a visible impact on the electricity bill, it is at least partially compensated by the decrease of electricity demand. In addition, marginal cost of electricity produced from PV systems after the expiration of the FiT period is close to zero; therefore electricity prices will benefit in the long term.

Most importantly, and in view of continued foreseeable reduction of FiTs over time, the PV industry is committed to significantly reducing the cost of PV systems to make it an affordable, mainstream source of power.

Key Recommendation 3: Encourage the development of a sustainable market by assessing profitability on a regular basis and adapting support levels accordingly

Sustainable market growth allows the industry to develop and creates added value for the society and the economy as a whole. A critical aspect of sustainable development is ensuring adequate levels of profitability that in turn ensures the availability of capital for investments while avoiding speculative markets. Consequently, investments in PV projects need to be at par with other investments of equivalent risk levels.

The figure 1 illustrates market developments under different support strategies. The green line represents a sustainable market growth. The red line shows a rapid and uncontrolled market peak, followed by a collapse due to sudden policy adjustment, while the blue line illustrates a stagnating market due to an incentive deemed insufficient.

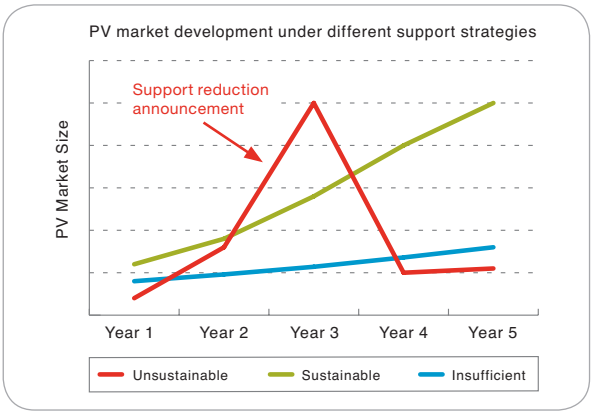

Figure 1 - Evaluation of support sustainability (example)

Assessing the profitability through IRR calculations

All available support scheme components (including FiT, tax rebates and investment subsidies) must be taken into account when calculating the Internal Rate of Return (IRR) of a PV investment. Its sustainability must be assessed by considering all local factors that impact the relative profitability of a PV investment. Table 1 presents an estimate of average sustainable IRR levels in a standard European country. Those percentages need to be adapted depending on local market conditions.

	Insufficient Support	Sustainable Support	Unsustainable Support
Private Investor	< 6%	6-10%	> 10%
Business Investor	< 8%	8-12%	> 12%

Table 1 - Internal Rate of Return levels

Key Recommendation 4: Guarantee a gradual market development with the corridor concept

An uncontrolled market evolution tends to create "stop-and-go" policies that risk undermining stakeholders' confidence and investor appetite for PV. In that respect, there is a need for a flexible market mechanism that is able to take more rapid cost digressions in the market into account and to adapt support schemes in order to ensure a sustainable growth path. The market corridor – as introduced in Germany for example - regulates the FiT based on market development over the preceding period (i.e. quarter, semester or year), thus allowing FiTs to be adapted so as to maintain growth within predefined boundaries. The FiT level is decreased on a regular basis in relation to the cumulated market level over a period passing below or above a set of predefined thresholds (quarterly or semi-annual revisions). The review periods should typically be set once a year to keep the administrative burden manageable for governments and to remain compatible with the visibility needed for investment cycles.

Key Recommendation 5: Develop a national roadmap to PV competitiveness

With the ongoing decrease in installed PV system costs and the increase in conventional electricity prices, the use of financial incentives will progressively be phased out, as competitiveness is reached. A realistic roadmap to grid parity should be defined for every country along with concepts for market mechanisms that treat all electricity sources equally.

2 Streamlining administrative procedures

Although many countries have implemented support policies favourable to PV, when it comes to realising PV projects, bureaucratic issues and highly complex procedures and requirements (such as notification, registration or permits) tend to significantly hold back installation processes. As a result, the cost of projects is kept artificially high, hampering PV market development or requiring unnecessarily high levels of FiTs to compensate.

In order to assess the situation in a given country and facilitate comparisons with identified best practices; EPIA - as partner of the PV LEGAL project- has been involved in the collection of information on administrative frameworks by National PV associations and system developers.

Key Recommendation 1: Assess the administrative process

In order to identify the major obstacles to the success of the legal-administrative process, a series of key characteristics need to be assessed thoroughly:

- **Transparency:** the process must be clear and understandable; the information necessary to complete each step must be available, complete and exhaustive;
- **Linearity:** when multiple institutions must be contacted, it is essential that each institution's approval does not depend on the decision of the following one;
- **Simplicity:** the number of institutions required in the process must be justifiable and reduced to a minimum; redundancies must be avoided;
- **Proportionality:** the procedure must be proportionate and well-suited to the specific features of each market segment;
- **Cost effectiveness:** the total cost of the administrative process should not represent a consistent share of the entire cost of the project;
- **Reasonable duration:** the time necessary to complete the whole process must not exceed a few weeks, particularly in the case of small and medium rooftop installations.

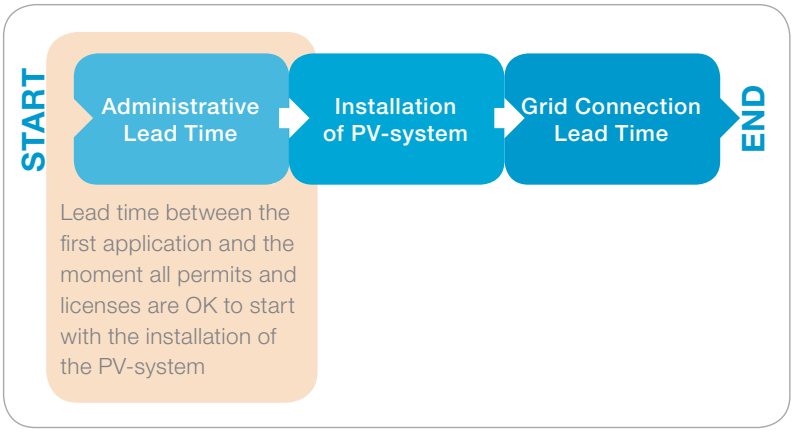

Figure 2 - Administrative Lead Time

In this respect, the PV LEGAL database represents an important source of information on the legal-administrative procedures required in 12 European countries. The database illustrates the administrative procedures and also quantifies the impact of administrative barriers in terms of time and cost. For more information: **www.pvlegal.eu**

Key Recommendation 2: Establish a "one stop-shop" process

Long administrative delays combined with the need to contact multiple agencies or government bodies, increases the lead time as well as the global cost of the project. The implementation of a simplified process is required, with one single step to be completed by the project developer. All authorisations, certifications and licensing applications must be assessed and delivered through this "one stop-shop" concept.

Key Recommendation 3: Reduce administrative lead times to reasonable periods

The reduction of the lead times must be a priority, especially for small-scale systems. Any delay in the authorisation process can result in loss of profitability for the investor; reduce returns and thus, the attractiveness of the project. In the absence of action from the administrative body in charge of a project within a reasonable time limit, approval should be given automatically. In the case of a small system, this should be limited to a couple of weeks. For large systems on the other hand, the approval process should remain proportionate and transparent. The lead time should not exceed a couple of months for large systems.

Key Recommendation 4: Accompany the administrative simplification by an adjustment of the support mechanisms

Once the administrative process has been simplified, the combination of support mechanisms should be adapted to take into account the cost reduction related to such simplification.

Key Recommendation 5: Ensure a fast and reliable monitoring system

The ability to control the market requires the constant monitoring of PV installations. Long delays prevent regulators to understand the evolution and to take appropriate action in due time. An online registration system for installers, combined with the appropriate IT infrastructure should guarantee an almost real-time access to the installation data.

3 Guaranteeing efficient grid connection processes

The grid connection process is often the most severe roadblock in completing a PV project. Thus it is able delay the project and dramatically increases its overall cost and the confidence of the investor lies in the guarantee that the electricity produced will be sold and transported. The PV Observatory provides an analysis of grid access, transmission and distribution of the electricity produced as well as some legal constraints related to the connection.

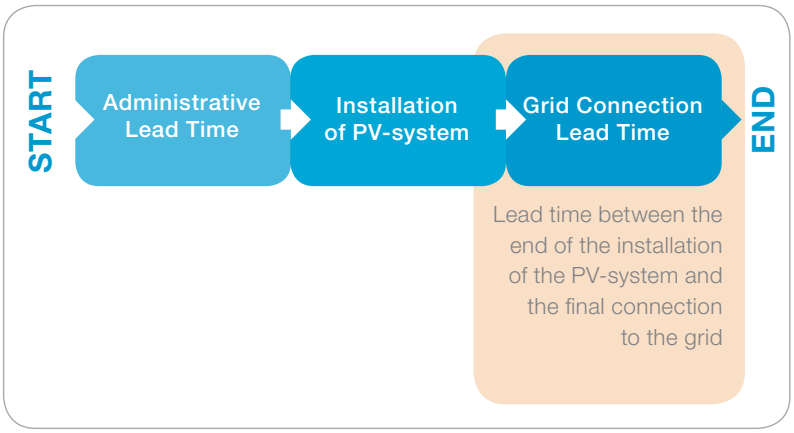

Figure 3 - Grid Connection Lead Time

Key Recommendation 1: Assess the grid connection process

In order to identify the major points of blockage in the grid connection process, the following elements need to be analysed:

- **Transparency:** transparency of the connection process is essential for developers to ensure they will be able to connect to the grid at an already existing connection point and at a clear and predictable cost (connection fees);
- **Information:** comprehensive and necessary information must be available for new connection requests;
- **Appropriateness:** the installation of small decentralised systems should simply require a notification to the Distribution System Operator (DSO);
- **Lead time:** Reasonable time to connection must be guaranteed and respected by either the DSO or the Transport System Operator (TSO);
- **Cost sharing:** Connection costs must be properly shared between the PV system operator and the DSO/TSO. This can be combined with network usage fees in order to provide both parties with incentives to make an efficient use of the electrical grid.

Key Recommendation 2: Reduce grid connection lead times to a few weeks

The reduction of lead times must become a priority, especially for small-scale systems. Any delay in the authorisation process may result in a loss of profitability for the investor, reduces return and thus the attractiveness of the project. Electricians (preferably certified) must be able to connect small-scale systems to the grid by only a notification to the Distribution System Operator (DSO).

Key Recommendation 3: Ensure priority access to the grid

Once the connection permit has been granted, the transport and the distribution of the electricity produced by PV systems must remain guaranteed during the entire lifetime of the installation.

The obligation for utilities to buy PV electricity must be guaranteed. This must remain valid at a predefined price (FiT) until the end of the grant period. After this period, the market price must apply automatically.

Key Recommendation 4: Issue grid connection permits to reliable project developers

Policy announcements can be followed by a flood of grid connection requests, to the extent that virtually all existing capacity could be exhausted. To avoid such a situation and counteract speculation, permits ought only be issued to reliable investors. The validity of permits must be limited in time and large project developers can be asked for bank guarantees to ensure they live up to their commitment.

Key Recommendation 5: Ensure the financing of network operators

The benefits that PV brings to electricity networks, especially at the distribution level come at a cost; meaning that the development of PV and its smooth integration to electricity networks must be accompanied by necessary investments. Ensuring funding for DSOs or TSOs may be necessary to secure maintenance and the upgrading of the electricity grid.

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