Deploying PV in Germany and Europe: Market perspectives and barriers.

Quo Vadis Spain? Market barriers after the Spanish boom
An Independent, Democratic Industry Association, Open to all PV Spanish Companies, in permanent contact with peer PV European associations.

Providing services to 475 PV Spanish Companies

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✓ The boom. Market evolution

✓ PV in Spain. Other facts. Barriers

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PV Market evolution in Spain

In 2008... the boom! (2,754 MW)
## Evolution analysis

**Plenty of credit (national & international)**

- Big plants possible (P>10MW)
- No cap
- Generous PV Tariff (0,47€/kWh)
- Moderate access to electrical network
- Investor from other Sectors arriving to PV
- No previous registration
- Oil at high prices

**Very limited credit**

- Plants with limited size (P<10MW)
- Cap of 500MW p.a.
- Adjusted PV Tariff (0.26/0.29/0.32 €/kWh, now)
- More difficult access to electrical networks
- Investors from other Sectors leaving PV
- With Register as a precondition
- Oil at medium prices

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![Diagram showing the evolution of PV legal framework](chart.png)

- **Favourable regulation**
- **Unsustainable growth**
- **Planned**
- **Transient period between regulations**
- **Free fall**
- **Restrictive regulation**
- **Smooth recovery**

### Millions of EUR

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Evolution analysis

Evolution of the PV Feed-in Tariff in Spain

- Roofs P< 20 kW
- Roofs up to 2 MW
- On ground
Spanish PV Industry evolution

From a deficit (2008) to a surplus (2009... and 2010)
Industry focus evolution

Export, a defence against PV weak domestic market
PV labour market evolution

PV jobs in PV in Spain

![Graph showing PV jobs in Spain from 2008 to 2010](image.png)
The boom. Market evolution

PV in Spain. Other facts. Barriers

Quo Vadis? Future
Fact: excellent irradiation

Zone 1: $H < 3.8$
Zone 2: $3.8 \leq H < 4.2$
Zone 3: $4.2 \leq H < 4.6$
Zone 4: $4.6 \leq H < 5.0$
Zone 5: $H \geq 5.0$

($H$ en kWh/m²)
Fact: Strong PV Industry

Covering all links in the value chain of a PV installation

Main factories of:
- Silicon
- Wafers
- Cells
- Modules
- Inverters
- Trackers
Fact: 3.8 GW installed (3.6 in Dec 2008)
PV Installations in Spain

Estimate mid-2010

- **BUILDINGS**: 5.5%
- **CPV**: 6.5%
- **2-AXIS TRACKER**: 13%
- **GROUND M.**: 98%
- **1 AXIS TRACKER**: 24%
- **CRISTALLINE SILICON**: 97%
- **FIXED**: 63%
- **SIZE**: 44% > 5 MW
- **LOCATION**: 36% < 2 MW

### PV LEGAL
Monthly electricity demand in Spain covered with PV
Year 2009

In some Spanish regions (Extremadura and Murcia) percentages higher than 10%
Fact: some interests against PV

PV electricity (and other renewables at cero price) is replacing gas

Explicit strong opposition of gas to PV expansion in Spain
Fact: strong distributors

Spanish PV connected to a hand of strong distributors
Main Barriers (as assessed in PV Legal)

**Pre-register**
- Limiting power per quarter and per type of installation.
- Costs and bureaucracy prior to register (money and effort lost if not successful)
  - Proposal of PV legal: flexible feed-in tariff (as in Germany)
  - Perceived probability of success in the implementation of PV proposals: very low.

**Complicated and expensive Administrative Procedures**
- Complicated: same procedures apply to a 2 kW installation than 2 MW.
- Expensive: Cost of permit and taxes high.
  - Several proposal of PV Legal
  - P. Probability of success: low for installation of P<100 kW, very low for higher power.

**Complicated and expensive connection to the grid**
- Complicated: same rules apply to a 2 kW PV installation than a 2 MW
- Expensive: Cost of the study of the connection and adaptation to the grid, high.
  - Several proposal of PV Legal
  - P. Probability of success: very high for installation of P<100 kW, low for higher power.
**SWOT Analysis**

**Weaknesses**
- Limiting, Complex and Expensive Administrative Procedures.
- Complex and Expensive Connection Procedures to the grid.
- Economic and financial situation of Spain and the electrical system*

**Threats**
- Unfavorable regulatory change.
- Opposition of gas and other displaced technologies by a strong entrance of PV in the system
- Other renewable technologies getting more share of EU 2020’s target of Renewable than planned.

**Strengths**
- High sun irradiation.
- PV Industry with high experience and quality products
- Determination of the PV associates in ASIF to overcome existing and looming problems

**Opportunities**
- EU 2020’s target of Renewable origin.
- Grid parity
- PV Legal.

*Spain within economic & financial difficulties (11%+ GDP deficit) + Within electrical system difficulties (tariff deficit: 20k M€)
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As per PANER 2011-2020, presented to the EU’s Commission.

8 GW in 2020
• **Now**, PV Market is at very low speed, at about 150 MW per annum, waiting the new regulation.

• **Short term**, positives forces in the Spanish market (Strengths and Opportunities), will compete very strongly against negative forces (Weaknesses and Threats), in order to attain a favorable new regulation.
  - At present, a tough regulation, mainly for ground installations, is under discussion; for January 2011, the following tariffs are looming: 0.136 €/kWh for ground, and between 0.207 and 0.297 €/kWh for roofs.
  New regulation is expected to be approved by November 2010.

• **Medium term**, after the transient of 2010, in 2011 and onwards, PV market in Spain is expected to attain a sustainable growth in the range of 500 MW per annum.

• **Long term**, attained grid parity and self consumption being regulated, the future will provide a stronger PV market.

**PV Legal comes to the right moment to contribute to this future.**