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Photovoltaic market development in the Netherlands - 2013, the year of price stabilization

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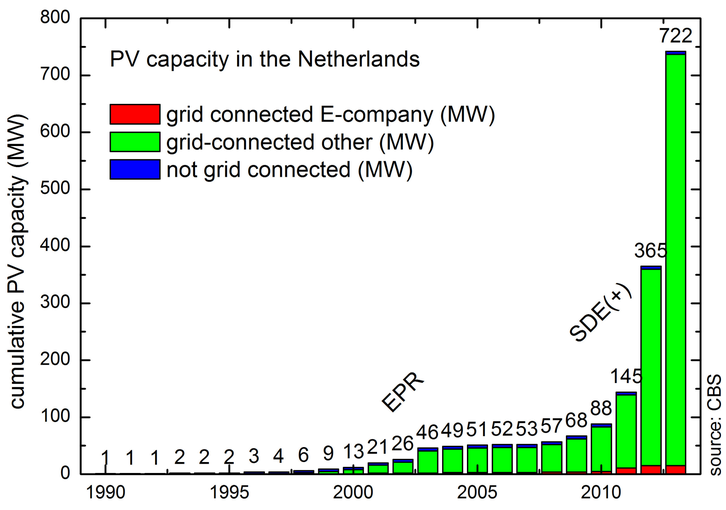
Introduction

Photovoltaic (PV) technology will become a mainstream energy harvesting option in the renewable portfolio in the coming decades, globally as well as in the Netherlands.

PV deployment in the Netherlands is hampered by the non-transparency of the market. This is addressed in several projects executed by Stichting Monitoring Zonnestroom. The quarterly market inventory project is running since October 2011. Prices have decreased considerably in 2012 [1]. The market update for 2013 is presented here. All prices include 21% VAT.

Development of the cumulative installed PV capacity in the Netherlands (data source: CBS [2]). The estimated capacity is 722 MWp (end 2013).



Market status April 2014

PV modules	October 2011	April 2014
Average price	2.28 €/Wp	1.09 €/Wp
Average capacity	140 Wp/m²	144 Wp/m²
# modules	166	879
Technology	c-Si (mono/poly)	48% c-Si, 50% p-Si, thin film

Inverters	October 2011	April 2014
Average price	0.45 €/Wp	0.37 €/Wp
EU efficiency	95.1%	95.4 %
# inverters	98	715

Systems	April 2012	April 2014
Average price (ex installation)	tilted: 1.63 €/Wp flat: 1.67 €/Wp	tilted: 1.33 €/Wp flat: 1.38 €/Wp
# systems	tilted: 1557 flat: 1477	tilted: 21121 flat: 21121
Average installation	0.40 €/Wp	0.34 €/Wp

References

[1] W.G.J.H.M. van Sark, P. Muizebelt, J. Cace, A. de Vries, P. de Rijk, Price Development of Photovoltaic Modules, Inverters, and Systems in the Netherlands in 2012, Renewable Energy 71 (2014) 18-22.

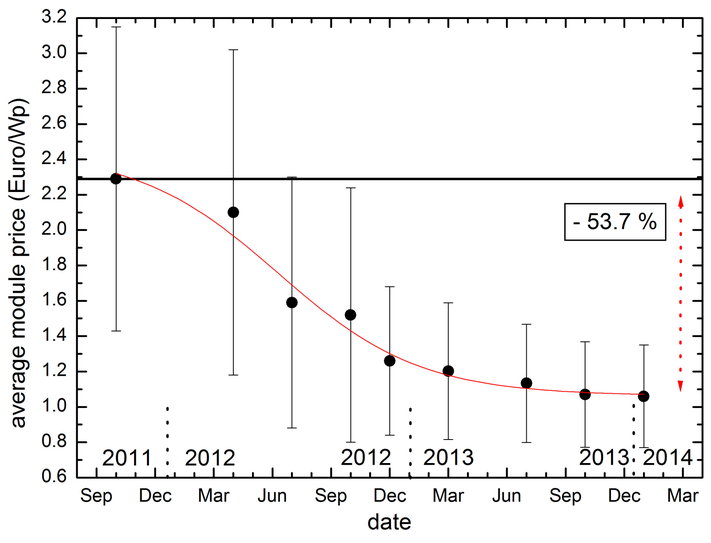
[2] CBS Statline, http://statline.cbs.nl/statweb/, last access date 30 June 2014.

2013 developments

Modules

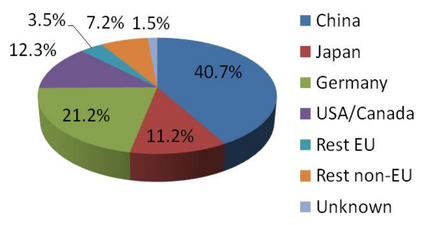
Price reduction of **15.9%** in 2013 (from 1.26 to 1.06 €/Wp).

Reduction of 53.7% since October 2011.



Dynamic market, expensive modules replaced by cheaper ones, and new brands/types ~10-25% each quarter.

Module country of origin

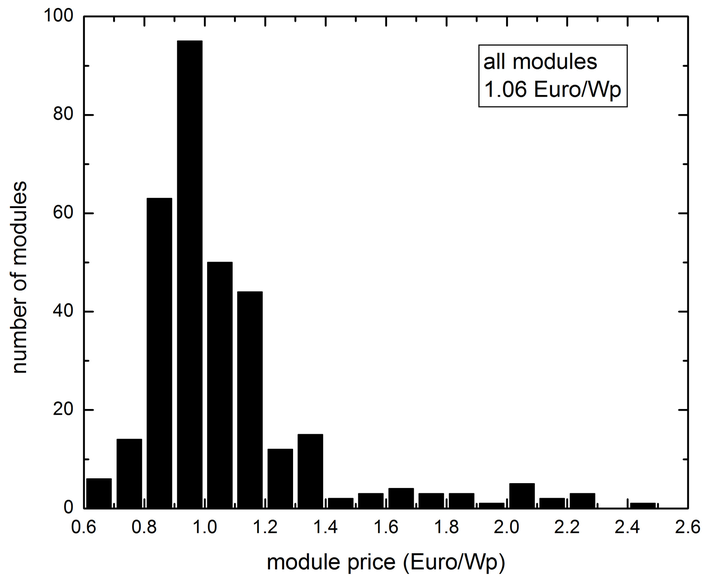


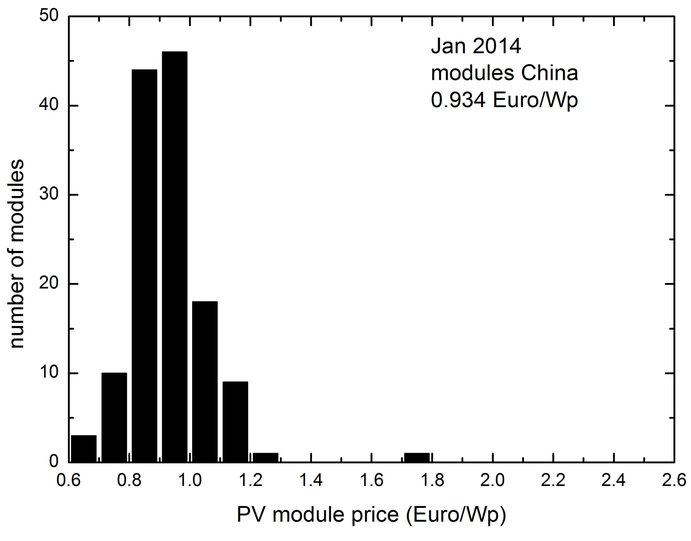
Average module price:

All: 1.06 €/Wp

From China: 0.93 €/Wp

From Germany: 1.12 €/Wp

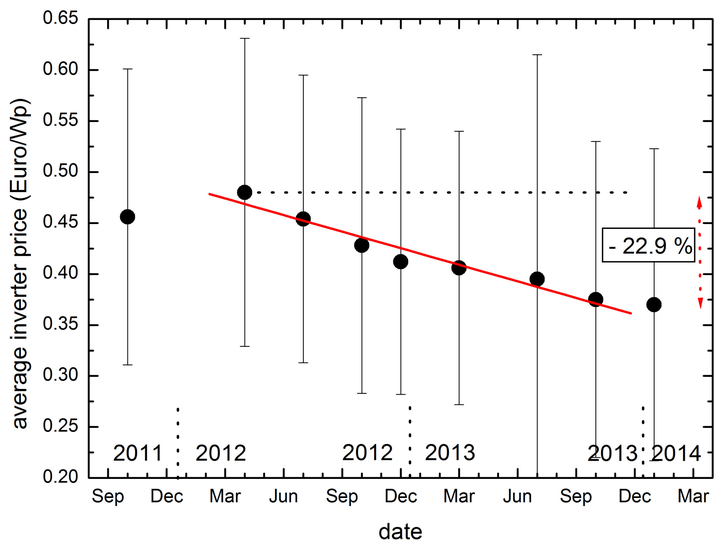




Inverters

Price reduction of **9.8%** in 2013 (from 0.41 to 0.37 €/Wp).

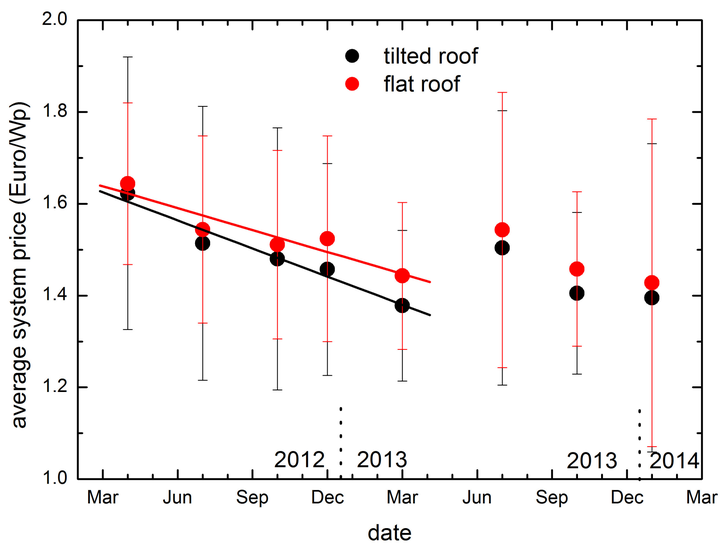
Reduction of 18.5% since October 2011.



Systems (excluding installation)

Price reduction of **4.1% (tilted)** in 2013 (from 1.46 to 1.40 €/Wp), **6.1% (flat)** (from 1.52 to 1.43 €/Wp).

Price increase early 2013.



Typical system prices, including installation:

System size kWp	Price €/Wp	Installation €/Wp	Total €/Wp
0.6	1.78	0.60	2.38
2.5	1.52	0.40	1.92
5	1.32	0.30	1.62
50	1.32	0.20	1.52

Levelized cost of electricity (€/kWh)

850 kWh/kWp			interest rate		
1% O&M	kWp	Euro/Wp	3	6	8
	0.6	2.38	0.189	0.247	0.290
	2.5	1.92	0.152	0.199	0.234
	5	1.62	0.129	0.168	0.198
	50	1.52	0.121	0.158	0.185

900 kWh/kWp					
1% O&M	kWp	Euro/Wp	3	6	8
	0.6	2.38	0.178	0.233	0.274
	2.5	1.92	0.144	0.188	0.221
	5	1.62	0.121	0.159	0.187
	50	1.52	0.114	0.149	0.175

Retail electricity price is 0.23 €/kWh; for large consumers (offices) 0.10 €/kWh → **Grid parity** continues.

Conclusion

- PV module and inverter price continue to decrease
- Modules from China ~12% cheaper than from Germany
- System price decrease back on track
- Grid parity continues for most consumers