ECN Energy research Centre of the Netherlands

ECN Policy Studies

ECN-N--12-002
30 January 2012

Note Policies and opportunities for grid parity of PV in the Netherlands

To :

Copy to :

From : Paul Lako ECN
Luuk Beurskens ECN

1. Introduction

In 2010, ECN Policy Studies has provided information on the development of solar PV in the Netherlands to GlobalData, India (GlobalData, 2011). Based on this information request, the present note on policies and opportunities for grid parity of PV has been drafted. Recently, subsidies for solar PV in the Netherlands have shown a pattern of a roller-coaster that is typical for PV financing in a number of EU countries. Stop-and-go policies for solar PV may have multiple causes. It may be difficult to determine the right feed-in tariffs for PV; or governments may be reluctant to provide sufficient funding for a relatively expensive renewable electricity source like PV. This note sheds light on the current state of affairs and policies for PV in the Netherlands, and on several private initiatives aimed at reaching grid parity for PV which is installed by households.

2. State of affairs and policies for PV in the Netherlands

Before 2007, the feed-in premium for PV under MEP was capped at 9.7 €ct/kWh, which was definitively not a competitive feed-in tariff for PV. In the SDE scheme which followed the MEP, the feed-in tariff for PV is significantly higher. The volume of eligible PV systems, however, is capped until the year 2011. In the year 2008, 4.4 MW_p was added, in 2009 10.7 MW_p, and in 2010 20.7 MW_p (CBS, 2011). Therefore, the cumulative capacity amounted to 88 MW_p in 2010 (Table 1).

In 2008, PV systems with a capacity of 0.6 to 3.5 kW_p were supported through SDE subsidy. The reference tariff was 56.4 €ct/kWh, which was to be corrected by avoided end-user power purchase prices.

In 2009, two categories of PV systems were applied:

- Small-scale PV with a capacity between 0.6 and 15 kW_p: the reference tariff for this power range is 52.6 €ct/kWh (estimated feed-in premium: 32.4 €ct/kWh) for 15 years. The maximum available subsidy is 62 M€ for a total capacity of 15 MW_p.
- PV systems with a capacity between 15 and 100 kW_p: the reference tariff for this power range is 45.9 €ct/kWh (estimated feed-in premium: 40.6 €ct/kWh) for 15 years. The maximum available subsidy is 26 M€ for a total capacity of 5 MW_p.

In 2010, two slightly different categories of PV systems were applied:

- Small-scale PV up to 15 kW_p: the tariff for this power range is 47.4 €ct/kWh (estimated feed-in premium: 24.9 €ct/kWh) for 15 years.

- PV systems with a capacity between 15 and 100 kW_p: the tariff is 43.0 €ct/kWh (estimated feed-in premium: 37.7 €ct/kWh) for 15 years.

In 2010, the maximum available subsidy for PV was € 93 million. In 2011, PV systems of 15 kW_p and more are only eligible for SDE subsidy, if they apply for the maximum feed-in tariffs of 9, 11, 13, or 15 €ct/kWh.

In 2009, 10.9 MW_p was added, and in 2010 10.9 MW_p (CBS, 2011). This brings the cumulative capacity at 88 MW_p in 2010.

Table 2.1 *Data of PV capacity and electricity generated in the Netherlands, 1990-2010*

Year	Capacity added [MW_p]	Cumulative capacity [MW_p]	Electricity generation [GWh]	Full-load hours [hours/year]
1990		1	0	N/A
1995	0.4	2	1	N/A
2000	3.6	13	8	615
2005	1.7	51	34	667
2006	1.5	52	35	673
2007	1.4	53	36	679
2008	4.4	57	38	667
2009	10.7	68	46	677
2010	20.7	88	60	682

Source: CBS, 2011.

3. Private initiatives aimed at reaching grid parity for PV

'Wij willen zon' is a private initiative to bring PV to the market with a price level that may compete with the electricity price for households (Internet Source 1). This initiative is based on closing relatively large multi-MW contracts with a supplier of PV systems, which may incur a discount of approximately 30%. The cooperative supplies packages of a number of PV systems, viz. 3, 6, 12, or 16 panels (0.555 kW_p, 1.41 kW_p, 2.76 kW_p, and 2.96 kW_p, respectively). Including installation of the systems, the total costs may range from € 2,550/kW_p (€ 2.55/W_p) to € 2,800/kW_p (€ 2.8/W_p).

'Zonvast' is an initiative of 'Zonnefabriek and energy company 'Greenchoice'. Instead of offering PV systems, 'Zonvast' offers a fixed electricity tariff of 23 €ct/kWh. A 2.3 kW_p PV system generates approximately 1950 kWh per year. 'Zonvast' uses a fixed electricity price for the electricity supplied to the household or fed into the grid, for a period of 20 years (Internet Source 2). The initiative assumes 'net metering' which is common in the Netherlands for PV systems of households.

A third initiative is the cooperative 'Zonvogel' which buys PV systems and is responsible for installation on roofs of specific houses, based on financing by members of the association. Members provide the funds needed and receive a fixed rent on their capital for a period of 20 years (Internet Source 3). This way of financing is common for rather small cooperatively owned wind farms.

With regard to the investment cost of PV, the aforementioned price level of € 2.55-2.80/W_p (including VAT) which appears to apply to PV systems offered by 'Wij willen zon' is quite comparable to the price level assumed for a relatively large PV system of 100 kW_p in (Lensink et al, 2010). Such 100 kW_p PV systems would need a feed-in tariff of 28 €ct/kWh, according to Lensink et al. Therefore, it is conceivable that the investment costs for PV systems from 'Wij willen zon' are equivalent to an electricity price of 28 €ct/kWh or less. Depending on the way of financing of a PV system, e.g. based on inclusion in a mortgage, the resulting electricity price may indeed be equal to or only marginally higher than the electricity tariff for households of 23 €ct/kWh (Figure 1).

The success of these PV-based initiatives depends on a number of preconditions or incentives, i.e.:

- Competitive offers for PV systems, e.g. based on a 30% discount (multi-MW deals);
- Competitive prices for electricity supplied to the grid (net metering).

Also, financing may be based on inclusion of the investment for the PV system in the mortgage, which allows PV investments to profit from the fiscal subsidy on mortgage interest payments.

A point of attention is who is bearing the risk of financial losses in the case of system malfunction.

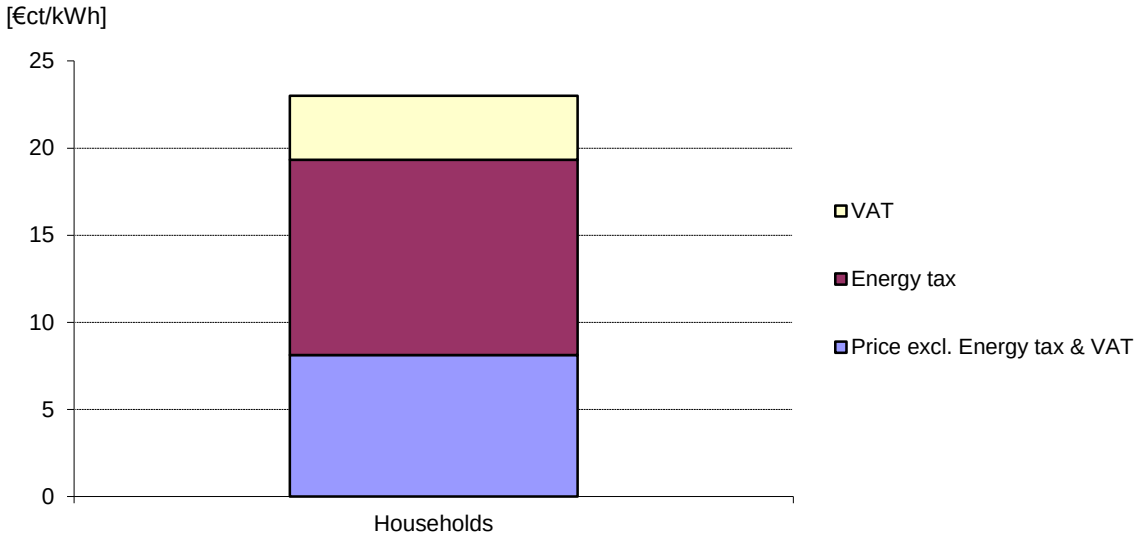

Figure 3.1 *Electricity price for households, 2011*

4. Conclusions

SDE subsidy of the Dutch government enabled financing of solar PV for a number of years, albeit with a stop-and-go character. However, due to the economic recession and the ensuing governmental budget reductions the relatively high feed-in tariffs for PV ended by 2010. In 2011, PV systems may opt for SDE subsidy based on the maximum tariff of 9, 11, 13, or 15 €ct/kWh, but it is questionable whether this will materialise. A growing number of private initiatives aims to achieve grid parity for PV systems in households. There are large differences between these initiatives. One of them is based on two basic elements, i.e. closing of very competitive contracts for multi-MW PV systems and so-called net metering. The investment costs of these PV systems are of the same order of magnitude as assumed for rather large 100-kW_p PV systems in the SDE. Therefore, it is conceivable that the resulting electricity price is equal to or only marginally higher than the electricity tariff for households of 23 €ct/kWh. If such favourable conditions apply, it appears to be feasible to reach grid parity for PV in households in 2011.

References

CBS (2011): *Hernieuwbare energie in Nederland 2010*. Statistics Netherlands (CBS), the Hague/Heerlen, the Netherlands, 2011. http://www.cbs.nl/NR/rdonlyres/F1ED185C-1DA7-4B70-9203-13AB6C895688/0/2010c89pub.pdf

GlobalData (2011): *Global Solar Photovoltaic (PV) Power Market Outlook to 2020*. GlobalData, India, August 2011. http://www.globaldata.com/reportstore/CategorySearchResult.aspx?Title=Alternative_Energy&LID=Solar_PV&Level=1&root=3&Sector=Solar_PV

Lensink, S.M. et al (2010): *Final advice base rates 2011 for electricity and green gas in the framework of the SDE scheme*, ECN/KEMA, Petten/Arnhem, ECN-E--10-109, September 2010. http://www.ecn.nl/docs/library/report/2010/e10109.pdf

Internet Sources

1. http://www.wijwillenzon.nl/
2. http://www.zonnefabriek.nl/zonvast.html
3. http://www.zonvogel.nl