Report D4.1-NL, March 2016

Auctions for Renewable Energy Support in the Netherlands: Instruments and lessons learnt

Short about the project

Auctions for Renewable Energy Support: Effective use and efficient implementation options (AURES)

This project helps assessing the applicability of different auction types to renewable support under different market conditions. It also explores which auction types and design specifications suit particular requirements and policy goals in European countries. By establishing best practices and a knowledge sharing network, we contribute to informed policy decision-making and to the success of auction implementations across Europe.

Target-oriented analysis: Through analysis of empirical experiences, experiments and simulation, we will create a flexible policy support tool that supports policy makers in deciding on the applicability of auction types and certain design specifications for their specific situation.

Capacity building activities: We undertake specific implementation cases to derive best practices and trigger knowledge sharing amongst Member States. We strive to create a strong network with workshops, webinars, bilateral meetings, newsletters, a website that will serve as capacity building platform for both policy makers and market participants (including project developers, auctioneers, etc.). Wherever required, we can set up specific bilateral and multilateral meetings on specific auction issues and facilitate cooperation and knowledge sharing. Additionally, we offer sparring on specific implementation options, drawing from insights gained during the first phases of the project (empirical analysis of previous auctions in Europe and the world), conceptual and theoretical analysis on the applicability of specific designs in certain market conditions and for certain policy goals issues and facilitate cooperation and knowledge sharing. Additionally, we offer sparring on specific implementation options, drawing from insights gained during the first phases of the project (empirical analysis of previous auctions in Europe and the world), conceptual and theoretical analysis on the applicability of specific designs in certain market conditions and for certain policy goals.

Project consortium: eight renowned public institutions and private firms from five European countries and combines some of the leading energy policy experts in Europe, with an impressive track record of successful research and coordination projects.

This report deals with all past and ongoing auctions for renewable support in the Netherlands. Since 2004, five single-item, technology-specific offshore wind auctions were held, with one more currently ongoing. One multi-item, multi-site nearshore wind auction is currently ongoing.

The report contributes to the first and second of three tasks in work package 4 of the AURES project:

T4.1 Providing a characterisation of the different auctions

T4.2 Making an assessment of auctions and case-specific lessons learnt

T4.3 Interpreting and summarising the general lessons learnt and resulting and thereby outline specific recommendations

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Report D4.1-NL, March 2016

Auctions for Renewable Support in Denmark: Instruments and lessons learnt

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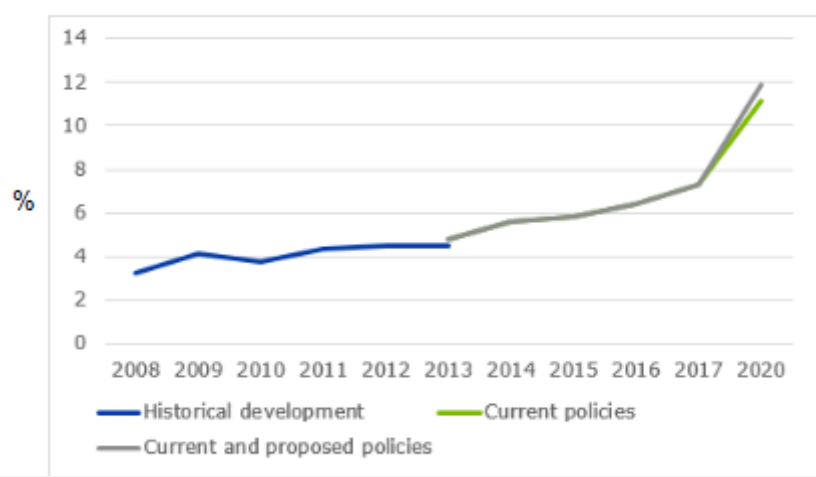
Project deliverable:
WP4 - Empirical aspects of auctions for RES-E: Learning from real experiences.
Task 4.1 Characteristics of auctions

Table of contents

1. Characteristics of auctions in the Netherlands

Table 1. Characteristics of auctions in the Netherlands

Characteristics	Description
Country and market characteristics	The Netherlands has a binding EU renewable energy (RE) target of 14% in 2020. In 2014 the share of renewable energy was 5.5%[1]. Although progress has been slow historically, deployment speed is picking up. This is driven by the *Energie Akkoord* (Energy Agreement), an agreement in 2013 between all relevant stakeholders to meet the target and on the measures that are needed. According to the latest prognoses the Netherlands will not meet its RE target with current and proposed measures and is expected to fall 2 – 3% short[2].  *Figure 1 Share of renewable energy as percentage of total final energy consumption* In terms of the setup of renewable energy by 2020, the following table summarises expected final energy per RE source.

[1] Compendium voor de leefomgeving, 2015, Verbruik van hernieuwbare energie, http://www.compendiumvoordeleefomgeving.nl/indicatoren/nl0385-Verbruik-van-hernieuwbare-energie.html?i=9-53

[2] ECN, 2015, Nationale Energie Verkenning 2015, http://www.cbs.nl/nl-NL/menu/themas/industrie-energie/publicaties/publicaties/archief/2015/nationale-energie-verkenning-2015.htm

<table>
<tr><th>Characteristics</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>PJ (final energy). Current Policies</th><th>2020</th></tr>
<tr><td>Hydropower</td><td>0.4</td></tr>
<tr><td>Wind onshore</td><td>44.6</td></tr>
<tr><td>Wind offshore</td><td>17.2</td></tr>
<tr><td>PV</td><td>16.6</td></tr>
<tr><td>Solar thermal</td><td>1.7</td></tr>
<tr><td>Heat Pumps, Heat and Cold Storage</td><td>7.6</td></tr>
<tr><td>Geothermal</td><td>6.7</td></tr>
<tr><td>Biomass energy</td><td>137.9</td></tr>
<tr><td>Total</td><td>232.6</td></tr>
</table>
</td></tr>
<tr><td>Name of auction scheme</td><td>Stimulation of Sustainable Energy Production (Stimulering Duurzame Energie, SDE+)</td></tr>
<tr><td>Objectives</td><td>The primary objective of the scheme is the realisation of the Dutch RE target of 14% for 2020 as agreed in the EU RE sources Directive, as cost-efficiently as possible.</td></tr>
<tr><td>Contracting authority</td><td>The Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland, RvO) encourages entrepreneurs in sustainable, agrarian, innovative and international business. It is the executive agency of the Dutch Ministry of Economic Affairs.</td></tr>
<tr><td>Main features</td><td>In July 2011, the Dutch government replaced its existing feed-in premium scheme SDE (Subsidieregeling duurzame energieproductie), introduced in 2008, with SDE+: a sliding premium determined in auctions. The SDE+ scheme aims to incentivise the deployment of RE at the lowest possible cost.</td></tr>
<tr><td>Year of introduction</td><td>The auction scheme was introduced in 2011. Since, the scheme has been revised each year, adding additional competitive annual auction rounds or phases. Also, the budget has been increased several times from €1.7 billion in 2011 to €8 billion in 2016.</td></tr>
<tr><td>Technology focus and differentiation</td><td>Although the design of the instrument differentiates between technology categories, the SDE+ scheme in practice is a technology-neutral scheme: it includes a “free category” in each round. This category is open for projects that are able to produce at lower costs than the (maximum) base amount that has been calculated for the specific technology. In this way, the free category gives bidders the opportunity</td></tr>
</table>

Characteristics	Description
	to access the scheme sooner, at lower tariffs. All projects, independent of the technology, can apply for subsidy in this free category. The scheme covers renewable energy sources for electricity (RES-E), renewable energy sources for heating and cooling (RES-H&C), and biogas. It covers the whole range of technologies that fall under these three broad categories.
Lead time before auction	Each year around March-April the conceptual design of the scheme for the year thereafter is published by ECN and DNV GL (i.e. in April 2015, for the auctions in 2016). This publication contains the ceiling prices for the different categories, including underlying assumptions, information and technical and financial parameters. From June to July market consultations take place. In November-December the final publication becomes available. The advice is usually adopted by the Ministry, though minor changes are sometimes made. The definitive details of the design of the auctions for that year are published in the government Gazette, usually in January-February. In 2016 the auctions will start in March.
Min. / max. size of project	There is no set minimum or maximum size of projects. Only the total energy production from biomass co-firing is capped at 25 PJ.
What is auctioned?	The scheme auctions premiums that remunerate the production from renewable energy sources.
Budgetary expenditures per auction and per year	For 2016, the total budget of the auction is €8 billion (divided over two rounds of €4 billion each) for new projects that participate in the auctions that year. This is more than twice the budget available in 2015. The budget for the years after 2016 is not established yet and is to be determined annually in the year preceding the auction. The budget depends on several developments, including whether the entire budget is consumed the previous year(s), the actual realisation of projects (the allocated budget for projects could be cycled back into the scheme) and changes in energy price scenarios. The actual (expected) budgetary expenditures for the SDE+ are resented in the table below.

<table>
<tr><th>Characteristics</th><th>Description</th></tr>
<tr><td></td><td>Table 1: annual (expected) budgetary expenditures (€ million)
<table><tr><th>2012</th><th>’13</th><th>’14</th><th>’15</th><th>’16</th><th>’17</th><th>’18</th><th>’19</th><th>’20</th></tr><tr><td>100</td><td>200</td><td>320</td><td>803</td><td>1,119</td><td>1,338</td><td>1,732</td><td>2,358</td><td>3,037</td></tr></table></td></tr>
<tr><td>Frequency of auctions</td><td>Each year the auctions open in several phases. Over the last years the number of phases increased each year: 6 phases in 2014, 9 phases in 2015. In 2016, both rounds consist of 4 phases. The rounds and their opening dates are presented in the table below.

Table 2: rounds and phases, opening dates in 2016
<table><tr><th>Phase</th><th>1</th><th>2</th><th>3</th><th>4</th></tr><tr><td>Round 1 (March)</td><td>1/3</td><td>7/3</td><td>14/3</td><td>21/3</td></tr><tr><td>Round 2 (September)</td><td>30/8</td><td>5/9</td><td>12/9</td><td>17/9</td></tr></table></td></tr>
<tr><td>Volume of the tender</td><td>The volume of the tender corresponds to the annual budget ceiling. In 2016 the total budget was €8 billion (two rounds of €4 billion). In 2014 and 2015 the total budget was €3.5 billion. The budgets for subsequent years are not published yet but will be equal or higher than preceding years.</td></tr>
<tr><td>Auction design elements</td><td>See table below.</td></tr>
</table>

Design elements for the assessment of auction schemes for RES-E

Table 2. Design elements of auction schemes in the Netherlands

Design elements	
Single- or multiple-item auctions	The Dutch SDE+ scheme is a multiple-item auction where bids/projects are selected up to the auctioned volume/annual budget.
Auction procedure	The SDE+ is a so-called sealed-bid auction. Bidders simultaneously submit their

Design elements	
	bids with an undisclosed price offer for a specific quantity of RE. The bids that meet all of the mandatory requirements are ranked, and projects awarded until the maximum allocated annual budget is reached. The SDE+ works with multiple bidding rounds or phases (9 in 2015, 4 in 2016). The individual bids are not disclosed after each bidding round. After each round, an aggregated overview is published, showing the technology (categories) and their budget claims. If the budget cap is reached, the biddings of that day will be sorted on auctioning price. The biddings with the lowest price will be awarded first, until the budget cap is reached. The individual bids (name developer, limited technical project details and budget claim) of the awarded projects are published at the end of each year after the scheme has closed for new applications.
Pricing rules	The SDE+ is a pay-as-bid auction whereby the winning bidder receives the price of its bid. The auction results in the allocation of multiple units of the same product with different prices to more than one project developer.
Ceiling price	Ceiling price

Qualification criteria	<u>Qualification requirements</u>
	• Completed application form
	• Required permits:
	  ○ Environmental permit (*Omgevingsvergunning*);
	  ○ Geothermal projects only: (mining) exploration permit (*Opsporingsvergunning*) and a completed geological survey.
	• Written permission of the owner of the location/land;
	• A (technical) description of the installation/project;
	• For biomass co-firing and industrial bio-CHP projects it is required to provide proof that the biomass used is meeting the sustainability criteria;
	• For projects with a budget claim >€400 million, a bank statement and a realisation contract (*uitvoeringsovereenkomst*) is required;
	• A feasibility study (see below).
	
	<u>Grounds for disqualification</u>
	• Non-conformity to legal requirements of the qualification;
	• Non-feasibility of projects or insufficiently realistic or non-viable projections;
	• Missing permits and official documents for prove;

Design elements	

	• No or insufficiently grounded permission from the owner of the location/land.
	
	<u>Feasibility study</u>
	Since 2014 it is required to submit a feasibility study for projects that are larger than 500 kWp or 50 Nm³/h. A feasibility study is also required when the capacity of multiple solar-PV projects of one applicant exceeds 500kWp. The feasibility study should contain the following elements:
	• Exploitation statement with:
	  ○ A specification of the investment costs per (main) component of the production installation
	  ○ A cost-benefit analysis of the installation
	  ○ A profit & loss statement with expected returns on investment
	• Statement of the level of equity and financing:
	  ○ Provide documents to substantiate equity (e.g. annual statement);
	  ○ For projects with less than 20% equity: a letter of intent from a financing party stating capacity and willingness to finance the project;
	  ○ Calculations and projections of the expected production from wind (based on the wind viewer), hydro, biomass and waste sources (only these sources).
	• For biogas projects: a statement from the responsible DSO of the costs for feeding into the gas network;
	• For renewable heat projects: an assessment of the heat demand (prove of sufficient demand/customers for the heat from the installations).

Penalties	• Since 2012, penalties are in place for the non-realisation of projects within the required period. If projects are not operational within the realisation period (3-4 years), the project loses its support right and is excluded from SDE+ for a period of 3 years. However, in some cases it is possible to work around this exemption by “redefining” the project (e.g. by changing the capacity or the location) and apply again. • For projects that claim >€400 million (over their lifetime) a fine must be paid of max. 2% of the budget claim of that project. The bank statement (required for these projects) has to guarantee payment of this 2%. Like the other projects, these projects are exempted from SDE+ for 3 years. • No projects are known to have claimed >€400 million in the past years. No information is available why such high limit was chosen. New measures have been introduced to limit the unnecessary budget claim of

Design elements	
	projects that are not realised. These measures include[3]: • Since 2014: a feasibility study is an important qualification requirement (see section on qualification criteria). This is seen as a major contribution to improving the realisation rate; • Project developers of projects that are not realised are excluded from SDE+ for three years, for the same project; • Stricter check on project feasibility and their economic viability on the basis of an assessment of the realisation and a financial plan that are submitted by applicants; • Check of progress after one year by RVO; • For projects with a budget claim >€400 million a bank statement and a realisation contract is required. The contract states that the project has to be realised within the given timeframe[4].
Monitoring of realisation progress	Check of progress after one year by the RVO.
Exemptions from requirements for small plants/developers?	The following exemptions are in place for small plants and developers: • Projects with a budget claim <€400 million: a bank statement and a realisation contract[5] is not required[6]; • Projects smaller than 0.5 MW, or 500 kWp resp. 50 Nm³/h are exempted from submitting a feasibility study (see section on qualification criteria).
Evaluation criteria of the auction	See “qualification criteria” section above.
Transferability of support right	The support right is not transferable to other (legal) persons than those to whom the support is granted[7].

[3] http://wetten.overheid.nl/BWBR0022735/geldigheidsdatum_03-04-2013#i6
[4] BIJLAGE 7 BEHORENDE BIJ ARTIKEL 39 VAN DE REGELING AANWIJZING CATEGORIEËN DUURZAME ENERGIEPRODUCTIE 2011 Uitvoeringsovereenkomst tot zekerheid van het aanvangen van de activiteiten ter zake waarvan subsidie is verstrekt op basis van artikel 35, eerste lid, van de Regeling aanwijzing categorieën duurzame energieproductie 2011. https://zoek.officielebekendmakingen.nl/stcrt-2011-9424.html
[5] . The contract states that the project has to be realised within the given timeframe.
[6] BIJLAGE 7 BEHORENDE BIJ ARTIKEL 39 VAN DE REGELING AANWIJZING CATEGORIEËN DUURZAME ENERGIEPRODUCTIE 2011 Uitvoeringsovereenkomst tot zekerheid van het aanvangen van de activiteiten ter zake waarvan subsidie is verstrekt op basis van artikel 35, eerste lid, van de Regeling aanwijzing categorieën duurzame energieproductie 2011. https://zoek.officielebekendmakingen.nl/stcrt-2011-9424.html
[7] Article 61, second paragraph, Besluit Stimulering Duurzame Energieproductie.

2. Evaluation criteria for the assessment of auction schemes for RES-E

Actor variety and social acceptability

The large majority of parties that apply for SDE+ are (small) SMEs (>80%), followed by non-profit organisations (municipalities, sport associations, water boards, schools etc.). A small percentage of applicants may be grouped as larger (multi-national) companies and utilities. In the table below the shares of participant types are presented.

Table 3 Shares of participant types in the SDE+ rounds in 2011 - 2015

	SME	Large/multi-national	Utility	Non-profit, public authority, municipality etc.	Unknown
2011	79%	1%	0%	20%	
2012	85%	0%	2%	14%	
2013	81%	2%	1%	15%	
2014	67%	<1%	2%	12%	18%
2015	70%	2%	8%	11%	9%

The level of competition may be typified as healthy, with different participants each year. The accessibility of the scheme for smaller companies and non-profit organisations is good.

Policy effectiveness (effectiveness of auctions)

In the table below the realisation rate of projects under the SDE and SDE+ scheme are presented. The SDE+ was introduced in 2011.

	2008	2009	2010	2011	2012	2013
	SDE			SDE+		
Realisation rate	100%	10%[1]	91%	68%	54%	11%

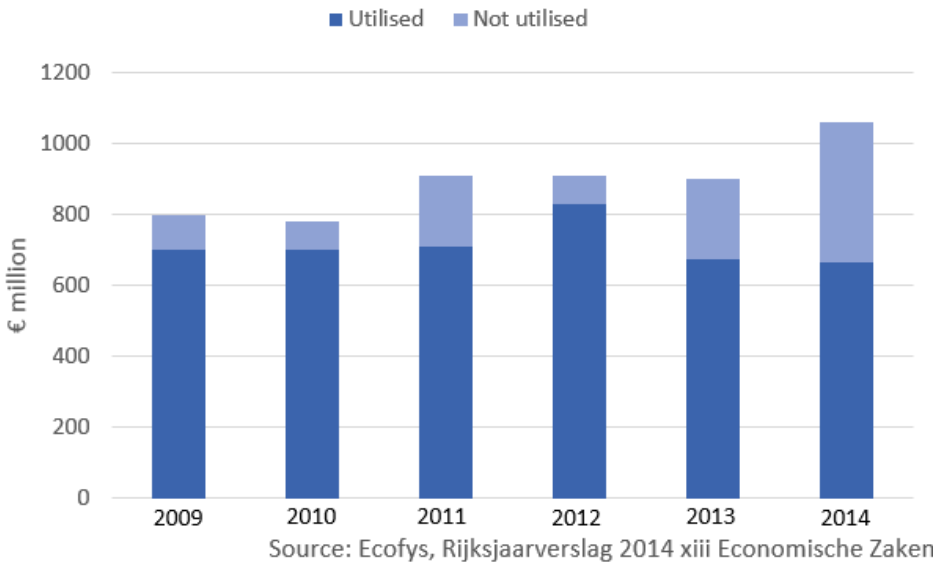
Source: Ecofys 2015, on the basis of information from RVO (status as per 07/2014).

The table shows that from the projects that were awarded SDE+ in 2011, 68% has been realised, from projects in 2012 54% has been realised and 11% from projects awarded SDE+ in 2013.

Projects have to be realised within 3-4 years after the subsidy is granted. This means that projects from 2011 (first SDE+ year), will have to be realised by the end of 2014/early 2015. The most recent data is

from mid-2014. This means that project the realisation rate for 2011 (and subsequent year) is likely to increase further.

Besides realisation rates, the utilisation of budgets is another useful proxy for effectiveness. In the case of the Dutch scheme, budgets are structurally underutilised (see graph below). This means that from the budgets that are reserved each year and granted to the projects, not all of this budget will actually be used. This is due to the fact that the SDE+ assumes theoretical production, which in practice turns out to be much lower (i.e. so less produced MWh/GJ need support). Because of the underutilisation, the budget increase of 2016 can be realised, without having to raise the energy tax. Downside of underutilisation is that it forms a serious risk for target achievement as more projects could have been awarded support.



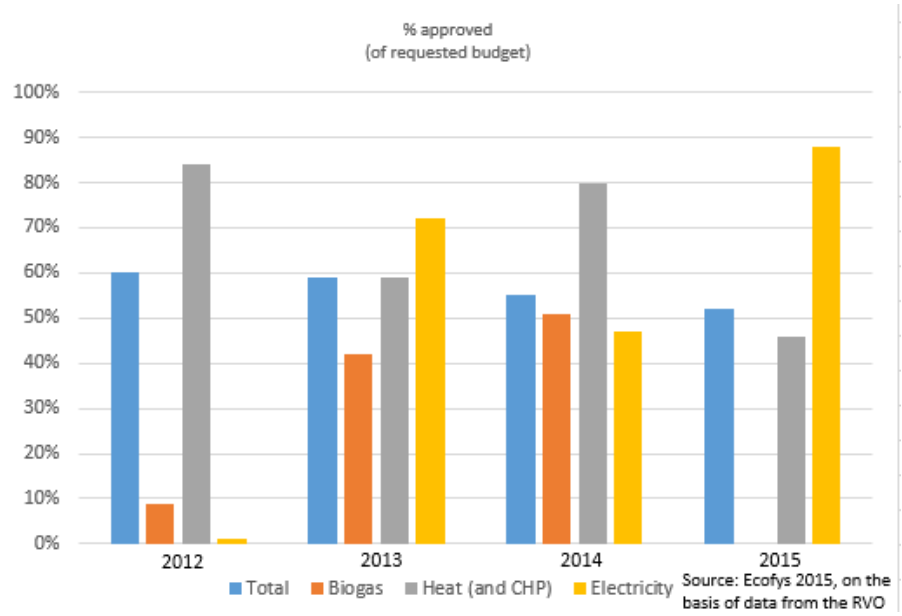
Source: Ecofys, Rijksjaarverslag 2014 xiii Economische Zaken

In 2011, 22% of the budget will not be utilised, in 2012 this is 20% and 25% in 2013. This is roughly twice as high as the previous SDE scheme

Static efficiency or cost effectiveness

The rationale behind the choice for an auctioning scheme was to realise renewable energy in the Netherlands at lowest possible costs. Projects would compete on price and in order to realise also more expensive projects, project developers should offer their projects at lower costs. Over the past years the demand was structurally higher than budget available (see graph below), which leads to a relatively high level of competition. However, in 2014 there was still budget available in the last phase and also the increased budget for 2016 seems to be indicating that the effectiveness of the SDE+ is decreasing (Algemene Rekenkamer, 2015)[8].

[8] Algemene Rekenkamer (2015), Stimulering van duurzame energieproductie (SDE+)



The base amount for each round is calculated yearly by ECN on the basis of market consultations and levelised cost of energy (LCOE) calculations. The procedures are transparent and an extensive report is published each year that contains detailed calculations and their input parameters. The report is complemented by Excel spread sheets that contain these calculations and parameters and allows project developers to get a good indication of their potential business case. Much experience has been gained with this for over 6 years and support levels are considered sufficient, yet challenging, by the market.

Each year, support levels (strike prices) are revaluated and adjusted to market circumstances and technology developments. There are no assessments on how successful the SDE+ managed to drive down costs (dynamic efficiency).

Compatibility with market principles and integration

The SDE+ is an auction scheme with a competitive price building mechanism (sliding feed-in premium) that reflects market principles. This has positive effect in avoiding negative prices. The SDE+ scheme fosters demand oriented generation since RES plants are fully subject to price signals in the market.

Balancing responsibility: RES generators need to comply with scheduled production as all other plants. RES plants operators are responsible for delivering the predicted electricity production.

Electricity from renewable sources is, however, granted priority in times of grid congestion, over electricity from energy sources other than renewable.

Distributional effects & minimisation of support costs

The average household contribution will increase significantly: from €25 in 2015 to €120 to €240 in 2020 and between €250 and €310 towards 2030.

The SDE+ is paid from a surcharge (per kWh and m^3) on the electricity and gas bills of consumers and companies. Consumers cover 50% of the total annual budget, the other half is covered by companies. The more you consume, the less you pay in surcharges (relative). In the tables below the annual surcharges are provided. The surcharge is depending on the amount of electricity/gas consumed. The surcharge is established annually and is set on the basis of an estimate of the expected SDE+ expenditures for that year (the tables below).

SDE+ Surcharge electricity 2013 - 2016 excl. 21% VAT (€/kWh)

	From	To	2013	2014	2015	2016
1	0 kWh	10,000 kWh	0.0011	0.0023	0.0036	0.0056
2	10,000 kWh	50,000 kWh	0.0014	0.0027	0.0046	0.0070
3	50,001 kWh	10 GWh	0.0004	0.0007	0.0012	0.0019

SDE+ Surcharge gas 2013 - 2016 excl. 21% VAT (€/m^3)

	From	To	2013	2014	2015	2016
1	0 m^3	170,000 m^3	0.0023	0.0046	0.0074	00113
2	170,000 m^3	1,000,000 m^3	0.0009	0.0017	0.0028	0.0042
3	1,000,000 m^3	10,000,000 m^3	0.0003	0.0005	0.0008	0.0013
4	10,000,000 m^3	-	0.0002	0.0004	0.0006	0.0009

3. Lessons learnt: key best practices and pitfalls identified

- The main focus of the SDE+ is on efficiency, i.e. on bringing down costs of the support scheme. This is achieved by allowing competition between all technologies that fall under the categories of RES-E, RES-H&C and biogas.
- For market participants, the technology neutrality creates a relatively high level of insecurity. To decide whether to participate or not a bidder has to quantify the risk of not being successful in the auction. To do so, however, they would need to estimate how the budget will be allocated, which requires information on all three markets (RES-E, RES-H&C and biogas) in detail.
- For the auctioning body, determining the base prices that define the lowest possible support level remains challenging and involves relatively high transaction cost. The base prices are currently set by experts from ECN after extensive consultations and are adjusted each year according to market and technology (price) developments.
- By adding the price competition element to the scheme, the effectiveness of the SDE+ increased over its precursors. However, recent increasing budgets have more or less offset this effect. Furthermore, budgets are structurally underutilised and realisation rates are low. The current policy does not take this underutilisation sufficiently into account.
- The effectiveness of scheme may increase over time. To improve the scheme, regular evaluations and subsequent improvements were done over the past six years, which e.g. led to the introduction of a feasibility study as a qualification criteria and the introduction of bid bonds to increase the effectiveness.
- To cope with the low realisation rate and the underutilisation of budgets, an alternative to higher qualification criteria and/or bid bonds would be to allow more projects than the theoretical amount that is needed to achieve the envisaged production. As this would require more flexible budgets, this option is currently not on the table.
- Other factors like the availability of (private) capital, permitting and spatial planning, public acceptance and the political will, as well as a stable policy framework for 2030 influence the efficiency and effectiveness of the scheme. These factors are external and may only partially be addressed by the design of an auction scheme.

Annex

Table 4 Outcomes of the SDE+ in 2011, 2012, 2013 and 2014

	2011	2012	2013	2014	2015
Available budget	€ 1.5 billion	€ 1.7 billion	€ 3.0 billion	€ 3.5 billion	€ 3.5 billion
Number of committed projects	**740 projects**, of which: Renewable electricity: 710 (196 MW, 6,408 GWh) Renewable gas: 30 (22,612 Nm^3/h)	**234 projects,** of which: Renewable electricity: 112 (20 MW, 398 GWh) Renewable heat and CHP: 118 (1,110 MW, 247 PJ) Renewable gas: 4 (1,470 Nm^3/h)	**871 projects,** of which: Renewable electricity: 733 (15,940 GWh) Renewable heat and CHP: 115 (170 PJ) Renewable gas: 23 (689 Nm^3/h)	**3,174 projects, of which:** Renewable electricity: 3,034 (18,525 GWh) Renewable heat and CHP: 115 (88 PJ) Renewable gas:25 (11,308 Nm^3/h)	**186 projects, of which:** Renewable electricity: 139 (27,910 GWh) Renewable heat and CHP: 47 (147 PJ) Renewable gas: 0 (0 Nm^3/h)
SDE+ categories with largest budget claims	Biogas claimed € 1.2 billion	Geothermal claimed € 0.8 billion	Biomass thermal conversion and winds onshore claimed respectively €0.7 billion and €0.6 billion	Solar-PV claimed over €1.3 billion	Prolonged lifetime of thermal biomass plants claimed €1.2 billion
Phase that budget cap was reached	Phase 1 (€0.09 / kWh)	Phase 1 (€0.07 / kWh)	Phase 2 (€0.08 / kWh)	Phase 6 (€0.15 / kWh)	Phase 4 (€0.10 / kWh)
Projects in free category[9]	85%	21%	46%	N/A	N/A

Table 5 Realisation rates of projects granted SDE and SDE+ support (in a particular year between 2008 and 2013) (Status 04/2014) (SDE+ was introduced in 2011).

Technology	Unit	2008		2009		2010		2011		2012		2013	
		committed	realised	committed	realised	committed	realised	committed	realised	committed	realised	committed	realised
Onshore wind	MW	46	46	466	37	459	435	109	83	2	2	402	5
Offshore wind	MW	0	0	719	0	0	0	0	0	0	0	0	0

[9] Percentage of the total claimed budget

Technology	Unit	2008		2009		2010		2011		2012		2013	
Solar - pv	MW	10	10	22	22	18	18	23	17	8	4	132	8
Waste	MW	78	78	49	49	79	74	0	0	413	321	155	-
Biomass	MW	4	4	31	19	33	20	21	5	297	122	762	174
Geothermal	MW	0	0	0	0	0	0	0	0	317	113	204	0
Hydro	MW	0	0	0	0	12	0	0	0	0	0	11	0
Biogas	Nm³/h	40	40	5808	5128	4778	2543	21196	3112	1470	0	7461	0
Total	MW	138	138	1287	127	601	546	153	105	1037	562	1666	187
Realisation rate	%	100%		10%		91%		68%		54%		11%	
Total	Nm³/h	0	0	0	0	12	0	0	0	0	0	11	0
Realisation rate	%	0%		0%		0%		0%		0%		0%	

Source: RVO 2014, various sources.

	Unit	2008	2009	2010	2011	2012	2013
Realisation rate	%	100%	10%	91%	68%	54%	11%

Table 6 Type of participants SDE+

	MKB	Large/multi-national	Utility	Non-profit, public authority, municipality etc.	Unknown	Total number of projects awarded SDE+
2011	190	2	0	48		241
2012	94	0	2	15		111
2013	518	16	9	98		641
2014	2,141*	20*	50	379*	584	3,174
2015	132	4	14	20	16	186

* Estimated based on overview