

Energy Efficiency Directive

Article 7

Implementation in the Netherlands

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Accountability

This report has been prepared on behalf of the Ministry of Economic Affairs as the Dutch contribution to Article 7 of the Energy Efficiency Directive (EED). It describes how the Netherlands intends to achieve the target defined in Article 7 of the EED. It discusses the interpretations adopted and choices made by the Dutch government with regard to implementation of the EED, the consequences for the Netherlands and the expected savings that will be necessary in order to reach the target. The calculations relating to the target and policy impacts were carried out by the Energy Research Centre of the Netherlands (ECN), with contributions in relation to agriculture from Nico van der Velden and Pepijn Smit of the *Landbouw Economische Instituut* [Agricultural Economics Research Institute]. ECN has provided support for the Dutch government in defining the interpretations and choices relating to the EED but this report is not an assessment of these by ECN.

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Abstract

Article 7 of the recently adopted Energy Efficiency Directive obliges the EU Member States to achieve 1.5% yearly efficiency improvements during the period 2014-2020, culminating in a cumulative savings target. This report describes the way the Netherlands intends to meet the Article 7 obligations, as requested by the European Commission.

The EED offers the Member States various degrees of freedom with regard to the definition of the target and the way it is met. Hence, this report addresses the choices of the Netherlands and their consequences for the Dutch target and the realised energy savings. A broad-lined description of the choices and overall results is complemented by extensive annexes that offer technical descriptions and detailed numbers.

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Reading guide

The summary and sections 2 and 3 of this report provide a broad-brush description of the choices offered by the EED, the way in which the Netherlands has handled them and the implications with regard to the associated target and the energy savings resulting from Dutch policy. These sections are intended to provide information for a broader target group: stakeholders within the Netherlands as well as the European Commission.

The annexes contain a more detailed, in-depth discussion of the same subject matter. The main objective of the annexes is to set out all the information requested by the European Commission. The main target group for the annexes is European Commission experts.

The summary table below shows where the information requested by the European Commission, or parts of that information, appear in the report.

Table 1: Table summarising the information required by the European Commission, indicating the sections of the report where this information appears

Information	Location
Intermediate periods for reporting savings	Annex H
Target (cumulative)	1.1, 1.2, 2.1, 0, Annex A
- Final or primary	1.1, 1.2, A, Annex E
- Years before baseline (historical savings)	2.4, Annex A
- Eurostat or national data	2.4, Annex A, Annex D
- Consumption as a raw material	Annex A
- Correction for generation for own use	Annex A
- Inclusion of the transport sector	2.4, Annex A, Annex D
- Inclusion of ETS companies, inclusion of early actions & savings by supply sectors?	2.5, Annex A, Annex D
- Achieving 25% reduction	2.5, Annex A, Annex D
- Phasing of cumulative savings target	1.3, 0, 2.4, 2.5, Annex A, Annex D
Obligation or alternative policy	1.2, 3.1, Annex D
Equivalence with obligation scheme	Annex J
Savings (cumulative)	1.1, 1.3, 3.1, Annex B
- Savings by sector	3.3-3.6, Annex A
- Policy measures for savings	3.1, 3.2, 3.3-3.6, Annex G
- EU versus national policy (standards)	1.3, 3.2, 3.3, 3.7, Annex B, Annex D
- Methodology for calculating savings	2.5, 3.2, Annex B
- Deemed / surveyed / scaled savings	Annex B
- Taxes and savings	3.2, 3.3, 3.5, 3.6, Annex B, Annex I
- Preventing overlap between effects (double counting)	3.2, Annex B
- Additionality measures/autonomous savings	3.2, 3.3, Annex B, Annex D
- Lifetime of savings	Annex A
- Annual versus cumulative savings	1.3, Annex A
M & E process / other	
- Policy safeguards (compliance)	3.2, 3.3
- Sustainable energy generated by consumers (observed)	Annex D
- Demonstrable and material	Annex B
- Savings, EPBD standards, new buildings	3.3, Annex D
- Monitoring & evaluation system	Annex E
- Climatic variations within the country	Annex B

1. Summary

1.1 Scope – objective and policy impact

This report explains how the Netherlands intends to meet its target as defined in Article 7 of the EED. It is based on the interpretations and choices that the Dutch government has made.

Target for the Netherlands

Article 7 of the Energy Efficiency Directive obliges the Netherlands to achieve an efficiency improvement of 1.5% per year in the period 2014-2020, as a cumulative target. For the Netherlands this means a target of at least 482 PJ savings on final energy consumption – after taking account of the degrees of freedom offered by the EED.

Expected savings by the Netherlands

The Netherlands expects to achieve cumulative savings of between 387 and 562 PJ in final terms, of which 87 to 186 PJ will be through new policy. This new policy consists of policy measures agreed in the recent *Energieakkoord* [Energy Agreement] concluded under the auspices of the *Sociaal Economische Raad* [Social and Economic Council of the Netherlands] (SER). The cabinet has also signed this agreement.

1.2 Net target to be achieved

Article 7 assumes that an obligation scheme will be created, but also offers Member States the option of achieving an equivalent target by means of alternative policy. The Netherlands has chosen this latter option.

Article 7 of the EED requires the Netherlands to achieve a 1.5% efficiency improvement per year in the period 2014-2020 compared with average consumption in 2010-2012, and translates this into a cumulative target. This requirement is over and above the efficiency improvement resulting from European policy.

For the Netherlands, this would be 643 PJ. But after taking advantage of the provisions of the EED and the degrees of freedom that it offers, the remaining net target for efficiency improvements on final use to be achieved during the period 2014-2020 is approximately 482 PJ.

1.3 Expected impacts of Dutch policy

Expected savings – highlights

The target relates to energy savings which take place between 2014 and 2020 and can be attributed to national policy. This target is not in addition to current policy efforts; the savings impacts of existing national policy also count. It does not matter whether this national policy was effective before 2014 or comes into force from 2014 onwards, provided that the savings measures that can be attributed to it – referred to in the EED as ‘new actions’ – are in place between 2014 and 2020. The impacts of European policy cannot be included. If Europe obliges Member States to introduce policy but it is implemented at national level, its impacts can be counted as national

policy. Where national policy goes further than European policy, national policy only counts if the results are over and above the impacts of European policy; for example, savings relating to electrical appliances only count if they are higher than those required by the European Ecodesign Directive.

Because the target is cumulative, energy-saving measures which are implemented earlier in the period 2014-2020 will contribute more to the target than the same measures in later years. An energy-saving measure introduced in 2014 will count for 7 years, whereas a measure introduced in 2020 will only count for 1 year. The phasing of policy impacts – i.e. when an energy-saving measure is actually put in place – therefore makes a lot of difference to their contribution towards the target.

It is estimated that the total cumulative savings that can be attributed to Dutch policy – existing and new – in accordance with the EED are between 387 and 562 PJ.

Existing policy will contribute between 266 and 410 PJ. The bandwidth is due to uncertainties with regard to economic growth, energy prices and the effectiveness of policy measures.

Bandwidths
 There are significant uncertainties with regard to the expected impacts that can be attributed to a policy. Therefore, where an estimate of these uncertainties is available, the report provides bandwidths around the most likely expected impacts. This applies both to the individual policy packages and to the totals per sector and for the Netherlands as a whole. The bandwidths reflect the upper and lower values between which the policy impact is likely to lie. The most probable impacts do not necessarily lie in the middle of the bandwidth.

Adding bandwidths to produce totals
 The bandwidths for the individual packages cannot be added together to produce totals by sector or on a national basis. If this were the case, it would mean that the total bandwidth contained situations in which everything was proceeding both well and badly at the same time, and it is very unlikely that this would happen. The aggregation into sectoral and national bandwidths takes this into account, but the consequence of this is that the bandwidths cannot be added together.

New policy is based on the policy agreed in the Energy Agreement and contributes between 87 and 186 PJ. The bandwidth here is much greater, relatively, than for existing policy. This is due to uncertainty about the precise details of the policy intentions defined in the Energy Agreement.

Of the total savings to be achieved, 130-211 PJ will take place in households, 32-136 PJ in services, 108-222 in industry and 12-21 in agriculture.

Table 2: Total expected savings, existing and new

	Min.	Average	Max.
Expected due to existing + new	387	473	562
<i>Of which</i>			
Savings due to existing policy	266	336	410
Savings due to new policy Energy Agreement	87	137	186

Table 3: Total expected savings, distribution by sector

	Min.	Average	Max.
Savings by households, existing and new	130	170	211
Savings by services, existing and new	32	82	136
Savings by industry, existing and new	108	166	222

Savings by agriculture, existing and new	12	16	21
Savings by transport, existing and new	34	40	46

2. Savings target for the Netherlands

2.1 Total energy-saving target

This section describes how the target for the Netherlands was obtained, and how the choices made by the Netherlands under the EED determine the resulting target.

Article 7 of the EED obliges the Netherlands to achieve a 1.5% efficiency improvement per year in the period 2014-2020 compared with final consumption in the period 2011-2013. The Directive translates this into a cumulative target: the aggregated savings in the years 2014-2020. For the Netherlands this means that – after taking advantage of the provisions and degrees of freedom offered by the EED – the target for efficiency improvements on end use to be achieved during the period 2014-2020 is approximately 482 PJ final.

The next sections describe step by step how the target for the Netherlands has been calculated on the basis of the choices that the Netherlands has made.

Comparison of Article 7 of the EED with previous Dutch savings targets

The savings target of 1.5% as defined by the Directive cannot be compared with previous national targets in the Netherlands, such as 2% energy savings for the period 2010-2020 according to the *Protocol Monitoring Energiebesparing* [Energy Saving Monitoring Protocol] method. The table illustrates a number of important differences.

Table 4: Summary of differences between energy saving targets

EED objective, Article 7	Dutch objective, 2% in 2010-2020
Cumulative energy savings over a period: early energy-saving actions carry greater weight.	Average energy-saving rate over a period
Based on a phased target (optional): 1% for first two years, then 1.25% for two years and 1.5% thereafter	Increasing from 2005 to 2010, then constant at 2%
Only the impacts of Dutch policy count	All energy savings count, including impacts of European policy
Only savings on end use, limited options to include savings in supply sectors	Includes all savings in the energy transformation sector, e.g. in power companies, refineries and cogeneration
Savings percentage across end users excluding transport, option of excluding industry in ETS	Savings percentage includes transport sector and industry in ETS
Choice of final or primary terms (Netherlands has chosen final)	In primary terms
Includes early actions (savings achieved before the target period) – with some restrictions	Only savings achieved during the relevant period

An important consequence of these differences is that it is difficult to compare the efforts that are required in order to achieve the targets. For example, the Dutch target appeared to be more ambitious at 2%, but all efficiency improvements could be counted towards it. The EED imposes many more restrictions with regard to the elements of the efficiency improvement that may be included.

2.2 Final versus primary

Member States can choose whether to set a target in final or primary terms. The Netherlands has chosen to set its target in final terms because this best connects with the fact that the target relates to final consumption.

The Netherlands has chosen to set a target in final terms

Final means that only supplies of energy as such can be counted, primary means that energy consumption which is associated with the production and supply of electricity is also included. In reality, a target that is expressed in primary terms means that electricity supplies will be larger by a factor of 2.2 to 2.5, both in the target and in the savings to be achieved. However, whether a country chooses to set a target in primary or final terms makes no difference to the type of energy-saving measures that can be included: in both cases, only savings on end use count.

The choice of final or primary makes no fundamental difference to the Netherlands in terms of the level of ambition for the target. Although a final target means that the saving in terms of PJs is smaller than with a primary target, the policy impacts are also smaller when the target is expressed in final terms. These impacts are therefore inversely related to the effort involved in reaching the objective. If the target were expressed in primary terms, the Netherlands would only find it easier to reach the objective if it could save relatively large amounts of electricity. This is not analysed or assessed here.

Figure 1: Target for efficiency improvements on end use. The area of the triangle corresponds to the target – the cumulative energy savings to be achieved – and each step to the annual efficiency improvement associated with it.

[Legend]: Cumulative
2014-2020
482 PJ final

2.3 Cumulative target

The Directive translates the target of 1.5% per year into a cumulative target: the total aggregated savings that must be achieved in the period 2014-2020.

Savings which can be achieved quickly make a bigger contribution towards reaching the target. This works as follows: an efficiency improvement that takes place in 2014 contributes towards reduced energy use in the target period for 7 years, an efficiency improvement in 2015 contributes for 6 years, etc. If the annual improvement is 1.5%, this gives cumulative savings of (7+6+5+4+3+2+1) times 1.5%, or 0.42 times the average final consumption for 2011-2013 (see **Figure 1**).

There is therefore a factor of 28 (42%/1.5%) between the cumulative target figure and the corresponding annual efficiency improvement, assuming a constant rate of saving. If the energy saving rate is not constant, the relationship between the average annual efficiency improvement and the cumulative savings may be different. For example, if energy saving starts late and increases over the EED period, the average rate of saving must be higher if it is to achieve the cumulative target.

2.4 Baseline

The Netherlands has excluded the transport sector from the baseline

The target relates to supplies to end users, optionally excluding the transport sector. The baseline includes the industry sector but not refineries because they belong to the energy supply sectors. The Netherlands has taken the option of excluding the transport sector from the baseline. This has no implications in terms of whether policy can be counted: the savings impacts in the transport sector still count towards the savings achieved.

The Netherlands has used the Eurostat baseline, corrected for renewables generated by consumers

The Directive states which categories from the Eurostat energy statistics correspond to the baseline (explanatory notes, Annex A). The Eurostat categories have been corrected for own generation of renewable energy by consumers, which does not constitute supply. The target is calculated on the basis of the average for the most recent three-year period prior to 1 January 2013.

Adjustment for 2012

The most recent period for which energy statistics data are available is 2009-2011. When the figures for 2012 become available, the baseline will have to be adjusted if the average for 2009-2011 is significantly different from the average for 2010-2012. In order to obtain a baseline that is as close as possible to the actual average for 2010-2012, the Eurostat figures for 2010 and 2011 have been used in conjunction with an estimate for 2012 based on Eurostat and energy use trends in 2012 calculated by Statistics Netherlands (CBS). The 42% therefore corresponds to total cumulative energy savings of approximately 643 PJ final. The next section explains in more detail how the target of 482 PJ was derived from this.

2.5 Adjustments to the target based on Article 7(2) and (3)

The cumulative target is 42% and must be achieved through savings on end use. However, Article 7(2) provides scope to reduce the target or to achieve some of it in other ways. Paragraph 3 limits the total scope to one quarter of that 42%. The options arising from paragraph 2 include:

- A phased target in which the cumulative target is based on a progressive increase in the savings rate (2014, 2015: 1%; 2016, 2017: 1.25%; 2018, 2019 and 2020: 1.5%).
- A more restricted baseline which may exclude supplies to industry under the emissions trading system.
- The inclusion of energy savings achieved in energy transformation, distribution and transmission.
- The inclusion of energy savings achieved before 2014 but after 31 December 2008, known as 'early actions'.

The Netherlands has opted for a phased target and partial exclusion of ETS companies from the baseline for the target

For the Netherlands, these four categories add up to much more than the maximum of 25% permitted by paragraph 3. Therefore, the Netherlands has only used the options of phasing and (partial) exclusion of companies which fall under the ETS, up to the maximum of 25%. The

phasing option produces a reduction of 21%, and the partial exclusion of ETS companies accounts for the remaining 4%.

As this makes up the maximum scope of 25%, there is no reason to include early actions or savings in the supply sectors. Although the Netherlands has a considerable reservoir of early actions, they are not further quantified here.

Table 5: Differences in targets, final v primary

[PJ]	In primary terms	In final terms
Average annual supplies to end users, 2010-2012	2129	1532
Savings target 2014-2020 (31.5% of final consumption in 2010-2012)	671	482

After taking account of the 25% adjustments, a cumulative target of 31.5% remains. This corresponds to a cumulative saving of 482 PJ final.

Clauses relating to the target and the savings achieved are largely separate

The EED contains many (exclusion) clauses with regard to calculation of the target. Examples of this are the phased target, exclusion of the transport sector from the baseline, and restricting the baseline by excluding ETS companies. In practice, this often leads to confusion about which savings can and cannot be counted. However, the text of the EED makes it clear that these clauses only apply when defining the level of the target, and do not affect the way in which the target is reached. The transport sector therefore counts towards the savings results achieved, even though consumption by that sector does not count when defining the target.

Phasing

The phasing permitted by Article 7(2) only relates to calculation of the cumulative target. Applying phasing therefore means that a smaller number of PJs must be saved cumulatively in order to improve efficiency. The savings achieved by means of Dutch policy only have to produce this cumulative saving. Phasing of the process of achieving savings – the practical implementation of efficiency improvements – is therefore separate from the phasing used as the basis for the target.

Restricting the baseline through (partial) exclusion of sectors

The exclusion of entire sectors (transport) or parts of sectors (companies under the ETS) from the baseline for the target does not mean that savings in those sectors do not count. The impacts of Dutch [policy] in these sectors count towards achievement of the target, regardless of the choices made when determining the baseline for calculation of the target.

3. Expected policy impacts

3.1 Summary

The Netherlands has chosen to achieve the target defined in Article 7 by means of alternative policy instead of imposing an obligation on suppliers. It is expected that this alternative policy will deliver 387 to 562 PJ in cumulative savings during the period 2014-2020.

Of the expected policy impacts, 266 to 410 PJ will result from existing policy and 87 to 186 PJ from new policy arising from the recently concluded Energy Agreement.

Existing and new policy

This text box explains what is regarded as existing and new policy within the context of this report, and the status of that policy.

Existing policy

For existing policy, the decision-making process is complete and the formulation of the policy is clear. Existing policy may therefore – in exceptional cases – include policy that has yet to become effective, but in most cases it relates to existing regulations: obligations, existing taxes including planned increases in those taxes, etc.

New policy

New policy is, in all cases, policy which has been agreed by the negotiating parties in the Energy Agreement. The cabinet has also signed this Agreement. The precise formulation of this policy has yet to be determined. The policy intentions also vary in terms of the level of detail and concrete definition.

3.2 Defining the contribution of policy

The Netherlands has not chosen to introduce an obligation scheme but has used the option provided in Article 7(9) of achieving the objective by means of alternative policy measures. This does not affect the size of the target but does have implications for the way in which it is achieved and the way in which the savings are substantiated.

The Netherlands has opted for alternative policy instead of an obligation scheme

When determining the policy impacts in accordance with Article 7, the Netherlands has based its approach on the provisions of the Directive, and has therefore had to make specific choices with regard to its interpretation (see Annex D). The policy impacts have been calculated in a number of steps. Existing policy and new policy have been treated differently (see Annex B).

The Netherlands has based its assessment of existing policy on a recent estimate

The Netherlands has used the most recent estimate of energy use to calculate the impacts of *existing policy*. This is the 2012 update of the reference estimate (Verdonk & Wetzels, 2012). The *total efficiency improvement* in the period 2014 to 2020, in final terms, was calculated on the basis of this estimate. This efficiency improvement includes both autonomous impacts and impacts of European

and national policy. Where appropriate, the efficiency improvement calculated on the basis of the update was adjusted subsequently if new information made this necessary.

Within the efficiency improvement calculated in this way, a distinction was then made between savings which could be counted under the EED rules and savings which could not be counted. The distribution took account of the provisions in the text of the EED, including those relating to the overlap between policy measures, and additionality in relation to European policy.

Annex B provides a more detailed explanation of the approach taken with regard to the savings that can be included and the assumptions used. Annex I discusses the impacts that could be attributed to energy taxes, duties and other price incentives if a separate impact is calculated for them on the basis of elasticities.

Calculation of savings arising from existing policy

The expected efficiency improvement in the Netherlands is calculated as part of the reference estimates for energy and emissions, which were last updated in 2012.

Reference estimate

The reference estimate uses simulation models which contain extensive databases of energy-saving technologies and techniques. The models simulate the investment behaviour of players in the sectors, taking account of technology replacement cycles, energy prices including taxes, and relevant policy measures. The models consider the total package rather than the individual policy instruments. For example, for a combination of subsidies and energy taxes, the model considers the total impact on the cost-effectiveness of a technology or technique.

The total expected savings are calculated from expected changes in energy use compared with the changes with frozen efficiency. Afterwards, the component that can be attributed to Dutch policy is filtered out, in line with the provisions of the EED.

Price incentives

The Directive asks for the impacts of taxes on energy use to be listed separately. However, the reporting requirements relating to policy impacts specify policy impacts for packages of instruments which, in many cases, also include taxes. This makes it possible to deal with overlap in a more responsible way. In the Netherlands, energy taxation, duties and the supplement for the stimulation of sustainable energy (SDE) scheme are among the price incentives evaluated. Annex I of this report discusses the impact due to elasticities that could be included if the interaction with other factors is not taken into account.

As the analysis takes the total expected savings as its starting point, and does not aggregate the impacts of individual actions on a bottom-up basis, there is no double counting of policy impacts.

New policy is based on the Energy Agreement

Determining the impact of new policy

All the new policy forms part of the Energy Agreement (see Annex H). Its impacts are identified in a separate report (Londo, Boot, 2013), in which ECN and the Netherlands Environmental Assessment Agency (PBL) evaluated the Energy Agreement in terms of the additional impacts that can be expected. Given that all the agreed policy in the Energy Agreement is both additional and Dutch policy, the expected impacts are also, by definition, additional to existing policy – both Dutch and

European. The impacts can therefore be directly counted for the purposes of Article 7 and there is no need to undertake a separate assessment of which components of these savings can be counted for the purposes of the EED.

In a number of cases, the agreed policy arising from the Energy Agreement has only been defined in broad outline and has yet to be fleshed out; the uncertainties are therefore far greater than those for existing policy.

Table 6: Total expected savings, existing and new¹

	Min.	Average	Max.
Expected due to existing + new	387	473	562
<i>Of which</i>			
Savings due to existing policy	266	336	410
Savings due to new policy, Energy Agreement	87	137	186

Table 7: Total expected savings, distribution by sector²

	Min.	Average	Max.
Savings by households, existing and new	130	170	211
Savings by services, existing and new	32	82	136
Savings by industry, existing and new	108	166	222
Savings by agriculture, existing and new	12	16	21
Savings by transport, existing and new	34	40	46

Supplementary Energy Agreement ambition that does not yet form part of the expected savings

Supplementary ambitions

The energy-saving ambitions of the Energy Agreement go further than the maximum that can be achieved with the policy measures agreed to date. The Energy Agreement states that the parties concerned will need to supplement the total ambitions if the new policy does not appear to be adequate. Achieving these ambitions will provide greater certainty that the target defined in Article 7 of the EED will be met.

Concrete definition of these ambitions will enable their impacts to be counted under the EED. The additional savings that would be achieved for the purposes of the EED if all the ambitions of the Energy Agreement were realised have been calculated at between 60 and 189 PJ.

Descriptions of the sectors

The descriptions of the sectors which follow are restricted to a broad outline and include a subdivision of the sector if this is relevant to policy, an indication of the role of national policy versus European policy and autonomous savings, and a brief look at the main policy instruments. Annex A contains more detailed information about the savings impacts for the purposes of the EED by sub-sector and package of policy measures.

¹ The bandwidths cannot be added together. See text box on page 6.

² The bandwidths cannot be added together. See text box on page 6.

3.3 Built environment

Summary

The built environment sector consists of house-building and service sectors and includes both building-related and non-building-related energy use. The total estimated cumulative savings in the built environment as a result of Dutch policy in the period 2014-2020 are between 188 and 320 PJ. Existing policy will save 117-207 PJ on a cumulative basis, and new policy arising from the Energy Agreement 45-141 PJ.

Sector

The built environment consists of a number of sub-sectors in which different (packages of) policy instruments dominate. Annex C provides a detailed overview of sub-sectors, policy instruments and their estimated impact. In a number of cases, the underlying technologies and techniques are also described in more detail. The description here provides a broad outline only.

Breakdown of Dutch policy

Existing policy

The main existing national policy instruments in the built environment are:

- The EPC requirements for new buildings (house-building and services).
- Price incentives through energy taxation and the SDE supplements for financing of renewable energy generation (all sub-sectors, including non-building-related use).
- *Koepelconvenant* [Voluntary Umbrella Agreement] including the underlying agreements *Meer Met Minder* [More With Less], the *Lenteakkoord* [Spring Agreement] and the *Convenant Energiebesparing Sociale Huursector* [Voluntary Energy Saving Agreement for the Rented Sector].
- *Blok voor Blok* [Block by Block] programme.

New policy

- Agreement between the government and Association of Dutch Municipalities (VNG) on active support for municipalities with regard to local and regional energy saving and generation.
- The energy label as part of the information and awareness programme for housing consumers.
- Loan for energy-saving measures to be repaid via the energy bill.
- Revolving fund for energy savings in the owner-occupier and rental sectors.
- Integral solution aimed at reducing the burden on individual homeowners.
- Additional mortgage options for energy-related renovations to create highly energy-efficient homes.
- A specific and integrated approach to reducing the burden on Associations of Homeowners (VVE).
- EUR 400 million in subsidies available to landlords in the social rental sector.
- *Stroomversnelling* [rapid track] programme.
- Agreement with five housing corporations to renovate 111 000 existing homes to create zero electricity bill homes.
- Tighten up enforcement of the *Wet milieubeheer* [Environmental Management Act], targeted at both medium-sized and large commercial and social real estate with a pilot *EnergiePrestatieKeuring* [Energy Performance Inspection] and a centre of expertise.

Table 8: Cumulative energy savings – Built environment³

[PJ]	Min.	Average	Max.
Total savings, national policy	188	251	320
Existing policy	117	158	207
- Households (owner-occupiers and rental)	91	129	169
- Services sector	13	29	58
New policy	45	93	141
- Owner-occupier sector	10	10	10
- Social rental sector	19	31	42
- Services sector	6	53	99

Building-related energy use

The distinction between new buildings and existing buildings is important where policy is concerned. The EPC standards dominate in new buildings, whereas in existing buildings the policy picture is more diverse. House-building includes the private owner-occupier, private rental and social rental sub-sectors. Although the services sector is very diverse, it does not include any large sub-sectors which are relevant to policy. In general, national policy is far more important than European policy in terms of building-related energy use.

Non-building-related energy use

In addition to building-related energy use, energy use by appliances also falls within the built environment sector. European policy, such as the Ecodesign Directive, is generally more important than national policy in this area.

Virtually no autonomous savings

For many years the built environment has experienced intense policy pressure in the form of standards for new buildings and high price incentives. A major consequence of this is that virtually nothing happens autonomously nowadays. For example, there is very little savings potential that would be cost-effective without the high level of energy taxation. Furthermore, policy intervention is almost always necessary to tackle barriers other than cost, such as split incentives. An example of this is linking the maximum rent with the energy performance of rented housing.

3.4 Industry

Summary

The industry sector is very diverse and consists of both energy-intensive and energy-extensive companies. For the purposes of Article 7 of the EED, refineries are not included in the industry sector, and neither are savings resulting from cogeneration. The total cumulative savings in industry that can be attributed to Dutch policy in the period 2014-2020 are approximately 108-222 PJ. Existing policy will save 76-187 PJ on a cumulative basis, and new policy arising from the Energy Agreement 21-46 PJ.

Sector

The most important policy that is targeted at industry is differentiated on the basis of the size and energy-intensity of the companies concerned. The ETS/non-ETS dividing line is important here.

³ The bandwidths cannot be added together. See text box on page 6.

Breakdown of Dutch policy

Existing policy

- Businesses which are covered by the ETS can participate in the *MEE-convenant* (Long-term voluntary agreements on energy efficiency for ETS companies).
- Enterprises which are not covered by the ETS can participate in the *MJA3-convenant* (Long-term voluntary agreement on energy efficiency 2001-2020).
- Energy use by small and medium-sized companies is largely covered by the Environmental Management Act.
- Energy taxation applies to the whole of the industry sector. Because the marginal tariff decreases as the level of energy use increases and there are large differences in energy use between companies, there are also major differences in the resulting price incentives.
- The energy investment allowance (EIA) provides a net benefit of approximately 10% on investments in energy-saving measures.

The AgentschapNL [Netherlands Enterprise Agency] (RVO) is involved in monitoring the MEE and MJA-3 voluntary agreements. All measures that are undertaken under the voluntary agreements are registered. Of those measures, only the savings that are within the scope of the agreement count towards the EED; knock-on effects, purchase of sustainable [energy] or cogeneration do not count.

New policy arising from the Energy Agreement

- Improvements in the voluntary agreements with specific agreements for individual companies.
- Stricter enforcement of the Environmental Management Act.
- Companies which are not part of the ETS can participate in the *MJA3-convenant* (Long-term voluntary agreement on energy efficiency 2001-2020).

The policy relating to industry which arises from the Energy Agreement has yet to be defined. This applies in particular to improvements in the voluntary agreements. The text of the Energy Agreement refers to a number of concrete elements which can be considered when defining this policy. However, these elements are not included in the impacts expected here.

Table 9: Cumulative energy savings – Industry⁴

[PJ]	Min.	Average	Max.
Total savings, national policy	108	166	222
Existing policy	76	132	187
New policy	21	34	46
MEE	2	2	2
MJA3	1	1	1
Process enforcement, rest of industry and buildings	3	16	28
EIA savings	15	15	15

⁴ The bandwidths cannot be added together. See text box on page 6.

3.5 Agriculture

Summary

The horticulture sub-sector is particularly important in terms of energy use and energy-saving potential. It is relatively energy-intensive. In the Netherlands there is intensive cooperation between the sector, the government and research, which means that new technologies and techniques are implemented relatively quickly. The total cumulative savings in greenhouse horticulture which can be attributed to Dutch policy in the period 2014-2020 amount to 12-21 PJ. Existing policy saves 4-9 PJ on a cumulative basis, and new policy arising from the Energy Agreement saves 6-14 PJ.

Table 10: Cumulative energy savings – Greenhouse horticulture⁵

[PJ]	Min.	Average	Max.
Total savings, national policy	12	16	21
Existing policy	4	6	9
New policy	6	10	14

Sector

The level of energy use and energy savings in the rest of the agriculture sector are of limited relevance to the EED target.

Existing policy

In general, policy in the greenhouse horticulture sector is targeted primarily at reducing CO₂ emissions and the use of fossil energy. Whether this is achieved through energy savings or renewable energy is less important: the outcome depends on which technical options are most readily available. In this sector, too, most of the energy savings achieved cannot be attributed to individual policy instruments. Policy is aimed at developing energy-saving opportunities and creating the conditions under which these opportunities can be put into practice.

The most important policy instruments in greenhouse horticulture are:

- *Kas als Energiebron* [Greenhouse as an energy source], including the *Transitiepad teeltstrategiën* [Transition path for growing strategies]. These include options such as *Nieuwe Telen* [Ecocultivation] and better greenhouse insulation.
- The ceiling for the sector. Total emissions from greenhouse horticulture are limited, and if they are exceeded a charge is levied across the individual companies on the basis of the CO₂ price, in proportion to energy use.
- The Market Introduction of Energy Innovations (MEI) and Energy Saving Investment (IRE) schemes. These schemes offer a subsidy for energy-saving and renewable energy measures.

Greenhouse horticulture is very energy-intensive and, in that respect, it is comparable with energy-intensive industry. For those reasons, the energy taxation rates are lower, although this is balanced out by the imposition of emissions ceilings.

New policy

Improvements to the price incentive for CO₂ systems in greenhouse horticulture. If the sectoral ceiling is exceeded, a charge is now levied across the individual companies in proportion to energy use. The aim is to create a system in which the charge is levied on the basis of the extent to which a company contributes to the collective exceedance of the ceiling. The actual emissions per company are

⁵ The bandwidths cannot be added together. See text box on page 6.

compared with a benchmark value for individual companies. A minimum price incentive is also under consideration.

3.6 Transport

Summary

Although energy use in the transport sector is excluded from the baseline used to calculate the target, this does not apply to the policy impacts. The total cumulative savings in the transport sector that can be attributed to Dutch policy in the period 2014-2020 are estimated at 34-46 PJ. All of this relates to existing policy. The Energy Agreement does not propose any new policy for the transport sector.

Sector

Within the sector, the greatest policy impacts are achieved in relation to road traffic. Most of the savings in this area are policy-related. Historically, high duties play a major role, recently supplemented by tax incentives for fuel-efficient cars and the European vehicle standards.

Existing policy

Important national policy instruments in the transport sector are:

- Tax benefits for fuel-efficient cars. This includes a lower private motor vehicle and motorcycle tax (BPM) and a reduced additional tax liability for lease cars, depending on the car's energy label.
- Duties (recent and planned increases).
- Incentives for electric cars.
- Other policy (behaviour, modal split).

The extent to which the Dutch vehicle stock is more efficient than the European standards was considered when calculating the impact of Dutch policy on the efficiency of cars. Fiscal policy and duties have an important role to play here; the recently announced increases in duties are particularly relevant. It is expected that the existing levels of duty will have no further additional impact. There is also specific policy which is targeted at electric cars. Other policy has a minor impact and is designed primarily to influence behaviour and the modal split.

New policy

The Energy Agreement does not contain any specific policy commitments relating to the transport sector.

Table 11: Cumulative energy savings – Transport⁶

[PJ]	Min.	Average	Max.
Total savings, national policy	34	40	46
Existing policy	34	40	46
New policy	0	0	0

3.7 Additional ambitions of the Energy Agreement

The stated ambition of the Energy Agreement is to achieve 100 PJ of additional savings on an annual basis by 2020 – compared with the reference level achieved with established policy. This ambition is separate from meeting or not meeting the obligations arising from the EED but provides additional certainty that the objective defined in Article 7 will be attained.

⁶ The bandwidths cannot be added together. See text box on page 6.

The Energy Agreement contains a number of specific policy commitments. In many cases the details of how they will be achieved have not yet been defined. It is expected that this policy arising from the Energy Agreement will achieve savings of 22-60 PJ per year by 2020. This is still not enough to achieve the ambition of the Agreement in itself.

Nevertheless, in the Energy Agreement the parties concerned undertake to formulate supplementary policy with the aim of saving 100 PJ. The Energy Agreement, however, includes supplementary European policy in this 100 PJ, mainly through the additional standards relating to the transport sector. Of course these standards are European policy and therefore do not count towards the EED target. If the additional standards deliver 15 to 20 PJ by 2020, this means that in order to achieve 100 PJ by 2020 it will be necessary to save between 20 and 63 PJ in additional savings resulting from national policy on an annual basis. These will count towards the EED.

As this policy has yet to be formulated and will then need to be implemented, it is likely to be some time before it starts to yield results. Its contribution to the cumulative target will therefore be relatively limited. If this policy were in force from 2016, it is estimated that the additional contribution to the EED target could be between 60 and 189 PJ. This increases the likelihood that the Netherlands will meet the EED target as defined in Article 7.

References

Abf (2012): *SYSWOV ramingen woningvoorraadontwikkeling 1985-2030* [SYSWOV estimates of housing stock development 1985-2030]. Delft: ABF Research.

AgentschapNL (2012): *Persoonlijke communicatie tussen AgentschapNL en PBL* [Personal communication between AgentschapNL and PBL]. Utrecht/The Hague: AgentschapNL.

CE Delft (2012): *Onderzoek naar het energiebesparingseffect van gedifferentieerde energieprijzen* [Study of the energy-saving effect of differentiated energy prices]. Delft, February 2012.

CPB (1999): *NEMO: Netherlands Energy demand MOdel*. Research memorandum no 155, The Hague, June 1999.

Daniëls, B.W. & S. Kruitwagen (2010): *Referentieraming energie en emissies 2010-2020* [Reference estimate for energy and emissions, 2010-2020]. ECN-E--10-004, Petten/Bilthoven/The Hague: ECN/PBL.

Elzenga, H. & S. Kruitwagen (2012): *Ex-ante evaluatie van Green Deals Energie* [Ex-ante evaluation of Green Deals Energy]. The Hague: Planbureau voor de Leefomgeving.

Elzenga, H. (2011): *Briefrapport 'Effect van nieuw beleid voor verlaging van de broeikasgasemissies van de niet-ETS-sectoren'* [Brief report 'Impact of new policy to reduce greenhouse gas emissions from the non-ETS sectors']. 31 May 2011, reference 009/2011KLE HE/cc, The Hague/Bilthoven: Planbureau voor de Leefomgeving.

Hekkenberg, M.; H.M. Londo, S.M. Lensink (2013): *Toelichting inschatting korte-termijneffecten energieakkoord op hernieuwbare energie* [Information on the assessment of the short-term impact of the Energy Agreement on renewable energy]. ECN-E--13-044, September 2013.

Koelemeijer, R.; M. Verdonk, M.; A.W.N. van Dril, A.J. Seebregts (2013): *Uitgangspunten voor het referentiep pad bij de evaluatie van het SER-energieakkoord* [Starting points for the reference path in the evaluation of the SER Energy Agreement]. ECN-E--13-049, September 2013.

Londo, H.M.; P.A. Boot (2013): *Het Energieakkoord: wat gaat het betekenen? Inschatting van de gemaakte afspraken*. [The Energy Agreement: what will it mean? Assessment of the commitments made]. ECN-E--13-047, September 2013.

PBL & ECN (2011): *Effecten van het kabinetsbeleid voor milieu en klimaat. Verkenning voor de motie-Halsema*. [Effects of cabinet policy relating to the environment and climate. Study for the Halsema motion]. The Hague/Petten: PBL/ECN.

Tigchelaar, C., M. Menkveld (2013): *Achtergronddocument bij doorrekening SER Energieakkoord - sector Gebouwde omgeving* [Background document for evaluation of the SER Energy Agreement – built environment sector]. ECN-E--13-045, September 2013.

Velden, N.J.A. van der & P.X. Smit (2011): *Energiemonitor van de Nederlandse glastuinbouw*, [Energy monitor for the Dutch greenhouse horticulture sector], The Hague: LEI.

Verdonk, M. & B. Daniëls (2011): *Raming van broeikasgassen en luchtverontreinigende stoffen 2011-2015* [Estimate of greenhouse gases and air pollutants 2011-2015]. Petten/The Hague: ECN/PBL.

Verdonk, M. (2011): *Emissions and targets of greenhouse gases not included in the Emission Trading Scheme 2013-2020*. The Hague: Planbureau voor de Leefomgeving.

Visser, H. (2005): *The significance of climate change in the Netherlands. An analysis of historical and future trends (1901-2020) in weather conditions, weather extremes and temperature-related impacts*. RIVM-MNP / IMP. RIVM Report 550002007/2005.

Volkers, C.H. (2006): *NEV-Rekensysteem. Technische beschrijving* [NEV calculation system. Technical description]. Petten, ECN.

VROM (2000): *Uitvoeringsnota Klimaatbeleid deel II, Kamerstuk 26.603 nr. 28* [Climate policy implementation plan part II, Kamerstuk 26.603 no 28]. The Hague: Ministry of Housing, Spatial Planning and the Environment (VROM).

Wetzels, W. (2013): *Achtergronddocument bij doorrekening Energieakkoord-sectoren industrie en land- en tuinbouw* [Background document for evaluation of the SER Energy Agreement – industry, agriculture and horticulture sectors]. ECN-E--13-046, September 2013.

Annex A. Explanatory notes – calculation of the target

The Netherlands has chosen to formulate its savings target in final terms. This means final energy consumption by the end user sectors. The energy sector (including refineries), power stations and also a large percentage of energy usage for cogeneration by end users are not included.

Eurostat figures were used to calculate the baseline for consumption. In accordance with Article 7(1), the transport sector was not included in the baseline. Eurostat figures are available up to and including 2011. In order to determine average use for the period 2010-2012, consumption in 2012 was estimated using consumption trend figures from Statistics Netherlands (CBS). This approach gave a baseline of 1532 PJ, see **Table 12**. In accordance with Article 7(1), the savings target of 1.5% per year from 2014 to 2020 is 42% of 1532 PJ, or 643 PJ.

The options provided in Article 7(2)(a) and (b) were used to adjust the savings target. It was decided that the savings rate should be phased in accordance with Article 7(2)(a). This reduces the cumulative target for 2020 from 42% to 33.25%. If ETS companies were also excluded from the baseline, the savings target would fall by much more than the permitted maximum of 25%. By taking advantage of these two provisions, the target was reduced to 25% less than 643 PJ, giving 482 PJ by 2020.

Table 12: Baseline for calculation of the target

		Final energy consumption for energy purposes, Eurostat			Extrapolation based on CBS	Av. 2009-2011	Av. 2010-2011
		2009	2010	2011	2012		
All products [TJ]							
B_101800	Final Energy Consumption - Industry	538160	598937	593855		576984	
B_102000	Final Energy Consumption - Other sectors	939572	1031525	886426		952508	
Electricity [TJ]							
B_101800	Final Energy Consumption - Industry	130601	140648	140440		137230	
B_102000	Final Energy Consumption - Other sectors	237629	237845	240214		238563	
	EED consumption basis in final terms [PJ]	1478	1630	1480	1542	1529	1551
	Consumption from own generation	18	19	19		19	19
	Corrected for consumption from own generation					1511	1532

Annex B. Explanatory notes – calculation of policy impacts

This annex describes how the Netherlands has calculated its policy impacts for the purposes of Article 7 of the EED. It makes a number of general introductory points, then goes on to describe the approach adopted in relation to both established and new policy. The annex ends with a number of specific issues which the European Commission has requested should be included in the report required by Article 7. This is followed by a description of how the Dutch approach takes account of these specific issues. This section therefore discusses the technical details of the calculations made in more depth.

Compliance with the Directive

The policy impacts have been calculated in accordance with the text of the Directive. Where the text of the Directive was open to more than one interpretation, the Ministry of Economic Affairs decided which interpretation should take precedence when calculating the policy impacts. The Ministry of Economic Affairs regards the text of the Directive itself as legally binding, but not the more detailed explanation in the working paper. For a summary of the choices made by the Netherlands, see Annex D.

Calculations by ECN

The ECN has calculated the contribution of national policy to the target defined in Article 7, based on the choices made by the Ministry.

Definition of energy savings

The text of the EED does not offer a new definition of energy savings. Neither does it contain a detailed explanation of what may or may not be regarded as energy saving, although more specific information is provided in certain areas. As the EED is the successor to the ESD, amongst other legislation, for the purposes of Article 7 of the EED the Netherlands has used the scope and definition of savings provided in the ESD, except in cases where the text of the EED is different.

Policy packages instead of individual instruments

The Netherlands has presented the savings achieved for packages of policy measures for (sub-) sectors, e.g. construction of new homes. The EED asks for a description of individual policy measures but allows their impacts to be aggregated by (sub-) sector. This approach prevents double counting, as required by the EED.

Structure of the total policy impact

The approach used to calculate the savings impacts of existing policy is different from the approach used in relation to new policy. This is due to the sources available and the status of the various policy measures. The impacts of existing policy are derived from the 2012 update of the reference estimate, updated where necessary with information which has become available subsequently. The impacts of new policy are based on the evaluation of the SER Energy Agreement carried out by ECN and PBL. The section on specific issues describes the implementation route selected with regard to the aspects deemed/surveyed/scaled, overlap, additionality, phasing, lifetime of the savings, taxes and regional climatic variations.

Existing policy: Update to the reference estimate, integral calculation

The impacts of existing policy are based on the integral calculation of Dutch energy use for the 2012 update of the reference estimate. The *total* efficiency improvement in the period 2014 to 2020, in final terms, is calculated on the basis of this estimate.

Adjustments to savings impacts

Where appropriate, the efficiency improvement derived from the update is adjusted subsequently if new information makes this necessary. For agriculture a targeted inventory compiled by the Agricultural Economics Research Institute (LEI) was used (van der Velden, 2013), for the transport sector current data on the efficiency of new passenger cars sold in the Netherlands was used, and for industry the savings were adjusted on the basis of the current energy saving plans that must be submitted by companies that are affiliated to AgentschapNL [Netherlands Enterprise Agency (RVO)].

Calculation of energy use

Dutch energy use has been calculated using simulation models which contain extensive databases of energy-saving technologies and techniques (Volkers, 2006). The models simulate the investment behaviour of players in the sectors and take account of technology replacement cycles, energy prices including taxes, and relevant policy measures. The models consider the total policy package rather than the individual policy instruments. For example, for a combination of subsidies and energy taxes the model considers the total impact on the cost-effectiveness of a technology or technique. The energy savings reported by the models are calculated with reference to the frozen efficiency for 2013, the last year before the EED period.

Breakdown of policy impacts

The total efficiency improvement includes both autonomous impacts and impacts of European and national policy. Within the efficiency improvement calculated in this way, a distinction is then made between savings which may be counted in accordance with the EED and savings which cannot be counted. The choices made by the Ministry of Economic Affairs serve as the starting point. This distinction takes account of the provisions in the text of the EED, including those relating to the overlap between policy measures, and additionality over and above European policy. In the majority of cases by far, the savings impacts achieved are the result of combinations of policy instruments, including energy taxation and other price incentives. The sole purpose of this further breakdown of policy impacts is to separate the effects of national policy impacts from European policy impacts and autonomous developments.

New policy, Energy Agreement

All the new policy forms part of the Energy Agreement. In this Agreement employers, employees and NGOs have undertaken, amongst other things, to achieve an annual savings target of 100 PJ in final terms by 2020, and to introduce a number of specific policy instruments. ECN and PBL have evaluated these instruments in order to identify the expected additional impacts and costs. As all the policy agreed in the Energy Agreement is, by definition, both *additional* and *Dutch*, the expected impacts are also, by definition, additional to existing policy – both Dutch and European. The impacts can therefore be counted directly for the purposes of Article 7 and there is no need to undertake a separate assessment of which elements of these savings can be counted under the EED.

With regard to their underlying definition, the impacts of the policy arising from the Energy Agreement are comparable with the impacts of existing policy. In many cases the policy agreed in the Energy Agreement has only been identified in broad outline and has yet to be fleshed out, so the uncertainties are far greater than those for existing policy.

Uncertainty

The expected policy impacts are surrounded by uncertainty. This can range from uncertainty about economic growth and its distribution across the different sectors, to uncertainty about the precise definition, formulation and effectiveness of specific policy measures. In some cases, a bottom-up estimate of the effects of uncertainty is available, especially for the new policy measures arising from

the Energy Agreement. The uncertainty surrounding the total policy impacts has been estimated in each case.

Specific issues

The European Commission has asked Member States to describe how they are handling a number of specific aspects. This section explains how these aspects have been incorporated into the figures for the Netherlands, using the approach adopted above.

Deemed/surveyed/scaled

The methodology used results in *deemed savings*. *Surveyed* and *scaled savings* are not part of the approach; in most cases, the reference situation for the *deemed savings* is the *average* efficiency in a sector in 2013, and not a specific, uniform reference situation against which the savings are calculated. The models used apply a detailed vintage approach in which they record how often an energy-saving technology or technique is used with reference to a specific starting situation. This starting situation can vary greatly within a sector. Ultimately, however, the result is a calculation of the impacts compared with the average situation – the average house, office, industrial company, etc. – in 2013.

There are a limited number of exceptional cases: where national policy results in additional impacts over and above European standards, it is not necessary to look at the starting situation; instead a comparison with the European standard provides an adequate benchmark. This is the case, for example, with regard to the efficiency of cars, and for electrical appliances.

Preventing overlap

The models generate the total savings impact, in which all factors – prices, policy, autonomous developments – are combined to give a total savings impact. There is no overlap between impacts in this total figure. The cost-effectiveness of specific savings options, for example, is calculated using information about energy prices (including taxes), investment subsidies and taxation systems. Where standards override the cost-effectiveness considerations, this is included in the calculations.

The evaluation of the Energy Agreement is used where new policy is concerned. This evaluation provides details of the expected impacts in relation to established policy, for non-overlapping areas. In this case, too, there is no overlap with existing policy or with other new policy.

Additionality, demonstrable and material

The contribution of Dutch policy is separated out from the total savings impact. The EED is very clear and specific about making a distinction between national and European policy. Where standards are concerned, in all cases the difference between the national standard and the European standard is regarded as an additional impact of national policy. For price incentives, the difference between national taxes and minimum energy taxation and VAT rates, as defined in Directives 2003/96/EC of 27 October 2003, and 2006/112/EC of 28 November 2006, serves as the basis for allocation to national policy. In hybrid situations – for instance, tax benefits for fuel-efficient cars when a European CO₂ standard is in force – the difference between the expected savings in the Netherlands and the European standard is attributed to Dutch policy.

The EED provides far less clarity with regard to the distinction between policy impacts and autonomous developments. The general principle used here was that savings impacts can be included provided that policy has made a substantial contribution to achieving those savings. If that is the case, policy impacts are attributed to national policy – corrected, of course, for the level of policy coverage in a sector and overlap with other policy, e.g. European policy.

Phasing of savings

The simulation models produce a year-by-year energy saving structure. Phasing is therefore incorporated into the modelling results. In general, phasing of the impact of policy that has been established for some time is predominantly linear: the policy delivers a uniform increase in efficiency improvement each year to 2020. Of course, economic fluctuations in sectoral growth or the demand for energy services may lead to slight fluctuations in the rate of savings. A temporary dip in the number of new-build homes supplied may, for example, also cause a corresponding dip in the contribution to energy savings.

For recent or new policy, the situation is different. In many cases the policy needs some time to gain full momentum and become fully effective. With new policy, it also takes time to define and introduce the policy. The estimates take account of the effect of this on the phasing of savings. This is particularly relevant to new policy arising from the Energy Agreement, to the planned tightening of a number of standards, and to the price incentive resulting from the sustainable energy (SDE) supplement, which rises gradually towards 2020.

Taxes

The Netherlands will report the impact of taxes as part of a broader package of policy instruments. This has already taken account of any overlap between the impacts of taxes and other policy. The EED explicitly asks for a separate breakdown of the impacts which can be attributed to taxes as a result of elasticities. An explanation of the methodology used for taxes and the associated results appears in Annex I.

Lifetime of savings

The EED provides for different ways of handling the lifetime of the savings achieved. The method used to deal with the lifetime is important primarily when setting up and designing obligation schemes and therefore has little relevance to the Dutch situation.

The Netherlands has calculated what the EED calls 'real' savings using the 'straightforward' method. In this method, the reported savings are the same as the real savings achieved through use of an energy-saving technology or technique between the year of implementation and 2020. In (nearly) all cases, the lifetime of the savings achieved by means of Dutch policy is more than 7 years; therefore it is not necessary to take account of shorter lifetimes.

Climatic variations

The calculations do not take account of regional climatic variations within the Netherlands. These variations are relatively small and of no practical significance to the resulting savings. The expected savings assume an average year in terms of outdoor temperatures, with the average based on the increasing trend in average outdoor temperature according to Royal Netherlands Meteorological Institute (KNMI) climate scenarios (Visser, 2005). A particularly hot or cold year may lead to differences in actual savings.

Annex C. Policy impacts, totals and phasing

The tables in this annex show the expected cumulative savings and how they are structured. They cover totals for each sector, sub-sector and cluster of policy instruments, and the expected phasing in the structure of the total cumulative savings. Uncertainty bandwidths apply to the totals per cluster and per sector. These cannot be added together directly. For the most part, the uncertainties relating to established policy and new policy in the various sectors and policy clusters do not correlate with one another. This has been taken into account when calculating the totals using the least squares method.

Table 13: Saving on final consumption – Built environment [PJ]

Built environment [PJ]	Total 2014-2020	2014	2015	2016	2017	2018	2019	2020
Total, established and new policy, households and services	251	9	19	29	36	44	52	60
Established policy, households	129	4.8	9.6	14.5	18.7	22.8	27.0	31.3
- EPC 0.6	49	1.8	3.7	5.6	7.1	8.6	10.1	11.8
- Voluntary agreements, existing buildings	26	1.0	2.1	3.1	3.8	4.6	5.3	6.1
- Other policy, including energy taxation and SDE supplement	48	1.7	3.4	5.2	6.9	8.6	10.3	12.0
- Further than Ecodesign	6	0.2	0.4	0.6	0.8	1.0	1.3	1.5
Established policy, services	29	1.4	2.8	4.1	4.5	4.9	5.3	5.8
- EPC and other national policy	23	1.2	2.3	3.5	3.7	3.9	4.1	4.3
- Other policy	6	0.2	0.4	0.6	0.9	1.1	1.3	1.5
New policy, households and services	93	3.3	6.6	10.0	13.3	16.6	19.9	23.3
- Owner-occupier sector	10	0.4	0.7	1.1	1.4	1.8	2.1	2.5
- (Social) rental sector	30.5	1.1	2.2	3.3	4.4	5.4	6.5	7.6
- Social and other real estate	52.5	1.9	3.8	5.6	7.5	9.4	11.3	13.1

Table 14: Saving on final consumption 2020 – Industry [PJ]

Industry [PJ]	Cumulative 2014-2020		2014	2015	2016	2017	2018	2019	2020
	Low	High							
Total, established and new policy	108	222	5	11	17	24	30	36	43
Existing policy									
- Combined impact of existing policy	76	187	5	9	14	19	24	28	33
New policy	21	46	0.0	1.4	3.0	4.7	6.4	8.1	9.8
- Energy Investment Allowance (EIA)	15	15	0	0.7	1.5	2.2	2.9	3.7	4.4
- Long-term voluntary agreement on energy efficiency, ETS companies (MEE)	2	2	0	0.1	0.2	0.2	0.3	0.4	0.5
- Enforcement, MJA3	1	1	0	0	0.1	0.1	0.2	0.2	0.3
- Enforcement, other industry	1	7	0	0	0.3	0.5	0.8	1.0	1.3
- Enforcement, building-related consumption, industry	2	21	0	0.6	1.1	1.7	2.2	2.8	3.3

Table 15: Saving on final consumption – Agriculture and horticulture [PJ]

Agriculture and horticulture [PJ]	Cumulative 2014-2020		2014	2015	2016	2017	2018	2019	2020
	Low	High							
Total, existing and new policy	11.6	20.9	0.1	1.3	1.7	2.2	2.7	3.6	4.6
Existing policy	4.0	8.7	0.1	0.2	0.4	0.6	1.0	1.6	2.4
- Direct use of solar heat	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.1
- LED lighting	0.8	2.4	0.0	0.1	0.1	0.2	0.3	0.4	0.6
- Avoidance of summer heating	1.3	2.7	0.0	0.1	0.1	0.2	0.3	0.4	0.7
- <i>Het Nieuwe Telen</i> [Ecocultivation]	1.4	2.8	0.0	0.1	0.1	0.2	0.3	0.5	0.8
- Better insulation	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.1
New policy									
- Private system, greenhouse horticulture	6.0	14.0	0	1.1	1.3	1.6	1.8	2.0	2.2

Table 16: Savings in final terms – Transport [PJ]

Transport [PJ]	Cumulative 2014-2020		2014	2015	2016	2017	2018	2019	2020
	Min	Max	Averages						
Established policy	33	46	1	2	3	5	7	9	12
Construction of loading docks for inland waterway transport	0.4	0.4	0.01	0.03	0.04	0.06	0.07	0.09	0.10
Increase in duty on diesel by 3 ct./l in 2014	2.8	6	0.16	0.31	0.47	0.63	0.79	0.94	1.10
Increase in duty on LPG by 7 ct./l in 2014	0.2	0.52	0.01	0.03	0.04	0.05	0.06	0.08	0.09
Electric cars	5.8	8.3					0.71	2.13	4.25
Modal split in freight traffic through port policy	1.2	1.6	0.05	0.10	0.15	0.20	0.25	0.30	0.35
Electric bicycles with 10% car replacement (or autonomous)	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Continuation of more fuel-efficient driving among new drivers	2.8	5.2	0.14	0.29	0.43	0.57	0.71	0.86	1.00
Continuation of incentives for fuel-efficient cars	16	28	0.79	1.57	2.36	3.14	3.93	4.71	5.50

Annex D. Choices and scope for interpretation in the EED

This annex contains a brief summary of all the choices that the Netherlands has made in relation to the options offered by the EED and the interpretation of the Directive.

The options relate primarily to the choice of target, and interpretation primarily to the way in which policy impacts can be counted. In all cases, the Ministry of Economic Affairs has made these choices. Moreover, where the text of the Directive was open to more than one interpretation, the Dutch government decided which interpretation should take precedence when calculating the policy impacts. The Dutch government regards the text of the Directive itself as legally binding, but not the more detailed explanation in the working paper. ECN has calculated the corresponding target and policy impacts on the basis of the choices made.

Table 17: Summary of Dutch choices in relation to the EED

Choice	Explanation
Choices relating to the target	
Transport not included in the baseline	Article 7(1) allows the transport sector to be excluded from the baseline for the savings target. This is separate from the inclusion of policy impacts in the transport sector.
Phased target	Article 7(2) allows the cumulative target to be based on a phased acceleration of the efficiency improvement rate: 1% in 2014 and 2015, 1.25 % in 2016 and 2017, and 1.5% in 2018, 2019 and 2020. This only has consequences for the cumulative target, and not for the actual phasing of the savings rate through policy impacts.
Partial exclusion of ETS companies	Article 7(2) allows ETS companies to be fully or partially excluded from the baseline used to calculate the target. This is separate from the inclusion of policy impacts in ETS companies.
Maximum use of the 25% scope provided in Article 7(2) and (3).	The Netherlands has taken advantage of the maximum scope of 25% offered by Article 7(3) by introducing a phased target and partially excluding ETS companies, as permitted by Article 7(2).
No early actions and savings in the supply sectors	As the maximum scope of 25% has already been accounted for in the phased target and partial exclusion of ETS companies, the Netherlands has not used the option of including early actions and savings in the supply sectors.
Target in final terms	The Netherlands has opted for a target in final terms, not in primary terms. As this means that both the target and the policy impacts that can be included are smaller in terms of PJs, this has no significant impact on the ambition level for the target.
Baseline based on Eurostat, corrected for own generation of renewables	The Netherlands has based its calculation of the target on the Eurostat categories identified by the EED, corrected for own generation of renewable energy.

Choices relating to policy impacts	
Policy packages instead of individual instruments	The Netherlands has presented the savings for non-overlapping packages of policy instruments rather than for individual policy instruments. This prevents double counting of impacts. The consequence is that the individual impacts of taxes, for instance, are not presented. However, the report does present savings that can be attributed to taxes on the basis of elasticities, without correction for overlap.
Deemed savings	The savings use the average efficiency in 2013 as the reference situation. This average is calculated as the result of the underlying variation in starting situations in which an energy-saving technology or technique is applied. In new-build situations or for replacement of appliances or cars, the average characteristics of the existing buildings/technologies are used as the reference for the calculated saving.
Impact of taxes, corrected for the implementation period	The EED states that the impacts of taxes must be calculated on the basis of elasticities. In doing this, the Netherlands has taken account of the implementation period: the time that a sector needs to adapt fully to a price stimulus. As a result, only part of the impact of a tax falls within the period 2014-2020. Therefore, the impacts of a tax before 2014 or after 2020 are not included.
Distinction between the impacts of Dutch and European policy	In relation to standards, the difference between the national standard and the European standard is regarded as an additional impact of national policy in every case. In the case of price incentives, the difference between the national taxes and the minimum energy taxation values from Directive xxx serves as the basis for allocation. In hybrid situations – e.g. tax benefits for fuel-efficient cars – the difference between the expected savings in the Netherlands and the European standard is attributed to Dutch policy. Where Europe requires Member States to have national policy but does not stipulate how it should be implemented, the full impacts of the national policy are included.
Use of the definition of savings in the ESD	The EED is the successor to the Energy Service Directive (ESD), inter alia. The Netherlands has therefore adopted the scope and definition of energy savings from the ESD, except in cases where the EED expressly provides otherwise. For this reason, the Netherlands has, for example, counted small-scale renewables generated by consumers for the purposes of the EED.
Additionality	The EED does not precisely define the criteria that apply when distinguishing policy impacts from autonomous developments. The approach taken by the Netherlands is therefore as follows: if a combination of policy instruments has a significant influence on savings in a sector, all the savings are included for that portion of the sector to which the policy applies. In the case of voluntary agreements, for example, only savings that are monitored among parties to the agreement are included, and not savings achieved by other companies in the sector, even though a voluntary agreement can also have knock-on effects in those areas.
Intermediate periods for reporting of savings	The EED asks Member States to choose intermediate periods for reporting savings. Here the Netherlands will follow the arrangements set out in the Energy Agreement, which states that the progress of savings and commitments will be evaluated in 2016, and that additional commitments will then be made if necessary.

Annex E. Monitoring

This annex explains how the Netherlands will carry out monitoring, control and verification (MCV) of energy savings within the context of the EED, in particular Article 7.

Responsible authority

The Ministry of Economic Affairs, Agriculture and Innovation is the coordinating ministry for MCV, although supporting tasks will be outsourced (AgentschapNL [Netherlands Enterprise Agency (RVO))). In addition, existing institutes such as the Agricultural Economics Research Institute (LEI) (for horticulture), Netherlands Environmental Assessment Agency (PBL) (for trends in CO₂ emissions) and Statistics Netherlands (CBS) (for data on sustainable energy production) will also have a monitoring role. The parties to the recently concluded Energy Agreement will also have a role in monitoring the energy-saving measures that are agreed in that Agreement.

Approach and results

The MCV system will deliver the data requested by the EED as specified in Annex C, using the approach described in Annex B and Annex E. For historical years, this relates to the total impacts per sector, if possible broken down by specific policy measure. For future years, the savings will be broken down by existing policy and proposed policy.

In both cases, ECN modelling instruments will be used to calculate consumption and savings for the various consumer sectors. The results for historical years are based on monitoring data gathered by other parties.

Annex F. Description of the basic approach

When calculating the savings resulting from established policy, the Netherlands has used the 2012 update of the 2010 reference estimate, corrected where necessary to take account of new developments and data since 2012. The update is also the background against which the additional effects of the policy agreed in the Energy Agreement are calculated. This annex provides a very brief outline of the general principles used and refers to sources which provide more comprehensive information.

Economy

The estimate assumes long-term structural growth, in which expected developments in the workforce and labour productivity are the key factors in determining the growth figure. In the shorter term, economic impacts are taken into account. As the 2012 update has been used, the figures do not reflect the latest economic forecasts.

Demographics

The estimate bases its population development calculations on the mean forecast by the *Centraal Bureau voor de Statistiek* [Statistics Netherlands] (CBS). Population growth is one of the factors that are directly relevant to demand for housing, education and care, and indirectly relevant, via the labour potential, to the economy.

Energy prices

The estimate uses the fuel price projections from the IEA World Energy Outlook (WEO). The update is based on the WEO 2011. Electricity prices are based on these fuel prices in conjunction with own calculations which take account of developments on the North-West European electricity market.

Policy

The update was calculated for a variant with established policy and a variant with new policy. Only the variant with established policy has been used for the purposes of the EED because the new policy that was assumed at the time has been replaced by the Energy Agreement. Formal decision-making in relation to established policy is complete and there is sufficient clarity about the formulation of the policy to make it possible to judge its impacts.

Annex G. List of policy instruments

The table in this annex provides a comprehensive overview of policy measures which are relevant to energy use and generation. The table covers both European and Dutch policy instruments and indicates which instruments count – in full or in part – for the purposes of the EED.

Some of the measures are directly targeted at energy saving while others contain energy saving among other things or have secondary impacts on energy saving. The table also shows which policy measures arise from the Energy Agreement.

Table 18: Overview of policy instruments

Sector	Measure	Status, September 2013		Counts towards EED	Arises from Energy Agreement
		Established policy	Proposed policy		
General	VAMIL/MIA scheme	X		X	
General	EIA scheme	X		X (+HE)	
General	Climate voluntary agreement with provinces and municipalities	X			
General	SLOK scheme	X			
General	National Heating Expertise Centre	X			
General	Innovation agenda	Stopped			
General	European CO ₂ emissions trading (ETS)	X			
General	Energy taxation	X		X	
General	Green Deals	X	X (new deals)	X	
Traffic	Biofuels in Road Transport Decree	Stopped			
Traffic	Renewable Energy for Transport Decree (successor to the Biofuels in Road Transport Decree)	X			
Traffic	Renewable Energy Directive	X			
Traffic	Amended Fuel Quality Directive (98/70/EC)	X			
Traffic	Tendering scheme for innovative biofuels	Stopped			
Traffic	Subsidy programme for filling stations with alternative fuels	X		X	
Traffic	Market introduction, driving on natural gas	Stopped			
Traffic	Greening of the tax system (in accordance with the <i>Belastingplan</i> [Tax Plan] 2008 and 2009)	X		X	

Traffic	Greening of the tax system (in accordance with the <i>Belastingplan</i> [Tax Plan] 2010)	X		X	
Traffic	Greening of the tax system (in accordance with the <i>Belastingplan</i> [Tax Plan] 2011)	X		X	
Traffic	Greening of the tax system (in accordance with the <i>Belastingplan</i> [Tax Plan] 2012, including implementation of the 'Autobrief' Motor Vehicles Memorandum)	X		X	
Traffic	Road pricing per kilometre	Stopped			
Traffic	EU standard on CO ₂ emissions from new passenger cars	X (130 g/km in 2015)	X (95 g/km in 2020)		
Traffic	Regulation on rolling resistance of car tyres (EC/661/2009)	X			
Traffic	EU standard on CO ₂ emissions from new vans	X (175 g/km in 2017)	X (147 g/km in 2020)		
Traffic	Sustainable procurement policy	X		X	
Traffic	Sustainable mobility pilot projects (electric transport)	X		X	
Traffic	Sustainable mobility pilot projects (hydrogen and other)	X		X	
Traffic	Sustainable logistics programme	X		X	
Traffic	Tendering scheme for innovative buses	Stopped			
Traffic	<i>Het Nieuwe Rijden</i> [New Driving] (phases 1 to 3)			X	
Traffic	<i>Het Nieuwe Rijden</i> [New Driving] (phase 4)	Stopped			
Traffic	<i>Voortvarend Besparen</i> [Full sail ahead with savings]	Stopped			
Traffic	Incentives for bicycle usage	Stopped	Stopped		
Traffic	<i>Platform slim werken slim reizen</i> [Smart work, smart travel platform]	X			
Traffic	Long-term agreements on energy efficiency NS	X		X	
Traffic	Sector voluntary agreement, traffic and transport: <i>Duurzaamheid in Beweging</i> [Sustainability in motion]	X			
Traffic	130 km/h		X		
Traffic	EEDI/SEEMP for ships	X			
Traffic	<i>Slim Reisbudget</i> [Smart travel budget]		X		
Industry	Long-term agreement on energy efficiency in ETS companies (MEE)	X		X	
Industry	<i>Benchmarking Convenant</i> [Benchmarking voluntary agreement]			X	
Industry	Long-term agreements on energy efficiency	X (MJA3)		X	

Industry	N ₂ O, nitric acid industry under ETS	X			
Industry	Enforcement of Environmental Management Act for processes in the rest of industry and building-related usage		X	X	EA
Industry	Enforcement of the Environmental Management Act in MJA3 companies		X	X	EA
Industry	Company-specific agreements, MEE companies		X	X	EA
Industry	Maintain energy investment allowance (EIA) for energy saving		X	X	EA
Energy	Ecodesign Directive	X	X		
Energy	Energy labelling	X	X (expansion)		
Energy	Coal voluntary agreement				
Energy	MEP (Environmental quality of electricity production) scheme				
Energy	SDE (Stimulation of sustainable electricity production) scheme				
Energy	SDE+ scheme	X		X (SDE supplement for users)	
Energy	Congestion management		X		
Energy	CCS	X (demonstration projects at Buggenum, K12, predecessor of ROAD)	X (ROAD, Pegasus, Air Liquide demonstration projects)		
Energy	Subsidy for heat infrastructure (cogeneration)				
Energy	Safety net scheme, cogeneration				
Agriculture and horticulture	Voluntary agreement (or innovation and action programme) <i>Schone en Zuinige Agrosectoren</i> [Clean and efficient agri-sectors]	X		X	
Agriculture and horticulture	Innovation contracts		X	X	
Greenhouse horticulture	GLAMI (Greenhouse horticulture and environment) voluntary agreement	Stopped			
Greenhouse horticulture	Continuation of <i>Kas als Energiebron</i> [Greenhouse as energy source] agreements	X		X	
Greenhouse horticulture	Proof-of-principle (part of Greenhouse as Energy Source agreements)	X		X	

Greenhouse horticulture	<i>Marktintroductie energieinnovaties</i> [Market introduction of energy innovations] (MEI) scheme		X	X	
Greenhouse horticulture	<i>Investerings in energiebesparing</i> [Investment in energy saving] (IRE) scheme		X	X	
Greenhouse horticulture	<i>Energienetwerken</i> [Energy networks] scheme				
Greenhouse horticulture	Guarantee facility for geothermal heat	X	X (optimisation)		
Greenhouse horticulture	Higher price incentive, CO ₂ sector system		X	X	EA
Agriculture and horticulture	Annual work programmes, small sectors	X		X	
Agriculture and horticulture	<i>Schoon en Zuinig</i> [Clean and efficient] demonstration projects	X		X	
Agriculture and horticulture	<i>Samenwerken bij Innovatie</i> [Collaborating on Innovation] innovation programme (including <i>Nieuwe Uitdagingen</i> [New Challenges])	X			
Agriculture and horticulture	Biobased Economy innovation programme	X (Innovation contract, Biobased Economy)			
Agriculture and horticulture	Small Business Innovation Research Programme	X			
Agriculture and horticulture	<i>Boerenklimaat</i> [Farming climate] scheme	X			
Agriculture and horticulture	<i>Unieke Kansen</i> [Unique Opportunities] programme	Stopped			
Agriculture and horticulture	Best practice networks subsidy scheme	X			
Agriculture and horticulture	Environmentally friendly actions subsidy scheme	X			
Built environment	Energy performance standards and <i>Lenteakkoord</i> [Spring Agreement]	X (EPC of 0.6 for homes)	X (further tightening to 0.4 in 2015) X (tightening up of non-residential construction 50% in 2015)	X	
Built environment	<i>Rijksgebouwendienst</i> [Government Buildings Agency] to lead by example	X		X	

Built environment	<i>Meer met Minder</i> [More with Less] voluntary agreement	X (no more non-residential construction)		X	
Built environment	Energy saving subsidy from crisis package	Stopped			
Built environment	<i>Maatwerkadvies</i> [Tailor-made advisory services] subsidy	Stopped			
Built environment	<i>Meer met Minder</i> [More with less] incentive premium	Stopped			
Built environment	Green projects scheme	X		X	
Built environment	Guarantee of energy saving credit	Stopped			
Built environment	Reduction in VAT on insulation	X		X	
Built environment	Subsidy on HR++ glass	Stopped			
Built environment	<i>Duurzame warmte</i> [Sustainable heat] subsidy scheme	Stopped			
Built environment	Voluntary agreement with housing corporations	X		X	
Built environment	Changes to the <i>Woningwaarderingstelsel</i> [house rating system]	X		X	
Built environment	Enforcement of Environmental Management Act	X		X	
Built environment	<i>Blok-voor-Blok</i> [Block by Block] approach	X		X	
Built environment	Revolving funds and supplementary measures		X	X	EA
Built environment	Tightening/concrete formulation of commitments, voluntary agreement on rent		X	X	EA
Built environment	EUR 400 million subsidy for housing corporations		X	X	EA
Built environment	Tighten up enforcement of Environmental Management Act (lists of measures, centre of expertise, pilot energy performance inspection, prioritisation of execution services)		X	X	EA

Annex H. *Energieakkoord* [Energy Agreement]

Background

In 2013 employers, employees and NGOs, under the direction of the *Sociaal-Economische Raad* [Social and Economic Council of the Netherlands] (SER), conducted negotiations with the aim of establishing an *Energieakkoord* [Energy Agreement] which would provide continuity of energy policy over a longer period and provide an additional stimulus for the Dutch economy. The result of these negotiations appeared in September 2013. The Dutch government has taken the policy agreed in the Energy Agreement as the starting point for new policy. The Agreement therefore helps to achieve the target defined in Article 7 of the EED.

This annex provides brief background information about the ambitions, policy outcomes, expected impacts and safeguards of the Energy Agreement.

Energy saving ambitions

The ambitions of the Energy Agreement include achieving additional energy savings of 100 PJ in final terms per year by 2020, compared with established policy. The Agreement includes the impacts of new European policy for the transport sector in this 100 PJ.

Policy outcomes

The parties to the Agreement have agreed on a number of policy instruments for energy saving. In addition, the European target of 14% renewables is also addressed in the form of policy. This latter area is also important to energy saving because the sustainable energy (SDE) supplement which is used to provide financial support for renewable energy also provides an additional price-related incentive to save energy.

Expected impacts for the purposes of the EED

ECN and the *PlanBureau voor de Leefomgeving* [Netherlands Environmental Assessment Agency] (PBL) have evaluated the impacts of the policy instruments agreed. For policy targeted at savings, the impact is estimated in accordance with the ambitions of the Agreement (impact on annual final consumption in 2020), but also in accordance with the EED target (impact on cumulative consumption in 2014-2020).

Phasing of the policy is therefore taken into account with regard to the EED target. The policy arising from the Energy Agreement is new and therefore, in many cases, has only been defined in broad outline. Clarification of the details and implementation will take some time and, in a number of cases, the parties concerned will have to conduct further negotiations about the details. Phasing is therefore particularly important in this area. The status of the policy also brings additional uncertainties. The bandwidth for the estimated impacts is therefore large.

Safeguards

In the Agreement the parties also decided to establish a system of safeguards. Progress in defining and implementing policy will be monitored and the impacts will be tested against the ambitions. If there is a risk that the ambitions will not be achieved, the parties have undertaken to adopt additional policy which must make it possible to meet the ambitions. 2016 is an important testing point for this.

In order to ensure that the target is reached, a committee has been established to evaluate progress on a two-yearly basis and formulate supplementary measures if necessary. These arrangements will ensure that the current uncertainty surrounding the impacts of measures does not translate into a failure to meet the target.

Annex I. Calculating the impact of energy taxation

Use of elasticities

The elasticities in energy use when energy prices change are used as the basis for calculating the impacts of energy taxation on energy use. The elasticities for different energy sources and sectors are available in the literature (CE Delft, 2012; CPB, 1999).

Short and long term

The impacts of price changes can be divided into short- and long-term impacts. Changes in behaviour are a short-term impact; long-term impacts occur when appliances are replaced.

Minimum values for taxes

When attributing the impacts of energy taxation, only the percentage of energy taxation and VAT that is over and above the minimum rate specified in European legislation (Directives 2003/96/EC of 27 October 2003 and 2006/112/EC of 28 November 2006) is included.

Furthermore, only the impacts which fall within the period from 2014 to 2020 are included.

Calculating the impacts in the period 2014-2020

The impact of energy price increases on behaviour decreases over time. The impact on appliances and installations takes some time to reach its full effect. Therefore, it is possible that measures that were introduced before 2014 may still have an impact during the period 2014-2020. This has been taken into account in the calculations. The impacts of increases in energy taxation during the period 2014 to 2020, and of increases in energy taxation before 2014 are attributed to the impact of national policy provided that they have an impact during this period.

Table 19 shows the impacts of national policy that are attributed to energy taxation.

Table 19: Impact of changes in energy taxation on energy consumption. The most applicable integration periods per sector are shown in bold.

Sector	Elasticity		Consumption 2011 [PJfin]	Minimum rate, EU [cent/kWh] or [cent/m ³] or [ct/litre]	Integration period [year]	Saving [PJ final cumulative]
	Short term	Long term				
Households, electricity	-0.15	-0.25	85	0.1	10	11
Households, natural gas	-0.1	-0.2	305	1.05	20	35
Trade, services and government (HDO), electricity	-0.1	-0.22	117	0.05	10	3
Trade, services and government (HDO), natural gas	-0.1	-0.23	168	0.525	20	17
Industry, electricity	-0.03	-0.1	123	0.05	20	0
Industry, natural gas	-0.03	-0.15	231	0.525	20	2
Ag & hort, electricity	-0.05	-0.1	34	0.05	15	1
Ag & hort, natural gas	-0.05	-0.23	151	1.05	15	4
Transport, diesel	-0.05	-0.4	287	33	10	27
Transport, petrol	-0.05	-0.4	188	35.9	10	7

Annex J. Equivalence with obligation schemes

The Netherlands has opted to implement Article 7 by means of alternative policy. This annex discusses the equivalence of Dutch policy and the expected policy impacts under an obligation scheme.

PJs versus certificates

Certificates

In obligation schemes, a certificate is awarded for a specified amount of energy savings. The use or sale of a technology/technique or energy-saving measure is then worth a certain number of certificates. The savings achieved are measured on the basis of the number of certificates presented. The relationship between actual savings and the number of certificates is therefore very indirect.

For instance, an energy-efficient lamp is worth a fixed number of certificates, but the savings actually achieved will vary greatly depending on the conditions in which the lamp is used and the behaviour of the user. A lamp that has been sold but stays in the box for a number of years may earn certificates but does not produce any savings. Another example is the combined use of savings measures, such as the combined use of wall, roof, floor and glass insulation and an energy-efficient boiler. In this case, the combined saving impact is (much) smaller than the standard values which apply to the individual components. A certificate is therefore only a proxy for the energy improvement associated with it and can, in many cases, deliver an overestimate of the energy savings achieved.

Dutch approach

The Dutch approach is based on the efficiency improvement actually achieved, i.e. the difference between the changes in an energy service delivered or a value that is indicative of this, and the actual change in energy use. It considers the impacts of use versus sale and the diminishing additional impacts when combinations of measures are applied. As a result, the difference between the expected and monitored savings, and the savings that have actually occurred is likely to be smaller.

Total number of PJs saved and uncertainties

Apart from the difference between PJs and certificates, the total number of cumulative PJs that the Netherlands expects to save is the same as the level that would be achieved with an obligation target.

Automatic compensation in obligation schemes

An important difference is that well-designed obligation schemes provide automatic compensation if implementing savings proves to be harder, slower and more difficult than expected. In such cases, the certificate price increases and energy-saving becomes more attractive.

Processes to safeguard Dutch policy

Alternative policy that is specifically targeted at sub-sectors does not include these automatic correction mechanisms. However, the Netherlands provides alternative safeguards: the Energy Agreement, for example, contains commitments to implement additional policy if the agreed measures fail to reach the targets (see Annex H).

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