Second National Energy Efficiency Action Plan for the Netherlands

30 June 2011

Foreword

This second National Energy Efficiency Action Plan for the Netherlands was drafted as part of the obligation to report to the European Commission under the Directive on energy end-use efficiency and energy services (2006/32/EC), abbreviated here to the ESD, and the recast Directive on the energy performance of buildings (2010/31/EU), abbreviated here to the EPBD.

This Action Plan contains a description of the measures to promote energy saving in the Netherlands, a calculation of the savings achieved and expected in the period 2007-2010 and other reporting obligations arising from the ESD and EPBD.

The preparation of this Action Plan was overseen by the Minster of Economic Affairs, Agriculture and Innovation and the Minister of the Interior and Kingdom Relations, with input from the Ministry of Infrastructure and the Environment. The Minister of the Interior and Kingdom Relations is responsible for the reporting under the Directive on the energy performance of buildings contained in paragraphs 1.3.2, 3.5, 3.6 and Annex VI. Calculations were produced and explained by NL Agency (bottom-up) and the Energy Research Centre of the Netherlands (ECN) (top-down).

Contents

1 INTRODUCTION

1.1 Main parts of the second NEEAP

The Energy Services Directive obliges Member States to submit the Second National Energy Efficiency Action Plan (NEEAP) to the Commission by 30 June 2011. The second NEEAP contains a description of measures to improve energy efficiency and an evaluation of the measures from the first NEEAP. The first NEEAP was submitted in 2007.

The second NEEAP was drawn up in accordance with the reporting model established by the European Commission for the reporting of legal obligations. In this second NEEAP, the Netherlands also reports on the recast Directive on the energy performance of buildings (2010/31/EU, referred to here as the recast EPBD). The Commission included this option in the model for the second NEEAP.

The following reports are presented to the European Commission on the basis of the recast EPBD:

1. National Plan for zero-energy buildings (Article 9 of the recast EPBD). This National Plan is described in paragraph 3.5
2. A list of fiscal and financial measures to promote energy saving in buildings (Article 10 of the recast EPBD). This report can be found in Annex III.2 Built environment.
3. Inspection of installations (Article 14 and 15 of the recast EPBD). This report can be found in paragraph 3.6.

Some aspects of the NEEAP which were open to interpretation have been clarified since the first NEEAP was drawn up. In the first NEEAP the Netherlands opted for a conservative definition of the reported saving. As a consequence of this, the first Action Plan did not report autonomous savings and excluded all consumption of companies falling within the scope of the ETS. At the Energy Demand Management Committee Meeting on 9 April 2008 it was decided that all savings, in other words both autonomous savings and savings arising from policy measures, could be included when determining the saving. Consequently, caution should be used when drawing comparisons between the saving in the current and previous reports.

The actual (2010) and expected (2016) savings in the final energy consumption falling within the scope of the ESD are determined in two different ways. The total ESD saving for the Netherlands as a whole and per sector is determined on the basis of national statistics and evaluation models. The savings for selected measures are then specified in more detail by bottom-up monitoring, which allows the savings to be linked more directly to policy measures. The measures monitored by the bottom-up method account for a large proportion of the actual total savings, considerably larger than the 30% of total savings to be explained by bottom-up monitoring specified in the ESD. The

total results achieved are shown in paragraphs 1.3.1 and 2.1. Paragraph 2.3 shows the results for 2010 and the expectations for 2016 per sector both from a top-down and a bottom-up perspective.

1.2 National energy saving framework

Energy saving is important, not only for the increased sustainability of the energy supply, but certainly also for the competitiveness of Dutch enterprise and the buying power of the consumer. The Cabinet's aim is therefore to achieve the objective (20% reduction in greenhouse gases and 14% renewable energy in 2020) by implementing energy saving cost-effectively. Energy saving is an economically-attractive means of reducing CO_2 emissions. The policy is designed to help get potential economically-effective investments off the ground. The government is creating the basic conditions for this. The aims of the Cabinet's Green Deal also include energy saving and the removal of any obstacles to the realisation of the measures. Existing energy saving policy will be continued and, where necessary, modified so that it makes the best possible contribution to a good investment climate for energy saving measures.

This NEEAP contains a description of the measures for improving energy-efficiency in the Netherlands that have already been implemented and are planned to achieve the targets for 2010 and 2016 (see paragraph 1.3). This NEEAP and these energy-efficiency targets relate to energy end-use, outside the ETS.

1.3 Summary of energy saving objectives and results

Table 1 gives a summary of the objectives and results achieved.

Table 1 Summary of objectives and results achieved under the ESD (end-use)

	NEEAP Saving Objective (GWh)	Energy Saving 2010 and 2016 (GWh)
2010	11 376	26 497
2016	51 190	74 620

1.3.1 National objectives for energy saving and results achieved

The ESD targets for 2010 and 2016 were set in the first NEEAP. The target for 2010 is 2% of historical consumption under the ESD and the target for 2016 is 9% of historical consumption. These targets were maintained in the second NEEAP.

The intermediate objective has been met by the saving achieved up to 2010 and the expected saving will also meet the objective for 2016.

1.3.2 National objectives for nearly zero-energy buildings

Paragraph 3.5 contains the action plan for the Netherlands to achieve the objective under the recast EPBD to build nearly zero-energy buildings from 2020.

2 ENERGY SAVING IN END-USE SECTORS

2.1 Summary of energy saving objectives and savings achieved

Table 2 gives a summary of the energy saving objectives (end-use) under the ESD set in the first NEEAP and the saving achieved. This table shows that both the actual and expected energy saving exceeds the objective. This is largely a result of adopting the latest information on the interpretation of the NEEAP saving method (see paragraph 2.2 for an explanation of this).

Table 2 Summary of energy saving under the ESD

	Energy saving objective		Actual/expected energy saving	
	Absolute (GWh)	Percentage (%; based on average consumption 2001-2005)	Absolute (GWh)	Percentage (%; based on average consumption 2001-2005)
2010 (interim period)	11 376	2	26 497	5
2016 (total period)	51 190	9	74 620	13

Table 3 gives a breakdown by sector of the saving calculated by the top-down method.

Table 3 Summary of energy saving per sector (top down)

Sector	Reference to measures	Calculation method	Actual saving in 2010 (GWh)	Expected saving in 2016 (GWh)
Built environment	Par. 2.3, Annex III	Par. 2.3, Annex II	12 705	41 845
Industry and SMEs	Par. 2.3, Annex III	Par. 2.3, Annex II	833	4 863
Transport	Par. 2.3, Annex III	Par. 2.3, Annex II	5 490	13 999
Agriculture and horticulture	Par. 2.3, Annex III	Par. 2.3, Annex II	7 469	13 913
		Total	26 497	74 620

2.2 Methodology for determining the saving achieved (top-down)

Since the first NEEAP was drawn up in 2007, new information has led to changes in the calculated saving figures. The new information can be broken down into four categories:

1. More precise interpretation by the Energy Demand Management Committee (EDMC) of the NEEAP definition of saving
2. Updating of the data for the period 2007-2009
3. Updating of the projection for the period 2010-2016 on the basis of the most recent developments and forecasts, both for the background picture (economy, demography, etc.) and development of policy

4. Changes in the calculation method.

Where possible, the quantitative consequences of these changes are described in the reports for each sector (paragraph 2.3).

Note to 1. More precise interpretation by the EDMC of the NEEAP definition of saving

Since NEEAP-1 was drawn up, some aspects of the definition of saving in the ESD which are open to interpretation have been clarified. For the first NEEAP, the Netherlands opted to use the following definition of saving:

- Saving: excluding autonomous saving (or policy-related saving only)
- Scope of the ESD: excluding all saving on the consumption of companies falling within the scope of the ETS (thus not only fuel, but also electricity and heat that does not generate CO_2 emissions, but on which a saving can nevertheless be made)[1]

It is now clear that the ESD saving is the total saving, in other words both policy-related and autonomous saving. It is also now accepted that the majority of the saving on the electricity consumption of ETS companies may be included. This has brought the calculation of the saving into line with that of the objective (see footnote 1).

Note to 2. Updating of data for the period 2007-2009

Since the first NEEAP was drawn up, new statistical data for energy consumption and other data relevant for determining energy saving in 2007-2009 have become available. The economic crisis has clearly had a major impact on energy consumption and the rate of energy saving, particularly in industry and agriculture. On the other hand there has been a far higher increase in CHP capacity in agriculture than was forecast in the previous NEEAP. The increase in the oil price to record levels in the middle of 2008 means that the price was much higher than that used in the previous estimate. The main observations will be reported for each sector.

Note to 3. Updating of the projection for the period 2010-2016

NEEAP-1 used the Global Economy scenario of the 2005 Reference Projection as the background scenario[2]. The additional saving from the new policy measures, which formed part of the 'Clean and Economical' ['Schoon en Zuinig'] programme were then calculated separately on the basis of subsidiary analyses per sector[3], which introduced a range to account for a number of uncertain factors. In April 2010 a new reference projection[4] was published containing the new information

[1] A large proportion (nearly 80%) of the industrial electricity consumption of ETS companies was in fact included in the calculation of the objective, so the Dutch objective was slightly higher.

[2] Dril, A.W.N. van; Elzenga, H.E.; Reference Projections Energy and Emissions 2005-2020, ECN, NMP, 2005

[3] Beoordeling werkprogramma Schoon & Zuinig [Evaluation of the Clean and Economical Action Plan], ECN, 2007, ECN-E--07-067

[4] Referentieraming energie en emissies [Reference Projection for Energy and Emissions] 2010-2020, ECN, PBL, ECN-E--10-004, 2010

about socio-economic developments, energy prices and policy. A number of elements of this projection have now been amended to take account of the most recent information (Short Term Projection, [M. Verdonk and B. Daniëls, 2011]). Both recent projections have used a mean projection, and established a range separately with a Monte Carlo analysis. The mean values of the Short Term Projection results were used to estimate the expected energy saving per sector for the second NEEAP. The main qualitative differences between the two projections fall into the following two categories (for details, see the background documents referred to):

- Updating of basic assumptions: the Global Economy scenario assumed a high level of economic growth. In addition to adjusting these growth figures (to include the influence of the financial crisis), the latest information on expected fuel price developments and other relevant developments such as demography were also included in the Short Term Projection.
- Updating of policy: the latest interim status of established Dutch and European policy was included in the Short Term Projection, including a large part of the original Clean and Economical policy.

The main deviations affecting the saving figure are stated for each sector.

Note to 4. Changes in the calculation method

In addition to the changes to take account of the changed definition of energy saving for the NEEAP, some other changes were also made to the calculation method/models which may produce differences in the saving figures:

- Household electricity consumption: since 2008 this has been estimated with a new model (Electricity Consumption of Appliances). This has led to an improvement in the determination of the expected saving. The Electricity Consumption of Appliances model is also used to analyse the actual trends in appliance ownership, appliance use and saving. These results are used to determine the electricity saving in the Protocol for the Monitoring of Energy Saving (PME), using some of the same input figures (degrees of penetration).
- Service sector: a new model was brought in for this sector in 2009, which is checked against all recent sources of information on new building and renovation, increases in floor area, consumption per energy function (including cooling) and saving options. This means that it is now possible for this sector to deliver a more substantiated figure for the expected saving. The model also delivers an estimate of the saving already achieved, which cannot be determined with PME.
- Supplementing the PME saving figures with saving figures from the simulation models for each sector: the basic method used in the Netherlands is the PME. This determines the saving for a number of years from the base year 2000. For this NEEAP a saving for 2008 and 2009 in comparison with 2007 is now also determined in the PME. However, this year-on-year saving is not statistically reliable and is also difficult to interpret as it is strongly influenced by the financial crisis. Also, PME figures are not yet available for 2010. For this intermediate report, this approach has therefore been supplemented and improved where possible with available results from sector model calculations.

- Industry: For the food, drink and tobacco sector a separate subsector model has been used, which improves the quality of the saving figure. The saving figure for the part of the sector that falls outside the ETS is now also included in the saving for the industry.

Finally, it should be noted that we have used our own Protocol for the Monitoring of Energy Saving instead of the methods recommended by the Commission. The reasons for this choice are described in Annex II.

2.3 Saving per sector

This paragraph describes the saving for each sector. The total saving is presented by the top-down method. For a selected number of measures the saving is also described by the bottom-up method, excluding early measures (in comparison with 2007) in each case and also, for illustration, including early measures (in comparison with 1995 or a later year, where advisable for reasons of data availability). Annex IV provides further information about the methods and sources used. A background report (NL Agency, not yet published) will give a more detailed account of this.

2.3.1 Built environment

2.3.1.1 Households (top down)

For households, a distinction is made between house-related saving (mainly gas) and saving on electricity consumption.

House-related

Important policy instruments are the More with Less [Meer met Minder] programme and the energy saving agreement entered into with housing corporations. The house-related saving is relatively high for new housing and so the developments in new buildings, such as the tightening of the energy performance requirements for new buildings and housing production, have been looked at separately in the evaluation.

Electricity

Saving is encouraged by European policy for new appliances, such as the labelling directives (since 1995) and minimum efficiency (Ecodesign, since 2008). The latter will deliver by far the most savings in future years.

The policy measures are described in detail in Annex III and the developments for saving are further explained in Annex IV and V.

The expected and actual saving in the households sector on the basis of the top-down method is shown in Table 4. No range has been determined. As already explained in paragraph 2.2 the values are mean values.

Table 4 Household saving (top-down)

	Saving (GWh)	
	2010 (actual)	2016 (expected)
Households total	8 112	29 753

Electricity	3 908	15 936
Housing-related	4 203	13 816

The total saving on both housing-related consumption and electricity over the whole period 2008-2016 is about 20% of the household consumption in 2020.

2.3.1.2 Households (bottom-up)

Actual saving up to the end of 2010 (only measures analysed by the bottom-up method)
The table below shows the results for energy saving in housing according to the above bottom-up calculations, both for 2007 and including savings from early measures since 2000 (for the calculation method see Annex IV).

Table 5 Annual saving from housing (bottom-up) (excluding electrical appliances)

	2008	2009	2010
Saving from housing/year (GWh)	1 567	1 503	1 397
- new building (GWh)	0	294	242
- existing building (GWh)	1 567	1 208	1 156
Total saving in comparison with 2007 (GWh)	1 567	3 069	4 467
Total saving in comparison with 2000 (GWh)	13 000	14 500	15 897

2.3.1.3 Service sector (top-down)

For the service sector a distinction can be made between commercial services (trade, hotel and catering, business services, etc.) and public services (education, healthcare and public authorities). The Directive imposes specific obligations on the latter group (see paragraph 3.1).

As far as policy is concerned, there is an energy performance requirement for new building, the EPC, which will be tightened up in 2015. This will deliver saving effects after 2016. There are also Ecodesign guidelines for lighting and economical pumps (speed control of the pumps of cooling and heating systems). High Frequency lighting will be compulsory in new buildings from 2012 and in existing buildings from 2017. An education subsidy for energy saving measures has recently been introduced to promote 'fresh schools'. Finally, the EIA subsidy scheme has also been available here for many years.

The policy measures are described in detail in Annex III and the developments for saving are further described in Annex IV and V.

The expected and actual saving in the service sector on the basis of the top-down method is shown in Table 6. No range has been determined. As already explained in paragraph 2.2 the stated values are mean values.

Table 6 Saving in the service sector (top-down)

	Saving (GWh)	
	2010 (actual)	2016 (expected)
Services	4 594	12 092

2.3.1.4 Service sector (bottom-up)

No bottom-up calculations have been made for the service sector due to a lack of available data.

2.3.2 Industry and SMEs

2.3.2.1 Industry and SMEs (top-down)

Industry breaks down into a variety of subsectors. A large proportion of the energy consumption relates to companies that fall within the scope of the European Emissions Trading System (ETS). This has been taken into account when calculating the saving.

The main saving instrument is the Long-Term Agreements. The policy measures are described in more detail in Annex III and the developments for saving are explained in more detail in Annex IV and V.

The expected and actual saving in industry and SMEs on the basis of the top-down method is shown in Table 7. No range has been determined. As already explained in paragraph 2.2 the stated values are mean values.

Table 7 Saving in industry and SMEs (top-down)

	Saving (GWh)	
	2010 (actual)	2016 (expected)
Industry and SMEs (excl. ETS)	833	4 863

2.3.2.2 Industry and SMEs (bottom-up)

The companies participating in Long-Term Agreements realise a number of saving projects each year as part of their action plans. Some of these savings are achieved by the other supporting measures for the sector. Bottom-up monitoring follows the actual total saving in the companies covered by the ESD.

Actual saving up to and including 2010 (only measures analysed by the bottom-up method)
The results for the savings falling within the scope of the ESD in the Multi-Year Agreements with industry are shown in Table 8. Efficiency savings from 2000 are shown separately.

Table 8 Annual saving in industry/SMEs under LTAs (bottom-up)

	2008	2009	2010[1]
Primary energy use in industry LTA (incl. EU ETS) (GWh)	42 528	42 084	
Primary energy use in industry LTA (excl. EU ETS) (GWh)	24 972	23 889	
- Saving from process measures (GWh)	444	444	
- Saving from SE (Sustainable Energy) – 'behind the meter' (GWh)	83	83	
Percentage saving from LTA annually	2.0 %	2.1 %	
Total saving in comparison with 2007 (GWh)	527	1 054	
Total saving in comparison with 2000 (GWh)	3 917	4 417	

[1]. Figures are not yet available for 2010. They should be available in summer 2011.

2.3.3 Transport

2.3.3.1 Transport (top-down)

The transport sector consists of various subsectors, a large number of which are now (passenger cars) or will soon be (delivery vehicles) covered by European CO_2 standards.

The energy saving policy measures in the transport sector are described in detail in Annex III and the saving developments are further explained in Annex IV and V.

The expected and actual saving in the transport sector on the basis of the top-down method is shown in Table 9. No range has been determined – as already explained in Paragraph 2.2 the stated values are mean values.

Table 9 Saving in transport (top-down)

	Saving (GWh)	
	2010 (actual)	2016 (expected)
Transport	5 490	13 999

The expected long-term saving in this sector is somewhat lower than stated in the previous NEEAP. One of the reasons for this is the delay in the introduction of the European CO_2 standardisation policy for passenger cars and delivery vehicles. Although a standard of 120 to 130 g/km was initially expected for passenger cars in 2012, this has been replaced by a standard of 130 g/km in 2015.

2.3.3.2 Transport (bottom-up)

The bottom-up method is used to examine a small part of the measures, namely the combined contribution of the measures which encourage a label shift to more efficient cars.

Actual saving up to the end of 2010 (only measures analysed by the bottom-up method)
The saving achieved by the above measures from a bottom-up perspective are summarised in Table 10.

Table 10 Annual saving in transport (bottom-up)

Shift to more efficient passenger cars (label shift)	2008	2009	2010[1]
Saving in comparison with 2007 (in GWh)	417	750	
Saving in comparison with 2001 (in GWh)	1 110	1 612	

[1] Figures are not yet available for 2010.

The saving from more efficient passenger cars is calculated on the basis of data from the test cycles. Actual use may be different. For kilometres travelled it is also assumed that new cars are used in a comparable way to older cars.

2.3.4 Agriculture and horticulture

2.3.4.1 Agriculture and horticulture (top-down)

Agriculture and horticulture includes greenhouse cultivation, livestock farming and other agriculture sectors. Several greenhouse cultivation companies participate in the European Emissions Trading System (ETS), so around 20% of the energy consumption of the whole agriculture and horticulture sector is not covered by the ESD. Some of these greenhouse cultivation companies may make use of an opt-out (from the ETS) and join the CO_2 equalisation system for greenhouse cultivation (Daniëls and Elzenga, 2010), but this has not been taken into account in the current saving figure.

The main saving instrument is a subsidiary agreement for the greenhouse cultivation sector within the Clean and Economical Agrosectors agreement. This subsidiary agreement began in 1997 as the Greenhouse Horticulture and the Environment Agreement (GLAMI) and was followed on 1 January 2011 by the CO_2 equalisation system. This system is supported by the innovation programme Greenhouse as Energy Source. The core of this programme is a set of long-term agreements for energy-efficiency improvement, CO_2 reduction and innovation. Horizontal measures such as energy tax[5], subsidies on innovative energy systems (Market Introduction of Energy Innovations (MEI), Small Business Innovation Research (SBIR), Unique Chances Programme(UKP)) and fiscal measures (EIA, Green investment and finance) strengthen the financial viability of measures. The combined effects of the measures are reflected in the calculated saving and should result in the realisation of the ambition to achieve climate-neutral and profitable cultivation in new greenhouses from 2020.

The measures are described in more detail in Annex III and the saving developments are explained further in Annex IV and V.

The expected and actual saving in agriculture and horticulture on the basis of the top-down method is shown In Table 11. No range has been determined. As already explained in paragraph 2.2 the stated values are mean values.

[5] The greenhouse cultivation sector has a lower energy tax rate for natural gas. The cost equalisation system compensates for this.

Table 11Saving in agriculture and horticulture (top-down)

	Saving (GWh)	
	2010 (actual)	2016 (expected)
Agriculture and horticulture	7 469	13 913
Contribution of CHP	4 956	6 289

2.3.4.2 Agriculture and horticulture (bottom-up)

Actual saving up to and including 2010 (only greenhouse cultivation measures analysed by the bottom-up method)
The agreements specify the annual energy efficiency achieved and CO_2 reduction for the whole sector.

The capacity of CHP installations in greenhouse cultivation is rising sharply. For the calculated saving, a distinction is therefore made between the efficiency improvements on the demand and the supply side. Energy saving on the demand side is the amount of energy required per m^2 cultivation area or per unit of product. Energy saving on the supply side is the saving from CHP. Some of the installations are covered by the EU-ETS. These installations are not included in the calculation of the ESD saving.

The table below outlines the saving in comparison with energy-efficiency levels in 1995 and 2007. For the early savings it is assumed that all measures implemented since 1995 are still having an effect in 2008, 2009 and 2010. From the figures it appears that most of the measures were implemented mainly after 2000 and that these measures will continue to have an effect in the period 2008-2016. The conversion used in the calculations below is 40% efficiency in electricity production.

Table 12 Annual saving in agriculture and horticulture (bottom-up)[1]

	2008	2009	2010[2]
Primary energy consumption greenhouse cultivation sector (GWh)	34 722	38 056	
- Primary energy consumption (electricity) (GWh)	15 000	20 000	
- Energy consumption for heat (GWh)	19 445	17 778	
Improvement in energy-efficiency index (EEI) in comparison with 1995	45%	41%	
Electricity production by CHP (GWh final)	7 500	10 833	
Head production by CHP (GWh)	10 000	13 889	
Total saving demand side (cultivation-related) in comparison with EEI 2007 (GWh)	2 222	-1 111	
Total saving supply side (CHP excl. ETS installations) in comparison with EEI 2007 (GWh)	3 889	5 278	
Total saving demand side (cultivation-related) in comparison with EEI 1995 (GWh)	14 167	10 556	
Total saving supply side (CHP excl. ETS installations) in comparison with EEI 1995 (GWh)	7 778	9 167	
Total saving demand side (cultivation-related) in comparison with EEI 2007 (GWh) in comparison with EEI 1995 (GWh)	 2 222 14 167	 -1 111 10 556	
Total saving supply side (CHP excl. ETS installations) in comparison with EEI 2007 (GWh) in comparison with EEI 1995 (GWh)	 3 889 7 778	 5 278 9 167	

[1] All figures are for primary consumption, unless otherwise stated.
[2] Figures for 2010 are not yet available.

Energy-efficiency in this sector has improved by over 40% in comparison with 1995 (LEI [Institute of Agricultural Economics], 2010). In 2009 the economic crisis caused stagnation/deterioration (lower production, less growth in CHP, fewer CHP operating hours).

Since 2006 the horticulture sector has been a net supplier of electricity, which means that the sector's production of electricity by CHP exceeds its own annual electricity requirement. The reports in the EIA demonstrate that much of the sector's investment is on CHP and another significant proportion on measures related more closely to cultivation, such as energy blinds and energy-efficient lighting. These figures also show the effect of the economic crisis. There was less investment in this sort of technology during the crisis (EIA, Environmental Investment Allowance (MIA)/Random Depreciation of Environmental Investments (VAMIL) figures).

3 ENERGY SAVING – SPECIFIC REPORTING OBLIGATIONS

3.1 Exemplary role of the public sector

3.1.1 Leadership role of the public sector

The exemplary role of national government is expressed both in the building of new, and the renovation of existing, government buildings, where the investments are cost-effective and practical. This is all done within the available financial resources of the Government Buildings Agency. All government buildings larger than 500 m^2 which are accessible to the public will be provided with a visible energy label from 2013. This will apply to buildings larger than 250 m^2 from 2015. For new buildings, the Government Buildings Agency will remain one phase ahead of the tightening of the energy performance coefficient with the aim of achieving zero-energy buildings from the end of 2018. However, this requires a significant leap in quality in comparison with current building practice. The Government Buildings Agency will look into the best phasing for the path to a zero-energy government building stock. Particular attention must be paid to the matter of cost. The Government Buildings Agency will share the knowledge and experience gained by this approach with the market. The Agency also contributes to increased energy saving in new and existing non-residential buildings by encouraging innovation in technology, process and contract forms.

3.1.2 Specific measures for purchases by public authorities

The Sustainable Purchasing programme began in 2006. Since July 2009 criteria have been available for 45 product groups which can be used by buyers for the tender process. Energy-related criteria have been formulated for many product groups. Energy use is one of the most important environmental aspects for improving the sustainability of a product/service and/or the production chain.

The criteria for sustainable purchasing have been available on the PIANOo website (www.pianoo.nl) since January 2011. PIANOo is the expertise centre for purchasers in public authorities.

Since 2010 the national government has aimed always to apply sustainable purchasing criteria. The objective for municipal authorities is 75% for 2010 and that for provincial authorities, water boards and secondary and higher education institutions and universities is 50%. All these bodies aim to achieve 100% sustainable purchasing in 2015. Sustainable purchasing goes beyond simply applying criteria. Work is also being done on increasing the number of innovative projects, formulating objectives for the future and acting as a launching customer for new products. These projects have an energy saving potential of 50 000 to 64 000 GWh[6].

3.2 Availability of advice and information

Energy efficiency information and advice is given to end-users in the following ways:

[6] DHV De impact van het programma duurzaam inkopen anno 2011, Vervolgonderzoek naar de effecten van duurzaam inkopen op markt en milieu, [The impact of the sustainable purchasing programme in 2011, follow-up study of the effects of sustainable purchasing on the market and the environment] January 2011

- MilieuCentraal (www.milieucentraal.nl) is a national organisation that offers consumers practical and reliable environmental information. MilieuCentraal also focuses a lot on energy saving measures. The information is reviewed by a panel of independent experts.
- MeerMetMinder [More With Less] (www.meermetminder.nl) gives consumers reliable information about how to save energy in buildings and about possible subsidies.
- The website of Het Nieuw Rijden [the New Driving] (www.hetnieuwrijden.nl) gives consumers tips about economical motoring.

The financial and legal frameworks established to achieve the ESD targets are published widely by NL Agency and brought to the attention of the target groups. Specific groups of economic operators are supplied with the relevant information about energy efficiency through the implementing programmes of central government, mostly implemented by NL Agency.

The best energy saving practices are exchanged and widely distributed in accordance with the Directive. For this purpose, the Netherlands participates in various international energy networks such as the European Energy Network (EnR) and various International Energy Agency (IEA) implementing agreements such as the Energy Conservation in Buildings and Community Systems Programme (ECBCS), Demand Side Management (DSM), Efficient Electrical End-Use Equipment (4E) and the Working Party on Energy End-Use Technologies.

3.3 Obligation of energy companies to promote end-use energy saving

Under the 1998 Electricity Act and the Gas Act, producers and suppliers of electricity and gas must promote the efficient and environmentally-sound production and use of electricity and gas by themselves and their customers. These provisions are included in Article 68 of the 1998 Electricity Act and Article 40 of the Gas Act. The Decree on Energy Cost Statements also regulates the supply of information to end users, based on the actual consumption and indicative costs. The main requirements of the Decree are that:

- the consumption and indicative cost statement must report the actual consumption and the current energy prices,
- the consumption and indicative cost statement must draw a comparison with consumption in a previous period and with other comparable final customers, and
- the consumption and indicative cost statement must provide the contact details of consumer organisations from which information can be obtained about available measures for improving energy-efficiency, comparable final-customer profiles or technical specifications for energy-consuming equipment.

Final customers who have a smart meter and have agreed to remote reading of their meter, receive a cost statement six times a year. All other final customers are sent this statement once a year. The Cost Statements Decree also specifies that buyers of transport fuels must be informed on/with the invoice about the number of litres purchased, the price and where they can obtain information about efficient fuel management.

3.4 Market for energy services

A model agreement is available on the website of NL Agency that helps with the drafting of a contract with an energy services supplier.

Energy services have been contracted out increasingly for a number of years and there are now a few dozen Energy Services Companies operating in the Netherlands. They provide a wide range of services, particularly generation, distribution and supply of heat, cooling and electricity (e.g. from a CHP plant). Energy saving and renewable energy are central to their business.

Some suppliers of energy services offer a complete package of services from financing and design of installations to services to the end-user. Other suppliers deliver a more limited package. Comfort and energy saving with higher quality and fewer CO_2 emissions are central to all of them. In most cases the suppliers give long-term guarantees for this. These are established in service indicators in combination with a reward/penalty scheme.

Energy Services Companies can be attractive for housing corporations, investors, building managers and owners' associations. An Energy Services Company has contracts with specific customers and has its own installations inside or near the building or (housing) complex in question.

3.5 National Plan for the promotion of nearly zero-energy buildings

Article 9 of the recast EPBD requires a National Plan for nearly zero-energy buildings. This National Plan must ensure an increase in nearly zero-energy buildings, with a view to achieving the Directive's objective for all new buildings to be nearly zero-energy by 31 December 2020. New buildings which house public authorities must be nearly zero-energy from 31 December 2018.

Article 9 states that the National Plan should include the following sections:

1. A definition of nearly zero-energy buildings
2. Intermediate targets for improving the energy performance of new buildings in 2015
3. Information about the policy and measures adopted for the promotion of zero-energy buildings

This National Plan for the promotion of nearly zero-energy buildings, as included in this paragraph, outlines the Dutch strategy for achieving nearly zero-energy buildings in 2020. Specifically, this relates to the consequences of the recast EPBD for new buildings and the accompanying tightening of the energy performance requirement to level zero, the relationship with the calculation method for the Energy Performance of Buildings (EPG) and the Energy Performance Measures at Regional Level (EMG). The transformation of existing buildings into nearly zero-energy buildings during renovation is also discussed.

3.5.1 Means of implementing Article 9 of the recast EPBD – nearly zero-energy buildings

In line with the European objective for nearly zero-energy new buildings from 31 December 2020 the Netherlands will apply an Energy Performance Requirement of (nearly) zero for new buildings in 2020. In the current building regulations the Netherlands has a minimum energy performance requirement for new buildings. This policy will be continued to achieve an EPC of zero in 2020 by tightening this minimum requirement. This tightening of the EPC will gradually be incorporated into

the Building Decree over the next decade. This phased approach will ensure that building owners have the time to progress towards zero energy over the next nine years.

For buildings housing public authorities a higher rate of tightening must be established in the Building Decree than for other buildings to ensure that new buildings for public authorities are zero-energy at the end of 2018. The government has an important exemplary role to play and can help to accelerate the development of the market. The government's campaign to deliver zero-energy building by the end of 2018 makes a contribution to the structural market for energy saving. This is a continuation of the current policy that the Government Buildings Agency should always be one phase ahead of the tighter requirements announced for the EPC. This promotes both technical and process innovation and helps to increase the number of new sustainable techniques.

The basic principle of national policy is (nearly) zero-energy buildings in 2020. This means that a common path must be mapped to achieve zero-energy over the next nine years. The government plays the part of regulator and facilitator in this. Firstly, the government tightens the minimum requirement in the regulations. Secondly it plays an important role as 'customer' in the market for energy saving by achieving zero-energy building from 2018 and breaking the trend through innovation.

3.5.2 Intermediate targets for new buildings in 2015

The Lente Agreement, the agreement between market participants and the government for energy-efficient building, reflects the rate of the tightening of the energy performance coefficient for house building (new building) from 0.8 to 0.6 on 1 January 2011 and to 0.4 on 1 January 2015 with the aim of achieving zero-energy houses (EPC=0) in 2020. A comparable tightening (in comparison with 1997) applies to non-residential buildings, so that new buildings will be 50% more energy efficient in 2015. The requirements for this were tightened in January 2009.

3.5.3 What has to be done before 2018?

1. The term 'nearly zero-energy' must be defined (see below).
2. The term 'buildings housing public authorities' must be defined to ensure that buildings used by public authorities are built as zero-energy buildings from 1 January 2018.
3. An EPC tightening study must be carried out for:
   - tightening of the EPC for houses in 2015 (to an EPC of 0.4)
   - tightening of the EPC in non-residential buildings in 2015 (50% energy saving in comparison with the 2007 level). This must be combined with a study of the optimum cost level of the energy requirements.
4. A decision must be made about whether a separate EPC requirement should be introduced for buildings housing public authorities on the basis of use, to ensure that zero-energy is guaranteed from 31 December 2018, or can be met with the current laws and regulations for the tightening of the EPC in non-residential buildings.

The Netherlands will use the following definition for zero-energy:

1. A building is a zero-energy building if it has an energy consumption of at least zero, and

2. The building draws no more energy from the public network (gas and electricity) than the renewable energy it generates or draws from renewable sources in the immediate vicinity of the building.

A study will be carried out into possible incentives for converting existing buildings into nearly zero-energy buildings during renovation. This study will be drawn up within the 'Energy Leap' [Energiesprong] programme. Energy Leap is the implementing programme of the Energy Innovation Agenda for the Developed Environment [Innovatie Agenda Energy Gebouwde Omgeving – IAGO]. The aim of IAGO is to achieve a 45-80% energy saving in the built environment and zero-energy new buildings from 2020. Energy Leap's approach is to capitalise on the removal of obstacles to innovations or increases in scale.

For effective calculation of the energy performance of buildings, the calculation method or standard for the performance of buildings will also be changed in 2011. There will be one standard for new and existing houses and non-residential buildings, the EPG (Energy Performance of Buildings). There will also be a standard for regional measures, the EMG, so that (nearly) zero-energy building will also be promoted by collective measures. The EMG ensures a level playing field within the standards system. To tighten the EPC requirements still further and ultimately achieve nearly zero-energy buildings a switch must therefore be made to local and decentralised (regional) energy performance measures.

It is also important to transfer knowledge acquired in practical experiments as effectively as possible and to apply it in regular projects. The knowledge from the 'areas of excellence' is used for this, for example. The 'areas of excellence' are 12 innovative building projects which are building with a strict EPC.

3.5.4 Environment and context

On this path to achieving zero-energy status, it is important to consider a number of aspects of the building process. These are:

- The indoor climate. More attention must be paid to the indoor climate, for example ventilation, in energy-efficient buildings. During the process of building more energy-efficiently, the effect on the indoor environment must therefore be monitored closely.
- The behaviour of the users. Research has shown that occupants of houses behave in a relatively inefficient way in an energy-efficient building. This means that it is not just a question of tightening the regulations, but also modifying the behaviour of the occupant, for example by using smart meters.
- The user-friendliness and simple application of new technologies by building owners is also essential to reduce energy use even further. This is a question of developing the market for energy-efficient technologies and products which fulfil the wishes and needs of the users.
- Attention to costs. The costs of zero-energy buildings are the subject of much discussion. Reducing the costs by process and technical innovation and increasing the number of techniques are important points for consideration. This is addressed by initiatives such as the Energy Leap programme.

3.5.5 Planning

Tightening of EPC requirements in the Building Decree on the basis of Article 9 of the recast EPBD.

Year	New building	Buildings housing public authorities
2011	Houses: 0.6	1.1
2015	• Houses: 0.4 • Non-residential building: 50% more energy-efficient than 2007	50% more energy-efficient than 2007
2018		EPC = 0
2020	EPC = 0	

3.6 Inspection of installations (Article 13 and 14 of the recast EPBD)

Under Article 14(4) and Article 15(4) of the recast EPBD Member States must submit a report to the European Commission by 30 June 2011. This is a report of the measures taken by the Member State to ensure that users are advised about the replacement of central heating boilers and air-conditioning systems. This concerns central heating boilers with an effective rated output of over 20 kW and air-conditioning systems with an effective rated output of over 12 kW. It is a technical report.

In concrete terms, this means that, for central heating boilers between 20 and 100 kW the Netherlands chooses to incorporate the inspection of installations into the existing quality assurance systems currently used in the installation and construction industry. For air-conditioning systems above 12 kW inspection is compulsory under the original 2002 EPBD. A summary of the way Articles 14-18 of the recast EPBD are implemented for installations is given below.

Table 13 Summary of implementation of Articles 14 to 18

		Central Heating	Air-conditioning
1	Inspection (Art 14 and 15)	Choice of Article 14(4)	Air-conditioning regulation – compulsory inspection every 5 years
2	Inspection report (Art 16)	Inspection report(s) arising from Article 14(4)	Air-conditioning regulation – compulsory report in specified format

3	Independent expert (Art 17)	Via quality-assurance system	Air-conditioning regulation – compulsory examinations
4	Independent control system (Art 18)	Via quality-assurance system	Via quality-assurance system

With regard to Article 14 and 15

- Allow the inspection of heating and air-conditioning systems to be carried out as far as possible as part of the cycle of regular maintenance and management of building installations.
- Article 14 introduced as a voluntary system for heating systems with an effective rated output of 20 to 100 kW, not on a compulsory basis but as an incentive to achieving the objectives. The requirements above 100 kW remain (in the Environment Management Act and the Air Pollution Act). Inspection is compulsory for air-conditioning systems above 12 kW.

With regard to Article 16

- Under Article 16, the building owner must be handed a report (with recommended improvements) of the inspection. (Existing) report formats or a standard copy of the maintenance form are to be used for this.
- Not compulsory for heating systems but promote the achievement of the objectives (although it is compulsory to produce and hand over a report).

With regard to Article 17 and 18

- Integrate the qualification/examination of experts as far as possible with the qualification/examination under related regulations. This also applies under the RES Directive. Provisional specific training courses/examinations, to be integrated into regular education and training in due course.
- Approach control primarily on the basis of quality assurance.

A detailed discussion of the implementation of these articles is given in Annex VI.

4 RESPONSIBLE ORGANISATIONS

Table 14 Responsible organisations

Task	Responsible organisation
General supervision of ESD objectives	Ministry of Economic Affairs, Agriculture and Innovation
Exemplary role for the public sector	Ministry of Economic Affairs, Agriculture and Innovation and Ministry of the Interior and Kingdom Relations
Introduction of the monitoring system	Ministry of Economic Affairs, Agriculture and Innovation

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ANNEX I. CATEGORIES AND EXAMPLES OF ENERGY SAVING MEASURES TARGETED ON END USE

The list is not exhaustive.

Category	Examples
1 Legislation	Standards and requirements: 1.1 Building requirements and enforcement 1.2 Minimum energy performance requirements for equipment
2 Information and compulsory information measures (e.g. compulsory labelling)	2.1 Specific information campaigns 2.2 Energy labels 2.3 Information centres 2.4 Energy audits 2.5 Training and education 2.6 Demonstration projects 2.7 Exemplary role of the public sector 2.8 Metering and invoicing
3 Financial instruments	3.1 Subsidies 3.2 Tax incentives and other taxes that reduce end-use 3.3 Loans (soft and/or subsidised)
4 Voluntary agreements and cooperation instruments	4.1 Industry 4.2 Commercial organisations or institutes 4.3 Energy-efficient government procurement 4.4 Technology procurement
5 Energy services for energy saving	5.1 Guarantee for energy saving contracts 5.2 Third-party financing 5.3 Energy performance contracts 5.4 Energy outsourcing
6 Energy saving mechanisms and other combinations of the above (sub)categories	6.1 Energy saving obligation on energy companies, including “white certificates” 6.2 Voluntary agreements with energy production, transmission and distribution companies 6.3 Energy efficiency funds

ANNEX II: DESCRIPTION OF ALTERNATIVE METHODOLOGY FOR THE CALCULATION OF ENERGY SAVING UNDER THE ESD

According to the ESD the saving must be demonstrated by a combination of 'top-down' and 'bottom-up' methods. At the EDMC meeting in April 2008 it was decided that all savings, including autonomous saving, can be included. This means that the total saving can be stated to demonstrate that the objective has been/will be achieved.

Comparison of PME and Odyssee

The total saving is calculated in principle by the top-down method. The EC has formulated recommended methods for this based on Odyssee energy indicators[7]. However, the Netherlands has been using its own method since 2000, established in the Protocol for the Monitoring of Energy Saving (PME)[8]. This method has the following advantages over Odyssee:

- The PME method works with a constructed reference consumption (excluding saving activities) which, after comparison with the actual consumption, delivers a saving directly. Odyssee works with efficiency indices which have to be converted into a saving using the scale of the (more efficient) activity.
- The PME method makes the maximum use of available national data, so it is easier to correct for structural effects that disrupt the saving calculation than Odyssee. For households, the higher penetration of all appliances is taken into account, instead of individual larger appliances only, as in Odyssee. For industry, physical dimensions are used for almost all energy consumption, whilst in Odyssee they are used only in a limited number of cases (iron/steel, aluminium, cement and paper). This avoids the move from base to fine chemicals being recorded as a saving, for example.
- In contrast to Odyssee, PME also determines the saving from combined heat and power production on the commercial premises of final consumers. This has been essential to obtain an accurate saving figure in recent years, particularly for horticulture.

Reliability of statistics-based top-down figures in the short term

The second NEEAP includes an ex-post evaluation for the first time, namely for 2008-2010. However, a lot of statistical data are not yet available for 2010. As the distance from the base year 2007 is short, the ex-post determination of the saving by a top-down method on the basis of statistical figures (as for example in PME and Odyssee) is less suitable for this second (intermediate) NEEAP. This is because the amount of the saving is roughly equal to the margins of uncertainty in the consumption figures. Once more years become available, this will be less of a problem, and in the next NEEAPs, in particular that in 2016, the calculations will be more reliable.

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[7] Recommendations on measurement and verification methods in the framework of Directive 2006/32/EC (ESD) – Preliminary draft excerpt, DG ENER, July 2010, Brussels.

[8] Realised energy savings 1995 -2002 - According to the Protocol Monitoring Energy Savings, P.G.M. Boonekamp et al, ECN-C-04-85, October 2004, Petten

These top-down problems are solved by using the figures from simulation models for end-use sectors as well. These models are used for the national energy settlements and also deliver the saving expected in the NEEAP. They are adjusted so that they also provide information on the saving achieved for 2008-2010 (see further explanation in planned report[9]).

The case for saving on the gas consumption of houses is described here as an example of how the simulation approach can be used to solve the problems encountered with top-down methods.

Comparison of PME and simulation results for household gas consumption

For 2008 and 2009 PME saving figures were determined in comparison with 2007 (base year for NEEAP2). These figures are much lower than those from the simulation and also lower than in previous years. These figures are not used in NEEAP-2 for the following reasons.

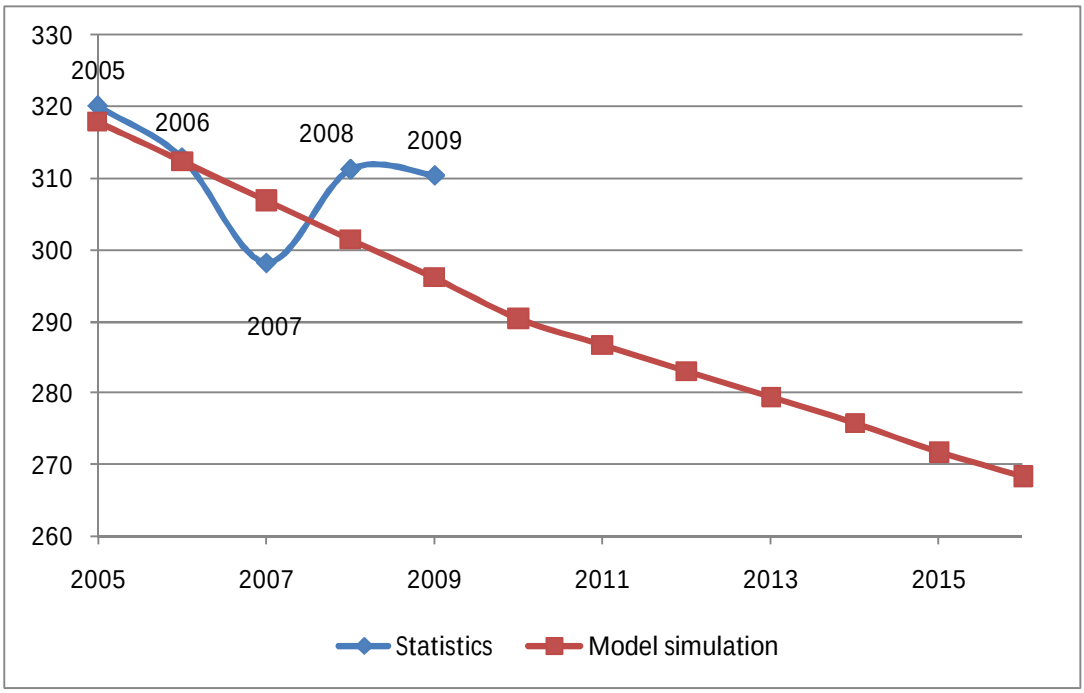
The PME results are not entirely comparable with those of the simulation because of a difference in the definition of saving and the way statistical uncertainties in household gas use are handled.

In the PME a limited number of input data are used, such as number of houses, number of households, and number of occupants. As a result, 'structural' effects, such as changes in the structure of the housing stock and reduced levels of occupation of residential buildings cannot be taken into account. As the simulation does take account of these factors, the saving will be different.

PME works on the basis of the statistical gas consumption, corrected for annual differences in climate that effect consumption for space heating. As shown in Figure 1 the statistical gas consumption for households has fluctuated significantly in recent years. The consumption for 2007 is strikingly low, whilst that for 2008 and 2009 is higher. This may be a result of changes in the collection of the data that form the basis for the statistics. The dip in gas consumption cannot be explained by any known developments in the simulation. A corrected gas consumption has therefore been used in the simulation, which delivers more stable saving figures than the PME figures that have to be based on the (uncertain) statistical consumption.

[9] ECN evaluation system for energy savings in the Netherlands on basis of simulation models, P.G.M. Boonekamp (ed.), ECN, Petten (to be published)

Figure 1: Household consumption of natural gas in accordance with statistics and the Simulation and analysis model for building-related energy consumption and CO• emissions



III.1 Horizontal measures

The following measures relate to at least 4 sectors:

- Energy tax (all sectors)
- Energy Investment Allowance (EIA, all sectors) (including temporary grant of EIA for rental properties)
- Long-Term Agreements (trade, services and public authorities, industry, transport and agriculture)
- Green investment and finance
- Green Deal (all sectors)
- Energy Research Subsidies

Name	Energy Tax
Category	3.2 Energy tax
Geographical area	The Netherlands
Target group	All end-users that fall within the scope of the ESD
End-user activities to be influenced	Change of behaviour (more efficient energy-use) and investment in energy-saving measures
Effectiveness	Increasing the energy price makes investment in an energy-saving measure more attractive and encourages energy-saving behaviour.
Status of implementation and planning	Implemented. Introduced on 1 January 1996 as Regulating Energy Tax.

Description

The Energy Tax is a tax on energy consumption which improves the cost-effectiveness of measures aimed at energy saving and renewable energy. Taxing energy use makes energy saving (by changing behaviour or investing in energy-saving measures) more attractive. For investment, the use of energy-saving techniques is more cost-effective. The price elasticity (the extent to which consumption reacts to a change in price) of the Energy Tax is low and varies from -0.1 to -0.25 in the short term. In the longer term, the elasticity is higher as a result of changes in investment behaviour.

The Energy Tax is levied on:

- electricity;
- natural gas;

Since 2004, the level of the Energy Tax has depended on the energy consumption of a customer. The higher the consumption, the lower the Energy Tax levied. In January 2010 the tax on mineral oils was transferred to the Excise Duty Act (2010 Fiscal Simplification Act).

Households

The Energy Tax significantly increases energy prices for small-scale consumers (up to 5 000 m^3 gas and 10 000 kWh) and to a lesser extent for large-scale consumers. The Energy Tax accounted for approximately 30% of the natural gas and electricity price for small-scale consumers in 2010.

The tax is charged by the energy supplier. The income from the energy tax is fed back to the tax payer through measures such as reduced wage and income tax. The Energy Tax is a Ministry of Finance measure.

Non-ETS industry

Industry not covered by emissions trading pays a higher price for natural gas and electricity than energy-intensive industry (which is covered by emissions trading).

Agriculture

The Energy Tax has a separate lower gas rate for greenhouse cultivation (fixed up to 2013). This means that these companies are taxed in the same way as the energy-intensive large-scale consumers.

The Energy Tax rates for 2011 are as follows:

Table 1: Regular Energy Tax rates on natural gas and electricity (2011 rate in € per unit excl. VAT)

Natural gas	0 – 5 000 m^3	€ 0.1639
	5 000 – 170 000 m^3	€ 0.1419
	170 000 – 1 million m^3	€ 0.0393
	1 million – 10 million m^3	€ 0.0125
	> 10 million m^3 non-commercial	€ 0.0117
	> 10 million m^3 commercial	€ 0.0082
Electricity	0 – 10 000 kWh	€ 0.1121
	10 000 – 50 000 kWh	€ 0.0408
	50 000 – 10 million kWh	€ 0.0109
	> 10 million kWh non-commercial	€ 0.0010
	> 10 million kWh commercial	€ 0.0005

The taxes are increased annually by annual indexation. The rates have increased by 0.6% since 2010.

Name	EIA: Energy Investment Allowance
Category	3.2 Tax reduction and other taxes that reduce the energy consumption of final consumers
Geographical area	The Netherlands
Target group	Entrepreneurs from all sectors that pay income or corporation tax (excluding households and public authorities)
End-user activities to be influenced	Influences choice of investment (encourages investment in energy-efficient equipment and equipment for generating renewable energy)
Effectiveness	The instrument reduces the financial threshold for the purchase of energy-efficient equipment.
Status of implementation and planning	Implemented in 1997; ongoing.

Description

The Energy Investment Allowance (EIA) is a fiscal measure that offers the possibility for an additional allowance on taxable profit. Applications for the EIA can be made for the purchase of designated energy-efficient equipment and equipment for the generation of renewable energy.

The EIA enables companies to deduct 41.5% of the investment amount from their taxable profits so they do not have to pay as much tax. Applications for the EIA can be made for the cost of purchasing or producing energy-efficient equipment and renewable energy.

Equipment that meets the general saving standards of the EIA is eligible for support. This equipment is listed in an energy list which is updated every year. The energy-efficient equipment must save more energy than the conventional equipment available in the market. Equipment for generating renewable energy is eligible for EIA if it generates more energy-efficiently than conventional equipment. Only the latest types of equipment are thus eligible for the EIA.

An investment may relate to a (part of) equipment that is both eligible for the EIA and for other fiscal measures (Small-Scale Investment Allowance, VAMIL and/or MIA). You cannot use both the EIA and MIA for the same investment element, although it is possible to combine the EIA and MIA with VAMIL.

Built environment

Until recently, housing corporations and private landlords could receive the EIA temporarily if they improved their properties by at least two label stages, or to energy label B. This was a measure in the Dutch government's Crisis and Recovery Package. This temporary EIA ended on 1 December 2010. In autumn 2010 some incentives for house building were announced. These fiscal measures cost €195 million. This is covered by the underspend on the temporary grant of the EIA.

The Energy Investment Allowance is a measure of the ministries of Finance and Economic Affairs, Agriculture and Innovation. NL Agency and the Tax and Customs Administration administer the EIA.

Name	Long-Term Agreements
Category	4. Voluntary agreements
Geographical area	The Netherlands
Target group	• Industry • Service sector • Agriculture
End-user activities to be influenced	The companies must produce energy efficiency plans, implement them and report on progress. They must also monitor energy consumption annually. Companies who enter into Long-Term Agreement 3 must set up an energy care system.
Effectiveness	An average efficiency improvement of 22.3% was achieved in the period 1989 – 2000.
Status of implementation and planning	The Long-Term Agreements began in 1992. LTA3 and LTA-ETS run until 2020.

Description

Since 1992 the government has entered into Long-Term Agreements (LTAs) for the improvement of energy efficiency with a large number of sectors. The first series of LTAs for industry was successfully concluded in 2000. Over the period 1989 - 2000 an average efficiency saving of 22.3% was achieved.

The Long-Term Agreements concluded with various sectors can play an important role in raising awareness of the possibilities for, and benefits of, energy saving. The LTA encourages more economical and rational decision-making on energy-saving techniques by increasing knowledge of the possibilities.

To support the agreement, various (general) instruments are used, such as the Renewable Energy Production Incentive Scheme, MIA / VAMIL, EIA and the Reduction of Other Greenhouse Gases programme.

Industry

Two types of Long-Term Agreement are currently running:

- LTA3 for large and medium-sized companies and institutions in industry, agriculture and the service sector;
- LTA-ETS for ETS companies in industry and the agriculture sector.

The LTAs are concluded with individual companies, industries and the Competent Authority. They aim to achieve energy-efficiency within the chain, as well as a company's own operating processes

and to promote the use of renewable energy. Where appropriate, industries participating in the programme also carry out strategic studies (roadmaps) based on a 50% reduction in CO• in 2030.

LTA3 and LTA-ETS run until 2020. A company participating in the programme undertakes to do the following:

- Draw up an energy saving plan every four years in consultation with the Competent Authority. In the Energy Efficiency Plan (EEP) the company describes the cost-effective measures taken within its own process and within the chain.
- As far as possible, a list of measures is drawn up for each participating LTA industry. Companies carry out the cost-effective energy-efficiency measures from the list.
- A trade objective is established on the basis of all EEPs in an industry. This is laid down in a Long-Term Plan (LTP).
- Within three years of joining an LTA3 programme, the company must have an energy care system.
- The company must report annually to NL Agency and the industry organisation about the implementation of the EEP and energy care.

The effect of the LTA as an instrument is related to the instruments under the Environment Management Act , ETS and the Energy Tax: the LTA provides an incentive, the Environment Management Act and ETS have a regulatory role, and the Energy Tax provides a reward.

The LTA programme is implemented on behalf of the Ministries of Economic Affairs, Agriculture and Innovation, the Interior and Kingdom Relations and Infrastructure and Environment. Implementation is facilitated by NL Agency.

Trade, services and public authorities

Long-Term Agreements have been concluded with various subsectors within trade, services and public authorities. These are scientific and higher professional education institutions, banks and insurers and University Medical Centres.

Agriculture

The Clean and Economical Agro-Sectors agreement sets specific objectives for aspects such as energy efficiency improvements for greenhouse cultivation, livestock farming, arable farming and bulb and mushroom growing.

The flower bulb and mushroom sectors have concluded new Long-Term Agreements for the period 2007-2011. These sector-specific LTAs include the 'instruments/measures' research, innovation vouchers, explanation and also demonstration and knowledge-transfer. The 'instruments/measures' are thus also inter-related. As the flower bulb and mushroom sectors have signed an LTA, they have access to the energy tax measure, under which their energy consumption is taxed by a reduced system of rates, as in greenhouse cultivation.

The greenhouse cultivation businesses are covered by the Greenhouse Horticulture and the Environment Agreement (GLAMI, which is broader in scope than energy). This agreement ends in 2010 when the rigid energy standards will be replaced by a more flexible CO_2 equalisation system.

The order in council relating to greenhouse horticulture [AMVB Glastinbouw] translates the GLAMI Agreement into regulations. The rules comprise about 100 standards for various crops, expressed as a falling primary energy consumption per hectare of greenhouse.

The primary animal sector has no LTA.

Name	Green Investment and Finance (MIA, VAMIL)
Category	3.2 Tax incentive
Geographical area	The Netherlands
Target group	All end-users that fall within the scope of the ESD
End-user activities to be influenced	Increasing the attractiveness of investment in projects with a positive effect on nature and the environment
Effectiveness	Affects the end-user directly.
Status of implementation and planning	Implemented in 1995; ongoing scheme

Description

The umbrella term 'Green Investment' covers both green saving and investment and also green finance. To be eligible for green finance projects must have a 'green statement' which shows that they meet certain criteria. Green Investment is made possible by two schemes: the Green Funds Scheme and the Green Projects Scheme.

The MIA offers businesses that invest in environmentally-friendly equipment the opportunity to deduct 36% of the investment costs from their taxable profits. The percentage of the deduction depends on the environmental effects and acceptability of the equipment. The VAMIL scheme offers a liquidity and interest benefit. Businesses using this scheme for equipment may depreciate it randomly or freely. The MIA and VAMIL are two different schemes, but are often combined. Both schemes use a common list, called the Environment List, which lists all equipment eligible for the MIA and/or VAMIL. The Environment List is revised every year.

In greenhouse cultivation, the Green Label Greenhouse and the semi-closed greenhouse are frequently listed under Green Investment and in the MIA and VAMIL.

- Green Label Greenhouses: greenhouses for commercial cultivation of horticultural crops with low energy-use and a low environmental impact. The greenhouses must fulfil strict requirements for the use of minerals, water and energy. Aspects such as light radiation and biological crop protection methods also play a part. Depending on the number of points obtained in the green certificate, Green Label Greenhouses can participate in the MIA/VAMIL and/or Green Investment schemes.
- Semi-closed greenhouse systems. The environmental and energy performance of semi-closed greenhouse systems is considerably better than that of Green Label Greenhouses, because the emphasis is on applying the latest techniques and using renewable energy sources. In these greenhouses the hot greenhouse air is cooled and the heat is stored in aquifers.

Name	Green Deal
Category	4. Voluntary agreements
Geographical area	The Netherlands
Target group	All end-users
End-user activities to be influenced	Investments in energy saving and renewable energy measures.
Effectiveness	
Status of implementation and planning	Concrete implementation of Green Deal agreements will start in autumn 2011.

Description

The Cabinet wishes to enter into a Green Deal with society for energy, in which the emphasis is on energy saving and local generation of renewable energy. Citizens, companies and others are increasingly finding their own solutions for smarter and more sustainable energy management, for example by saving energy or generating it themselves, or by clean energy use. Often these are energy projects that pay for themselves, but they do not always get off the ground. Problems encountered by citizens, companies and other parties in setting up energy projects include inadequate staffing, too little information, confusion about permits, unclear or conflicting regulations or failure to find cooperation partners.

The government can help solve these problems in a variety of ways, for example by giving advice, bringing parties into contact with each other and removing obstacles in legislation and regulations. By entering into a Green Deal with the party taking the initiative, the government aims to take action to solve these problems and give the project another chance.

To get the market moving, the government is looking for forward-looking initiatives. These could be:

- Initiatives that contribute to increased energy saving and the realisation of renewable energy policy and are attractive from an economic point of view. Initiatives that are in the implementation or application phase.
- Initiatives capable of producing results in the short-term, preferably within the term of office of the present Cabinet.
- Preferably initiatives that have the potential to be repeated, so that comparable projects can be started up without government intervention.

The government is in discussions with companies and individuals from its network to produce a full list of initiatives. A website has also been set up where parties can announce their energy projects. Projects can be announced from 1 April to 1 June 2011. After summer 2011 the Ministry of Economic

Affairs, Agriculture and Innovation will produce a list of Green Deal Initiatives with potential for success.

Name	Energy Research Subsidy
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Businesses
End-user activities to be influenced	Research (long-term / short-term / demonstration) into energy saving possibilities and techniques.
Effectiveness	Ensures the spread of technical knowledge about energy-efficiency and renewable energy.
Status of implementation and planning	The Environmental Research Subsidy has been opened for applications every year for the past few years. The 2011 application round depends on the outcome of the Energy Top Sector recommendations.

Description

The Energy Research Subsidy programme aims to expand knowledge of energy-efficiency and renewable energy by supporting research by Dutch research bodies and companies. The Energy Research Subsidy covers the path from idea to market introduction. Depending on the type of project and its prospects, companies and research bodies can apply for a subsidy under various Energy Research Subsidy schemes. The Energy Research Subsidy also encourages the development and application of knowledge in other ways. As administrator of the Energy Research Subsidy Programme, NL Agency organises conferences, platforms and knowledge networks, bringing Dutch and foreign parties into contact with each other. The Netherlands uses this cooperation to strengthen its knowledge position. There will be no new application rounds for the Energy Research Subsidy scheme in the first half of 2011. Whether or not another application round will be opened depends on the outcome of the Energy Top Sector recommendations.

III.2 Built environment

The following measures apply in the built environment sector:

- Energy Tax (see description in paragraph III.1)
- Long-Term Agreements (see description in paragraph III.1)
- Energy Investment Allowance (see description in paragraph III.1)
- Energy Performance Standard, including stricter requirements for 2011 and proposed stricter requirements for 2015
- More with Less (agreements, incentive scheme, customised advice)
- Changes to the system of evaluation of residential buildings
- Ecodesign and changes to energy labels
- Temporary subsidy scheme for insulating glass (ended in December 2010)
- 'Reduced VAT rate for insulation work' and 'Reduced VAT rate for labour costs for the maintenance and renovation of houses' (ends on 1 October 2011)
- Innovation agenda for the built environment
- Sustainable heat for existing houses
- Milieucentraal
- Enforcement of the Environmental Management of Non-Residential Buildings Act
- Block by block
- Roll-out of smart meters

Name	Energy performance requirements including agreement with building contractors
Category	1.1 Building requirements and enforcement 4. Voluntary agreements
Geographical area	The Netherlands
Target group	• Building companies • Project developers • Banks
End-user activities to be influenced	Increase the energy-efficiency of new buildings
Effectiveness	High
Status of implementation and planning	Ongoing

Description

Making new residential buildings 25% more energy efficient on 1 January 2011 than they were in practice in 2008. Tightening the requirements of the Energy Performance Coefficient (EPC) for new buildings from 0.8 to 0.6 in 2011 is expected to achieve an annual reduction of around 30 ktonnes CO_2. A further tightening to an EPC of 0.4 is proposed for 2015. The ultimate aim is zero-energy new buildings (EPC=0) in 2020, in accordance with the objective of the recast EPBD.

The EPC has been part of Dutch climate policy since 1995 and sets minimum energy performance requirements for new buildings.

To support the tightening of the energy performance requirements an agreement was concluded in 2008 (Lente agreement) between the national government and the market participants (The Dutch Construction and Infrastructure Federation, NEPROM [the Association of Dutch Project Development Companies] and the Dutch Banking Association (NVB)). The objective of the Lente agreement is to improve energy performance of new buildings by 25% in 2011 and 50% in 2015 (in comparison with the 2007 building requirements), with the intention of setting stricter requirements for zero-energy new buildings in 2020. The national government is regularly tightening the laws and regulations to achieve this aim. The trade organisations are running a knowledge-transfer and promotion programme with their member companies to bring their knowledge of energy performance improvements up to the required level.

Name	Agreements for existing buildings: More with Less / Housing Corporations
Category	4. Voluntary agreements
Geographical area	The Netherlands
Target group	• Housing corporations • Building companies • Installation sector • Owner-occupiers
End-user activities to be influenced	Increase the energy efficiency of existing houses
Effectiveness	Affects the target group directly
Status of implementation and planning	Ongoing (since 2008)

Description

The 'More with Less' programme (2008) is a joint initiative of the national government, housing corporations, building companies, the installation sector and energy companies. For the period up to 2020 the objective of this programme was to make 3.2 million existing buildings 20 to 30% more energy-efficient in order to create a market for energy-saving measures by organising supply and facilitating demand through national schemes and advertising campaigns.

The agreement with housing corporations (2008) is an agreement between the national government, Aedes and the Woonbond [Association of Landlords and Tenants]. The aim is to guarantee the active involvement of the corporations in realising the energy saving objectives. Corporations own about 2.3 million residential buildings and have now taken steps towards making their housing stock more energy-efficient. The aim is to achieve a saving of 24 Petajoules (1 PJ = 31.6 million m^3 natural gas) in the period 2008–2020. How this will be achieved is the subject of agreements at a local level between corporations and tenants' organisations. For new buildings the aim is to reduce energy consumption by 25% by 1 January 2011 and 50% by 1 January 2015 in comparison with the regulations in force on 1 January 2007.

Name	National Grant Scheme More with Less
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Home owners
End-user activities to be influenced	Increase the attractiveness of energy-saving investments in housing
Effectiveness	Budget for the first tranche has been fully allocated.
Status of implementation and planning	2010 - 2011

Description

In July 2010 the National Government made € 15 million available for the implementation of the National Grant Scheme. Home owners who implement energy-saving measures and move to more efficient energy labels receive a grant of €300 or €750. The first tranche of €5 million was announced on 18 July 2010 and was fully allocated by the end of November 2010. Nearly 7000 households reserved a grant through their contractor or installer. The second and last tranche of €10 million was announced at the end of May 2011.

Name	Customised Advice More with Less
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Home owners
End-user activities to be influenced	Investments in energy-saving measures
Effectiveness	More than 53 000 home owners have received subsidies for obtaining customised advice.
Status of implementation and planning	2009-2010

Description

The customised advice provides a tailor-made report of the energy-saving measures that can be implemented in the home, how much they cost and what they will deliver. A total of around €13 million was available for the subsidy scheme in 2009 and 2010. The scheme was fully allocated by the end of 2010. In total more than 53 000 home owners received customised advice.

Name	Changes to the Home Evaluation System
Category	1. Legislation
Geographical area	The Netherlands
Target group	• Housing corporations • Tenants
End-user activities to be influenced	Encourage energy-saving investments
Effectiveness	
Status of implementation and planning	Expected to come into effect on 1 July 2011

Description

The aim is to change the system of evaluation of homes (Home Evaluation System due to come into effect on 1 July 2011) which evaluates the energy performance of a home (on the basis of the energy label) to encourage investment in energy-saving measures. The Home Evaluation System sets the maximum rent on the basis of the characteristics of the home. This change will include the energy label in the Home Evaluation System and the maximum rent of the home will be linked to its energy label.

On 8 March 2011 the Lower House approved the Bill incorporating the energy label into the Home Evaluation System. It also approved two amendments (the transition date was extended until 1 January 2014, and the change will be evaluated after three years, immediately after the end of the transitional period). The change to the Home Evaluation System will be introduced immediately for homes with an energy label.

Name	Strengthening of Ecodesign and the energy label for products
Category	1.2 Minimum efficiency requirement and labelling
Geographical area	European Union
Target group	Product buyers; product developers and producers; retail sector
End-user activities to be influenced	Purchase of more efficient products Design and production of more efficient products/parts
Effectiveness	High
Status of implementation and planning	Ecodesign regulations have now come into force for 12 products. (Revised) energy labels are available for 8 products.

Description

The recast Ecodesign Directive (2009/125/EC) concerns both energy-consuming products and energy-related products, such as insulating materials and shower heads. With the revision of the Energy Labelling Directive (2010/30/EU) its scope has been made equal to that of the Ecodesign Directive.

Ecodesign regulations are now in force for 12 products and (revised) energy labels are available for 8 products. This number will increase over the next few years.

The aim of Dutch policy is to achieve ambitious targets for as many products as possible and ambitious energy labels as soon as possible to improve the efficiency of the products sold in the Netherlands.

Activities that contribute to this are:

- Support from the Commission for the preparation and formulation of ambitious minimum efficiency requirements and energy labels, for example for televisions and network standby.
- Working with the trade organisations within the Confederation of Netherlands Industry and Employers to distribute practical information about the current regulations (see also: www.agentschapnl.nl/programmas-regelingen/ecodesign) and informing designers and manufacturers about ecodesign as a design strategy that exceeds the minimum requirements of the regulations.
- Continuing effective enforcement of energy labelling (both checking the presence of energy labelling in shops and testing products to check the accuracy of the label statement) and setting up an effective enforcement structure for ecodesign, as far as possible in cooperation with the EU.
- Informing buyers of household and ICT products from shops and online retailers of the annual energy costs of a product (project carried out by UNETO-VNI (the Association of Technical

Retailers and Installers); see www.energieweter.nl) so that buyers choose products that are more expensive but have lower energy costs as a result of lower consumption.

Name	Temporary Subsidy Scheme for Insulating Glass
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Home Owners
End-user activities to be influenced	Increasing the attractiveness of investments in home insulation
Effectiveness	100 000 households have applied and the entire budget has been allocated.
Status of implementation and planning	2009 - 2010

Description

Owner-occupiers and owners' associations can receive subsidy to buy insulating glass for homes built before 1995. A total of €45 million was available for the whole period of the scheme (2009-2010). All of the available budget had been allocated by the beginning of December 2010. Nearly 100 000 households applied for a voucher for an insulating glass subsidy.

Name	Reduced VAT rate for insulating work and for the labour costs of maintenance and renovation of homes
Category	3.2 Tax incentive
Geographical area	The Netherlands
Target group	• Housing corporations • Home owners
End-user activities to be influenced	Encouraging energy-saving investments
Effectiveness	Targeted directly at the home owner
Status of implementation and planning	2009- 1 October 2011

Description

This relates to the reduction of the VAT rate for energy-saving measures on homes (ground, roof and facade insulation) and for all labour costs for renovation and restoration work performed in and on the home. The VAT rate is reduced from 19 to 6%. The low VAT rate on labour costs ends on 1 October 2011.

Name	Energy Savings Credit Guarantee / Green Projects Scheme / National Mortgage Guarantee
Category	3.3 Loans
Geographical area	The Netherlands
Target group	Home owners
End-user activities to be influenced	Encourage investments in energy saving
Effectiveness	Targeted directly at home owners
Status of implementation and planning	Runs until 30 June 2011 Ongoing Ongoing

Description

These measures give a discount on the market interest for loans taken out by home owners for investments in energy saving. These are the Energy Saving Credit Guarantee scheme and the Green Projects scheme.

The Guarantee Fund for Private Homes (Waarborgfonds Eigen Woningen - WEW) implements the Energy Saving Credit Guarantee. The guarantee runs until 30 June 2011. In practice, few banks offer energy saving credits and few individuals take them.

The Green Projects Scheme is a scheme that offers a tax rebate on green investments. Investments in sustainable buildings and energy saving are also covered by this. As the government gives a tax rebate to savers and investors on investments in green projects, investors may settle for a lower allowance and banks can lend money to green projects at a lower rate of interest. The scheme was changed on 1 January 2011 so the tax benefit for savers and investors will be reduced in stages from 2.5% to 0% in 2014. The capital returns tax exemption (benefit 1.2%) will continue in full. This is expected to reduce the availability of green finance.

The National Mortgage Guarantee is a guarantee which covers the risk of the mortgagee defaulting on the mortgage payments. This guarantee is intended for mortgages up to €350 000. Energy-saving measures can be co-financed, and investments in energy saving up to a maximum of €6 500 are not taken into account in the income test. Energy-saving measures include HE boilers, cavity wall insulation, roof insulation, floor insulation, HE++ glazing, heat pumps, solar boilers and/or solar cells.

Name	Enforcement of the Environmental Management of Non-Residential Buildings Act
Category	1.1 Building requirements and enforcement
Geographical area	The Netherlands
Target group	Building owners
End-user activities to be influenced	Enforcement of legal obligation to take energy-saving measures with a pay-back time of less than 5 years
Effectiveness	
Status of implementation and planning	Ongoing

Description

Since 2008 many organisations have fallen within the scope of the Activities Decree under the Environmental Management Act. This states that businesses have a duty of care for energy consumption. If a business consumes more than 50 000 kWh electricity or 25 000 m^3 natural gas a year, the competent authority may require it to take energy-efficiency measures that have a proven pay-back time of 5 years or less. That applies also for offices, schools and healthcare institutions. The competent authority, usually the municipal authority, can enforce compliance with the Activities Decree. If the business consumes more than 200 000 kWh electricity or 75 000 m^3 natural gas a year, the enforcing authority may oblige it to carry out an energy saving study if it is suspected of not meeting the obligations of its duty of care.

Name	Sustainable heating in existing homes
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Home owners (individuals and housing corporations)
End-user activities to be influenced	Encourage the installation of solar boilers, heat pumps and micro CHP.
Effectiveness	Almost all of the budget has been allocated.
Status of implementation and planning	The subsidy scheme was open for applications up to the end of 2010. There is no budget yet for 2011.

Description

Under this scheme subsidies could be obtained for solar boilers, heat pumps air/water source pumps and micro-CHP installations. The budget up to the end of 2010 was €40 million. This was distributed as follows:

- Ø 32 million euros for solar boilers and heat pumps;
- Ø 4 million euros for air/water source heat pumps;
- Ø 4 million euros for micro-CHP.

The scheme has not yet been opened again with a new ceiling for 2011. The requirements to be fulfilled by the designated measures, the subsidy basis and the relevant subsidy amounts are as follows:

Solar boilers
For the purchase of small solar boilers with a collector surface up to and including 6 m², which meet the required standards, the subsidy is €200 per Gigajoule (GJ).
Since 9 August 2009 the subsidy for solar boiler systems with a surface greater than 6 m² has been €125 per GJ. For applications submitted before 9 August 2009 the old subsidy amount of €180 per GJ still applies. Since 19 May 2010 the subsidy for solar boiler systems with a surface greater than 6 m² has been €125 with a maximum €1 500 per home.

Water/ brine-to-water/water source heat pumps
The subsidy up to 10 kWth (calorific output) is €500 per kWth with another €250 per kWth given for the remaining output of installations above 10 kWth. Sample calculation: the calorific output of a heat pump is 15 kWth. The subsidy thus amounts to (10 x €500 + 5 x 250) = €6 250.

Air/Water source heat pumps
For applications for air/water source heat pumps received before 19 May 2010 the subsidy is €500 per kWth up to a maximum of €1 000. From 19 May 2010 the subsidy is €2 000 per air/water source heat pump.

Micro-CHPs
The subsidy for these micro CHP boilers is €4 000 per installation.

Name	MilieuCentraal
Category	2.1 Specific information campaigns
Geographical area	The Netherlands
Target group	The consumer
End-user activities to be influenced	• change in consumer behaviour • purchase of more energy-efficient appliances
Effectiveness	Influencing behaviour and the choice of appliance by providing information and explaining the consequences of energy consumption for the climate, the possibilities for saving energy and the cost benefit to the consumer.
Status of implementation and planning	Ongoing

Description

MilieuCentraal implements a number of instruments and works to bring energy saving and renewable energy to the attention of specific consumer target groups. MilieuCentraal is a national, independent foundation that offers consumers practical and reliable information on the environment. The information is reviewed by a panel of independent experts. The foundation receives government subsidy for most of its activities.

The following instruments are used to bring energy saving and renewable energy to the attention of the consumer:

Labelling of household appliances: The provision of information about the energy efficiency of appliances. The website 'Energylabel.nl' gives a list of energy-efficient household appliances and the energy labels used in the Netherlands.

Consumer Help Desk: The MilieuCentraal Help Desk replies to questions received by telephone or email. It also initiates publicity projects about important environmental issues, such as environmentally-friendly building and jobs, mobility and nutrition.

Smart meters and feedback: over the next few years, smart meters will be installed in all homes in the Netherlands to allow frequent feedback on energy consumption. The cost-benefit analysis carried out by KEMA (Intelligente meters in Nederland; herziene financiële analyse en adviezen voor beleid [Intelligent Meters in the Netherlands; revised financial analysis and policy advice], KEMA, June 2010) indicates that with a smart meter an average saving of 3.2% can be made on household electricity consumption and 3.7% on gas consumption.

Name	Innovation Agenda for the Built Environment
Category	6.3 Energy efficiency funds
Geographical area	The Netherlands
Target group	• Project developers • Building companies
End-user activities to be influenced	Increase the energy-efficiency of new buildings
Effectiveness	
Status of implementation and planning	2011 -2014

Description

The innovation programme Energy Leap encourages innovations and aims to halve energy-use in the built environment in 2030 (in comparison with 1990). The priorities of this programme are:

1) Accelerated development and introduction into existing buildings of high energy-performance energy-saving packages that can be increased in scale.
2) Accelerated market development of energy-saving concepts with an integrated approach to design and execution. These are required to achieve more ambitious targets in new buildings and existing buildings (chain integration).
3) Involvement of the user aspects and user-friendliness in the design of energy-efficient buildings.

Projects targeted specifically at acceleration and renewal may be eligible for support under the Innovation Agenda for the Built Environment (IAGO). A part of the budget of the IAGO-I (€30 million) and IAGO-II has already been allocated. For the remaining sum proposals are being drawn up for the period up to 2014. These are targeted both at homes and non-residential buildings and at regional development.

Name	Block by Block approach
Category	2.6 Demonstration projects
Geographical area	The Netherlands
Target group	Home owners, corporations
End-user activities to be influenced	Facilitating investments in the improvement of the energy quality of homes
Effectiveness	
Status of implementation and planning	5 pilots starting in 2011

Description

The Cabinet is relying on a large-scale approach to existing buildings, called block by block, to create more momentum in existing building. The aim is to use standard packages, with a management role at local level and using money from the market (for example from institutional investors). Influencing the behaviour of occupants and users will form part of this approach. A pilot comprising five projects is starting in 2011. These projects have a term of two years. During this period, sufficient experience must be gained to produce a concept that can be rolled out nationally. Experience is needed in financing structures, marketing models and forms of local operating units. The State provides the projects with financial support to cover additional process costs.

Name	Roll-out of smart meters
Category	2.8 Metering and invoicing
Geographical area	The Netherlands
Target group	All end-users that fall within the scope of the ESD
End-user activities to be influenced	Energy saving through information about energy consumption
Effectiveness	The KEMA cost-benefit analysis (Intelligente meters in Nederland; herziene financiële analyse en adviezen voor beleid [Intelligent meters in the Netherlands; revised financial analysis and policy advice], KEMA, June 2010) shows that an average saving of 3.2% can be made on electricity and 3.7% on gas.
Status of implementation and planning	Smart meters are installed in new buildings, during large-scale renovation and regular replacement and at the request of the final customer.

Description

The Act implementing the EC Energy Efficiency Directive contains rules to promote energy saving. It specifies that smart meters that can show the actual energy consumption and provide information about the period of consumption must be installed in new buildings, during major renovation and regular replacement and at the request of the final customer. As a smart meter can give consumers feedback about their energy consumption, it is an important aid to behaviour change and offers possibilities for saving energy. The meter can be used to offer services to help with this on a display unit supplied separately or on the final-customer's personal computer. The government recognises the importance of direct feedback for raising energy-awareness and offering consumers a perspective on their actions. It is primarily up to companies to produce convincing applications, for example for mobile phones, the Internet or applications in the final-customer's own home. The smart meters must therefore be suitable for connecting local applications in a way that is supported by international open standards. The government will therefore also make this a requirement for smart meters.

The meters must then be offered in new buildings, during major renovation, regular replacement and at the request of the final-customer. Final-customers can opt not to have a remotely readable meter installed, or to be connected to remote meter-reading. In that case, the customer will certainly have a P1-port, to which a display can be connected.

III.3 Industry

The following measures apply in the industry sector:

- Energy Tax; see also description in paragraph III.1
- Energy Investment Allowance (EIA); see description in paragraph III.1
- Long-Term Agreements; see also description in paragraph III.1
- Use of industrial heat
- Environmental Quality of Electricity Production (until the end of 2007)

Name	Use of industrial heat
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Industry
End-user activities to be influenced	Promoting the use of residual heat
Effectiveness	Budget for viability studies fully allocated; investment budget almost fully allocated
Status of implementation and planning	10.5 million euros was available for this in 2010. A budget has not yet been made available for 2011.

Description

The government awards a subsidy on application to businesspeople running an industrial business or participating in a viability study partnership conducting a heat reduction viability study.

1. The subsidy amounts to 50% of the cost eligible for subsidy.
2. The subsidy is capped at €100 000 per heat reduction viability study. For viability study partnerships, if the total amount of the subsidy is more than €100 000, the excess is deducted on a pro-rata basis from the subsidy awarded to the applicants in question.

The government awards a subsidy on application to businesspeople running an industrial business for an industrial heat-use investment project.

1. The subsidy amounts to 40% of the costs eligible for subsidy.
2. The subsidy is capped at €1 000 000 per recipient.

Name	Environmental Quality of Electricity Production (MEP): MEP for CHP (last opened for applications in 2007)
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Producers of CHP power and investors in CHP installations
End-user activities to be influenced	Encouraging the use of CHPs
Effectiveness	High
Status of implementation and planning	Last opened for applications in 2007

Description

Under the Environmental Quality of Electricity Production initiative, CHP installations receive a subsidy for one year, if justified by the market circumstances. The CHP incentive under this initiative ended in 2007 and no further subsidy has been made available since then. The primary aim of the subsidy was to maintain the existing pool of cogeneration installations at times when the market price of electricity and gas meant that it was not cost-effective to develop them. Installations first commissioned or extensively renovated in the 2007 subsidy year were also eligible for subsidy.

III.4 Traffic and transport

The following measures apply in the traffic and transport sector:

- Energy Investment Allowance (for description see paragraph III.1)
- Long-Term Agreements (for description see paragraph III.1)
- Other transport taxes (Motor Vehicle Tax/Private Car and Motorcycle Tax, CO_2 differentiation, lease cars)
- Energy labelling of passenger cars/tyres
- Longer and heavier goods vehicles
- Sustainable Mobility Pilot Projects
- Sustainable Logistics (Connect)
- Mobility Management
- Incentives for inland waterways
- European vehicle standards
- The New Driving
- Trade-in scheme (ended on 21 April 2010)

Name	Other transport taxes
Measures	• Motor Vehicle Tax differentiated by weight and exemption for very efficient vehicles • Passenger Car and Motorcycle Tax exemption for very efficient vehicles • Conversion of Passenger Car and Motorcycle Tax to CO_2 basis and fiscal addition to taxable income for company cars
Category	3.2. Tax incentive
Geographical area	The Netherlands
Target group	Owners and users of passenger cars and motorcycles
End-user activities to be influenced	Encouraging the purchase of lighter and more efficient vehicles.
Effectiveness	High, direct influence on end-users
Status of implementation and planning	Ongoing

Description

Fiscal encouragement for the purchase and leasing of environmentally-friendly vehicles is being continued with more transparent rates and concentration on absolute environmental performance.

In 2011 the tax incentives for very efficient vehicles (passenger car and motorcycle allowance, motorcycle tax allowance and 14% addition to income for lease vehicles) are unchanged. As this form of fiscal encouragement is intended to be a lasting incentive for greening, the Cabinet will investigate the options for regular tightening of the conditions (CO_2 emission limits). The Cabinet will also announce that tax incentives will continue in the longer term. Those currently driving a very efficient vehicle and those who buy one in the future will definitely continue to benefit from the zero rate of motor vehicle tax until 2013.

Name	Energy labelling of vehicles / tyres
Category	2.2 Energy labelling
Geographical area	European Union
Target group	People who are considering buying a vehicle or new tyres
End-user activities to be influenced	Purchase of more efficient vehicles / tyres
Effectiveness	Targeted directly at the end-user
Status of implementation and planning	Since 2001

Description

All new passenger cars have an energy label. The label provides information about the energy consumption of a car. It is related to the CO_2 reference standard, the average emission of all new cars. Cars with an A-label are the most fuel-efficient and those with a G-label the least. Cars with a C or D label have average fuel consumption in relation to their size. There are cars with A or B labels in each 'size class'. A car with an A label consumes 20% less fuel than a car with a C or D label in the same size class. The fuel calculation for a car with a B label is 10 to 20% lower than that for a car with an average consumption for its size.

For tyres, a label will be introduced in 2012 on the basis of the EU regulation.

Name	Longer Heavier Goods vehicles (LHVs)
Category	2.6 Demonstration
Geographical area	The Netherlands
Target group	Goods transport
End-user activities to be influenced	More efficient use of the infrastructure and lower fuel consumption per tonne-kilometre.
Effectiveness	High, direct influence on target group
Status of implementation and planning	A large-scale experiment with an unlimited number of participants and goods vehicles started in November 2007 and ends in November 2012. If the practical experience continues to demonstrate positive results for the environment and no negative effects on traffic safety, the infrastructure and the modal split, longer heavier goods vehicles will become the 'normal' combination in the Netherlands.

Description

LHVs have now been through ten years of practical testing. These vehicles are able to combine parts that are standard throughout Europe so the additional costs of assembling the parts of the vehicle into an LHV are relatively low. The great advantage is that the vehicle parts can also be used separately as normal vehicles, making this a flexible concept. Since 2007 there has been no restriction on the number of participants and vehicles, although stricter requirements are set for drivers (additional examinations), routes (motorways and main roads to commercial sites) and vehicles (EBS, axle load meters, marking).

The use of nearly 400 LHVs in 2010 reduced the CO_2 emissions by 16 million kg and saved 20 million goods vehicle kilometres. This amount will increase with the increase in the number of LHVs as they replace these regular combinations. However, LHVs are not expected to dominate the roads.

Intensive evaluation in close cooperation with hauliers has demonstrated that the use of LHVs in the Netherlands has been unproblematic. They are hardly noticed in daily use, more than 90% weigh no more than 50 tonnes and there have been no incidents that can be related to the additional length or weight of LHVs.

LHVs are an effective solution particularly for bulk transport. The largest users are retailers, flower transporters and container transporters. They are cost-effective for distances of 75 kilometres and over.

Name	Sustainable mobility pilot projects
Category	3. Subsidies
Geographical area	The Netherlands
Target group	Companies and institutions
End-user activities to be influenced	Purchase of and practical experience with running more energy-efficent vehicles on fuels other than gasoline or diesel
Effectiveness	
Status of implementation and planning	The programme Sustainable Mobility Pilot Projects runs from 2009 to 2014

Sustainable Mobility Pilot Projects: Drive Electric

A new Drive Electric Action Plan will soon be published for the period 2011-2015. This action plan will announce plans to increase electric vehicles to 20 000 in 2015 and to include scooters, innovative bicycles and boats. Energy saving: 0.05 PJ. This should deliver a 0.5 Mtonne reduction in CO_2 emissions, as well as cleaner air and less noise polution, particularly in inner cities, and less dependency on fossil fuels.

Within this programme a subsidy of €10 million has been set aside for hybrid and electric vehicles. Nine projects are receiving subsidies from this pot to gain experience with driving a variety of electric vehicles in a variety of subsidiary markets. This will help to identify problems and obstacles to large-scale market introduction that can then be addressed.

Sustainable mobility pilot projects: driving on hydrogen

The aim of this pilot project is to promote the development and acceptance of the technology and remove the main barriers through practical trials.

The first application round was held at the beginning of 2010. As this was unsuccessful, the intention is to set up another scheme with more scope for R&D in the autumn of 2011, with a sum of €5 million.

Sustainable mobility pilot projects: driving on biogas and higher biofuel blends

A €2.6 million subsidy programme is available. The aim is to encourage fuel saving and CO_2 reduction in passenger cars, delivery vehicles and light goods vehicles and to promote the level of acceptance. The possibilities for driving on biogas and higher biofuel blends are unclear in practice and their effectiveness and reliability are not sufficiently proven. The programme aims to remove the obstacles. It will be opened on 1 July 2011 and closes on 1 December 2011.

Sustainable mobility pilot projects: Truck of the future

The Truck of the Future Action Plan has been formulated after extensive consultation with those concerned in the field. This consultation concluded that there are many opportunities for saving fuel and reducing CO_2 in road haulage, but that they are massively under-utilised as a result of lack of

awareness amongst customers and/or the fact that they are unclear and their effectiveness, reliability and economic ratio are not proven.

The Action Plan builds on this through initiatives such as the Truck of the Future Pilot Project Programme to demonstrate the added value and effectiveness of opportunities in practice and develop a Truck of the Future knowledge centre to collect and transfer knowledge.
See Kamerstukken (parliamentary papers) II, 2009/2010, 31209, No 122.
https://zoek.officielebekendmakingen.nl/kst-31209-122.html

Sustainable mobility pilot projects: innovative buses for public transport

At the end of 2008 six pilot projects were started for public transport buses run on hydrogen, natural gas or biogas. The provinces of Zuid-Holland, Gelderland, the city regions of Amsterdam and Rotterdam and the Eindhoven and Twente regions are taking part in a scheme for innovative public transport buses.
The Ministry of Infrastructure and the Environment is making available a total of 11.4 million euros for the experiments. Public transport companies are also contributing funds. They are converting the vehicles to run on hydrogen (Amsterdam) or natural gas and biogas (Eindhoven). About five thousand public transport buses are currently running in the Netherlands.

Sustainable mobility pilot projects: intelligent transport systems
The aim is to drive forward location-aware mobility services, determining how to reach a group of travellers or vehicles on a particular section of road or route and how to obtain useful data (e.g. traffic flow, preferential access) from it. This will make use of open source and the development of a technical platform for communication between mobile units and a number of service providers.

Sustainable mobility pilot projects: sustainable mainports
Both mainports (Schiphol airport and the port of Rotterdam) have formulated CO_2 reduction objectives. The subsidiary programme for sustainable mainports aims to link into the proposals developed by the two mainports. The purpose of the state's contribution is to develop the knowledge and experience gained and to expand the number of successful projects.
Three different schemes have been implemented - Well to Wing, Walstroom and LNG (liquified natural gas) for Inland Navigation. Well to Wing supports the development of biofuels for aviation (KLM). A closed scheme has been set up for this. Walstroom aims to reduce emissions and restrict noise in the port. A ferry company (Stena) is currently running a pilot project for this. The LNG for Inland Navigation scheme aims to provide LNG fuelling points.

Name	European Vehicle Standards
Category	1. Legislation
Geographical area	European Union
Target group	Manufacturers and buyers of new vehicles.
End-user activities to be influenced	Purchase of more efficient vehicles
Effectiveness	High
Status of implementation and planning	The Passenger Car Directive has been implemented (Vehicle Reg.); that for delivery vehicles will follow soon.

Description

These measures fulfil current and forthcoming European requirements for restricting CO_2 / saving fuel in passenger cars and delivery vehicles (and later goods vehicles). The Cabinet's aim is to establish the CO_2 emissions of all modes of transport. The European CO_2 standard for new passenger cars and the CO_2 standard for new delivery vehicles adopted in March 2011 are the first actions to reduce fuel consumption in the EU (and thus the CO_2 emissions from traffic). These standards are not only necessary to achieve (inter)national climate targets, they also help to reduce our dependency on fossil fuels, and may encourage the European (car) industry to become more innovative and competitive. After the initial strong resistance of the car industry to the CO_2 standard for passenger cars (of 130 g/km in 2012 and 95 g/km in 2020) the possibilities now appear to be better than was ever expected. A growing number of car manufacturers have already brought one or more models onto the market with CO_2 emissions of less than 100 g/km.

Name	The “New Driving” Programme
Category	2.5 Training and education 3.1 Subsidies
Geographical area	The Netherlands
Target group	(Learner) drivers; intermediary organisations (fleet managers, driving schools, trade organisations, etc.)
End-user activities to be influenced	Driving and buying behaviour
Effectiveness	Varies: some activities are targeted directly at end-users, other activities aim to reach the end-user through intermediary organisations.
Status of implementation and planning	Ongoing (since 1999).

Description

The New Driving programme encourages energy-efficient and safe buying and driving behaviour in (learner) drivers and fleet managers.

The New Driving aims to encourage energy-efficient buying and driving behaviour in motorists, company drivers and fleet managers.

The New Driving information campaign aims to change behaviour in transport and car-buying. To influence driving behaviour an information campaign has been launched which focuses on driving in high gear and changing to a higher gear earlier.

The New Driving is a programme of the Ministry of Infrastructure and the Environment with contributions from the Ministry of Economic Affairs, Agriculture and Innovation. It was implemented by NL Agency, but has now been transferred to private participants (the Institute for Sustainable Mobility [Instituut voor Duurzame Mobiliteit], the sustainable mobility knowledge centres of the motoring and trade organisations BOVAG, RAI Vereniging, TLN, KNV and VNA). The wide reach of the New Driving programme is also important: initiatives that are only indirectly connected to motoring, but still deliver reduced CO_2 emissions may also be eligible. The New Driving also covers training, transport telematics, smart bicycle use, public transport and/or hire cars and publicity about these. More information can be found at http://www.hetnieuwrijden.nl/.

Name	Trade-in scheme
Category	3. Subsidies
Geographical area	The Netherlands
Target group	Vehicle owners
End-user activities to be influenced	Earlier trade-in of an older vehicle for a cleaner and more efficient model.
Effectiveness	Around 81 000 cars have been traded in for a cleaner model.
Status of implementation and planning	Scheme ended on 21 April 2010

Description

This was a temporary scheme.

From 29 May 2009 to 21 April 2010 a trade-in scheme was run in the Netherlands for old, polluting cars. Around 81 000 cars were traded in for a cleaner model: in one third of cases this was a new car, otherwise a clean second-hand car. Background information about the scheme and the results achieved over the period of the scheme can be found at www.nationaleslooppregeling.nl.

Although saving energy and reducing CO_2-emissions are not the primary aim of this scheme, the evaluation showed that CO_2 emissions fell by 10 ktonnes as a result of the scheme.

III.5 Agriculture

The following measures apply in the agriculture sector:

- Energy Tax; see description in paragraph III.1
- Energy Investment Allowance (EIA); see description in paragraph III.1
- Long-Term Agreements (see description in paragraph II.1): Innovation and Action Programme for Clean and Economical Agrosectors
- Green Investment and Finance (MIA, VAMIL); see description in paragraph III.1.
- Subsidies, such as Market Introduction for Energy Innovations (MEI), Investment in Energy Saving and Demonstration Projects
- Internal CO_2 equalisation system for greenhouse cultivation
- Innovation programme Greenhouse as Energy Source

Name	Subsidies (such as Market Introduction of Energy Innovations, Investment in Energy Saving, Clean and Economical Demonstration Projects)
Category	3.1 Subsidies
Geographical area	The Netherlands
Target group	Agriculture, particularly greenhouse cultivation
End-user activities to be influenced	Increase the attractiveness of investments in projects with a positive effect on nature and the environment
Effectiveness	High
Status of implementation and planning	Ongoing scheme

Description

There are various subsidy programmes within the agriculture sector to promote the development of energy-efficiency measures and efficient energy systems.

The subsidy programme 'Investments in Energy Saving' offers companies in greenhouse cultivation a subsidy of 25% for measures to increase energy efficiency. The maximum amount of subsidy for each investment can vary. Clusters of companies can also apply for subsidy.

The programme 'Market Introduction of Energy Innovations' (MEI) aims to promote and accelerate the introduction of efficient energy systems by greenhouse cultivation companies. Investments in semi-closed greenhouses should result in a local reduction in CO_2 emissions of at least 25%.

The Clean and Economical demonstration projects scheme supports demonstration projects for the application of renewable technologies that result in energy savings, the use of renewable energy and a reduction in the emission of greenhouse gases. The subsidy can be granted for up to 50% of eligible costs and 70% if the project is carried out by a partnership of agricultural companies.

Name	Internal CO_2 equalisation system for the sector
Category	4.1 Voluntary agreements
Geographical area	The Netherlands
Target group	Greenhouse cultivation
End-user activities to be influenced	Raise awareness of energy consumption and encourage investment in energy saving by introducing a ceiling and market price for CO_2
Effectiveness	
Status of implementation and planning	Measure launched in 2011 for greenhouse cultivation (trial phase)

Description

Greenhouse cultivation is the largest energy-consumer in the agriculture sector. To regulate CO_2 emissions, a CO_2 equalisation system has been set up for this sector. The ceiling for the system is set by the government. The introduction of a market price for CO_2 encourages companies to invest in energy saving.

The basis for the emissions is the gas consumption set off against heat and CO_2 production. The CO_2 price is based on the price in the ETS.

The CO_2 equalisation system will not be linked to the EU-ETS. Around 80 horticulture companies will be offered the opportunity to opt out of the EU-ETS system and join the internal CO_2 equalisation system.

Name	Innovation programme Greenhouse as Energy Source
Category	2.6 Demonstration
Geographical area	The Netherlands
Target group	Greenhouse cultivation
End-user activities to be influenced	Development and application of innovations that make energy saving possible. This involves both the market and research.
Effectiveness	The energy efficiency of greenhouse cultivation in terms of primary fuel consumption per unit of product was 53% lower than in 1990.
Status of implementation and planning	Set up in 2002; ongoing programme

Description

The innovation programme 'Greenhouse as Energy Source' contains a strategy of 6 transition paths to produce a sustainable energy system for greenhouses, so that in 2020 crops can be cultivated cost-effectively in new zero-energy greenhouses. The programme also aims to reduce the use of fossil fuels and to make greenhouse cultivation a supplier of sustainable heat and electricity in 2020.

In 'Greenhouse as Energy Source' the government, the commercial world and knowledge institutions work together on long-term innovations and measures that deliver short-term financial savings. The programme uses various instruments for this, such as a design competition, demonstration projects, publicity and the distribution of knowledge and financial support.

One of the innovations developed within the Greenhouse as Energy Source programme is New Cultivation which delivers an energy saving of up to 50% using new cultivation techniques. The programme also looks at low-energy lighting, (bio) CHP, solar energy and ground source heat.

ANNEX IV: METHODS USED TO CALCULATE ENERGY SAVING

This annex gives more detailed information for each sector about the methods and processes used to calculate the saving achieved up to the end of 2010 (top-down and bottom-up methods) and the expected saving in 2016.

Methods for top-down calculation of the saving achieved

The top-down saving is determined in accordance with the Protocol for the Monitoring of Energy Saving (PME), for all end-use sectors and both for actual (ex-post) and expected (ex-ante) saving. The general approach is described below. A distinction is made between saving on end-use and saving on heat and power production. For the specific approach per sector and subsidiary consumption figures, please see the reports in Dutch (ECN-C-04-16) and English (ECN-C-04-85).

Determining saving in end-use

Energy saving is not directly identifiable as it is energy that is not used. Energy saving must therefore be determined by a method other than measurement. The protocol uses the 'reference use', which is the (theoretical) consumption when no saving is made. Saving is then defined as the difference between actual consumption and reference consumption in the end year (see Figure 1). The main problem for determining the saving is therefore establishing the correct reference consumption.

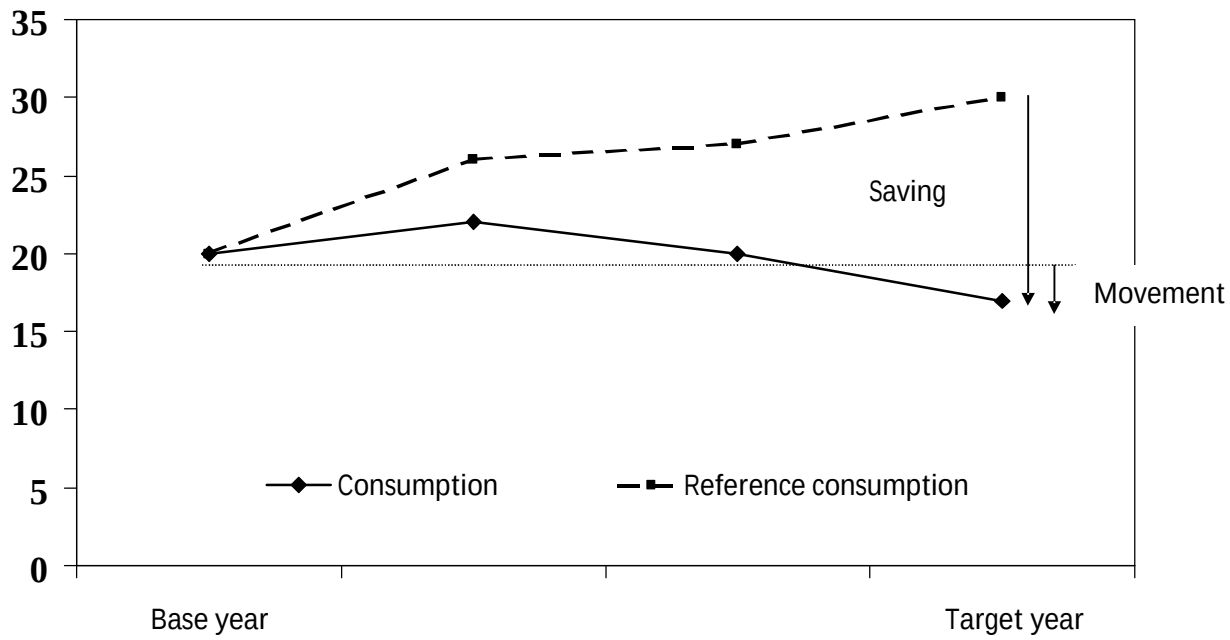


Figure 1 Consumption, reference consumption and saving

The reference consumption is determined by linking the energy consumption to an 'energy-relevant dimension'. The change of this dimension over time determines the rise or fall of the reference consumption. The energy-relevant dimension relates to the activities for which energy is needed and is expressed in physical, social or economic terms, such as tonnes of steel production in the industry sector. At a high level of aggregation it is often impossible to designate one dimension which describes reference use well. To arrive at a suitable dimension we must drop to the level of the subsidiary consumptions in each sector, for example the number of homes times space heating times households.

Determining the saving on combined heat and power production
Final-consumers can also save by generating their own electricity consumption in combination with heat production, i.e. combined heat and power production (CHP). The saving is determined by comparing the CHP input with the saved consumption for separate generation. A boiler with a normal output for the sector is used as a reference for the heat; the reference for electricity is the average power output of central electricity production. The saving is determined both for the base year and the year under review; the increase in the saving in comparison with the base year is recorded as the saving achieved with CHP.

Methods for bottom-up calculation of the saving achieved

Built environment sector (households, services)

Existing buildings: The Ministry of the Interior and Kingdom Relations has commissioned NL Agency to monitor the progress of the agreements for the built environment. This relates to the application of energy-saving measures such as insulation, insulating glass and energy-efficient HE boilers and the use of renewable energy supplies in the built environment, such as woodburning stoves, solar boilers, solar panels and heat pumps.
For existing buildings, NL Agency is arranging annual market surveys of the parties to the agreement to determine how many homes in the Netherlands use energy-saving measures, what these measures are and in what type of home they are used. The random sample for the market survey in 2010 comprised about 70 000 residents. For the social housing sector, the housing corporations were also surveyed about the use of energy-saving measures in this subsector. The Netherlands has around 7 million homes and the random sample therefore covers a significant proportion of the total population.

The savings from early measures are calculated separately in comparison with the results obtained in the period 2008-2010. The change in the degrees of penetration originates from the Home Panel set up in 2000. The degrees of penetration from the Home Panel are scaled up for the whole of the Netherlands. The data on the total number of homes in the Netherlands used for this are provided by Netherlands Statistics. They show a number of homes with the different measures taken in them.

After these studies have established the frequency of use of the various energy-saving measures each year, a saving must be determined for these measures. The key figures for saving are drawn from a study of saving measures by BuildDesk (Builddesk, 2011). The Energy Saving Monitor for Homes was used as a source for this study. These are energy savings for standard homes calculated on the basis of a model. All reference home types are extrapolated from their 'current' situation to the situation when the measure is taken. The average saving is weighted by the number of a type of

home found in the Netherlands. One weighted reference figure is therefore calculated for each measure to establish the saving in PJ.

New buildings: the data for energy consumption per m^2 in new homes are calculated on the basis of an EPC calculation model applied to the reference homes (ECN). The energy use per m^2 was calculated for 6 types of reference home. To calculate the energy use the house-related energy consumption was calculated on the basis of the numbers of homes and the average surface area per type of home. The values are determined by taking a weighted average on the basis of numbers built and the useable surface area of the underlying basic types (reference homes). The data on numbers of homes are provided by Netherlands Statistics. A delay of two years is applied between the building permit and delivery. This is used to calculate savings excluding early measures in new homes in 2008, so the effects of the tightening of the EPC in 2007 are not yet taken into account. However, for the calculation in comparison with 2000 everything is taken into account, as the delay for this falls some time after the lower limit of 1995 for early measures.

Industry sector

The extent of the efficiency improvement achieved by the projects is calculated each year. This is done by comparing the situation without savings (virtual situation) with the situation after savings (actual situation). The calculation is made in 3 steps:

1. actual energy consumption at the end of the reporting year is determined
2. the sum of reported savings in the monitoring year is determined
3. the efficiency saving is established as a percentage. This is the ratio of the savings realised in the monitoring year as compared with the situation without savings.

The saving is quantified as far as possible in comparison with measured data. Where that is not possible, companies may use calculations or estimates. Monitoring and calculation methods are agreed with the parties concerned and established in various documents (NL Agency, 2010[10]; NL Agency, 2011[11]).

In the Long-Term Agreements a distinction is made between savings from process measures, chain measures and generated/purchased renewable energy [these terms are defined in the abovementioned documents]. Only the savings from process measures taken by industrial companies[12] which do not fall within the scope of the EU ETS are included in this NEEAP report. Process measures save energy within the limits of the company. Table 8 (paragraph 2.3.2.2) states separately the renewable energy generated and used 'behind the meter'.

The saving in the production process can be achieved by:

[10] NL Agency (2010), Memo Communicatie Methodiek Monitoring MJA3 [Memo, Communication of Monitoring Method for LTA3].

[11] NL Agency (2011), Handreiking Monitoring MJA3, versie 1.4, [Assistance with Monitoring of LTA3, version 1.4] 19 January 2011

[12] The Long-Term Agreement savings of companies from the service and transport sectors are thus not included.

- Energy care and good housekeeping: actions based on continuous, structural attention to energy efficiency
- Process measures: measures on processing installations
- Utilities and buildings: measures on facilities and support installations
- Strategic projects

In this method, the new measures carried out are recorded each year. The saving for each measure is recorded on an annual basis. Intensification of a previously-reported measure may also be regarded as a new measure. Process measures may only be listed once, in the year they are first implemented. The saving achieved by the measure also takes account of the saving results over the remaining duration of the agreement.
Many companies also take 'soft' energy care measures. These often have a limited lifespan – the effect of the behaviour campaign often wanes after a few years. A measure may therefore be listed only once under the heading energy care.
The companies report the monitoring data on 1 April each year. During this process draft data can be checked by industry consultants. The company reports are reviewed after submission via NL Agency and feedback is given to the companies. NL Agency then compiles the data into a sector report. This is discussed with the industry and the government in a consultation group. After approval the sector results are published.

Transport sector

The savings from label improvements are determined on the basis of the data about the labels of newly-purchased passenger cars and the average use of these cars. The data for this come from RDW [the National Road Transport Organisation] (sales of cars per label) and Netherlands Statistics/the Netherlands Environmental Assessment Agency (estimation of the use of cars in terms of the number of kilometres driven). The data on car sales and estimated kilometres are submitted regularly by these parties. For this NEEAP report Harmelink produced a one-off calculation of the results (2010)[13].

Agriculture and horticulture sector

The LEI [Institute of Agricultural Economics][14], part of the Wageningen University and Research Centre, monitors the energy use of Dutch greenhouse cultivation on behalf of the Horticultural Product Board and the Ministry of Economic Affairs, Agriculture and Innovation. The results are published in the annual greenhouse cultivation energy monitor [15], which also cites the data sources used.

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[13] Harmelink, M. (2011), Energy savings in the horticulture and road transport sector in the Netherlands over the period 1995-2010.

[14] LEI provides statistical data for many areas of agriculture on the basis of production data, regular surveys etc.

[15] Van der Velden, N., P. Smit (2010), Energiemonitor van de Nederlandse glastuinbouw [Energy Monitor of Dutch Greenhouse Cultivation] 2009, LEI report 2010-091. LEI, Den Haag. http://www.kasalsenergiebron.nl/uploads/media/Energiemonitor_LEI_2009.pdf.

The efficiency improvement is determined in comparison with 1980. The energy-efficiency is the primary fuel consumption per unit of product and is determined for the production of greenhouse cultivation. The following steps are involved:

- establishment of the total input and output of the separate energy types both of greenhouse cultivation and the production of greenhouse cultivation
- establishment of the physical production of the production of greenhouse cultivation
- calculation of energy efficiency.

Greenhouse cultivation produces many products. For each product the physical production is expressed in various units (tomatoes and peppers per kg, cucumber per unit, flowers per unit or per bunch and plants per unit). The total physical production is therefore determined indirectly. This is done on the basis of sales of greenhouse cultivation products for one year in comparison with the previous year. The difference between these consists of a price change and a change in physical production. The physical production is determined by correcting the sales for average price changes in the products of greenhouse cultivation. The data are drawn primarily from sector reports.

ANNEX V: ENERGY SAVING BY THE TOP-DOWN METHOD, BACKGROUND INFORMATION PER SECTOR

Energy saving by the top-down method: households
For households a distinction is made between house-related saving (mainly gas) and saving on electricity consumption.

Household energy saving: house-related

As the PME figures are unreliable for short periods due to the limited availability and quality of the data[16] the results of the simulation with the Simulation and analysis model for building-related energy consumption and CO•emissions are used here, which distinguishes between the saving on heat demand (insulation, heat recovery, etc.) and saving from output improvements (HE boilers etc).

Period 2008-2010: actual
Results from model simulation
Figure 1 shows the house-related saving in homes determined using model simulations. The total primary saving in the period 2008-2010 is around 5 PJ a year. Some of the saving comes from new buildings (about 1.6 PJ), but most of it is from the replacement of heating boilers and from insulation installed in existing residential homes (3.4 PJ).

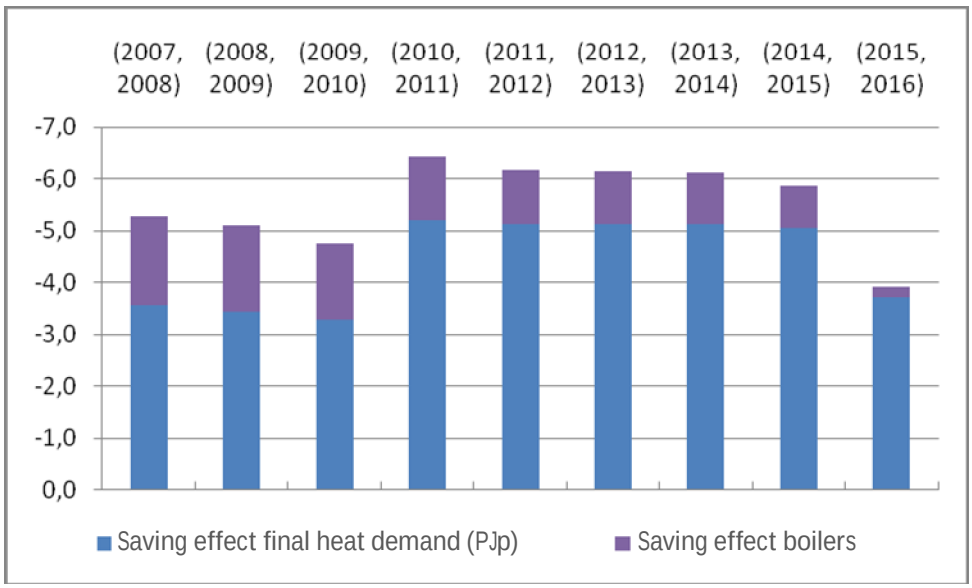

Figure 1: Total annual saving for 2008-2016 on building-related consumption

Effect of crisis
The number of new homes did not fall in 2008 and 2009, but is even higher than in previous years. In the period 2000-2007 the average number of finished homes was around 69 000 a year. In 2008 and 2009 it was 79 000 and 83 000. This number did not fall substantially until 2010, when it was 56 000. The simulations are based on an average of 77 000 new homes a year in 2008 and 2009 and 71 000

[16] See section "Choice of evaluation method for top-down saving figures"

in 2010. For the period 2008-2010 the actual figure is 8 000 lower than the calculation and the saving for 2008-2010 is 0.2 PJ lower.

Period 2011-2016: expected

The expected saving increases again in comparison with the historic period to just over 6 PJ primary saving a year (see Figure 1 and Table 1). This is a result of the extra saving from insulation measures under the More with Less programme and the additional efforts of corporations under the agreement concluded with them. After 2015 the saving potential will have been exhausted and the saving will fall.

Total saving 2008-2016

The total cumulative saving over the period 2008-2016 is almost 50 PJ (see Table 1). This makes a contribution of 26% to the objective for 2016.

Table 1: Energy saving on house-related consumption per period (in PJ)

	2008-2010	2011-2016	2008-2016
Reduced demand	10.3	29.4	39.7
More efficient boilers	4.8	5.2	10.0
Total saving	15.1	34.6	49.7

The policy used is that of the 2010 Reference Projection (Daniels et al, 2010), with two adjustments: the gas price was increased from 45 to 52 ct/m^3 natural gas and the EPC was tightened on 1 January 2011 from 0.8 to 0.6. In comparison with NEEAP-1, the projection of the policy effects of the Clean and Economical programme has been reduced sharply (at that time it was 50-100 PJ for the GO). In the first NEEAP there was no decline in the rate of house building as a(n) (delayed) effect of the economic crisis, and thus no negative effect on energy saving.

Calculation method

In comparison with the previous NEEAP there were no significant methodological changes that affected the NEEAP savings figures for this sector apart from the general changes (new background-scenario, changed definition of saving from policy-related to total saving).

Household energy saving: electricity

The Electricity Consumption of Appliances calculation model is used to evaluate the electricity consumption of households. This includes all applications and almost all appliances. The Electricity Consumption of Appliances results are also used to calculate the PME figure for electricity saving. As a result the savings figures from PME and from the simulation are not integrated here.

Period 2008-2010: actual

The saving in this period is a result of autonomous efficiency improvements and of the Ecodesign Directive for standby consumption of appliances and lighting and a maximum consumption for televisions, refrigerators, freezers, dishwashers, single set-top boxes/decoders.

The greatest saving is made in washing machines, refrigerators and lighting (in that order). Dishwashers and freezers also account for a reasonable share in the saving. The remainder of the saving is from tumble-driers, a lower stand-by output of all appliances, cooking equipment, heating, audio, video and ICT. The annual saving in each of the years 2008, 2009 and 2010 is around 1.6%. The crisis has had no visible effect (in the form of a sharp fall in the purchase of appliances). The saving in primary terms is around 2.5 times that of the saving on final electricity consumption. A large part of the saving is autonomous or a result of previous policies. The house-related options are for example electric boilers, electric cookers and electric heat pumps.

Table 2: Household electricity saving per period

	2008-2010	2011-2016	2008-2016
Per household (kWh)	161	553	714
Relative (%/year)	1.6%	2.9%	2.6%
Total primary (PJ) (including building options)	14.1	43.3	57.4

Period 2011-2016: expected

The saving in this period is a result of autonomous saving, previous policies (see 2008-2010) and European policy that will come into effect during this period. It is assumed that there will be no changes in the existing Ecodesign Directives and that there will be no more new energy labels. The effect of the revision of the Energy Labelling Directive in 2010 has not been calculated either. The saving is achieved particularly for lighting and the stand-by output of all appliances, followed at some distance by saving in washing machines, dishwashers and refrigerators. The expected annual saving is higher than the 1.6% realised in 2008-2010 because of the further development of Ecodesign policy.

Total savings 2008-2016

The Table also shows the total saving over the whole period. The average saving rate for these years is 2.6%. In primary terms the electricity saving amounts to around 57 PJ, or 30% of the objective for 2016.

Calculation method

In comparison with the previous NEEAP, there have been several changes in addition to the general changes (new background scenario, changed definition of saving from policy-related to total saving), as a result of a change to a broader (bottom-up) Electricity Consumption of Appliances model for the determination of this subsidiary consumption. In this model, the consumption per appliance is determined on the basis of the degree of penetration, intensity of use, performance (output) and the saving. When added together, this produces the total electricity consumption. For historical years the input data for each appliance are drawn from surveys and the total consumption is checked against the statistical consumption. For the overlap with building-related electricity consumption (with electrical heat source pumps for example) which is determined with the Simulation and analysis model for building-related energy consumption and CO• emissions, a correction is applied to avoid double-counting.

The main consequences of this move to the Electricity Consumption of Appliances model combined with the changed background scenario are:

- For the first NEEAP the saving effects were estimated for fewer appliances than in the Short Term Projection, in which Ecodesign effects are estimated for dishwashers, washing machines, refrigerators, freezers, single set-top boxes, lighting, televisions and the stand-by consumption of all appliances. At that time no effect was assumed for dishwashers, washing machines and set-top boxes, and a different effect was estimated for refrigerators and freezers together, lighting, televisions and stand-by[17]. Also, far more is now known about expected Ecodesign Directives.
- Slightly different trends were assumed for various appliances (cooking, audio, video and ICT) and for cooling, which has a small indirect effect on the electricity saving.

Energy saving by the top-down method: industry

Industry can be divided into a number of subsidiary sectors, a large number of which are covered by the European Emissions Trading System (ETS). This must be taken into account when determining the saving. As before, saving on heat and fuel consumption in the large, energy-intensive ETS companies is still excluded from the saving figures determined for the NEEAP. However, discussions with the European Commission after the end of the previous NEEAP have led to a change in the approach to including savings on electricity consumption.

Period 2008-2010: actual

The forecast for the total NEEAP energy saving for the period 2008-2010 is 3 PJ, which is about half the rate of saving in the previous years. Saving on the electricity demand makes the largest contribution to this. The main underlying causes are capacity developments and utilisation and investments in energy-saving technology (including CHP).

In the autumn of 2008 the financial and economic crisis had a major impact on Dutch industry. The recession caused a significant downturn in production, particularly in energy-intensive sectors such as base metals, chemicals and synthetic fertilisers. As an illustration of this,[18] total Dutch steel production fell from 7.4 million tonnes in 2007 to 5.2 million tonnes in 2009 (Figure 2). The reduced capacity utilisation had an extremely negative effect on the energy efficiency of industry, but the majority of this was for fuel consumption under the ETS. This only affected the NEEAP saving figures related to electricity use. In 2010 the production level and capacity utilisation had largely recovered.

[17] In the first NEEAP forecast this excludes stand-by for ICT. In the Short Term Projection, stand-by includes ICT.

[18] This sector falls within the scope of the ETS, but good month-by-month data are available to illustrate the effect.

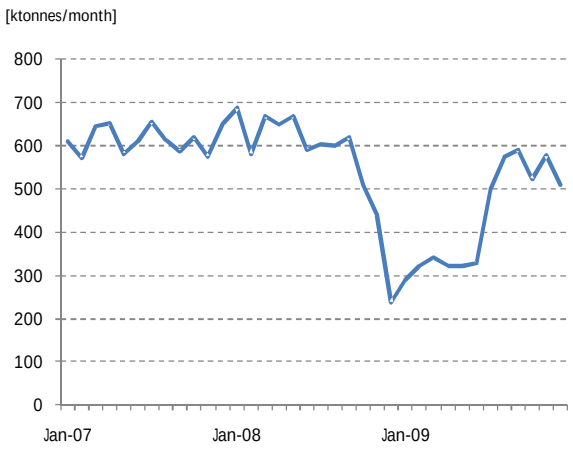

Figure 2 Monthly steel production in the Netherlands 2007-2009 (source: World Steel Association 2009, 2010a, 2010b)

Energy saving in industry is often realised by investing in improved installations, expanding capacity, using residual heat or cogeneration. These investments in energy-saving technology fell in the period 2008-2010 as companies did not have the financial scope for them. The requirements of companies (and particularly quoted companies) for returns on investments in energy saving are often high, particularly at times when capital is scarce. This affects saving in the longer term as well. Most of the effects of the rapid fall in production (as a result of under-utilisation of capacity) on the energy-efficiency are expected to be short-lived.

More attention to cost-reduction by energy-saving measures that are not very capital-intensive is having a positive effect on energy-efficiency. The high energy prices in 2008 also increased the interest of many companies in energy saving. The measures concerned are 'good housekeeping' measures such as optimising process management and improving production planning.

Measures that increase chain efficiency (such as optimum distribution and a reduction in energy use when using the product) often have no direct effect on the energy saving of the industry itself, but only on the saving in other sectors.

There is a slight downward trend for electricity production from cogeneration in industry. In the current market circumstances, few companies are investing in new CHP. As CHP is mainly used by energy-intensive companies it accounts for only a small proportion of industrial CHP.

Period 2011-2016: expected

The forecast for primary saving in industry in the period 2011-2016 is 15 PJ. Of this, 12 PJ are realised by saving on the relevant part (ca 80%) of the final electricity demand in all companies (a very large proportion of which is realised by ETS companies), and the remaining contribution comes from saving on the heat demand of non-ETS companies. The effect of CHP outside the ETS on the NEEAP saving is small.

The projected medium-term saving in the NEEAP is reasonably in line with the energy saving realised historically. The scenario assumptions for energy prices are higher than in the Reference Projection 2010-2020, but this has only a limited effect. New policy (such as the new Long-Term Agreements) is

no reason to expect a break in the trend for energy saving. The energy agreements will be continued and there will be less emphasis on financial incentives and more on removing obstacles.

Total saving 2008-2016

The total NEEAP saving in industry in 2008-2016 is 18 PJ. This is mainly a result of savings on the final electricity demand. In the 2007 NEEAP the saving for 2008-2016 was 2-6 PJ. The difference is largely explained by the fact that the saving of almost 80% on the electricity consumption of industry as a whole is now included in the NEEAP and this makes a substantial contribution.

Calculation method

In comparison with the previous NEEAP, there has been one important change in scope, in addition to the general changes (new background scenario, changed definition of saving from policy-related to total saving) that has had a significant effect on the NEEAP saving figures for this sector. This is the expansion in the scope of the NEEAP to include the electricity consumption of the ETS companies referred to above, which means that all saving on electricity is now included. As a result of this change which arose from discussions with the European Commission, the expected NEEAP saving has increased sharply, as the final electricity demand on which savings can be made has roughly quadrupled (non-ETS companies have a share of about 20% in the electricity consumption of the sector). If the saving on the electricity consumption of ETS companies is not taken into account, the saving would be about 8 PJ for the period 2008-2016 (of which 1 PJ would be for the period 2008-2010).

There is one more possible development that may have an effect. The saving on heat and fuel consumption is taken into account only for non-ETS companies. In the third trading period of the EU ETS (from 2013) more companies will fall within the ETS as a result of policy choices than was expected and accounted for in 2007 (on the basis of the information known at the time) for the NEEAP objective. In the third ETS trading period, emissions outside the ETS will relate primarily to other metal industries, the food industry and companies classified as 'other industry'. Only saving figures from other industry and other metal industries were included in the previous NEEAP. Some of the saving from the food industry (excl. ETS) is also included in this NEEAP.

For the calculation of the NEEAP saving figures it is assumed, as in the previous NEEAP, that they are comparable for companies within a subsidiary sector, irrespective of whether they fall within the ETS or not.

Energy saving by the top-down method: services

In service sectors a distinction can be made between commercial services (trade, hotel and catering, business services etc.) and public services (education, healthcare and public authorities). The Directive includes specific obligations for the latter.

In contrast to the other end-use sectors there are no PME saving figures available for the service sector because of a lack of reliable data. The analysis for the period 2008-2010 is entirely based on the results of the historical simulation using the SAVE-S model.

The saving effect is calculated separately for the heating/cooling demand, the electricity demand, installations for space heating and cooling and, finally CHP (see Table 3). For the heating demand, the saving is almost entirely determined by insulation and heat recovery and for the cooling demand by sun shading. A marginal saving is realised on the provision of hot tap water. Savings are also made on improvements to the efficiency of installations (HE boilers, heat pumps and cooling units). In the electricity demand saving measures for lighting (HE lighting and motion sensors), product cooling (covering cooling units, more efficient compressors) and pumps account for 90% of the total saving.

Period 2008-2010: actual

The contribution of (additional) CHP is negligible in comparison with the final demand (see Table 3). The electricity saving, expressed in primary terms, contributes around 40%. The saving on heating/cooling methods relates to more efficient methods in both existing and new buildings. The total saving over the period 2008-2010 amounts to about 3.5% of the total consumption in 2007, or an average of 1.1% a year.

Table 3: Saving effect by period and category (expressed as PJ primary)

	2008-2010	2011-2016	2008-2016
Final heating/cooling demand	4.8	7.5	12.3
Heating/cooling installations	5.0	6.9	11.9
Final electricity demand	6.2	12.0	18.2
Total final	16.0	26.4	42.4
CHP	0.6	0.6	1.1
Total	16.5	27.0	43.5

Effects of the crisis

Between 1996 and 2008 the annual rate of office building was around 3.2% of the total stock. This fell over the following years to 1.5% in 2010. The rate of building is expected to stay at 0.7% for the next few years. At the same time, the level of vacancy increased from around 6% in 1996 to nearly 14% in 2009. EIB (Economic Research Institute for the Building Industry) expects vacancy to hover around 16% next year (Zuidema and Van Elp, 2010). The net effect of this is that the Gross Surface Area that is actually in use grew by 2.2% up to 2008 and fell by about 2% a year in 2009 and 2010. This is expected to increase again slowly by about half a percent a year over the next few years.

The increase in this Gross Surface Area is partly a result of new buildings and partly of renovated office buildings being occupied again. Some of the new building also goes directly into vacancy. New buildings can also be expected to play a smaller part in realising energy saving within the office sector over the next few years in comparison with previous years. No comparable data are known for other types of building.

We can conclude that the market for new office buildings has collapsed since 2008, but that this has had a limited effect on the saving as new building delivers only a small part of the total saving , partly because some of the space taken back into use is renovated vacant offices.

Saving effect of new versus existing buildings

New buildings account for only 17% of the total realised saving. In this figure, the energy demand for the various functions in a new building is set off against the average demand of the building stock built between 1995 and the base year 2007. In new buildings, most of the saving is realised on the energy functions space heating, lighting, ventilation and pumps. The main saving measure on space heating in offices is equipping the entire shell with an insulation value of Rc=4 and installing windows with a factor U=1.4.

In existing buildings the order of the contributions to the saving is: lighting, space cooling, product cooling and space heating. In offices and schools in particular, HF lighting is expected to increase before any specific policy is introduced (followed by supermarkets and hospitals).

Period 2011-2016: expected

The expected annual saving on the basis of the Short Term Projection analysis (Verdonk and Daniëls, 2011) is somewhat lower than in the period 2008-2010. The contribution of more efficient installations in particular to the total saving will be slightly lower. The total saving over the period 2011-2016 will be around 5.7% of total consumption in 2007, or an average of 0.9% a year. The electricity consumption will stabilise and even fall slightly after 2016, as a result of the effect of Ecodesign measures, which compensates for the growth of consumption.

Total saving 2008-2016

The total saving in the service sector contributes around 23% to the NEEAP objective of 189 PJ. The saving currently determined is precisely between the low and high value as specified for the first NEEAP. The saving for 2008-2010 is significantly higher than in NEEAP-1, whilst that for 2011-2016 is just on the lower limit of the margin determined at the time. These differences are primarily due to the following changes in the basic principles resulting partly from the changed (policy/) background scenario:

- EPC new building: NEEAP-1 assumed a tightening of EPC requirements in 2003, 2008, 2011 and 2017. The current NEEAP assumes a tightening in 2003 and 2009. The proposed tightening in 2015 has not been included in the calculation, but would not have produced a saving until after 2016.
- Education subsidy: recently-introduced subsidy on energy-saving measures in schools, only applicable to 2009 and 2010 (saved around 1.1 PJ).
- The current NEEAP assumes Ecodesign requirements for pumps and HF lighting (see paragraph 2.3.1.3). A number of other requirements are in the pipeline but have not yet been finalised and are thus not included as firm policy: HR boilers, energy-efficient office equipment and frequency-regulation of ventilators and energy-efficient compressors or night-covers for refrigerators and freezers in supermarkets. HE boilers are also used autonomously without Ecodesign requirements.
- For the period 2011-2016 the package of measures in NEAAP-1 was more extensive than it is now. Ecodesign measures for the product groups PCs, screens, imaging equipment, stand-by and off-mode and commercial refrigeration and freezing equipment have now been dropped. NEAAP-1 also assumed that the More with Less agreement would affect non-residential buildings. Now it is assumed that this agreement will only affect homes.

Of the 43.5 PJ saving found, only 1.8 PJ can be attributed to Ecodesign and Education Subsidy. The rest comes from the tightening of the EPC requirements in 2009, the EIA scheme and autonomous

saving effects including other policies from before 2007. As new buildings contributed relatively little, it can be argued that the autonomous saving effect within existing buildings is dominant over this period.

Calculation Method

Since the previous NEEAP new data have become available which have improved the modelling of consumption and saving in Services. The model is tailored to the energy statistics of 2009 and historical penetration levels of energy-saving measures. It assumes that packages of measures estimated by consultants DGMR (Bergen, 2005) prior to the tightening of the EPC requirements, will be applied for the EPC requirement for new buildings from 2009.

In comparison with the previous NEEAP there have been no significant methodological changes that have affected the NEEAP saving figures for this sector apart from these model improvements and the general changes (new background scenario, changed definition of saving from policy-related to total saving).

Energy saving by the top-down method: transport

The transport sector comprises various subsidiary sectors, a large number of which are already (passenger cars) or soon will be (delivery vehicles) covered by the European CO_2 standards.

Period 2008-2010: actual

The projected total NEEAP energy saving for the period 2008-2010 is around 20 PJ. The largest contribution is made by efficiency improvements in passenger cars, which account for nearly 60% of the energy consumption within the sector. A short account of the main developments is given below.

In the autumn of 2008 the financial and economic crisis had a major impact on Dutch industry. The recession caused a sharp fall in the number of passenger cars sold, even after a temporary trade-in scheme was set up. However, the share of small, economical vehicles in new sales rose significantly, so the saving for the period 2008-2010 is still substantial. The increased share of small, economical vehicles, in addition to the economic crisis, will also be affected by the fiscal measures for economical vehicles and the increased availability of very economical models. The fiscal measures were introduced in the recent tax plans and include a (partial) exemption from passenger car and motorcycle tax/motor vehicle tax and/or lower addition to taxable income for (very) economical vehicles, such as hybrids. The average energy consumption per vehicle kilometre of the passenger car pool will fall by around 5% in 3 years. Part of the shift could also be explained by changes in driving behaviour as a result of the programme “New Driving” and/or the high fuel prices in the middle of 2008. In fact the shift to smaller vehicles may also be seen partly as a structural effect. However the data currently available make it impossible to separate this effect easily from the saving.

The freight sector suffered during the economic crisis, and the volume fell, but the production level is expected to make a reasonable recovery in 2010. It is less easy to establish the exact saving than for passenger transport as the degree of recovery in 2010 still affects the final saving figures.

Period 2011-2016: expected

The projected NEEAP saving in the transport sector in the period 2011-2016 is around 30 PJ. The vast majority of this (80% to 90%) was realised by saving on passenger cars. The remaining contribution comes mainly from savings on both delivery vehicles and freight transport.

Although the CO_2 standard introduced for passenger cars was delayed and less ambitious, it still delivers a substantial saving, certainly in combination with the fiscal measures. The Reference Projection 2010-2020 (which is unchanged in the recent update to the Short Term Projection), indicates a 10% improvement in the average energy consumption per kilometre of the total passenger car pool in this period (or a 15% improvement in comparison with 2007). For delivery vehicles and large goods vehicles an improvement has also been realised, but it is not as great (ca 2% improvement between 2010 and 2016).

Total savings 2008-2016

The total NEEAP saving in transport in 2008-2016 is 50 PJ. This is primarily a result of the savings from more efficient passenger cars. In the 2007 NEEAP the saving for 2008-2016 was estimated at 63-97 PJ. The difference is mainly due to the weakened and postponed CO_2 standard for passenger cars and delivery vehicles. If the original plans had gone ahead, a significant proportion of new sales in the years 2010 to 2016 would have been considerably more economical than is now expected.

Calculation Method

In comparison with the previous NEEAP there is one important methodological change that has a limited effect on the NEEAP savings figures for this sector, in addition to the general changes (new background scenario, changed definition of saving from policy-related to total saving). This relates to the determination of the saving figures with sector models such as those also used for projections. The effect of this was that the energy saving for passenger transport was not derived from consumption per passenger kilometre, but from consumption per vehicle kilometre. Energy saving from higher occupancy levels (for example car pools) was thus not taken into account. The total saving was also determined on the basis of a rather different subsector classification, but this effect is fairly negligible.

Energy saving by the top-down method: Agriculture and horticulture

Agriculture includes the greenhouse cultivation, livestock farming and other agriculture sectors. Several greenhouse cultivation companies currently participate in the European Emission Trading System (ETS), which means that around 20% of the energy consumption of the whole agriculture and horticulture sector does not fall within the scope of the ESD. Some of these greenhouse cultivation companies may use an opt-out (from the ETS) and join the CO_2 sector system for greenhouse cultivation (Daniëls and Elzenga, 2010), but this is not taken into account in the current saving figures.

Period 2008-2010: actual

The majority (ca. 18 PJ) of the total primary energy saving under the ESD (27 PJ) was achieved by an increase in the use of CHP gas engines in greenhouse cultivation. At the time of NEEAP-1 this strong

growth was not foreseen, and the contribution of this sector to the NEEAP saving was therefore underestimated.

The rate of saving in agriculture suffered a significant collapse in 2009 as a result of the recession and the levelling-off of the growth in CHP capacity. Agricultural exports, particularly of dairy products and flowers, fell sharply. This drop in demand led to lower prices in many sectors. In 2008 the income of many sectors was already significantly lower than in 2007 (LEI, 2009). The physical production per m^2 greenhouse fell in 2009 after a sharp rise in the previous years (van der Velden and Smit, 2010).

The economic situation restricted the scope for investment of many companies. New building of greenhouses halved in 2009 in comparison with 2008 (van der Velden and Smit, 2010). Many other investments in energy-saving technology were also dropped. After a period of strong growth, the CHP capacity in greenhouse cultivation increased only slightly in 2009. The reduced production led to lower energy efficiency. Companies may have given a higher priority to options for reducing costs through energy saving.

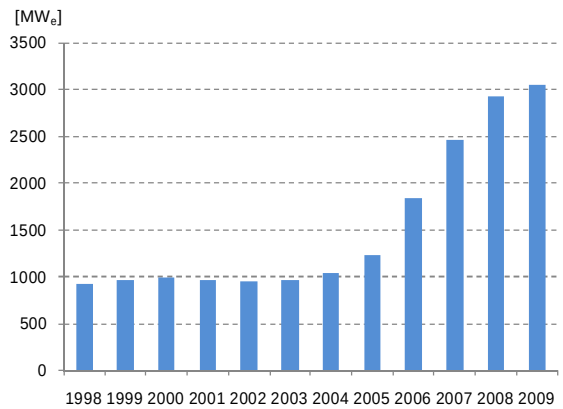

Figure 3 Development of CHP capacity in greenhouse cultivation (source: Netherlands Statistics, data for 2009 are provisional)

In 2009 the average hours of use of CHP gas engines was around 500 hours less than the exceptionally high level of about 4 300 hours in 2008 (van der Velden and Smit, 2010). The saving from CHP can vary significantly from year to year because of changes in the production quantities, energy price movements and changes in the external temperature.

The heating demand of livestock farming and other agriculture sectors has fallen steadily. The consumption of electricity in livestock farming remains roughly constant whilst the other agriculture sectors will use more electricity. As greenhouse cultivation accounts for a large part of the energy use of agriculture, the developments in greenhouse cultivation have a decisive impact on the saving in agriculture.

Period 2011-2016: expected

The projected total primary energy saving of agriculture in the period 2011-2016 is 23 PJ. The reduction in the average rate of saving in comparison with the previous three years is almost entirely due to a substantially lower additional saving from cogeneration (5 PJ).

The projection assumes that the long-term trend of increasing production per m^2 greenhouse surface area will continue. This is an important explanatory factor for the relatively high rate of saving in agriculture. In addition to investments in operating equipment (such as energy-saving blinds) modified cultivation methods may also limit the demand for natural gas and electricity. The government is encouraging new cultivation methods in the 'New Cultivation' programme. The electricity consumption for lighting, automation and mechanisation is increasing. LED lighting will continue to play only a limited role up to the end of 2016.

Geothermal energy and semi-closed cultivation are used more often. Although this development results in an increase in the production of renewable energy in greenhouse cultivation , it does not contribute to the saving. The government wants to continue to cooperate with the agriculture sector in agreements. These will probably make less use of subsidies.

The use of CHP is a very important factor for the saving achieved. After increasing rapidly since 2005, the use of CHP is levelling off due to market saturation. CHP will still make a contribution to the rate of saving in the period 2011-2016 as a result of assumptions about the intensification of production, energy price movements and an increase in the greenhouse cultivation area. The Reference Projection 2010-2020, which assumes an increase to around 11 000 hectares in 2020 from the level of around 10 300 hectares in 2009, is used for the increase in the cultivation area.

Total saving 2008-2016

The projected total primary energy saving from agriculture in the period 2008-2016 is 50 PJ, 23 PJ of which is a result of CHP. The forecast is considerably higher than the result of 10-20 PJ in the 2007 NEEAP. The difference is largely explained by the underestimation of the growth of CHP capacity in the previous NEEAP.

Calculation Method

In comparison with the previous NEEAP, there have been no significant methodological changes that affect the NEEAP saving figures for this sector apart from the general changes (new background scenario, changed definition of saving from policy-related to total saving). Two factors that are relevant to the interpretation of the NEEAP saving figures are explained below.

Several greenhouse cultivation companies are currently participating in the European Emissions Trading System. This has been expressly taken into account when determining the NEEAP objective. It is expected that the greenhouse cultivation companies will take advantage as much as possible of the opportunity to withdraw from ETS and join the CO_2 sector system instead. When determining the saving for the period 2008-2016, this shift has not been taken into account, but the saving has been determined in accordance with the original ESD share in the first NEEAP (to maintain consistency with the target calculated originally).

The energy statistics for agriculture have recently been revised by Netherlands Statistics. The conclusion drawn from the statistics is that the heating demand in greenhouse cultivation has fallen

sharply in past years. The uncertainty in the statistics has only a limited effect on the estimated saving.

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ANNEX VI: INSPECTION OF INSTALLATIONS

This annex expands on paragraph 3.6 on the inspection of installations.

Under Article 14(4) and Article 15(4) of the recast EPBD Member States must submit a report to the European Commission by 30 June 2011. This report outlines the measures taken by the Member State to ensure that users are given advice on the replacement of central heating boilers and air-conditioning systems. The boilers concerned are those with an effective rated output of more than 20 kW. For air-conditioning systems, these are systems with an effective rated output of more than 12 kW. This is a technical report.

In concrete terms, this means that for central heating boilers between 20 and 100 kW the Netherlands has chosen to incorporate the inspection of installations into the existing quality assurance systems that are commonly used in the installation and building sector. For air-conditioning systems above 12 kW there is a compulsory inspection under the original EPBD Directive from 2002. The following paragraphs briefly explain how Articles 14-18 of the recast EPBD, which relate to installations, are being implemented.

Article 14 (Inspection of heating systems)

Inspection and testing of heating systems in the Netherlands can be divided into two categories:

1. Regular inspection: a regular inspection of the accessible parts of the heating system which should also include an assessment of the output.

2. Boiler size evaluation: A comparison/evaluation of the boiler size with the heating requirements of the building. (This evaluation does not need to be repeated as long as there are no changes to the heating system or the heating requirements of the building.)

Note to 1 Regular inspection
Heating installations are currently tested regularly for safe operation by the SCIOS method (SCIOS: Stichting Certificatie voor Inspectie en Onderhoud aan Stookinstallaties [Foundation for the inspection and maintenance of heating installations]) under the Decree on Emission Requirements for Medium-Sized Heating Systems and the Activities Decree:

Non-gas-fired heating systems > 100 kW

Under the SCIOS method, the accessible parts of the heating system are tested at least once every two years for safe operation, optimum burning and energy-efficiency. By implementing this system, the requirements of Article 14 of the (recast) EPBD for regular inspection are fulfilled for this category of heating systems.

Non-gas-fired heating systems 20 - 100 kW and gas-fired heating systems > 100 kW

Under the SCIOS method the accessible parts of the heating system are tested at least once every four years for safe operation, optimum burning and energy-efficiency. By implementing this system, the requirements of Article 14 of the (recast) EPBD for regular inspection are fulfilled for this category of heating systems.

Gas-fired heating systems 20 - 100 kW

This category of heating systems is not yet regularly inspected for energy efficiency. The following options are possible for regular inspection of the accessible parts of systems in this category:

- Option a: The SCIOS method extended to gas-fired heating systems of 20 - 100 kW (SCIOS-light).
- Option b: A (yet to be developed) inspection method for heating systems of 20 - 100 kW based on the BRL 6000 (BRL 6000: Evaluation Guideline for the installation of gas-, water- and electrical systems).

Discussions are still being held with the market participants in the Netherlands about a cost-effective choice under Directive 2010/31/EU that will be compatible with the Dutch market situation.

Note to 2 Boiler size evaluation

- Non-gas-fired and gas-fired heating systems >20 kW

1. When applying for a building/conversion permit for homes and non-residential buildings an EPC calculation is required (EPC calculation: calculation of the Energy Performance Coefficient). For the EPC calculation the boiler size is determined on the basis of the heating requirements of the building. That means that the EPC calculation can be used to implement the requirements of Article 14 for the evaluation of the boiler size.

2. When selling or letting a building, it is compulsory to have an energy label. An energy label is also compulsory for public buildings with a usable surface area greater than 1000 m².

For all buildings that have an EPC calculation, this fulfils the requirements of Article 14 for comparison of the boiler size with the heating requirements of the building, provided no further changes are made to the heating system or the heating requirements of the building (or conversion) after the building has changed hands.

For buildings that do not have an EPC calculation, or where a change has been made to the heating system or to the heating requirements after the EPC calculation has been produced, the boiler size must be evaluated. Discussions are currently being held with market participants to find a definitive means of doing this. One possible way would be to opt, via BRL 9500, for:

1. a (non-compulsory) separate supplement to the energy label or customised advice

2. a separate boiler evaluation.

Article 15 (Inspection of air-conditioning systems)

The inspection of air-conditioning systems is implemented via the Decree on the Energy Performance of Buildings. This fulfils the requirements of Article 15 (1), (2) and (3) of the recast EPBD.

Article 16 (Inspection reports)

Heating systems

Note to 1 Regular inspections

- Non-gas-fired heating systems > 20 kW and gas-fired heating systems > 100 kW

The SCIOS-method requires an inspection report to be drawn up after each inspection and handed over to the owner. The SCIOS method states the minimum content of the inspection report, the format to be used for the reports is free and the inspector can organise it as he wishes. This system fulfils the requirements of Article 16 of the recast EPBD for this section.

- Gas-fired heating systems 20 - 100 kW

In Article 14 we proposed to choose option a for this category (the extension of SCIOS to gas-fired heating systems of 20 - 100 kW). The SCIOS method requires an inspection report to be produced after each inspection and handed over to the owner. This system (the SCIOS method) fulfils the requirements of Article 16 of the recast EPBD for this section.

Note to 2 Boiler size evaluation

- Non-gas-fired and gas-fired heating systems >20 kW

The calculation method for the energy label and the EPC calculation method include a requirement for a report to be produced and handed over to the owner. This system fulfils the requirements of Article 16 of the recast EPBD for this section.

Air-conditioning systems

The compulsory (EPBD) air-conditioning inspection regulation is expected to come into effect on 1 October 2011. This regulation requires a report of the result and improvement measures to be produced for each inspection carried out. This system fulfils the requirements of Article 16 of the recast EPBD for this section.

Article 17 (Independent experts)

Heating systems

Note to 1 Regular inspection

- Non-gas-fired heating systems > 20 kW and gas-fired heating systems > 100 kW

The SCIOS method requires the inspection to be carried out by an inspector qualified for the work concerned working for a SCIOS-certified company. This system fulfils the requirements of Article 17 of the recast EPBD for this section.

- Gas-fired heating systems 20 - 100 kW

In Article 14 we proposed to choose option a for heating systems of 20 - 100 kW (extending SCIOS to gas-fired heating systems of 20 - 100 kW). The SCIOS method requires the inspection to be carried out by an inspector qualified for the work concerned working for a SCIOS-certified company. This system fulfils the requirements of Article 17 of the recast EPBD for this section.

Note to 2 Boiler size evaluation

- Non-gas-fired and gas-fired heating systems >20 kW

a. The energy label calculation method (based on the BRL 9500) requires the recommendation to be produced by a qualified adviser working for a certified company. The energy label calculation method fulfils the requirements of Article 17 of the recast EPBD for this section.

b. For the present the EPC calculation does not require certification or a qualification. If certification or a qualification is required in future to produce an EPC calculation, the EPC method can be used to fulfil the requirements of Article 17 of the (recast) EPBD for this section.

Air-conditioning systems

For the inspection of air-conditioning systems above 12 kW the inspector must hold the diploma EPBD A – air-conditioning systems and the diploma EPBD B – air-conditioning systems. This fulfils the requirements of Article 17 of the recast EPBD for air-conditioning systems.

Article 18 (Independent control system)

Heating systems

Note to 1 Regular inspection

- Non-gas-fired heating systems > 20 kW and gas-fired heating systems > 100 kW

Quality control of inspections performed and reports produced is carried out by the SCIOS method (on random samples). This system fulfils the requirements of Article 18 of the recast EPBD for this section.

Furthermore, SCIOS operates a central sign-off system in which the approved installations can be signed-off after inspection. No substantial data are currently held by the central registration. There is no legal sign-off obligation, however a Certifying Body can withdraw the certification of the company that carries out the inspections.

- Gas-fired heating systems 20 - 100 kW

In Article 14 we proposed to choose option a for heating systems of 20 - 100 kW (the extension of SCIOS to gas-fired heating systems of 20 - 100 kW). Quality control of inspections performed and reports produced is carried out by the SCIOS method (on random samples). This system fulfils the requirements of Article 18 of the recast EPBD for this section.

Note to 2 Boiler size evaluation

- Non-gas-fired and gas-fired heating systems >20 kW

a. The quality of the energy label method is guaranteed by BRL 9500. Quality control of inspections performed and reports produced is carried out under BRL 9500 (on random samples). This system fulfils the requirements of Article 18 of the recast EPBD for this section.

b. At present, the quality of the EPC calculation is not guaranteed by a quality assurance system. If the quality of the EPC calculations produced needs to be guaranteed in the future by a quality assurance system (which checks the EPC calculations produced) this system will then fulfil the requirements of Article 18 of the recast EPBD for this section.

Air-conditioning systems

For air-conditioning systems > 12 kW a quality assurance system is being developed (analogous to the SCIOS method) in which the inspections performed and reports produced are checked. We are considering whether this should be brought under the Environment Management Act. This will then fulfil the requirements of Article 18 of the recast EPBD for this section.