



Energy research Centre of the Netherlands

# **Energy Efficiency Action Plan for the Netherlands**

## **Elaboration on method and results**

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## Abstract

In compliance with article 14, paragraph 2 Directive 2006/32/EC on energy end-use efficiency and energy services (ESD) a first National Energy Efficiency Action Plan (NEEAP) has been set up. For the Action Plan an indicative energy savings target for 2016 has been calculated, equal to 9% of average energy use in the period 2001-2005 for end-users not being part of the EU emission trading system. An assessment of the energy savings to achieve the target for 2016, and an intermediate target for 2010, was made. The set of (policy) measures to improve energy efficiency in the Netherlands was described, with special emphases on the requirements regarding the exemplary role of the public sector and information and advice to final customers. The Action Plan is described in the appendix. This report gives background information on the calculation of the target, the assessment of energy savings and the relation between target and savings.

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## Summary

The Directive on energy end-use efficiency and energy services (ESD) requires that Member States submit a first energy efficiency action plan to the European Commission. This action plan for the period 2008-2016 should contain indicative targets for 2010 and 2016; the latter at a minimum of 9% of historic energy use (average value 2001-2005). The Netherlands Energy Efficiency Action Plan (NEEAP) has been constituted by SenterNovem and ECN, by order of the Ministry of Economic Affairs. This report intends to provide more elaborate information on the NEEAP.

### *Calculation of target*

In the calculation of the saving target the following issues are explained: demarcation of energy use being (not) part of ESD energy use, determination of historic energy use, corrections for future changes in the emission trading system, conversion of energy consumption into primary units and calculating the ESD targets.

Because of these problems the correction for the ETS companies are based on the available data at SenterNovem from the process of CO<sub>2</sub> allocation 2008-2012. It was necessary to correct and supplement these figures for three reasons.

### *Targets for 2016 and 2010*

The target is calculated straightforwardly from total ESD energy use, applying the minimum fraction of 9%, resulting in 184 PJ to be saved (see Table S.1). The NEEAP for the Netherlands adopts a 2% target value for 2010 or 41 PJ, taking into account the fact that implementing many new policy measures takes time and several new policy measures will not deliver their full potential in the first year(s) after implementation.

Table S.1 *Total ESD energy use and ESD targets for 2010 and 2016*

	Total primary [PJ]	Fraction [%]
Total energy use	3239	100
ESD total	2048	63
9% Target 2016	184	5.7
2% Target 2010	41	1.3

### *Determination of ESD savings*

The definition of *end-use* is somewhat ambiguous in the ESD; on the one hand it does not take into account energy supply; on the other hand *district heat* is presented as a saving option. With regard to the definition of savings the ESD incorporates *modal shift*, car-free days and the contribution of renewable energy sources ‘behind the meter’.

A special feature of ESD is the possibility to account for effects of so-called early actions, facilitating measures in the period 1995-2007 that still save energy in the period 2008-2016. However, in the NEEAP early actions have not been taken into account. If needed, this can be done in later years.

The saving effects are expressed in primary units; a factor of about 2.5 has been used to value electricity savings. However, no primary factor for grid supplied heat is available. Heat and fuel are added on basis of heat content, although heat has no conversion losses when meeting the energy demand, opposite to fuel. Therefore, the savings due to district heat cannot be valued.

Savings due to existing policy have been extracted from the Reference Outlook 2005. Savings due to new policy in the recently formulated national program ‘Schoon & Zuinig’ (Clean & Efficient) were extracted from the ECN assessment of this program.

#### *Expected energy savings*

The total energy savings in 2010 and 2016 are presented in Table S.2. From the comparison with the target it can be concluded that the targets for 2010 and 2016 are met.

Table S.2 *ESD energy savings per sector and total*

	2010 [PJ]	2016 [PJ]	2016 [% energy use]
Households	20	119-123	16-17
Tertiary	6	52-56	9-10
Industry	1-3	2-6	1-2
Agriculture	4	13-19	9-13
Transport	15-19	90-97	12-13
Total savings	45-52	277-302	11-12
Target	41	184	

#### *Elaboration on NEEAP results*

Member States can decide themselves in which sector energy savings should be realized. It appears that the sectors households and transport contribute relatively the most, while industry (the part outside emission trading) contributes relatively few energy savings.

With a linear trend from 2008 tot 2016 the intermediate target in 2010 would be 3%, or 61 PJ. Expected savings in 2010 are below the trend because time is needed to implement the large amount of new policy measures.

In the NEEAP it has been assumed that the EU will fully support the Member States in realizing the ESD target. A large fraction of total savings is dependent on EU policy measures, such as standards on CO<sub>2</sub> emissions of cars and energy using devices (Eco-design directive). If EU support is absent total energy savings are still above the target, but by only 5%.

The ESD accepts renewables produced by end-users ‘behind the meter’ as energy savings. The contribution of renewables in the sectors households and tertiary is rather small. However, in agriculture the energy neutral greenhouses save a large amount of natural gas by storing summer heat in the soil and extracting it for winter heating. If this contribution should be refused by the EU, total ESD savings diminish by 21 PJ. In the most pessimistic case, i.e. together with lacking EU support, total savings could become slightly lower than the target.

## 1. Introduction

Directive 2006/32/EC of 5 April 2006 on energy end-use efficiency and energy services (ESD, 2006) requires that Member States submit no later than 30 June 2007 a first energy efficiency action plan to the European Commission. This action plan for the period 2008-2016 should contain indicative targets for 2010 and 2016; the latter at a minimum of 9% of historic energy use. The measures to improve energy efficiency, in order to achieve the targets, should be described as well. Furthermore, the action plan should highlight the exemplary role of the public sector and governmental provision of information and advice to final consumers.

September 2007 the Netherlands has submitted a National Energy Efficiency Action Plan (NEEAP, 2007) to the EU, based on the proposed new savings policy in the working program Schoon & Zuinig (Clean and Efficient) (S&Z, 2007).

The action plan has been constituted by SenterNovem and ECN, by order of the Ministry of Economic Affairs. The content of the NEEAP submitted to the EU is the responsibility of the Ministry.

Several choices had to be made, on the scope of ESD energy use, the definition of energy savings and the value of parameters in the calculation. These were made on the basis of available information from a current European project on developing a method to determine ESD savings (EMEEES, 2006). However, these choices still have to be formally accepted by the ESD Committee of the EC.

In setting up the NEEAP the Member States were suggested to use the common EU template made available by DG TREN. In applying this template a number of issues have not been treated. This report intends to provide elaborate information on these issues.

The following subjects are presented:

- An explanation of the calculation of the ESD target.
- An explanation of the determination of energy savings to be realized.
- Information on choices made in line with the EMEEES<sup>1</sup> proposals.
- Further analysis on savings versus target, e.g. definition issues, EU versus national policy measures, uptake of new policy, etc.

The exemplary role of the public sector and provision of information is not dealt with in this report. The NEEAP submitted to the European Commission is included as an Appendix in this report.

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<sup>1</sup> Evaluation and Monitoring for the EU directive on Energy end-use Efficiency and Energy Services.

## 2. Calculation of energy savings targets

### 2.1 Method applied

The ESD requires that Member States submit indicative targets on energy savings for 2010 and 2016. The calculation of the saving target comprises the following steps:

- a. Demarcation of energy use being (not) part of ESD energy use.
- b. Determination of historic energy use, excluding emission trading.
- c. Corrections for future changes in the emission trading system.
- d. Conversion of energy consumption into primary units.
- e. Calculating ESD targets.

The steps result in an intermediate target value for 2010 and a final target value for 2016.

#### *a. Demarcation of energy use*

The focus of the Energy Service Directive is on energy efficiency improvement in end use. Therefore energy use in energy supply sectors, such as power production, is not covered by ESD. Moreover, use of energy carriers as feedstocks is not incorporated as well. Finally, energy consumption of entities that participate in the CO<sub>2</sub> Emission Trading System (ETS, 2003) is left aside as well (see also Section 2.2).

In practice, energy use in the sectors Households and Transport is entirely part of ESD energy use. Not covered are a very small part of energy use in Services, part of agricultural energy use and a large part of industrial energy use. Part of energy use is not excluded because of industry participating in ETS, but because it regarded heat from combined electricity and heat production owned by joint-ventures. This production is regarded as part of the energy supply sector which by definition is not part of ESD energy use.

#### *b. Historic energy use excluding emission trading*

The ESD target should be based on average energy use in a recent historic period of five years. For the NEEAP the period 2001-2005 has been chosen. In Section 2.2 it is described how sector energy use covered by ETS has been investigated for this period.

#### *c. Changes in the emission trading system*

Future changes in the Emission Trading System will probably lead to a shift between ETS emissions and emissions related to ESD energy use. E.g. energy users can leave ETS if their emissions get below the threshold, or they can enter the system due to changes in the rules. In these cases the historical energy use figures must be corrected backward accordingly. This has been done for horticulture, although the ESD is somewhat ambiguous on this matter.

For most end-use sectors it has been assumed that the ETS fraction of total energy use does not depart from historical figures. However, for horticulture 25% of fuel related CO<sub>2</sub> emissions (20% of agricultural fuel use) will be part of the ETS system in the future (Van Dril, 2005). The increase from 6% in 2005 is due to the scaling up of activities. The correction of agricultural fuel use for the years 2001-2005 leads to lower ESD energy use and ultimately a slightly lower target value.

It must be remarked that future changes in the emissions of ETS participants do not influence ESD energy use and target, because the ESD target is based on given historical figures.



#### *d. Energy use in primary units*

Consumption of energy carriers by end users can have different effects on total primary energy consumption due to conversion losses in energy supply. E.g. using a unit of electricity can take 2.5 units of primary energy, while using a unit of natural gas takes about 1.0 unit of primary energy.

The ESD offers three options with respect to converting electricity to primary units:

- a factor of 1,
- a factor of 2.5,
- another factor insofar accountable<sup>2</sup>.

In this NEEAP historic primary energy use has been calculated with a factor of 2.5 for electricity.

#### *e. Target calculation*

The target for 2016 should be at least 9% of historic ESD energy use, but Member States can state a higher value if they wish. The NEEAP for the Netherlands defines a 9% target value for 2016. For the intermediate target of 2010 the ESD prescribes no minimum target value, but article 4, paragraph 2 specifies that this intermediate target shall be realistic and consistent with the overall national indicative energy savings target referred to in paragraph 1.

## 2.2 Energy use under emission trading

### *Scope of ETS*

The ESD states that it regards end-users excluding undertakings that participate in the emission trading system (ETS). Fuel use related to the traded CO<sub>2</sub> emissions should be subtracted from sector fuel use. The ESD does not state explicitly whether all energy use of the participating undertakings, leading to emissions or not, should be left aside. Here it has been assumed that it regards all energy carriers. Therefore use of electricity and heat are corrected as well.

### *Historic ETS energy use*

In the period 2008-2012 some 350 Dutch companies are participating in the ETS on CO<sub>2</sub> emissions, of which about 250 final consumers of energy. The other 100 companies are part of the energy supply (or transformation) sector (power plants, oil and gas production companies and refineries). The historic ETS energy use is based on plant<sup>3</sup> level and not on company level.

First the possibility was investigated if the energy use for EU-ETS companies could be based on CBS<sup>4</sup> data. However, several problems arose regarding the aggregation level of the available data and the fact that part of the data is based on sampling.

Because of these problems the correction for the ETS companies are based on the available data at SenterNovem from the process of CO<sub>2</sub> allocation 2008-2012. It was necessary to correct and supplement these figures for three reasons:

- Using the harmonized EU definition of incineration plants, not all incineration plants of EU-ETS companies come in EU-ETS. Therefore the non-EU ETS figures were completed with an estimate of the incineration plants that do not come in EU-ETS.
- Not for all EU-ETS companies figures on electricity consumption were available. Estimates based on monitoring data from Long-term Agreements (LTA) and environmental year reports were used to complement the figures.

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<sup>2</sup> "MS may apply a different coefficient provided they can justify it".

<sup>3</sup> Dutch: 'inrichting'.

<sup>4</sup> Centraal Bureau voor de Statistiek (Statistics Netherlands).

- No figures were available on the purchase of heat. The total consumption of heat in industry was estimated using the output of industrial CHP installations. 95 % of the amount was attributed to EU-ETS companies.

### *Correction for agriculture*

As described in Section 2.1 the fraction of ETS energy use in agriculture will be higher in the future. Therefore the figures on ETS fuel found earlier for 2001-2005 have been replaced by a fraction of 20% of total historic fuel use.

### *ETS energy use*

Table 2.1 specifies the amounts of fuel, electricity and heat to be subtracted from total sector use. The total per sector, expressed in primary units, is given as well. For the sectors Households and Transport no subtractions have to be made. For agriculture the part of fuel use that was actually part of ETS in the years 2001-2005 is shown between brackets.

Table 2.1 *Historic energy use of undertakings that participate in (future) emission trading, average figures 2001-2005*

[PJ]	Fuel	Electricity	Heat	Total primary
Industry	342	30	50	466
Agriculture				
• future undertakings	29	0	0	29
• undertakings in 2005	(8)			(9)
Services	5	2	0	9
Total end use sectors	377	31	50	504

## 2.3 Calculated targets

### *Historic ESD energy use*

Historic ESD energy use is equal to the total for all end-use sectors minus corrections for ETS energy use. Table 2.2 shows ESD energy use per sector for fuel, electricity, heat and total primary. The fraction of total energy use regards primary energy use.

Table 2.2 *Average ESD energy use 2001-2005 and fraction of total energy use*

	Fuel	Electricity	Heat	Total primary	Fraction of total [%]
Households	335	84	18	562	100
Industry	68	99	59	373	44
Services	192	101	20	465	98
Agriculture	117	14	13	163	85
Transport	471	6	0	486	100
Total end-users	1183	303	108	2048	80

It must be remarked that the fraction of 44% for industry (including construction) regards industrial energy use without non-energetic uses. With feedstocks included the fraction drops to about a quarter of total industrial energy use.

### *Targets for 2016 and 2010*

The target is calculated straightforwardly from total ESD energy use, applying the minimum fraction of 9% (see Table 2.3). The directive demands an intermediate target for 2010 as well but does not specify a minimum value. However, the intermediate shall be realistic and consistent with the overall national indicative energy savings target. The NEEAP for the Netherlands

adopts a 2% target value for 2010, taking into account the fact that implementing many new policy measures takes time and several new policy measures will not deliver their full potential in the first year(s) after implementation.

Table 2.3 *Total ESD energy use and ESD targets for 2010 and 2016*

		Total primary	Fraction TPEC [%]
TPEC	[PJ]	3239	100
ESD total	[PJ]	2048	63
9% Target 2016	[PJ]	184	5.7
2% Target 2010	[PJ]	41	1.3
	[TWh]	(17063)	

The results are expressed as fraction of TPEC (Total Primary Energy Consumption). Meeting the target should save almost 6% on total energy use for 2001-2005. The target figures, expressed in TWh, equal the figures given in the action plan (see also Appendix).

### 3. Determining energy savings to be realised

The determination of ESD savings to be realized comprises the following steps:

- Definition of ESD energy savings.
- Policy effects contributing to ESD.
- Saving effects of existing policy measures.
- Saving effects of new policy measures.
- Total savings due to policy.
- Treatment of uncertainty in policy effects.

These steps result in energy savings in 2010 and 2016. Table 3.1 gives an overview of the results, expressed in PJ. The figures in the action plan are expressed in TWh (see Appendix).

#### 3.1 Definition of ESD energy savings

In the ESD energy savings are attained by energy efficiency improvement (EEI) measures. The following aspects must be dealt with to count the effect of EEI measures as ESD savings:

- Demarcation of energy users involved.
- Definition of energy end-use.
- Definition of EEI measures.
- Time frame for the energy savings.
- Accountability of (early action) EEI measures.

The flowchart in Figure 3.1 shows which conditions or properties have to be met before energy savings can be accounted for as ESD savings. The extensions indicate possible broadening of definitions in the ESD. In these cases a choice has to be made how to define the scope of ESD savings. In the EMEEES project, which regards developing a method to calculate ESD savings, proposals have already been made. However, the final decision on these propositions is up to the ESD Committee.

Savings on energy use outside the scope of ESD do not count. The demarcation of *energy users* inside or outside the ESD scope has been dealt with in Chapter 2. Not incorporated are energy savings in the supply sectors and savings on energy use covered by the ETS.

The definition of *end-use* is somewhat ambiguous in the ESD. On the one hand the directive does not take into account energy supply; on the other hand *district heat* and efficient *transformers*, being part of the supply system, are presented as examples of ESD savings. Moreover, no primary factor has been defined for grid supplied heat. Therefore a unit of heat counts in the same manner as a unit of fuel while grid supplied heat has no conversion losses in end-use. The savings of distributed heat compared to fuel use are therefore not recognized. This problem still has to be solved in the ESD method of calculating savings. However, the saving figures in the Action Plan for the Netherlands incorporate the savings due to (increase in) grid supplied heat to end-use sectors.

Fuel for electricity and heat production (CHP) at the site of the energy user is part of end-use., provided that the CHP unit is owned by the end-user. Therefore the savings from *own CHP* are part of ESD savings. Introduction of CHP lowers energy consumption in primary terms because conversion losses in power stations are avoided. To account for these savings an avoided unit of electricity from the grid should count as 2 to 2.5 units of primary fuel, as is the case in the NEEAP.

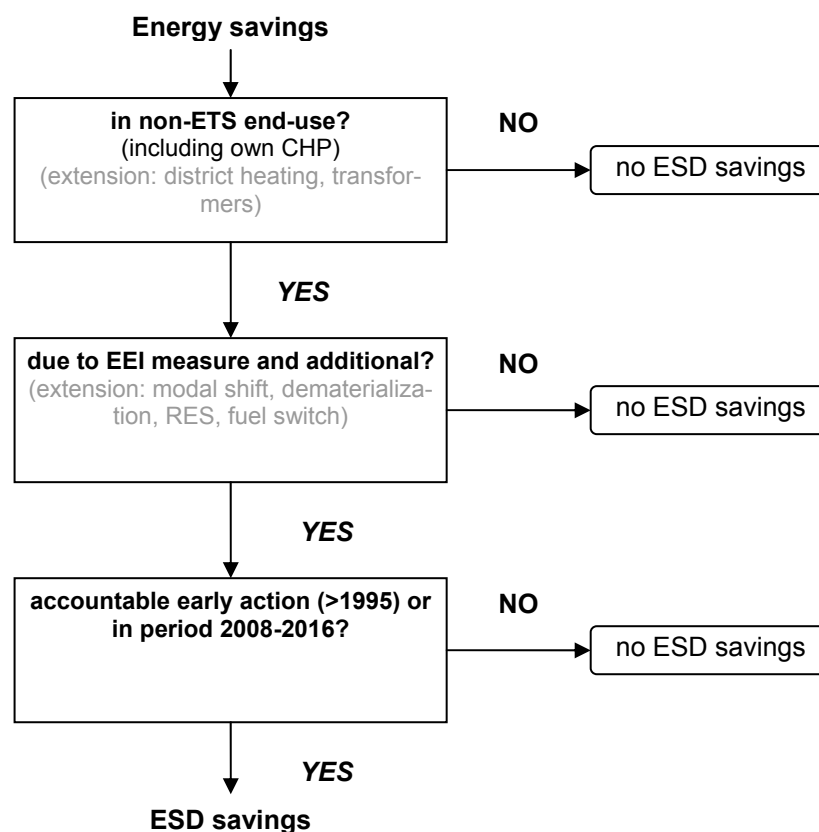


Figure 3.1 Flowchart for defining eligible ESD savings

The ESD applies a broader definition of energy efficiency improvement (EEI) measures than in most analyses, at least in the Netherlands (see Protocol Monitoring Energy savings in Boonekamp, 2001). According to the examples given in ESD annex III, a reduction of energy consumption by a shift between transport mode (*modal shift*) or car-free days and the contribution of renewable energy sources (*RES*) ‘behind the meter’ also contribute to the ESD target. From the EMEEES analysis it appears that even *dematerialization*, i.e. savings on (energy intensive) materials, and savings due to *non-energy policy* could count as ESD energy savings.

The definition of EEI measures in the ESD is such that it could be either a saving measure or a policy measure promoting saving measures. In the EMEEES project a distinction has been made between end-use actions (saving measure) and facilitating (policy) measures. The effect of EEI measures should be *additional* in order to be accounted as ESD savings. Therefore so-called baseline values will be defined for various end-use actions and the facilitating measures will be corrected for free riders. In the NEEAP the same approach is valid, although it is not quite clear whether it will be consistent with baselines that have to be defined still in the EMEEES project.

Furthermore, the timeframe of facilitating measures is of importance. In principle ESD savings encompass the effects of:

- existing policy,
- new policy,
- early action.

Existing policy regards facilitating measures already implemented before 2008, but going on and providing extra energy savings after 2008 (see Section 3.4). New policy regards facilitating measures introduced after 2008 (see Section 3.5).

Early actions regard facilitating measures in the period 1995-2007 that still save energy in the period 2008-2016. By allowing countries to incorporate early action effects in the ESD savings, they are not punished for already implementing part of their saving potential. However, these savings have to be proved more thoroughly than savings from existing or new policy after 2008. In the NEEAP the effects of early action facilitating measures have not been taken into account. If needed, this can be done in later years.

Finally the lifetime of end-use actions should be considered. From EMEEES information it is understood that the effect of saving measures must be present still in 2016, as to be eligible for the target. The NEEAP results are based on calculations with models that apply a vintage approach where lifetimes of saving measures are accounted for. Therefore, the NEEAP savings will indeed meet the ESD requirement on lifetimes.

### 3.2 Demarcation between energy savings under ESD and ETS

The demarcation between energy savings related to respectively ETS and ESD follows the same line of reasoning as for calculating the ESD target (see Section 2.1). Therefore, efficiency improvements in energy supply are not regarded. All energy savings in Households, Services and Transport contribute to the ESD target. For Industry and Agriculture total energy savings are divided between ETS and ESD according to two methods:

- If specific policy measures focus on ESD energy use only, the savings due to these policy measures contribute fully to the ESD target.
- If policy measures do not focus on ESD energy use alone, or the focus is not known, the saving due to these policy measures is attributed to the ESD target in proportion to the fraction of ESD energy use in total energy use of the sector.

In Section 2.2 it was described how ESD energy use has been calculated for recent historical years. It has been assumed that ESD fractions in energy use per sector remain stable in time, unless the scenario studies indicate a change. In the NEEAP the same is assumed for ESD savings; if fractions of total sector savings are used the fractions are fixed for the period 2008-2016. This approach implicitly assumes that saving trends are the same for ESD and ETS energy use.

### 3.3 Primary energy savings

In line with the approach taken for the determination of the saving target, the savings on electricity are converted into primary units. However, the approach departs slightly from that for the target (see Section 2.1).

The savings are the combined effects of existing and new policies. The effects of existing policies are based on an earlier national outlook (Van Dril, 2005) that provided figures on CO<sub>2</sub> emission reductions as a result of policy measures (see also Section 3.4). These figures have been converted to primary energy savings, using estimated CO<sub>2</sub> factors. These factors imply a conversion factor for electricity in the order of 2.5, but which is not known exactly.

The saving effects of new policies are calculated using values for primary energy savings from an ECN ex-ante evaluation (Menkveld, 2007). The primary savings for electricity were calculated with a primary factor based on the properties of the electricity supply system in the base year 2005 (see also Section 3.5).

Due to using processed results of two available ex-ante evaluations it is not possible to state the exact primary factor for electricity. Moreover, this factor is influenced by the production of heat next to electricity in centralised production. It has been assumed that the savings of combined production are allocated for the larger part to the heat output. This comes down to a unit of heat

being valued at just 0.5 units of primary energy. When end-users buy this heat, instead of using fuels, their primary energy use decreases; in this way they realize energy savings. The saving figures for the Netherlands comprise the savings due to district heating and other heat delivery from central production. In the text of the directive, town heating is mentioned as a saving option. However, no calculating mechanism (e.g. a low primary factor for heat) is available to account for the savings.

It must be remarked however that, given the outcomes of the NEEAP, the exact value for the primary factors applied will not influence the main results of the NEEAP for the Netherlands.

### 3.4 Determination of saving effects of existing policy

Saving effects of existing policy have been extracted from the Reference Outlook (Van Dril, 2005). Chapter 10.3 provides an analysis of the effects of a complete removal of all saving policy from 2000 on CO<sub>2</sub> emissions. For 2010 and 2020 the differences as to the baseline scenario with policy are given. The changes in CO<sub>2</sub> emissions are specified to sector and (sometimes) application.

In (Van Dril, 2005) the policy effects were given for the period 2000-2010 and 2000-2020. The NEEAP analysis regards the period 2008-2010 (intermediate evaluation) and 2008-2016 (final evaluation). For the intermediate evaluation the results for 2000-2010 were interpolated to 2008-2010 by multiplying with a factor of 0.3. For the final evaluation the values were calculated from the 2010-figure plus 0.6 times the difference between 2010 and 2020 results. Implicitly it has been assumed that effects of existing policy increase continuously in the period 2000-2020. Also no account has been taken of changes in policy since the publication of the Reference Outlook, e.g. abolishing the subsidy scheme MEP for CHP savings.

Savings in the end-use sectors Households, Services and Tertiary have been attributed entirely to ESD. The ESD savings for Industry were based on the CO<sub>2</sub> effect of one sector wide policy measure, using a fraction in line with ESD use in total industrial energy use. In Agriculture the total emission reductions regarded savings in horticulture. Because 25% of horticulture energy use was part of emission trading, 75% of the total emission reduction was attributed to ESD.

The results in Mton of CO<sub>2</sub> had to be converted into savings on primary energy use. In transport the CO<sub>2</sub> factor for oil products has been applied. In household and tertiary sectors the CO<sub>2</sub> effects regarded either savings on natural gas or electricity. For each a separate CO<sub>2</sub> factor was used to calculate savings in PJ. For agriculture and industry it was not possible to split given CO<sub>2</sub> effects into gas or electricity. Here a weighted value for the two CO<sub>2</sub> factors was calculated, using a fraction of 10% for electricity savings.

The approach described leads to energy savings due to existing policy as shown in Table 3.1.

Table 3.1 *ESD energy savings due to existing policy*

	2010 [PJ]	2016 [PJ]	2016 [% energy use]
Households	10	42	6.9
Tertiary	3	9	1.8
Industry	1	2	0.4
Agriculture	1	3	2.6
Transport	6	6	0.9
Total savings	20	62	2.7

### 3.5 Determination of saving effects of new policy

Mid 2007 ECN made an assessment of the effects of newly formulated policy in the national program ‘Schoon & Zuinig’ (Clean & Efficient). This program (S&Z, 2007) intends to realize 2% savings per year, as part of a reduction of total emissions by 30% in 2020. The ECN assessment (Menkveld, 2007) provides saving effects in primary units for 2011 and 2020, using primary factors for grid supplied electricity and heat valid for the base year 2005 (see Section 3.3).

The ECN report presents saving effects per sector and (combination of) policy measures. Energy savings for the ESD part of industry are determined on basis of the effect of specific policy measures for this part of industry, e.g. intensifying the Long term Agreements and permit regulations. For agriculture this approach is not possible; here ESD savings are 75% of total policy effects (see Section 3.4).

The report presents cumulative results for the years 2011 and 2020. In general the ESD savings for 2010 en 2016 are determined by interpolation. Given a start of new policy by 2008, three-quarters of the stated effect in 2011 can be realized in 2010. However, for each policy measure it is checked whether the full effect will emerge already before 2010 or only after 2010. For 2016 the interpolated effect is equal to 9/13 of the effect in 2020, being the number of years from 2008 to 2016 and 2020 respectively. Again a check is made on the full saving effect before or after 2016.

In the assessment it is stressed that uncertainties exist about the future saving effect of both national and EU policy measures. Therefore margins are used for the savings of some national policy measures. As to effectiveness of EU policy a low and a high variant are used. Combining upper and lower values for both cases results in four possible values for the saving effects. In the NEEAP it has been assumed that EU policy will be implemented fully and will deliver the expected savings. Therefore, only margins due to national uncertainties are presented.

The approach described leads to energy savings due to new policy as shown in Table 3.2.

Table 3.2 *ESD energy savings due to new policy*

	2010 [PJ]	2016 [PJ]	2016 [% energy use]
Households	10	77-81	10
Tertiary	3	43-47	8
Industry	0-2	1-5	0-1
Agriculture	2-3	9-16	6-11
Transport	9-13	84-91	12
Total savings	25-31	215-240	8-9

### 3.6 Calculation of total saving effects

The saving effects of existing policy are based on the difference between a reference scenario and a variant without any policy on savings. The study on saving effects of new policy uses the reference scenario as a baseline. Therefore it is possible to combine the two results in a consistent manner.

For 2010 and 2016 the figure on savings of existing policy is combined with the upper and lower savings due to new policy, leading to a margin for the total policy effect (see Table 3.3).



Table 3.3 *ESD energy savings per sector and total*

	2010 [PJ]	2016 [PJ]	2016 [% energy use]
Households	20	119-123	16-17
Tertiary	6	52-56	9-10
Industry	1-3	2-6	1-2
Agriculture	4	13-19	9-13
Transport	15-19	90-97	12-13
Total savings	45-52	277-302	11-12
Target	41	184	

## 4. Elaboration on NEEAP results

This chapter contains some further analysis results beyond the content of the NEEAP. The following subjects are covered:

- contribution per sector,
- target and savings in 2010,
- uncertainty in EU policy effect,
- disagreement on ‘renewables-behind-the-meter’.

### 4.1 Contribution per sector

The ESD target regards a total number of PJ to be realised. Member States can decide themselves in which sector energy savings should be realized. However, it would be interesting to show the contributions of the various sectors. To this end the target percentage of 9% was applied to total historic energy use of each sector, and compared with the calculated savings (see Table 4.1). It appears that the sectors households and transport contribute relatively the most, while industry contributes relatively few energy savings. The latter is not a consequence of excluding end-users participating in ETS; the ‘target’ for industry has been set at 9% of ESD industrial energy use.

Table 4.1 *ESD target, divided over sectors, and energy savings per sector in 2016*

	Target [PJ]	Savings [PJ]	Ratio [S/T]
Households	51	119-123	2.4
Tertiary	42	52-56	1.2-1.3
Industry	34	2-6	0.1-0.2
Agriculture	15	13-19	0.9-1.3
Transport	44	90-97	2.1-2.3
Total savings	184	277-302	1.5-1.6

### 4.2 Target in 2010

The target for 2016 has been set at 9% of historic ESD energy use. With a linear trend from 2008 tot 2016 the intermediate target in 2010 would be 3%, or 61 PJ of total energy savings. The ‘linear’ target is not met with the expected savings of 45-52 PJ (see Table 3.3).

The most important reason for relatively low savings in 2010 is the time needed to implement the large amount of new policy measures. For instance, the first strengthening of the performance standard for new dwellings and buildings is foreseen in 2011 and thus does not contribute to savings in 2010. The same holds to a lesser extent for new car standards and for some policy measures in agriculture.

There is only one policy measure that has its full effect before 2010, namely the ‘greening’ of taxes in transport. It has been assumed that, once taxes have changed, the full saving effect is realized. However, in general saving effects lag behind the linear trend from 2008 to 2016.

### 4.3 Uncertainty in EU policy effects

In the NEEAP the most optimistic EU case was chosen. It has been assumed that the EU will fully support the Member States in realizing the ESD target. However, a number of EU policy measures has to be finalized still, such as minimum standards on CO<sub>2</sub> emissions of cars and energy using devices (Eco-design directive). At the set up of the NEEAP it was not known what specific standards will be in force from what year. Therefore, next to the optimistic case a pessimistic case for the energy savings effect was estimated. In Table 4.2 energy savings are shown for the case with low impact for both EU and national policy measures. Total energy savings are still above the target, although the difference is only 5%. It can be concluded that the NEEAP most probably will meet the ESD saving target.

Table 4.2 *ESD energy savings with low impact of EU and national policies*

	2010 [PJ]	2016 [PJ]	2016 [%]
Households	20	85	16-17
Tertiary	6	33	9-10
Industry	1	2	1-2
Agriculture	3	11	9-13
Transport	14	63	12-13
Total savings	43	194	11-12
Target	41	184	

### 4.4 Renewables-behind-the-meter as savings

With regard to the definition of energy savings there exists some lack of clarity in the ESD. In previous chapters own choices were made with respect to counting savings from town heating systems and renewables produced by end-users 'behind the meter'. In the NEEAP the contribution of district heating is rather small. The same holds for renewables behind the meter in the sectors households and tertiary. However, in agriculture the energy neutral greenhouses save a large amount of natural gas by storing summer heat in the soil and extracting it for winter heating. This kind of harvesting solar heat is made part of energy savings in the NEEAP.

It is uncertain whether this approach will be sustained in the final calculation method of ESD savings. If it should be refused, total ESD savings diminish by 21 PJ. In most circumstances the ESD target will be met anyway. However, in the most pessimistic case total savings could be further down to 173 PJ which is lower than the target in 2016.

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## Appendix A NEEAP submitted to the European Commission

# **The Netherlands Energy Efficiency Action Plan 2007**

**The Hague**

**12 September 2007**

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## **Preface**

This action plan is the implementation of the Netherlands of the requirement in article 14.1 of Directive 2006/32/EC of 5 April 2006 on energy end-use efficiency and energy services, stating that Member States shall submit to the Commission an energy efficiency action plan (EEAP).

The action plan contains a description of measures to improve the energy efficiency in the Netherlands that are planned to achieve the indicative targets for 2010 and 2016, and to comply with the requirements regarding the exemplary role of the public sector and information and advice to final customers.

In 2011 a second EEAP will be submitted as required in the directive.



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## 1 Summary

The table below summarizes the expected savings of the measures taken in the framework of the Netherlands Energy Efficiency Action Plan and provides indicative targets for 2016 and 2010. The expected savings per sector are calculated for the package of measures applied to that sector; no savings per measure are calculated. Given the connection between the measures, such a calculation is not feasible. Furthermore a range (low – high) is given for the expected savings. The minimal value for energy savings, slightly above the target, implies the lowest estimate for effects of EU-policies as well as national policies. The difference between lowest and highest value depends for about two-thirds on success for EU-policy and for about one-third on success for national policy. If the contribution of renewables-behind-the-meter is omitted the minimal value is equal to the target.

<b>National indicative annual energy savings target 2016 (GWh)</b>		51.190		
<b>National intermediate indicative annual energy savings target 2010 (GWh)</b>		11.376		
<b>Measures to improve energy efficiency planned for achieving the target</b>	<b>Annual energy savings expected by end of 2010 (GWh)</b>		<b>Annual energy savings expected by end of 2016 (GWh)</b>	
	low	high	low	high
Package of measures in the residential sector	5.527	5.527	23.576	34.257
Package of measures in the tertiary sector	1.515	1.515	9.112	15.499
Package of measures in industry (non-ETS)	249	874	636	1.778
Package of measures in the transport sector	3.807	5.293	17.613	26.939
Package of measures in agriculture	845	1.158	2.917	5.528
<b>Total ESD energy savings expected:</b>	<b>11.943</b>	<b>14.366</b>	<b>53.854</b>	<b>84.001</b>

### Measures to implement Article 5 on the public sector:

Within Europe, the Netherlands is a frontrunner when it comes to **sustainable procurement**. It has been agreed upon in the government that in 2010 100% of central governmental procurement will take sustainability (including energy efficiency) criteria into account. For regional and local government, this percentage will be at least 50%. In the programme Sustainable Operational Management for Governments (DBO)

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criteria on sustainable procurement are developed and dissemination activities are carried out.

The Dutch government will make **agreements with local authorities** to reduce carbon dioxide. These agreements will also contain sections on energy efficiency.

The **buildings of the national government will be climate neutral** from 2012 on. This will be done by firstly, increasing energy efficiency and the use of renewable energy. The remaining emissions will be compensated for.

The exemplary role of the central government will also be undertaken by acting as **'launching customer'**. Government will apply innovative energy concepts in housing and mobility. Through its buying volume, the government can give a strong impetus to the development of innovative concepts, products and services.

**Measures to implement Article 7 on availability of information:**

In the Netherlands three organisation disseminate reliable information on energy efficiency: one organisation targeted on consumers (MilieuCentraal), one on SMEs (Energiecentrum MKB) and one for other market parties. Furthermore many NGOs and companies are active in this field. Due to the increased attention to energy efficiency in Dutch policy the next years will show an increasing number of opportunities to show market parties the possibilities of energy efficiency.

In accordance with the directive best practices regarding energy efficiency are exchanged and disseminated widely. To that end The Netherlands participate in various international energy (efficiency) networks.

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## 2 Overall national indicative target

### 2.1 Calculation of the overall national indicative target

Table 2.1 summarizes the calculation of the overall national indicative target.

Table 2.1 Calculation overall national indicative target

	Total year 1-5 (2001-2005)			
	Fuels	Heat	Electricity	Total
	[GWh]			
<b>Final inland energy consumption<sup>1</sup></b>	2.196.396	188.261	1.159.174	3.543.830
<i>Exemption: energy consumption in undertakings involved in activities covered by EU ETS</i>	523.035	68.881	108.031	699.947
<b>Final inland energy consumption in scope of ESD</b>	1.673.360	119.380	1.051.143	2.843.883
Residential sector	479.878	10.078	290.049	780.004
Tertiary sector	270.290	22.992	352.327	645.609
Industry (ESD scope)	104.695	68.978	341.726	515.399
Transport	656.425	0	19.931	676.356
Agriculture	162.072	17.333	47.110	226.515

Average over 5-year period

568.777 GWh

9% energy saving target in 2016

51.190 GWh

Energy saving target adopted

51.190 GWh

Intermediate target in 2010 adopted

11.376 GWh

Annex I contains a detailed calculation.

<sup>1</sup> Energy use of armed forces not included.

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## **2.2 Specific aspects in the calculation of the national target**

### **2.2.1 Specific aspects in the calculation of the national target**

For the calculation of the final inland energy consumption the energy statistics of CBS (Statistics Netherlands) are used. These figures are processed in the MONIT-system (Monitoring Of National use, Information and Trend analysis) of ECN<sup>2</sup>.

### **2.2.2 Interface with the sectors covered by the ET Directive and military use**

In the period 2008-2012 some 350 Dutch companies are participating in the European system of CO<sub>2</sub>-emissions trading (EU-ETS), of which about 250 final consumers of energy. The other 100 companies are part of the energy supply (or transformation) sector (power plants, oil and gas production companies and refineries). The group of final consumers of energy who take part in EU-ETS has the following composition:

- Industry: about 175 companies
- Agriculture: more than 60 companies
- Tertiary sector: more than 10 companies
- Residential sector: 0
- Transport sector: 0

The ESD end-use is calculated by subtracting the final energy use of the EU-ETS companies from the final energy use of the 5 above mentioned sector as a whole. The calculation of the ESD target for the Netherlands is based on the average ESD end-use in de period 2001-2005.

First the possibility is investigated if the deduction for EU-ETS could also be based on CBS data. Several problems arose that had to do with the aggregation level of the available information and the fact that part of the information is based on sampling.

Because of these problems the correction for the EU-ETS companies are based on the available information at SenterNovem from the process of CO<sub>2</sub>-allocation 2008-2012. It was necessary to correct and supplement these figures for three reasons:

- Using the harmonized EU definition of incineration plants not all incineration plants of EU-ETS companies come in EU-ETS. Therefore the non-EU ETS figures were completed with an estimate of the incineration plants that do not come in EU-ETS.
- Not for all EU-ETS companies figures on electricity consumption were available. Estimates based on monitoring data from Long-term Agreements (LTA) and environmental year reports were used to complement the figures.

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<sup>2</sup> P.G.M. Boonekamp et al, Monitoring energieverbruik 1982-1996. Methode, resultaten en perspectieven, ECN-C--98-046, ECN: Petten 1998.

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- No figures were available on the purchase of heat. The total consumption of heat in industry was estimated using the output of industrial CHP installations. 95 % of the amount was attributed to EU-ETS companies.

The CBS energy data does not contain energy consumption data of the armed forces; therefore no correction regarding this aspect was needed.

### **2.2.3 Conversion factors**

In the calculations for the savings in chapter 3 the electricity saved at end-users is converted to primary energy. The savings are the combined effects of existing and new policies. The effects of existing policies are based on an earlier outlook that provided figures on CO<sub>2</sub> emission reductions due to policy measures. These figures have been converted to primary energy savings, using CO<sub>2</sub>-factors that imply a conversion factor for electricity in the order of 2.5, but which however is not known exactly. The effects of new policies are calculated using the primary energy savings for 2011 and 2020 from the ex-ante evaluation for the work programme “Schoon en Zuinig” (Clean and Efficient). The interpolation to the target years 2010 and 2016 implies a slightly diverging conversion factor, in the range of 2.2 - 2.3. Due to using processed results of available ex-ante evaluations it is not possible to state the exact overall conversion factor for electricity. However, given the outcomes of the EEAP, the exact value for the conversion factor will not influence the main results of the EEAP for the Netherlands.

### **2.2.4 Definition of the boundary between final inland consumption and the supply (or transformation) sector**

In the final inland consumption power stations (including decentralised CHP), extraction companies and refineries were not taken into account because they are part of the energy production sector. Furthermore most of these companies come in EU-ETS.

Delivery of heat to the residential, tertiary and agricultural sectors is included in the final inland consumption.

Regarding the industrial sector 95 % of the heat of decentralized CHP plants (independent installations) contributed to EU-ETS companies and therefore subtracted from the final consumption of the industrial sector. If a CHP plant is part of a company, the gas used for the CHP is contributed to the company, not the heat and electricity produced.





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## 3 Sectoral presentation of energy efficiency measures

### 3.1 Introduction

This chapter contains a sectoral presentation of the savings as a result of the implementation of various packages of measures. These measures include both current policies and new, yet to be implemented policies. Savings from Early Actions are not included. This introduction provides some background to the calculation of the savings<sup>3</sup>.

The savings due to existing policies are calculated using a reference scenario and a variant without policies. The savings are calculated as the difference between the scenario with existing policies and the variant without policy. However, the results are in Mton CO<sub>2</sub> reduced and need to be converted into primary energy saved with a CO<sub>2</sub> emission factor. Different emission factors are used for the residential and tertiary sector (gas and electricity), industry and agriculture (weighted factor for gas and electricity), transport (fuels).

The savings due to new policies are based on scenario calculations for the national work programme "Schoon en Zuinig". Savings are in primary energy but for the years 2011 and 2020. Therefore the results from the calculations for 2011 and 2020 are by interpolation converted to savings for 2010 and 2016, taking into account when measures will become effective. E.g. the implementation of standards has only effect on new products, whereas the effect of an energy tax is considered to be immediate. Furthermore, also savings due to the implementation of renewables „behind the meter“ are taken into account.

The saving results are specified per sector and specific energy uses, e.g. new dwellings or appliances. The results often have been calculated for packages of policy measures; therefore no saving effects per separate policy measure are shown generally.

### 3.2 Energy efficiency improvement measures in the residential sector

Table 3.1 provides an overview of savings by application in the residential sector due to a package of measures.

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<sup>3</sup> For more details see e.g.: Dril, A.W.N. van; Elzenga, H.E.; *Reference Projections Energy and Emissions 2005-2020*, ECN, NMP, 2005

Table 3.1 Overview savings residential sector

No	Application	End-use target group	Period	Savings 2010 (GWh/year)		Savings 2016 (GWh/year)	
				low	high	low	high
1		Households	2008-2016	5.527	5.527	23.576	34.257

The energy policy for the residential sector is characterized by a set of instruments targeted at various aspects of residential energy use. This package of instruments aims to increase the awareness, to provide insight in self-regulation, to stimulate home owners to take measures to improve the efficiency of their houses and contains regulation for new houses. Appendix II contains a description of the measures.

### 3.3 *Energy efficiency improvement measures in the tertiary sector*

The table below offers an overview of savings by application in the tertiary sector due to a package of measures.

Table 3.2 Overview savings tertiary sector

No	Application	End-use target group	Period	Savings 2010 (GWh/year)		Savings 2016 (GWh/year)	
				low	high	low	high
1		Tertiary sector	2008-2016	1.515	1.515	9.112	15.499

For the tertiary sector the package contains regulatory standards for new buildings, regulation concerning environmental and energy management, energy tax, long term agreements and benchmarking covenants, and subsidies that make investing in energy efficiency measures more profitable. Appendix II contains a description of the measures.

### 3.4 *Energy efficiency improvement measures in the industry (non-ETS)*

The table below offers an overview of savings in the industry (non-ETS) sector due to a package of measures.

Table 3.3 Overview savings industry (non-ETS)

No	Application	End-use target group	Period	Savings 2010 (GWh/year)		Savings 2016 (GWh/year)	
				low	high	low	high
1		Industry	2008-2016	249	874	636	1.778

The package contains regulation, voluntary measures, taxes and subsidies. The Environmental Protection Act contains the minimum obligations with which companies must comply, while additional efforts are agreed upon via the Long-term Agreements and the Benchmarking Agreement. The Energy Investment Deduction makes investments in energy efficient equipment and/or processes more cost-effective sooner, while the Energy Tax increases the cost price of energy. The Environmental Quality Electricity Production (Dutch: MEP) was broadened and optimised; there will be a MEP for wind on sea and on land, and for biomass. Appendix II contains a description of the measures.

### 3.5 *Energy efficiency improvement measures in the transport sector*

The table below offers an overview of savings by application in the transport sector due to a package of measures.

Table 3.4 Overview savings transport sector

No	Application	End-use target group	Period	Savings 2010 (GWh/year)		Savings 2016 (GWh/year)	
				low	high	low	high
1		Transport sector	2008-2016	3.807	5.293	17.613	26.939

The package for the transport sector contains the following measures:

- Taxes: fuel taxes (including taxation of motor fuels which are harmful to the environment), motor vehicle tax (Dutch: MRB) and private motor vehicle and motorcycle tax (Dutch: BPM), surcharge levy per kilometre, CO<sub>2</sub>-differentiation BPM, tax discount for most efficient leased cars.
- Long term agreements
- Limiting maximum speed
- Energy labelling of cars
- ,Eco driving' programme
- Subsidy schemes
- Longer and heavier lorries

Appendix II contains a description of the measures.

### 3.6 *Energy efficiency improvement measures in agriculture*

The table below offers an overview of savings in the agricultural sector due to a package of measures.

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Table 3.5 Overview savings agriculture

No	Application	End-use target group	Period	Savings 2010 (GWh/year)		Savings 2016 (GWh/year)	
				low	high	low	high
1		Glasshouse horticulture	2008-2016	845	1.158	2.917	5.528

The package contains the following measures: Long term agreements, subsidy schemes, e.g. for CHP and renewables, energy tax, Energy Investment Deduction, the programme ,Kas als energiebron'<sup>4</sup>, Green Funds Scheme and Financing (MIA, Vamil), and an internal emission trading scheme for the greenhouse sector. Appendix II contains a description of the measures.

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<sup>4</sup> Greenhouse as energy source.

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## 4 Horizontal and cross-sectoral measures

Several measures in this action plan relate to more than one sector (see table below).

Table 4.1 Cross-sectoral measures

Measure	Residential	Tertiary	Industry	Transport	Agriculture
Energy Tax	X	X	X	X	X
Building Decree	X	X			
Energy Performance Standard for buildings	X	X			
Long Term Agreements		X	X	X	X
Environmental Quality Electricity Production CHP			X		X
Energy Investment Deduction		X	X	X	X
Temporary subsidy scheme Buildings and CO <sub>2</sub> reduction	X	X			

The savings for horizontal and cross-sectoral measures are allocated in the relevant sectors.



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## 5 Measures related to article 5 and 7 ESD

### 5.1 *Article 5: Energy efficiency measures in the public sector*

The ESD (Article 5) requires the public sector to play an exemplary role in meeting the energy saving target set out in Chapter 2. The policies and measures underway and already in place to fulfil this requirement are detailed below.

#### ***Sustainable public procurement***

Within Europe, the Netherlands is a frontrunner when it comes to sustainable procurement. It has been agreed upon in the government that in 2010 100% of central governmental procurement will take sustainability (including energy efficiency) criteria into account (Kamerbrief van 14 juli 2006 van de Staatssecretaris van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer (Kamerstukken II 2005/2006, 30 300 XI, nr. 134)). For regional and local government, this percentage will be 50%, but currently negotiations between national and local governments are taking place with the aim to raise the percentage.

In the programme Sustainable Operational Management for Governments (DBO) criteria on sustainable procurement are developed. Energy efficiency will often be an important part of the criteria. By the end of 2010, criteria for 80 to 100 product groups will have been developed. The programme is jointly operated by the national government and the representative organisations of regional and local government. Progress of the programme will be monitored biannually. The website [www.senternovem.nl/duurzaaminkopen](http://www.senternovem.nl/duurzaaminkopen) contains all information about the programme and criteria. The website is also an important tool to disseminate knowledge on energy efficient procurement, together with conferences, workshops, newsletters and other activities, undertaken by DBO and other organisations working on public procurement.

#### ***Local agreements***

Furthermore, the Dutch government will make agreements with local authorities to reduce carbon dioxide. These agreements will contain various aspects, like 2% energy efficiency improvement in buildings, 1,5% energy efficiency improvements considering public lighting, renewable energy, etc. and subsidy schemes.

#### ***Climate neutral government***

The buildings of the national government will be climate neutral from 2012 on. This will be done by firstly, increasing energy efficiency and the use of renewable energy. The remaining emissions will be compensated for. In the period 2008-2012, the ambition is to reach energy savings of at least 2% per year. In 2030, CO<sub>2</sub> emissions of the national government should be reduced by 30% compared to 1990.

So far, 19 local governments have ambitious plans to become climate neutral cities between 2015-2020. Apart from their own building stock, mobility and operational management, they will stimulate energy efficiency and renewables in households and

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commercial companies. This number is expected to increase, also as a result of the above mentioned agreements.

Furthermore, government plans to install energy efficient lighting in public space at increased speed.

### ***Government as Launching Customer***

The exemplary role of the central government will also be undertaken by acting as 'launching customer'. Government will apply innovative energy concepts in housing and mobility. Through its buying volume, the government can give a strong impetus to the development of innovative concepts, products and services. The website of the initiative can be found on [www.launchingcustomer.ez.nl](http://www.launchingcustomer.ez.nl).

Through the combination of these measures, the Dutch government fulfills the obligations under article 5 of the ESD. The focus lies on items b and c of Annex VI of this directive, but the Dutch government also contributes to the other items of Annex VI.

### **5.2 Article 7: Availability of information**

MilieuCentraal ([www.milieucentraal.nl](http://www.milieucentraal.nl)) is an organisation offering consumers practical and reliable information on environmental items, including energy efficiency. The information is validated by independent experts. The Energiecentrum MKB is an independent foundation offering information on energy efficiency measures to SMEs. The financial and juridical frameworks adopted to achieve the indicative target values in most cases are disseminated by SenterNovem. Implementing programmes of the government, mostly carried out by SenterNovem, are aimed at specific stakeholder groups to provide them with information on energy efficiency. In this way the availability of information and advice to end-users is ensured.

Since the Balkenende IV government took office the attention for energy efficiency in the Netherlands has increased. The next years will show even more attention to dissemination of the possibilities for energy efficiency measures to stakeholders.

In accordance with the directive best practices regarding energy efficiency are exchanged and disseminated widely. To that end The Netherlands participate in various international energy (efficiency) networks, e.g. the European Energy Network (EnR) and various Implementing Agreements of the International Energy Agency (IEA), e.g. Energy Conservation in Buildings and Community Systems Programme (ECBCS), Demand Side Management (DSM) and the Working Party on Energy End-Use Technologies.



## Annex I

### Detailed calculation of national overall indicative target

#### Energy use (in GWh PRIMARY)

	Coal	Oil	Natural gas	Other gasses	Biogas/ extraction	Heat	Electricity (PRIMARY)
<b>Year 1</b>							
FIEC	1.425	141.481	258.831	28.356	6.819	36.314	226.729
Exemption	465	2.191	64.497	33.797	873	13.299	20.061
<b>FIEC-ESD</b>	<b>960</b>	<b>139.289</b>	<b>194.334</b>	<b>-5.441</b>	<b>5.946</b>	<b>23.015</b>	<b>206.668</b>
Of which:							
Residential	58	1.083	96.269	0	2.847	1.858	55.278
Tertiary	318	2.302	46.492	0	1.613	5.314	69.463
Industry	584	2.423	22.665	-5.441	1.486	11.926	68.594
Transport	0	127.361	2.092	0	0	0	3.944
Agriculture	0	6.120	26.814	0	0	3.917	9.389
<b>Year 2</b>							
FIEC	1.361	144.067	253.725	32.103	7.192	36.811	227.875
Exemption	425	1.951	64.596	36.656	696	12.994	20.769
<b>FIEC-ESD</b>	<b>936</b>	<b>142.116</b>	<b>189.129</b>	<b>-4.553</b>	<b>6.495</b>	<b>23.817</b>	<b>207.106</b>
Of which:							
Residential	56	1.028	90.994	0	2.853	1.778	57.042
Tertiary	290	3.364	47.528	0	1.674	5.347	67.741
Industry	590	2.314	23.532	-4.553	1.969	13.275	69.008
Transport	0	129.861	0	0	0	0	3.889
Agriculture	0	5.550	27.074	0	-1	3.417	9.427
<b>Year 3</b>							
FIEC	1.164	146.067	257.050	34.047	7.367	37.192	230.257
Exemption	443	1.863	64.454	38.890	900	13.136	21.640
<b>FIEC-ESD</b>	<b>721</b>	<b>144.204</b>	<b>192.596</b>	<b>-4.843</b>	<b>6.466</b>	<b>24.056</b>	<b>208.617</b>
Of which:							
Residential	58	1.083	93.192	0	2.869	1.942	58.319
Tertiary	294	3.484	52.166	0	1.781	4.219	69.580
Industry	369	2.275	20.842	-4.843	1.817	14.562	67.326

Transport	0	131.583	0	0	0	0	3.958	
Agriculture	0	5.779	26.397	0	0	3.333	9.433	
	<b>Year 4</b>							
FIEC	1.086	146.478	255.057	34.069	7.619	39.731	238.118	
Exemption	436	1.783	63.976	40.222	926	14.662	22.817	
<b>FIEC-ESD</b>	<b>650</b>	<b>144.695</b>	<b>191.080</b>	<b>-6.152</b>	<b>6.693</b>	<b>25.068</b>	<b>215.301</b>	
Of which:								
Residential	58	1.083	91.872	0	2.925	2.331	58.826	
Tertiary	313	3.127	52.169	0	1.936	4.328	74.296	
Industry	279	1.567	20.648	-6.152	1.832	15.077	68.667	
Transport	0	133.139	0	0	0	0	4.118	
Agriculture	0	5.779	26.392	0	-1	3.333	9.394	
	<b>Year 5</b>							
FIEC	811	146.231	244.400	31.286	8.306	38.214	236.194	
Exemption	406	1.695	62.944	36.925	1.025	14.790	22.745	
<b>FIEC-ESD</b>	<b>405</b>	<b>144.536</b>	<b>181.456</b>	<b>-5.639</b>	<b>7.280</b>	<b>23.424</b>	<b>213.450</b>	
Of which:								
Residential	56	1.056	87.478	0	2.958	2.169	60.583	
Tertiary	71	3.939	45.125	0	2.303	3.783	71.247	
Industry	278	1.374	22.461	-5.639	2.020	14.138	68.132	
Transport	0	132.389	0	0	0	0	4.021	
Agriculture	0	5.779	26.392	0	-1	3.333	9.466	
	<b>Total year 1-5</b>							
	<b>Coal</b>	<b>Oil</b>	<b>Natural gas</b>	<b>Other gasses</b>	<b>Biogas/ extraction</b>	<b>Heat</b>	<b>Electricity (PRIMARY)</b>	<b>Total</b>
FIEC	5.847	724.322	1.269.062	159.861	37.303	188.261	1.159.174	3.543.830
Exemption	2.174	9.483	320.467	186.490	4.421	68.881	108.031	699.947
<b>FIEC-ESD</b>	<b>3.673</b>	<b>714.839</b>	<b>948.595</b>	<b>-26.629</b>	<b>32.882</b>	<b>119.380</b>	<b>1.051.143</b>	<b>2.843.883</b>
Of which:								
Residential	286	5.333	459.806	0	14.453	10.078	290.049	780.004
Tertiary	1.287	16.215	243.481	0	9.307	22.992	352.327	645.609
Industry	2.100	9.952	110.148	-26.629	9.124	68.978	341.726	515.399
Transport	0	654.333	2.092	0	0	0	19.931	676.356
Agriculture	0	29.005	133.068	0	-2	17.333	47.110	226.515

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## **Annex II**

### **Description of measures**

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## II.1 Cross sectoral measures

The following measures apply to at least 4 sectors:

- Energy Tax (all sectors)
- Energy Investment Deduction (all sectors)
- Long-term Agreements and Benchmarking Agreement (Tertiary, Industry, Transport and Agriculture)

<b>Name</b>	<i>Energy Tax</i>
<b>Category</b>	3.2 Tax rebates and other taxes reducing energy end-use consumption.
<b>Regional application</b>	The Netherlands
<b>Target group</b>	All end users that fall within the scope of the Energy Service Directive (ESD)
<b>End-use EEI action targeted</b>	Changing behaviour (saving energy) and investing in energy saving measures
<b>Status of implementation and planning</b>	Implemented. Introduced on 1 January 1996 as the Regulating Energy Tax (RET).

### **Description**

The Energy Tax (ET) is a levy on energy consumption. The effect of ET is that it improves the yield of measures focussed on energy saving and regeneration of energy. The levy imposed on the consumption of energy makes energy saving more attractive (by changing behaviour or by investing in energy-saving measures). Investments earlier become more cost-effective by applying energy-saving techniques. The price elasticity (the extent to which consumption responds to a price change) of the ET is low and it varies from – 0.1 to – 0.25 in the short term. In the long term the elasticity is higher by changing the investing behaviour.

The energy tax is levied on:

- Electricity
- Natural gas
- Gas oil
- Semi-fluid oil
- Liquefied petroleum gas (LPG)

### **Residential sector**

Since 2004 the level of the ET is dependent upon the energy consumption of the customer: the lower the consumption, the lower the Energy Tax. However, the ET per kWh electricity or m<sup>3</sup> gas is much larger for small consumers than for large consumers. As a consequence, the ET has led to a considerable increase of energy prices for small consumers<sup>5</sup> and to a lesser extent for the large consumers. The share of ET

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<sup>5</sup> Consumers with a consumption up to 5,000 m<sup>3</sup> gas and/or 10,000 kWh.

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levied on natural gas and electricity prices at small consumers was approximately 30% more in 2006.

The 2004 Evaluation of Climate Policies in the Building Sector states that the effect per household is small. However, there is a relatively large contribution as a result of wider application.

The energy supplier charges the energy tax. The revenue of the energy tax is channelled back to the taxpayer through a decrease in the wages and income tax.

The Energy Tax is a regulation imposed by the Ministry of Finance. The energy companies collect the tax.

### ***Industrial sector (non-ETS)***

The non-ETS industrial sector pays higher prices for natural gas and electricity compared to the energy intensive industries (which do fall under emission trading). With a natural gas consumption of up to 6 million m<sup>3</sup> per year<sup>6</sup> the ET rate varies between 1 and 11 cent/m<sup>3</sup>. Translated into €/GJp, the non-trading companies pay between 9 and 14 €/GJp for their natural gas of which 1 to 4 €/GJp is energy tax.

### ***Agriculture***

The energy tax (ET) applies a lower rate for glasshouse horticulture, flower bulbs and mushroom sectors (in any case until 2008). This measure allows these industries to enjoy the same benefits as the energy-intensive giant consumers.

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<sup>6</sup> The cut-off between trading and non-trading companies is at a thermal input capacity of 20 MW. At a operational time of 3,000 hours, this equals a natural gas consumption of nearly 7 million m<sup>3</sup> per year, and a natural gas bill of around €1.5 million.

<b>Name</b>	<i>Energy Investment Deduction</i>
<b>Category</b>	3.2 Tax rebates and other taxes reducing energy end-use consumption.
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Companies from all sectors that pay corporate income tax (no households, no authorities)
<b>End-use EEI action targeted</b>	The choice to invest is affected (stimulus for investing in energy efficient equipment and sustainable energy).
<b>Status of implementation and planning</b>	Implemented in 1997; on-going.

### Description

Energy Investment Deduction<sup>7</sup> (EID) is a tax rule that allows additional deductions on taxable profit. The EID can be requested for acquisition or production costs of energy efficient equipment and sustainable energy.

The EID recognises five areas of application: buildings, equipment and processes, CHP, transport and sustainable energy. The energy list determines which equipment qualifies for the EID.

Equipment that is listed in the energy list must comply with several criteria:

- The equipment or technique must be defined clearly and unequivocally.
- The applied technique must comply with the valid generic conservation standards or it has to be related to the use of sustainable energy sources or should be very desirable from a perspective of raising awareness. In principle, only those parts in the technique that are necessary for realising energy saving are included.
- The equipment must be applicable in a sufficient number of situations or in a sufficient number of companies.
- The energy-saving piece of equipment should be one that is not commonly used as yet in the Netherlands.

The energy lists are updated annually.

In addition to techniques in the energy list, there are generically defined energy-saving investments that can be considered for EID. With respect to the generically defined investments there is a requirement to state the energy saving per invested euro.

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<sup>7</sup> Dutch: Energie-investeringsaftrek (EIA)

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A situation could arise in which an investment is related to a piece of equipment (or a part of it) that can be considered for both the EID and for other fiscal regulations (Accelerated Depreciation on Environmental Investments<sup>8</sup> and/or Environmental Investment Deduction<sup>9</sup>). It is not possible to use both EID and MIA for the same investment component. However, a combination of EID and VAMIL is permitted.

The list already contains several measures aimed at the built environment. It will be expanded (probably as of 1 January 2008) with more measures to make it more attractive for building owners to invest in energy saving measures.

The Energy Investment Deduction is a regulation of the Ministry of Finance and the Ministry of Economic Affairs. SenterNovem and the Tax Authorities implement the EID.

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<sup>8</sup> Dutch: VAMIL.

<sup>9</sup> Dutch: MIA.



<b>Name</b>	<i>Long-Term Agreements (LTA) and Benchmarking Agreement</i>
<b>Category</b>	4. Voluntary agreements 4.1 Industrial companies 4.2 Commercial or institutional organisations
<b>Regional application</b>	The Netherlands
<b>Target group</b>	<ul style="list-style-type: none"> <li>• Tertiary sector</li> <li>• Industry</li> <li>• Transport</li> <li>• Agriculture (glasshouse horticulture)</li> </ul>
<b>End-use EEI action targeted</b>	Companies must draft plans for energy saving, implement these plans, and report about their progress. In addition, companies must set up an energy management system and monitor the consumption of energy.
<b>Status of implementation and planning</b>	A start was made in 1989 with the long-term agreements. In 1999 the Benchmarking Agreement was introduced for industrial companies consuming more than 0,5 PJ/a.  Duration: LTA2 until 2013, Benchmarking agreement until 2012.

## Description

### **Long Term Agreements (LTA)**

Since 1992, within the framework of its energy saving policy, the government has been making long-term agreements<sup>10</sup> (LTA) with a large number of sectors for improving energy efficiency. In 2000 the first series of LTAs for the industrial sector were concluded successfully. The period between 1989 and 2000 saw an average improvement of 22.3% in efficiency.

At the present time there are several types of long-term agreements running concurrently:

- LTAs with companies and organisations in the tertiary and transport sector.
- LTAs with companies in the agricultural sector.
- LTA2, which are called the second generation of long-term agreements, with enterprises that have energy consumption of up to 0.5 PJ per year. Companies with higher energy consumption are required in principle to join the Energy

<sup>10</sup> Dutch: Meerjarenafspraken (MJA).

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Efficiency Benchmarking Covenant (unless they can substantiate that their participation in the LTA2 is more useful).

The first series of LTAs and LTA2 are distinguished by a number of clear differences:

- The LTAs are concluded with sectors while the LTA2 are concluded with individual companies, sectors and Competent Authorities.
- In addition to energy efficiency, LTA2 also focuses on Expansion Themes: Energy Efficiency Product Development (EPPD), sustainable energy (SE) and Sustainable Chains and Energy Saving<sup>11</sup>.
- LTA2 is closely linked to the provisioning of environmental permits (see Environmental Protection Act).

The LTA2 has a term of twelve years, divided into four-year periods.

A company that joins is committed to the following:

- Every four years, companies draft an Energy Conservation Plan (ECP), in consultation with the Competent Authority, which sets out the energy efficiency goals of each company, linked to concrete measures and an implementation plan. The ECP defines which feasible measures shall be taken and which expansion theme the company shall undertake.
- Companies are obliged to implement so-called "good housekeeping" savings measures. These are process efficiency measures that are financially profitable for companies (the costs can be recouped in less than five years).
- To the extent possible, a list of measurements is formulated per associated LTA sector. Companies then carry out the feasible energy-efficient measures mentioned in the list.
- Based on all ECPs in the sector, a sector objective is determined. This is set down in a long-term plan (LTP).
- Participants in LTA2 are obliged to introduce systematic energy management (within three years of participation) into their companies. Energy management is intended to encourage companies to remain consistently focused on their energy consumption.
- Companies participating in LTA2 are obliged to strive to put the so-called expansion themes into practice. This involves working towards increasing the use of sustainable energy and saving energy through energy efficient product development.

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<sup>11</sup> Dutch: DKE.

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- Participants in the LTA's must submit yearly reports to the Competent Authority and SenterNovem on the progress they have made with implementing the Long-Term Agreements.

The effect of the LTA as an instrument is related to the use of the Environmental Protection Act as an instrument: the LTA has a stimulating function and the Environmental Protection Act regulates the minimal obligations.

Intensification and renewal of the LTAs are important components of the Dutch policy for improvement of energy efficiency. For the new agreements that will take effect in 2012 the following goals are being considered:

- An average improvement of energy efficiency of 20% inside the companies in 2020 compared to 2005 levels.
- Additional energy savings outside the companies of 10% over the same period (this includes renewable energy).
- Strategic studies for each industry sector that give an overview of possible savings, CO<sub>2</sub> reduction and renewable technologies, as well as long term scenarios. These studies should aim for a 50% reduction in 2030.

The LTA schedule is carried out under the commission of the Ministry of Economic Affairs and the Ministry for Housing, Spatial Planning and the Environment, the Ministry of Agriculture, Nature and Food Quality and the Ministry of Transport, Public Works and Water Management. SenterNovem facilitates implementation.

#### *Tertiary sector*

Long-Term Agreements about energy efficiency have been concluded with various sub-sectors in the trade, service provision and government sectors. This concerns the science sector, higher professional training sector, banks and insurers, supermarkets and university medical centres (UMCs).

#### *Industrial sector*

The long-term agreements that were made with the various industrial sectors could play an important role in raising awareness about the options for energy saving as well as its benefits. By increasing the knowledge about the possibilities, the LTA2 could contribute to more economic-rational decision-making about energy efficient techniques.

#### *Transport sector*

A LTA in the transport sector was concluded with the Nederlandse Spoorwegen (Dutch Railways).

#### *Agriculture*

The flower bulb and the mushroom sectors have concluded new long-term agreements for the period of 2007 to 2011. In the framework of these sector-specific LTAs, the

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following instruments are used: research, innovation vouchers, information as well as demonstration and knowledge transfer. Therefore, the instruments are also intertwined.

Since the flower bulbs and the mushroom industries have signed a LTA, they benefit from the energy tax measure.

The Glasshouse Horticulture and Environmental Covenant (GLAMI, broader than energy) is applicable to glasshouse growers. The GLAMI expires in 2010. The rigid energy standards will be replaced by a more flexible CO<sub>2</sub> settlement system.

The Glasshouse Horticulture Order in Council<sup>12</sup> is an interpretation of the GLAMI covenant into legislation. The rules concern around 100 standards for various crops and it is expressed in decreasing primary energy consumption per hectare of glasshouse.

There is no LTA for the primary animal sector.

### ***Benchmarking Agreement***

After the first LTA (1999) for the industrial sector there was a need for the industry to compare themselves, their individual processes, with the worldleaders in energy efficiency. The incentive was and still is to make maximum efforts to consume energy more efficiently, yet without compromising their international competitiveness.

The participating companies (>0,5PJ/a) have to set the world toplevel themselves with help of an independent consultant, by means of an international benchmark. They will compare their processing plants in the Netherlands with similar plants abroad. The Dutch plants will need to individually measure themselves against the average energy efficiency of the best region in the world or with the best 10 percent of the globally structured installations (excluding those in the Netherlands). When defining the world leaders, account will also be taken of the anticipated efficiency improvements up to 2012. Companies indicate in an energy efficiency plan how and when the worldtop will be reached. The world lead must be redefined every four years. Sofar the Dutch industry has completed the first and second benchmarking round (benchmark reference years 2000/2001 and 2003/2004).

The Benchmarking schedule is carried out under the commission of the Ministry of Economic Affairs and the Ministry for Housing, Regional Development and the Environment.

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<sup>12</sup> Dutch: AMvB.

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## II.2 Residential Sector

The energy policy for households is characterised by a combination of policy instruments that are focussed on the various aspects of household energy consumption. This combination of instruments is focussed on increasing the awareness about energy consumption, providing an insight into self-regulation, stimulating households into taking measures, and statutory measures for newly built housing.

- Energy Tax (see II.1)
- Building Decree and Energy Performance Standard (EPC)
- MilieuCentraal, COEN (Consumer & Energy) and HIER campaign
- TELI subsidy scheme
- KOMPAS
- Temporary subsidy scheme Buildings and CO<sub>2</sub> reduction
- Green Funds Scheme (Groen Beleggen)
- Expand green investment arrangements
- Meer met Minder (More with Less)<sup>13</sup> plan
- Taskforce lighting (see II.3)
- Covenant housing corporations
- Heat distribution
- Enhancing effects implementation of Ecodesign directive

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<sup>13</sup> Not to be confused with the More with Less plan from the European Commission

<b>Name</b>	<i>Building Decree and the Energy Performance Standard (EPC)</i>
<b>Category</b>	1.1 Building Codes and Enforcement
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Project developers and other parties involved in building construction
<b>End-use EEI action targeted</b>	Measures to improve energy efficiency of houses and other buildings.
<b>Status of implementation and planning</b>	1995: Energy Performance Coefficient (EPC) = 1.4 2000: Energy Performance Coefficient (EPC) = 1 2007: Energy Performance Coefficient (EPC) = 0.8 2011: EPC = 0.6 2015: EPC = 0.4

## Description

The current policy regarding new buildings is set down in the Building Decree and the Energy Performance Standard (EPC).

### *Specific energy requirements for the building elements in the Building Decree*

The Building Decree specifically regulates the constructional requirements to which new buildings have to comply in the Netherlands. This also includes minimal demands with regard to insulation values of façades, floors and roof elements and requirements for installations (establishing standards on the level of components).

### *Energy Performance Standard (EPC)*

The EPC sets up requirements regarding the energy performance of a house or (commercial) building. In the meantime the standard in the Building Decree has been tightened several times by which the maximum permitted energy performance coefficient (EPC) for newly built housing has been decreased from 1.4 in 1995 to 0.8 presently. As a result of these measures, newly built houses save an average of 30% in energy. The standards for utility building have also been made stricter.

### *Additional tightening of the EPC*

Project developers and other parties to the project are obligated to take energy-saving measures in all new developments. Additional EPC measures could result in tightening the standard by 25% around 2012 and 50% around 2015 with respect to the current standard. Such stringent standards could mean that the EPC for buildings would shift to 0.4. If the EPC is 0,4 the energy consumption for space heating is comparable to the Passive house concept (15 kWh/m<sup>2</sup>).

<b>Name</b>	<i>MilieuCentraal, COEN and HIER campaign</i>
<b>Category</b>	2.1 Focused information campaigns 2.3 Information centres.
<b>Regional application</b>	The Netherlands
<b>Target group</b>	The consumer and intermediary organisations (municipalities)
<b>End-use EEI action targeted</b>	<ul style="list-style-type: none"> <li>• Changing consumer behaviour.</li> <li>• Choosing energy-saving appliances.</li> </ul>
<b>Status of implementation and planning</b>	Ongoing

## Description

MilieuCentraal, the COEN (Consumer & Energy) programme and the HIER campaign are implementing a number of instruments and activities that will bring the subject of energy saving to the attention of specific consumer target groups. COEN focuses on the intermediary organisations and MilieuCentraal and the HIER campaign on consumers.

MilieuCentraal is national and independent organisation that offers consumers practical and reliable information about the environment. A forum of independent experts tests that information. The organisation gets a government subsidy for carrying out part of its activities.

COEN is a programme fully financed by the government. The HIER campaign is partly financed by the government and partly by NGOs and private parties.

The following instruments are employed for bringing energy saving to the attention of consumers:

**Tailored energy advice<sup>14</sup>:** The '[Energie op Maat](#)' website provides interested consumers with tips and instructions on how to make their energy consumption more sustainable, cheaper and more environment-friendly.

**Television:** The TV programme [Energy Survival](#) presents games that engages children actively, using the theme of 'energy saving' combined with an interactive internet site. It is also geared indirectly towards their parents.

**Labelling on household appliances:** Providing information about the energy efficiency of appliances. The '[Energietabel.nl](#)' website provides an overview of energy efficient household appliances and the energy labels used in the Netherlands.

<sup>14</sup> Dutch: Energie op Maat (EoM).

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**Smart Light!:** This project is aimed at replacing regular light bulbs with energy-saving light bulbs, including drives via municipalities.

**HelpDesk for consumers:** MilieuCentraal answers questions by telephone and via emails that are sent to the Helpdesk. In addition, MilieuCentraal initiates communication projects about important environmental issues, such as environment-friendly building, DIY, mobility and food.

**Smart meters and feedback:** In the coming years all households in the Netherlands will be equipped with smart meters that provide consumers with frequent feedback on energy consumption. The expectation is that in combination with information provision and awareness, this will result in a saving of approximately 2% on household energy consumption by realising a change in behaviour.

**Hier**<sup>15</sup> ([www.hier.nu](http://www.hier.nu)) is the name of a large Dutch climate program whose fundamental idea it is to stress the immediate necessity to implement adaptation projects and initiatives to climate change. Hier introduces a new brand uniting and representing all initiatives that reduce the risk of climate change. This campaign involves not only >40 national charity organisations, but also government and businesses.

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<sup>15</sup> Dutch for 'Here'.



<b>Name</b>	<i>KOMPAS</i> (energy awareness in living and working)
<b>Category</b>	2.1 Focused information campaigns
<b>Regional application</b>	The Netherlands
<b>Target group</b>	For home constructions the target groups are: housing corporations, owner-occupant, private constructors, project developers of houses, installers
<b>End-use EEI action targeted</b>	Using intervention strategy, facilitating and encouraging parties to take sustainable measures. A mix of instruments is used to this end that is appropriate for the specific features and motivation of the target groups. The approach must fit in with the natural motivation of the target groups, it must make knowledge available to them and guarantees energy-saving behaviour by establishing guidelines and regulations.
<b>Status of implementation and planning</b>	The programme began in 2004.

## Description

Kompas intends to facilitate measures so that parties and consumers will undertake their own activities and effect decisions that lead to a CO<sub>2</sub> reduction, including energy saving. Kompas supports municipalities, parties in the commercial and industrial building sector (such as schools and banks) and parties in the housing sector (such as housing corporations).

Kompas determines the most efficient strategy per party, which means employing a mix of instruments that are best suited. In order to attain a picture of the developments in energy saving in the buildings sector, Kompas monitors this aspect annually via user panels.

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<b>Name</b>	<i>Energy label and certificate for houses</i>
<b>Category</b>	2.2 Energy labelling scheme
<b>Regional application</b>	The Netherlands
<b>Target group</b>	House owners and tenants
<b>End-use EEI action targeted</b>	Measures to improve energy efficiency of houses
<b>Status of implementation and planning</b>	Starting 2008

### **Description**

The energy label and certificate for houses will be used to stimulate house owners and tenants to take measures to improve the energy efficiency of their houses. From 2008 on, an energy label will be compulsory at mutation moments (selling, renting out the building). This measure will be complemented by other measures, e.g. financial measures to remove barriers for investments by house owners (both private and corporate).

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<b>Name</b>	<i>TELI subsidy scheme</i>
<b>Category</b>	2.1 Focused information campaigns 2.4 Energy audits
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Local authorities, (energy) companies, housing corporations.
<b>End-use EEI action targeted</b>	Energy efficiency measures (including information campaigns) for low income households.
<b>Status of implementation and planning</b>	Scheme went into effect as of 1 January 2002; most recent tender was in 2006.

## Description

The TELI subsidy scheme<sup>16</sup> aims to remove barriers for low income households with respect to energy efficiency measures, e.g. technical measures, advices and information for the rational use of energy. Low income households (i.e. households with a yearly income less than € 14.000) generally face two barriers: monetary (to pay even for small investments) and access to tailored information.

The scheme subsidizes projects carried out by e.g. local authorities, (energy)companies and housing corporations that give advice and information to low income households and carry out or provide technical measures, e.g. water saving shower heads, CFLs, piping insulation.

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<sup>16</sup> Dutch: Tijdelijke subsidieregeling energiebesparing huishoudens met lage inkomens.

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<b>Name</b>	<i>Temporary subsidy scheme Buildings and CO2 reduction</i>
<b>Category</b>	3.1 Subsidies (Grants)
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Housing corporations, private housing companies, investors and property developers.
<b>End-use EEI action targeted</b>	Energy efficiency measures for improving energy efficiency of existing houses and commercial buildings.
<b>Status of implementation and planning</b>	The scheme went into effect 27 July 2006

### **Description**

The temporary subsidy scheme Buildings and CO2 reduction provides a subsidy up to 15 % of the investment costs (with a maximum of € 1 million per project) for technical measures in existing buildings to reduce energy consumption. The eligible measures should be chosen from a list and the subsidy depends on the (deemed) amount of CO2 saved. Possible measures include cavity, roof and wall insulation, solar hot water system, heat pump boiler and CHP installations.

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<b>Name</b>	<i>Green Funds Scheme (GFS)</i>
<b>Category</b>	3.2 Tax rebates and other taxes reducing energy end-use consumption
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Banks, companies, private investors
<b>End-use EEI action targeted</b>	Investment in energy efficiency measures.
<b>Status of implementation and planning</b>	GFS was set up in 1995

### **Description**

The Green Funds Scheme (GFS)<sup>17</sup> is a tax incentive scheme enabling individual investors to put money into green projects that benefit nature and the environment. Since the scheme was launched 200.000 investors have put up five billion euro, funding 5.000 green projects.

The government plans to make the GFS better suited to projects in the built environment.

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<sup>17</sup> Dutch: Groen Beleggen

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<b>Name</b>	<i>Expand green investment arrangements</i>
<b>Category</b>	3.3 Soft loans
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Private homeowners, housing associations and tertiary sector
<b>End-use EEI action targeted</b>	Offer the financial means to invest in energy saving measures
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

### **Description**

Green investments can be financed with special loans with lower interest rates. The Green mortgage is one of the available soft loans. When a dwelling meets the demands that were formulated in the rules for sustainable dwellings<sup>18</sup>, the owner can receive a discount of about 1 percent on the interest rate. In practice many project developers find the rules to demanding and the number of participants is therefore limited.

At the moment the possibilities to improve the arrangements are being studied. A taskforce with members from different departments made proposals for improvement. A committee, that among others contains financial institutions, did not take a position on the proposals. If they approve the proposals, they will be elaborated to become a part of the 2009 tax plan.

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<sup>18</sup> Dutch: maatlat duurzame woningbouw.

<b>Name</b>	<i>Meer met Minder (More with Less)<sup>19</sup> plan</i>
<b>Category</b>	4.2. Voluntary agreement with commercial and institutional Organisations
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Energy companies, housing associations, private households, tertiary sector and construction sector
<b>End-use EEI action targeted</b>	Stimulating both institutional and private home/building owners to take energy saving measures in existing buildings
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

## Description

The associations for the housing cooperatives (Aedes), for energy companies (EnergieNed), for the construction sector (Bouwend Nederland), for the installation sector (UNETO-VNI) and the Energy transition platform for the build environment (PeGO) proposed an action plan “More with Less”<sup>20</sup> for energy savings in the build environment. This plan is a comprehensive collection of policy measures to achieve considerable energy savings in the built environment.

The plan will be implemented in covenants with the participating organisations. These agreements will formalize the different targets and intentions mentioned in the plan. The energy sector and other organizations commit themselves to execute the MmM-plan in the period 2008-2020. A MmM program board will be installed, which becomes responsible for the implementation of the plan.

The plan contains several components:

- Energy Central
- Remove barriers
- Change the housing assessment system for social housing
- Pilots energy saving for homeowners and private landlords in combination with district approach.

<sup>19</sup> Not to be confused with the More with Less plan from the European Commission

<sup>20</sup> Dutch: Meer met Minder (MmM)

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<b>Name</b>	<i>MmM: Energy Central</i>
<b>Category</b>	2.3 Information centre
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Energy companies, housing associations, private households, tertiary sector and construction sector
<b>End-use EEI action targeted</b>	Create a central information and coordination office that can support all the parties involved.
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

### **Description**

Energy Central will become the executing office responsible for the implementation of the MmM-plan. It should become the central coordinator to facilitate the different actors. Several organization will contribute to Energy Central. It will carry out different tasks:

- Promotion of energy saving in buildings.
- General advise
- Monitoring and reporting the results on a yearly basis.
- Coordinate the different activities taken by real estate agents, constructors, banks, installers and energy companies and others.



<b>Name</b>	<i>MmM: Remove barriers for homeowners to invest in their dwelling</i>
<b>Category</b>	2.1 Focused information campaigns 2.8 Metering and informative billing 3.1 Subsidies 3.3 Soft loans
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Private homeowners
<b>End-use EEI action targeted</b>	Inform homeowners about energy saving and financial benefits. Offer the financial means to invest in energy saving measures
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

### Description

Although homeowners (both private and institutional) are aware of the necessity of energy saving, many barriers prevent homeowners to actually improve their own real estate. The implementation of the MmM-plan will put a lot of effort into the removal of these barriers.

Four types of barriers can be identified:

1. Unawareness of the financial savings that can be made by energy saving.  
This barrier must be removed by information campaigns.
2. Uncertainty and distrust about the quantity of financial savings that will be achieved  
Certification and quality management can help to increase the confidence in the results of energy saving measures. Smart meters can help to inform the dweller on his present energy consumption. Energy companies should decrease the advance payment directly at the moment when energy saving measures are executed.
3. The homeowner is unable to finance the necessary large investments in energy saving measures.  
Banks should offer attractive financing programs and governments should set up supporting programs
4. Refurbishing dwellings is too much effort  
Information campaigns and support programs should focus on natural investment opportunities, especially when occupants move out. Energy saving measures could also be combined with district upgrading programs. Energy saving measures must be offered in combinations of easy and more difficult measures.

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The MmM-plan will follow the following route to remove barriers: communication, awareness raising, advice, implementation and „after sales“ service. Facilities, e.g. personal advice and support, will be provided to consumers if:

- They at least implement 2 measures, of which one easy and one more difficult measure.
- The energy saving measures must lead to at least an improvement of two label categories<sup>21</sup>.
- The total energy saving package is cost effective.

The government will also financially stimulate homeowners to invest in energy efficiency. Until 2011, under this scheme, in 500,000 houses measures will be taken to make houses more energy efficient. From 2012 on, a number of 300,000 houses per year.

A subsidy for renewable options in existing buildings will be started (solar boilers, heat pumps and solar PV). This will lead to 100,000 existing buildings with RES in 2011.

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<sup>21</sup> Energy labels for existing buildings are obliged from January 2008 according to the EPBD directive.

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<b>Name</b>	<i>MmM: Change the housing assessment system for social housing</i>
<b>Category</b>	1. regulation
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Housing associations
<b>End-use EEI action targeted</b>	Enable to raise the rent for housing associations when investing in energy saving measures
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

### **Description**

In the Netherlands rental prices are regulated. Within the housing assessment system, points are awarded for quality aspect of dwellings, such as floor surface and facilities. The rental prices depend on the total number of points.

At present, implementing energy measures such as insulation is only limited rewarded. Investment in energy saving measures cannot be compensated by raising rental prices. Since the landlord cannot benefit from financial profit as a result from energy saving, it's not attractive to invest in energy saving.

If energy saving measures will receive more points in the future, housing associations can earn their investments back by raising rental prices.

<b>Name</b>	<i>MmM: Pilots energy saving for homeowners and private landlords in combination with district approach</i>
<b>Category</b>	2.6 Demonstration projects
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Low-income people
<b>End-use EEI action targeted</b>	Save energy through large scale refurbishment in low-class districts.
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet.

### Description

In 2007 the Dutch government has initiated an approach to upgrade city districts that suffer from unemployment and crime, more than average. The minister of Housing, communities and integration, identified 40 districts which will be upgraded.

National and local governments will cooperate with local residents and social housing corporations to upgrade neighbourhoods. A physical upgrade or replacement of existing dwellings is one of the items in this plan.

Apart from the social improvements, energy saving will be an important issue in these districts. The districts contain a lot of poor quality dwellings, which are e.g. often badly insulated. As a result, the energy costs for the dwellers are high. Because of low incomes and limited access to loans, home-owners cannot invest in energy saving measures. Local authorities and housing corporations will invest in energy saving measures in these districts.

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<b>Name</b>	<i>Covenant housing corporations</i>
<b>Category</b>	4.2. Voluntary agreement with commercial and institutional Organisations
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Housing associations
<b>End-use EEI action targeted</b>	Commit housing associations to make an effort to realize large scale energy savings in existing buildings.
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet.

### **Description**

Housing corporations play a major role in Dutch housing. About 500 corporations possess 35% of the dwellings in the Netherlands. Since renters are not allowed to make major changes in their dwelling, energy saving measures must be executed by the corporations. They have the financial, technical and organizational means to implement saving measures on a large scale.

In their 2007 statement "*Antwoord op de samenleving*" (Answer to society) Aedes, the association for housing corporations, promises to save 20% on energy use in existing dwellings before 2018. Since their effort is crucial for the results in the residential sector, the government will fixate these promises in a covenant. Aedes elaborates the target in a plan which can be used as a basis for a covenant.

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<b>Name</b>	<i>Heat distribution</i>
<b>Category</b>	1. Regulation
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Heat distributors
<b>End-use EEI action targeted</b>	Create fixed conditions under which heat distribution projects can be executed. This raises the attractiveness of heat distribution projects.
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

### **Description**

Heat distribution can be a sustainable and efficient way to suffice the heat demand of buildings. The government is willing to stimulate this. Since consumers depend on a single heat distributors, these organization act as monopolists. Energy companies are accused for charging to much for heat distribution. This has harmed the image of heat distribution and municipalities are reserved in starting up new projects. To handle this problem it is expected that the Dutch parliament will approve new legislation on heat distribution<sup>22</sup> this year. This law dictates how organizations should operate when they manage heat distribution projects. Maximum tariffs and assurance of heat supply are the main issues in the legislation.

Apart from new legislation studies are being executed for measures to facilitate and stimulate heat distribution projects.

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<sup>22</sup> Dutch: Warmtewet.

<b>Name</b>	<i>Enhancing effects implementation of Ecodesign directive</i>
<b>Category</b>	1.2 Minimum Equipment Energy Performance Standards
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Industry, SMEs
<b>End-use EEI action targeted</b>	Develop strong standards for appliances, so newly bought appliances are much more energy efficient
<b>Status of implementation and planning</b>	New EEI measure, process of implementation started.

### Description

The Ecodesign directive became effective in August 2007. Energy and environmental standards will be formulated, to change the design of energy using products.

To prepare for (possible) implementation measures, 20 studies are carried out. These studies involve: Central heating boilers, hot water equipment, computers, imaging equipment (copiers, fax-machines, etc.), TV-sets, stand-by usage, power supplies and battery-chargers, office lighting, public lighting, domestic lighting, domestic air conditioners, electric motors, commercial and domestic refrigerators and freezers, washing machines, dishwashers, solid fuel heaters, dryers, vacuum cleaners and simple and complex set-top boxes. Every study for every appliance group will contain an environmental profile. These profiles will be used to select policy measures. It is very likely that energy efficiency standards will be part of all implementing measures.

The Dutch approach focuses on ambitious implementation measures that will lead to market changes, including:

- Enlarge the Dutch involvement in the European decision making process to accomplish stringent standards for the energy efficiency of appliances.
- Designers and manufacturers of (Semi-) products or parts will be supported if they comply with ecodesign standards earlier than necessary or if they exceed ecodesign standards. Additional funds will be made available in the existing Environment & technology program.

It is expected that at the end of 2008 implementing measures for all product groups will be proposed.

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## II.3 Tertiary Sector

In the tertiary sector the following combination of policy measures are applied:

- Energy Tax (see II.1)
- Energy Investment Deduction (see II.1)
- Long-term Agreements (see II.1)
- Energy Performance Standard (EPC) for public utility buildings and Energy Certificate (see II.2)
- Environmental Protection Act
- KOMPAS (see II.2)
- Temporary subsidy scheme Buildings and CO<sub>2</sub> reduction (see II.2)
- Green Investment Scheme (see II.2)
- Ecodesign directive for office appliances and public lighting (see II.2)
- Tasforce Lighting

The measures are a combination of statutory requirements for new developments (EPC), statutory requirements on environmental and energy management, taxes on the energy use, agreements about energy saving, and an incentive regulation that should make investing in energy saving measures more profitable.



<b>Name</b>	<i>Environmental Protection Act; environmental permits and orders in council (Dutch: AmvB's)</i>
<b>Category</b>	1.1 Building Codes and Enforcement
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Companies
<b>End-use EEI action targeted</b>	Regulations for industrial layout & equipment and operational management are set out in an environmental permit or orders in council. The frugal use of energy is also assessed in imposing the regulations.
<b>Status of implementation and planning</b>	Implemented (since 1993).

## Description

The Environmental Protection Act<sup>23</sup> (EPA) went into effect on March 1993. In specific terms the government uses the EPA to work towards an integral approach for environmental issues. The act outlines the statutory instruments that are available for protecting the environment and which basic assumptions are valid for these. In this context, the EPA requires companies to have an environmental permit. The permit must include requirements that 'offer the environment the best possible protection'.

The government's definition of 'protection of the environment' is in any case understood to mean:

- Improving the environment
- Effective removal of waste products
- Rational use of energy and raw materials
- Limiting traffic to and from the plant

This is known as a framework act: it contains the general rules for environmental management. More specific rules for certain groups are elaborated in decrees (Dutch: AmvB's) and ministry regulations.

The companies that fall under an order in council could have an 'additional requirement' imposed by the municipality, that stipulates that the companies must undertake energy saving measures with a cost recovery period of five years or less.

The ministry for Housing, Spatial Planning and the Environment is responsible for enforcement. InfoMil, an information centre, informs the implementers about enforcing the act.

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<sup>23</sup> Dutch: Wet milieubeheer (Wm)

<b>Name</b>	<i>Taskforce lighting</i>
<b>Category</b>	4.1 Voluntary agreements/co-operative instruments with commercial and institutional organisations.
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Residential and tertiary (including public) sector
<b>End-use EEI action targeted</b>	Develop, by cooperation between public and private parties, a policy to achieve major savings on public lighting
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

### **Description**

The taskforce on lighting is a cooperation between producers, retailers and users of lighting. The parties involved will enter into agreements to move towards the use of the most energy efficient lighting available; the agreements will be more ambitious than the implementing measures (minimum efficiency standards) under the Ecodesign directive. The task force will deal with public lighting (lighting on highways, regional and local roads, bridges and locks), commercial and residential lighting

The taskforce will look at ways to expand existing policy measures such as the Energy Investment Deduction (a fiscal stimulation for enterprises), energy saving projects from the ministry of transport and Long Term Agreements with the industry and tertiary sector.

Apart from intensifying existing policies, the taskforce will develop attractive financial stimulation measure, track down and take away conflicting regulations and lock-in effects as a result of new technologies. The government will take the lead by using her purchase power.

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## II.4 Industry (Non-ETS)

In the industrial sector, with the exception of the part that falls under the European emission trading, the following measures are employed:

- Energy Tax (see II.1)
- Energy Investment Deduction (see II.1)
- Long-term Agreements and Benchmarking Agreement (see II.1)
- Environmental Protection Act (see II.3)
- Environmental Quality Electricity Production (Dutch: MEP) for Combined Heat and Power (CHP; Dutch: WKK)
- Energy Centre for SME (Dutch: Energiecentrum MKB)

The Environmental Protection Act contains the minimum obligations with which companies must comply, while additional efforts are agreed upon via the Long-term Agreements. The Energy Investment Deduction makes investments in energy efficient equipment and/or processes more cost-effective sooner, while the Energy Tax increases the cost price of energy. The Environmental Quality Electricity Production (Dutch: MEP) was broadened and optimised; there will be a MEP for wind on sea and on land, and for biomass.

<b>Name</b>	<i>Environmental Quality Electricity Production (Dutch: MEP) for CHP (Dutch: WKK) and MEP for sustainable energy</i>
<b>Category</b>	3.1 Subsidies (Grants)
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Electricity producers
<b>End-use EEI action targeted</b>	Stimulating sustainable energy and the use of CHP.
<b>Status of implementation and planning</b>	The subsidy for sustainable generated electricity was stopped in 2006. A temporary regulation was implemented as an emergency measure. At this time an adapted version of the MEP is being prepared.

## Description

Part of the electricity produced using CHP (about 30 % of the production of an installation) or sustainable generated kWh (by wind, biomass, sun, hydropower) receives support from the government.

The subsidies for sustainable electricity and for electricity produced by CHP should compensate for the differences between the production costs related to sustainable electricity and for electricity produced by CHP and the market price for conventional electricity. The current subsidy scheme covers about 50% of the uneconomic part of the total costs.

The amount of subsidy varies according to the type of sustainable energy generation based on the difference between the production costs for sustainable electricity (wind, solar energy, etc.) and the market price for conventional electricity. The Minister for Economic Affairs decides annually on the level of the subsidies. The minister has the prerogative to distinguish between various production categories and various production installation categories.

The subsidy is then paid for maximum 10 years in the case of sustainable electricity and for 1 year in the case of CHP.

The higher level of subsidy for sustainable generated electricity was set to 0 in 2006. A temporary regulation was implemented as an emergency measure. At this time an adapted version of the MEP (for both sustainable energy and CHP) is being prepared.

The regulation falls under the responsibility of the Ministry of Economic Affairs.

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<b>Name</b>	<i>Energy Centre for SMEs</i>
<b>Category</b>	2.3 Information Centres
<b>Regional application</b>	The Netherlands
<b>Target group</b>	SMEs
<b>End-use EEI action targeted</b>	Stimulating sustainable energy and the use of CHP.
<b>Status of implementation and planning</b>	The activities of the Energy Centre run since 2002.

### **Description**

The Energy Centre for SMEs<sup>24</sup> was founded in 2002. The mission of the Energy Centre is to stimulate energy savings in SMEs. To realize the mission the Energy Centre cooperates with associations, companies and other intermediars. Activities include advice on energy efficiency measures, energy scan and helpdesk.

In the last 4 years 100,000 SMEs used the services of the Energy Centre and saved an amount of energy worth 6 million €. The expectation is that by the end of 2008 200,000 SMEs will be supported.

The Energy Centre is financed by the Ministry of Economic Affairs.

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<sup>24</sup> Dutch: Energiecentrum MKB.

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## II.5 Transport

The following measures apply to the Transport sector:

- Energy Tax (see II.1)
- Energy Investment Deduction (see II.1)
- Long-term Agreements (see II.1)
- Taxes: fuel taxes, motor vehicle tax (Dutch: MRB) and private motor vehicle and motorcycle tax (Dutch: BPM), surcharge levy per kilometre, CO<sub>2</sub>-differentiation BPM
- Limiting maximum speed
- Energy labelling of cars
- 'Eco-Driving' programme
- Subsidy scheme CO<sub>2</sub> reduction transport
- Longer and heavier lorries
- European car standards
- Distance-based levy for transporters of goods
- Additional taxation of motor fuels which are harmful to the environment
- Discount on tax for most efficient leased cars

<b>Name</b>	<b>Taxes</b>
<b>Measures</b>	<ul style="list-style-type: none"> <li>• Fuel taxes</li> <li>• Motor vehicle tax</li> <li>• Private motor vehicle and motorcycle tax</li> <li>• Surcharge levy per kilometre</li> </ul>
<b>Category</b>	3.2 Tax rebates and other taxes reducing energy end-use consumption
<b>Regional application</b>	The Netherlands
<b>Target group</b>	<ul style="list-style-type: none"> <li>• Private vehicles and vans and motorcycles</li> <li>• Transport of goods</li> </ul>
<b>End-use EEI action targeted</b>	Decreasing the use of cars by making car use more expensive (more public transportation, more bicycles, more car pooling), and stimulating the population of acquire lighter and more economic cars.
<b>Status of implementation and planning</b>	Fuel taxes: since 1990. Surcharge levy per kilometre: proposed implementation during the period of this cabinet.

## Description

Fuel tax is a consumer tax included in the price of both petrol and diesel. The tax is levied per litre. In 2006 the tax in the Netherlands for Euro lead-free petrol was €0.67 (consumer price € 1.46) and for sulphur-free diesel €0.36 (consumer price € 1,08). The tax levels have hardly changed in the past years.

On 1 July 2006 the new Private Motor Vehicle & Motorcycle Tax (Dutch: BPM) regulation went into effect. Each new personal vehicle can receive a reduction on the BPM depending on the car's energy label. The aim of the regulation is to reward economic cars with a bonus on the BPM and to penalise relatively uneconomic cars with a surcharge on the BPM (penalty). The regulation is based on the Dutch system of energy label for personal cars (A to G) that determines the classification of the car according to its relative thriftiness. The government wants to intensify this measure. This probably will be implemented 1 January 2008.

The bonus and penalty amounts are as follows:

	non-hybrid car	Hybrid car		
A	€ 1,000 bonus	6,000 bonus	A	> 20% more economic than average
B	€ 500 bonus	3,000 bonus	B	10 - 20% more economic than average
C	€ 0 none	0 none	C	0 - 10% more economic than average
D	€ 135 penalty	135 penalty	D	0 - 10% less economic than average
E	€ 270 penalty	270 penalty	E	10 - 20% less economic than average
F	€ 405 penalty	405 penalty	F	20 - 30% less economic than average
G	€ 540 penalty	540 penalty	G	> 30% less economic than average



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<b>Name</b>	<i>Limiting maximum speed</i>
<b>Category</b>	1. Regulation (and Enforcement)
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Motorway/Road car users
<b>End-use EEI action targeted</b>	Imposing a lower maximum speed and enforcing it can influence driving behaviour. Lower speed goes hand in hand with less fuel consumption.
<b>Status of implementation and planning</b>	Further limitation of the maximum speed most likely will not go through due to high costs.

### **Description**

The maximum speed on Dutch motorways is 120 km/h. Since 2001 the maximum speed has been enforced more strictly. In 2004 and 2005 the maximum speed in many urban areas was lowered from 120 to 100 km/h. In a few urban areas it is even down to 80 km/h. Monitoring maximum speed was tightened by means of trajectory spot-checks.

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<b>Name</b>	<i>Energy labelling of cars</i>
<b>Category</b>	2.2 Energy labelling schemes
<b>Regional application</b>	The Netherlands
<b>Target group</b>	People who consider buying a car
<b>End-use EEI action targeted</b>	Purchasing a more economical car
<b>Status of implementation and planning</b>	Since 2001

### **Description**

All new personal vehicles have an energy label. The label provides information about the energy consumption of the car. The label is related to the average emission of all new cars (the CO<sub>2</sub> reference standard). Cars with an A label are the most fuel-efficient cars. Cars with a G label are the least fuel-efficient. Cars with a C or D label have average fuel consumption for their size. There are cars with A or B labels in each 'size category'. A car with an A label definitely uses 20% less fuel than a care with a C or D label in the same size category. The fuel bill for a car with a B label is 10 to 20% lower than the fuel bill for a car that has average fuel consumption for its size.

The addition to the taxable income for leased cars (22% of the purchase price of leased cars must be added to the taxable income) is going to be changed in such a way that leased car drivers are fiscally encouraged to obtain economical private cars.

<b>Name</b>	<i>Eco-Driving</i>
<b>Category</b>	2.1 Focused information campaigns 2.5 Training and education 3.1 Subsidies (Grants)
<b>Regional application</b>	The Netherlands
<b>Target group</b>	(Potential) Car users Intermediary organisations (car fleet managers, driving schools, sector organisations, etc.)
<b>End-use EEI action targeted</b>	Driving behaviour and purchasing behaviour
<b>Status of implementation and planning</b>	Since 1999; Eco-Driving III runs until 2010 and the expectation is that it will be expanded with Eco-Driving IV (till 2011).

### Description

The Eco-Driving<sup>25</sup> programme encourages holders of driving licences (or aspirant drivers) and car fleet managers to adopt a more energy efficient and safer purchasing and driving behaviour.

The objective of Eco-Driving is to urge car drivers, professional chauffeurs and car fleet managers to adopt a more energy efficient and safer purchasing and driving behaviour. Presently the Eco-Driving programme Phase 3 is being implemented and it shall run from 2006 to 2010.

The information campaign of Eco-Driving is focused on changing driving behaviour as well as the attitude towards buying cars. To influence driving behaviour, an information campaign was started, which focuses on aspects such as driving in low gear and tyre pressure monitoring.

The programme also has a subsidy component intended for municipalities, provinces, companies, sector organisations, dealers, consumer organisations, road safety organisations and parties offering advanced driving lessons. It concerns for example, car equipment and training. The subsidy part is accommodated in the Subsidy regulation for CO<sub>2</sub> reduction in traffic and transportation.

Eco-Driving is a programme put out by the Ministry of Transport, Public Works and Water Management. SenterNovem facilitates implementation.

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<sup>25</sup> Dutch: Het Nieuwe Rijden (HNR)

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<b>Name</b>	<i>Subsidy scheme CO2 reduction transport sector</i>
<b>Category</b>	3.1 Subsidies (Grants)
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Companies and organisations.
<b>End-use EEI action targeted</b>	Energy efficiency measures in transport (thereby reducing CO2 emissions)
<b>Status of implementation and planning</b>	The scheme started in 2002.

### **Description**

The subsidy scheme CO2 reduction transport sector<sup>26</sup> provides subsidies to companies and organisations carrying out projects to reduce CO2 reduction in transport. The scheme consists of two programmes, one for goods traffic and one for transport of passengers. The subsidy for 1 tonne CO2 reduction is € 10.

In the last 4 years 4 programmes have been carried out, each of them with a budget of 6 million €. The following type of projects were subsidised: clean technology and vehicles, transport efficiency, modal shift, alternatives for the private car.

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<sup>26</sup> Dutch: Subsidieregeling CO2-reductie Verkeer en Vervoer.

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<b>Name</b>	<i>Longer and heavier lorries</i>
<b>Category</b>	4.2 (Voluntary agreements and co-operative instruments) Commercial of Institutional Organisations.
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Transport companies
<b>End-use EEI action targeted</b>	Increase energy efficiency of lorries.
<b>Status of implementation and planning</b>	Large scale experiment 2004-2006. First phase (3 to 5 years) starting 1 November 2007.

### **Description**

A longer and heavier lorry<sup>27</sup>, also named Ecocombi, is a lorry that is allowed and able to carry more freight than an ordinary lorry. An Ecocombi is at most 25,25 metre long and has a weight of 60 tonnes, whereas an ordinary lorry is at most 18,75 metre long and has a weight of 50 tonnes (in the Netherlands). Because the fuel consumption of an Ecocombi is only marginally higher than the consumption of an ordinary lorry, transport of goods with an Ecocombi saves 4 to 30 % on fuel (per lorry).

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<sup>27</sup> Dutch: Langere en Zwaardere Vrachtautocombinatie (LZV).

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<b>Name</b>	<i>European car standards</i>
<b>Category</b>	1.2 Minimum Equipment Energy Performance Standards
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Car manufacturers
<b>End-use EEI action targeted</b>	Develop stringent standards for cars, so newly bought cars are much more energy efficient
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet

### **Description**

European standards are crucial for achieving goals on energy efficiency and CO<sub>2</sub> reduction. The Dutch government wants the EU to set a maximum of 120/130 g-CO<sub>2</sub>/km in 2012. The Commission has made a proposal for a renewed Community strategy to reduce CO<sub>2</sub> emission from light vehicles (cars and vans) which includes this target. In its work programme, the Dutch government has written its intentions to lower the 130 g/km in 2016 and further in 2020.

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<b>Name</b>	<i>Distance-based levy for transporters of goods</i>
<b>Category</b>	3.2 tax rebates and other taxes reducing energy end-use consumption
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Transport sector
<b>End-use EEI action targeted</b>	Make driving more expensive to limit the kilometres driven.
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet. In discussion, no governmental intention for implementation yet.

### Description

Like car drivers, transporters of goods must be charged per kilometre. The fixed taxes for transporters are relatively low in comparison with other costs. Unlike the expected passenger car levy, this levy is not based on a shift from fixed to distance-based taxation.

The system could be comparable to the German *Autobahnbenutzungsgebühr für LKW* (Distance-based heavy load levy)<sup>28</sup>. In this system the toll rate is based on actual infrastructure costs. These costs are spread over the heavy goods lorries that use the roads. They have to pay a levy for every driven kilometre.

The measure will stimulate transporters to minimize driving distances.

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<sup>28</sup> See MURE database for a description: [http://www.isis-it.com/data/mure\\_pdf/transport/GER2.PDF](http://www.isis-it.com/data/mure_pdf/transport/GER2.PDF)

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<b>Name</b>	<i>Additional taxation of motor fuels which are harmful to the environment</i>
<b>Category</b>	3.2 tax rebates and other taxes reducing energy end-use consumption
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Car users and transport sector
<b>End-use EEI action targeted</b>	Increase the costs of driving in diesel cars to limit the travelled kilometres
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet.

### **Description**

The use of diesel fuel is more harmful to the environment in comparison with other fuels. Especially small particles (PM10) have a negative effect on air quality in city-centres. In order to discourage the use of diesel, it will be made more expensive with an additional tax.

This measure could lead to shift to other fuels for passenger cars. For trucks it helps to stimulate the introduction of energy saving measures.



<b>Name</b>	<i>Discount on tax for most efficient leased cars</i>
<b>Category</b>	3.2 tax rebates and other taxes reducing energy end-use consumption
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Lease companies, users of leased cars
<b>End-use EEI action targeted</b>	Make energy efficient leased cars cheaper to make the fleet of leased cars as a whole more energy efficient.
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet. Implementation probably 1 January 2008.

### **Description**

In the Netherlands leased cars, which are also used for the private purposes of the employee, are seen as part of the income. The employee must pay income tax over 22% of the cost price including tax.

To stimulate the market for energy efficient cars, the government wants to lower this percentage for the most energy efficient cars.

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## II.6 Agriculture

The following measures apply to the agricultural sector:

- Energy Tax (see II.1)
- Energy Investment Deduction (see II.1)
- Long-term Agreements (see II.1)
- Environmental Quality Electricity Production for CHP and sustainability (see II.4)
- Green Funds Scheme and Financing (Environmental Investment Deduction (Dutch: MIA) and/or Accelerated Depreciation on Environmental Investments (Dutch: VAMIL)).
- Subsidy schemes: Investments in energy savings (Dutch: IRE), Market introduction energy innovations (Dutch: MEI), Unique Opportunities Scheme (Dutch: UKR); programme Greenhouse as Energy Source.
- Internal emission trading system for the greenhouse sector

<b>Name</b>	<i>Green Funds Scheme and Financing (MIA, VAMIL)</i>
<b>Category</b>	3.2 Tax rebates and other taxes reducing energy end-use consumption
<b>Regional application</b>	The Netherlands
<b>Target group</b>	All end users that fall under the scope of the Energy Service Directive (ESD)
<b>End-use EEI action targeted</b>	Making investments in projects that have a positive effect on nature and the environment more attractive.
<b>Status of implementation and planning</b>	Implemented in 1995: ongoing regulation

## Description

The all-encompassing term 'Green Investment' contains on the one hand the conservation and investment in green projects and on the other hand, green financing. In order to qualify for green financing, the projects require a 'green declaration', which demonstrates that the entities comply with certain criteria. Green Investment is made available by means of two directives: the Green Fund Directive and the Green Project Directive.

The Environment Investment Deduction<sup>29</sup> offers entrepreneurs who invest in environment-friendly equipment the possibility to deduct up to 40% of the investment amount from their taxable profits. The percentage of the deduction depends on the environmental impacts and the prevalence of the equipment.

The Accelerated Depreciation on Environmental Investments<sup>30</sup> offers liquidity and interest benefits. Entrepreneurs that adopt the VAMIL scheme for their equipment can write off their equipment arbitrarily or freely.

The MIA and Vamil schemes are two different regulations, but often they are combined. Both regulations use a mutual list, what has become known as the Environment List. This list contains all the types of equipment that qualify for MIA and/or Vamil. The Environment List is reviewed annually.

The glasshouse horticulture industry frequently submits claims for Green Label Glasshouses and semi-closed greenhouses under Green Investment scheme and within the MIA and VAMIL schemes.

- Green Label Glasshouses: glasshouses for commercial growth of garden products with low energy consumption and a low environmental impact. The

<sup>29</sup> Dutch: Milieuinvesteringsaftrek (MIA).

<sup>30</sup> Dutch: Willekeurige afschrijvingen milieu-investeringen (VAMIL).

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glasshouses must comply with strict requirements set for the use of minerals, water and energy.

Aspects such as light radiation and organic crop protection also play a role in this. Depending on the number of points that Green Label Glasshouses obtain in the green certificate, they are permitted to participate in MIA/VAMIL and/or Green Investment.

- Semi-closed greenhouses: In the semi-closed greenhouse systems the environment and energy performance are considerable better than in the Green Label Glasshouses, because the emphasis is on applying new techniques and the use of sustainable energy sources. The hot air in these greenhouses is cooled and the heat is stored in aquifers.

<b>Name</b>	<i>Subsidy schemes (IRE, MEI, UKR), Programme 'Kas als Energiebron'</i>
<b>Category</b>	3.1 Subsidies
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Agricultural sector, in particular Greenhouse sector
<b>End-use EEI action targeted</b>	Development of and investment in efficient energy systems and energy efficiency measures
<b>Status of implementation and planning</b>	Ongoing

## Description

Various schemes exist to support the development of and investment in energy efficiency measures and efficient energy systems.

The scheme 'Investments in energy savings'<sup>31</sup> offers a subsidy of 25 % of the eligible costs with a maximum of € 400.000 to greenhouse farming companies that implement measures to increase energy efficiency. Also clusters of companies are eligible.

The scheme 'Market introduction energy innovations'<sup>32</sup> aims to stimulate and accelerate early market introduction of efficient energy systems by greenhouse farming companies. Investments in semi-closed glasshouses should result in a CO<sub>2</sub> emission reduction of at least 25 %.

The Unique Opportunities Scheme<sup>33</sup> supports projects in which market parties and other stakeholders cooperate towards the transition to a sustainable energy system. Emphasis is put to accelerated market introduction of technologies contributing towards this transition. The scheme subsidizes up to 40 % of the part of the investment that is not cost-effective.

Furthermore financial support of 50 % of the eligible costs is provided to projects that test and show in practice the results of innovations.

The programme Greenhouse as Energy Source<sup>34</sup> encompasses a strategy of 6 transition paths leading to a sustainable energy system for greenhouses, meaning that in 2020 new greenhouses should allow for energy neutral cultivation. Several instruments are implemented in this programme, e.g. design competition,

<sup>31</sup> Dutch: Investerings op het terrein van energiebesparing (IRE)

<sup>32</sup> Dutch: Marktintroductie Energie-innovaties (MEI)

<sup>33</sup> Dutch: Unieke Kansen Regeling (UKR)

<sup>34</sup> Dutch: Kas als Energiebron.

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demonstration projects, communication and dissemination of knowledge and financial support. The programme is financed by the Ministry of Agriculture, Nature and Food Quality.

<b>Name</b>	<i>Internal emission trading system for the greenhouse sector</i>
<b>Category</b>	4.1 Voluntary agreements and co-operative instruments –Industrial companies
<b>Regional application</b>	The Netherlands
<b>Target group</b>	Greenhouse horticulture sector, insofar not participating in the emission trading scheme.
<b>End-use EEI action targeted</b>	Increasing awareness of energy consumption and stimulation of investments in energy-saving measures by giving CO <sub>2</sub> a market value.
<b>Status of implementation and planning</b>	New EEI measure, process of implementation not started yet. Proposed measure, expected to be implemented in 2010.

### **Description**

To improve the energy efficiency of the Dutch greenhouse sector, which is the dominant user of energy in the agricultural sector, a separate CO<sub>2</sub> emission trading system will be set up for this subsector. The cap for the CO<sub>2</sub> emission will be set by the government. By giving CO<sub>2</sub> a market value, companies are encouraged to invest in emission reduction.

The horticulture organization Productschap Tuinbouw is expected to introduce and manage this system, and has proposed a system design. An internal balancing system for the greenhouse sector is expected to be operational in 2010.

Many large greenhouse companies (65 in 2007) already participate in the European Union Emissions Trading System (EU-ETS). The new system will involve also smaller companies into emissions trading. The Netherlands will strive for a coupling of this system to the EU-ETS via a separate construction. It is expected that this can be realized in 2013.