



Intelligent Energy  Europe



**Energy research Centre
of the Netherlands**

Energy Efficiency Policies and Measures in The Netherlands

**Monitoring of Energy Efficiency in EU 27,
Norway and Croatia (ODYSSEE-MURE)**

Petten, September 2009

Contacts:

J. Gerdes

Energy research Centre of the Netherlands

Westerduinweg 3, Petten

Tel.: +31 224 564692 / Fax: +31 224 568338

E-Mail: gerdes@ecn.nl

www.ecn.nl

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Communities. The European Commission is not responsible for any use that may be made of the information contained therein.

Contents

	Page
1 Executive Summary	2
2 The Background to Energy Efficiency	4
2.1 Overall economic context	4
2.2 Energy consumption trends: by fuel and by sector	5
2.3 The policy background to energy efficiency	6
3 Overall Assessment of Energy Efficiency Trends	8
3.1 Overall trends in energy intensity	8
3.2 Industry	10
3.3 Households	11
3.4 Services	15
3.5 Transport.....	16
3.6 Assessment of energy efficiency/savings through ODEX: total and by sector.....	18
3.7 CO ₂ -emissions trends	21
4 Energy efficiency measures.....	25
4.1 Recent Energy Efficiency Measures	25
4.2 Patterns and Dynamics of Energy Efficiency Measures.....	26
4.3 Innovative Energy Efficiency Measures	31
4.4 Energy efficiency measure evaluations.....	31
4.4.1 Semi-quantitative Impact Estimates of Energy Efficiency Measures	31
4.4.2 Lessons from Quantitative Energy Efficiency Measure Evaluations	36

5 National Developments under the EU Energy Efficiency Directive and the 20% Energy Efficiency Target of the EU.....	39
---	-----------

Annex 1: Energy Efficiency Measure Summary by Country

Annex 2: Country Profile

Index of Figures

	Page
Figure 2-1 <i>Macro economic developments in the Netherlands, 1990 - 2007</i>	4
Figure 2-2 <i>Final energy consumption 1990 – 2007</i>	5
Figure 2-3 <i>Final energy consumption by sector</i>	6
Figure 3-1 <i>Primary and final energy intensities 1990 - 2007</i>	8
Figure 3-2 <i>Transformation share</i>	9
Figure 3-3 <i>Energy efficiency index in the industrial sector</i>	10
Figure 3-4 <i>Energy efficiency developments in the industrial sector</i>	11
Figure 3-5 <i>Energy efficiency index households</i>	12
Figure 3-6 <i>Energy efficiency for space heating in households</i>	13
Figure 3-7 <i>Specific energy use of electrical appliances</i>	13
Figure 3-8 <i>Specific consumption of new dwellings</i>	14
Figure 3-9 <i>Energy intensity of the services sector</i>	15
Figure 3-10 <i>Unit consumption per employee</i>	16
Figure 3-11 <i>Energy efficiency index of transport</i>	17
Figure 3-12 <i>Average specific consumption for road transport vehicles</i>	17
Figure 3-13 <i>Combined energy use: Global ODEX</i>	18
Figure 3-14 <i>Industry ODEX</i>	19
Figure 3-15 <i>Transport ODEX</i>	20
Figure 3-16 <i>Households ODEX</i>	21
Figure 3-17 <i>CO₂ emissions of all final consumer sectors, with and without emissions from electricity generation</i>	22
Figure 3-18 <i>CO₂ emissions of the different sectors without emissions from electricity generation</i>	23
Figure 3-19 <i>CO₂ emissions of the different sectors with emissions from electricity generation</i>	23

Figure 4-1	<i>Measure types for the residential sector</i>	26
Figure 4-2	<i>Measure types for the transport sector</i>	27
Figure 4-3	<i>Measure types for the industrial sector</i>	28
Figure 4-4	<i>Measure types for the tertiary sector</i>	29
Figure 4-5	<i>Measure types, cross-cutting</i>	30

Index of Tables

	Page
Table 4-1 <i>Policy measures for the residential sector</i>	32
Table 4-2 <i>Policy measures for the transport sector</i>	33
Table 4-3 <i>Policy measures for the industrial sector</i>	34
Table 4-4 <i>Policy measures for the tertiary sector</i>	35
Table 4-5 <i>Policy measures, cross-cutting</i>	36

1 Executive Summary

This report contains the national case study of The Netherlands for the Intelligent Energy Europe project Monitoring of energy efficiency in the EU27 countries, Norway and Croatia (ODYSSEE-MURE).

It presents the recent energy efficiency trends in the Netherlands on the basis of indicators extracted from the ODYSSEE database that contains data up to 2007.

GDP growth from 2003 until 2007 was 2.8% per year on average. This follows a period of low growth between 2000 and 2003 at 0.8%. Private consumption followed the GDP trend until 2003, but was lagging behind in more recent years. Energy consumption growth has been lower since 1996; before that year it was 2.5% per year, after 1996 it was only 0.5%. The share of energy consumption by the transport and services sector has become higher compared to 1990. The share of the industrial sector has become lower and that of the residential sector much lower. Natural gas consumption has decreased because of more efficient heating and higher temperatures in recent years. Electricity consumption has increased. The share of renewable energy remains small. The energy efficiency for the industrial, transport and residential sectors combined has been improving steadily from 1990-2007, with an average annual improvement of 1.2%.

Industrial production (measured in added value) grew at half the speed of that of GDP. Half of the industrial sector consists of chemical industry, a subsector that made considerable progress. Important policy measures in effect are Long Term Agreements and the Benchmarking Covenant.

Transport only shows a modest improvement of efficiency. In goods transport a higher share of light duty vehicles causes a lower overall efficiency. With cars, the higher efficiency of engines, enforced by vehicle standards, was compensated by higher vehicle weight.

In households the efficiency of space heating, which makes up 70% of the energy consumption in, has improved considerably. Energy labels for appliances have been effective, but the higher penetration of large electrical appliances compensated their higher efficiency. All in all, the efficiency in households improved with 1.8% per year on average between 1990 and 2007.

Data for the tertiary sector are scarce, which makes it hard to draw firm conclusions. One can still conclude that energy intensity has not changed much over the past years, but energy use per employee did increase.

Energy Efficiency Policies and Measures in The Netherlands in 2007

A new policy program called “Clean and Efficient” (Dutch: “Schoon en Zuinig”) was introduced by the government in 2007. Because this report includes data up to 2007, the quantitative effects are not yet known.

2 The Background to Energy Efficiency

2.1 Overall economic context

The average economic growth from 1990 until 2007 was about 2.6% annually. This period can be divided into four parts with quite different growth numbers. From 1990 until 1993 growth was 1.8% per year. Between 1993 and 1999 economic growth was very high with 3.7% on average and with a maximum of 4.7% in 1999. After 2000 this growth came to a halt with almost no growth in 2002. Over the period 2000-2003 the economic growth was about 0.8%. Finally, the average growth over the period 2003-2007 was again higher at 2.8% per year.

The 1993-2000 period showed a rapid progression of the industrial production (2.4 % per year). This marks a break compared to the period 1990-1993 when the average industrial growth was much lower. After 2001 growth was around zero in 2002 and even negative with -1.8% in 2003. Despite the decline in production around 2003, the average growth in industrial production from 2000 to 2007 amounted to 0.9% per year thanks to higher growth, with a peak in 2007 at 2.9%. Over the complete 1990-2007 period, the industry production grew with half the speed of that of GDP.

Over the 1990-2007 period private consumption grew by 2.2% per year on average. The 1995-2000 timeframe shows a very high growth of 4.4%, while from 2000 to 2007 the average growth was only 0.9%. Private consumption closely followed the GDP trend until 2003, but started to lag behind in more recent years.

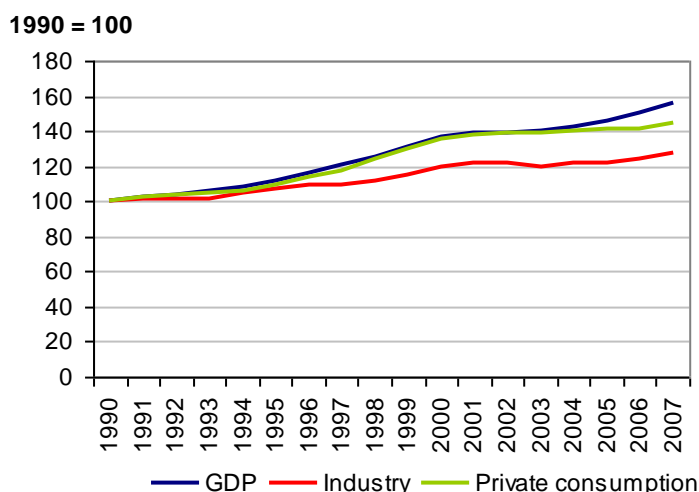


Figure 2-1 *Macro economic developments in the Netherlands, 1990 - 2007*

2.2 Energy consumption trends: by fuel and by sector

Between 1990 and 2007, the final energy consumption increased with approximately 1.1% a year. The year 1996 seems to be a turning point. Not only the year itself is exceptional because of a cold winter, it also divides the period 1990-1995 with more than 2.5% and 1997-2007 with less than 0.5% annual increase in energy consumption.

Especially the share of natural gas in total consumption has decreased during the last 17 years (from 50% in 1990 to 38% in 2007). This can be explained by more efficient heating equipment and by the warmer climate, which is illustrated by the average number of degree-days per year (1990-1995: 2916 compared to 2752 on average from 2000 to 2007).

In contrast with natural gas the market share of electricity in the final consumption grew from 14% in 1990 to 17% in 2007. If we don't take into account non-energy use in metal production, coal is of minor importance in the Dutch energy mix. The share of renewable energy is increasing but remains small. Heat has been increasing from 1% in 1990 to 6% in 2007.

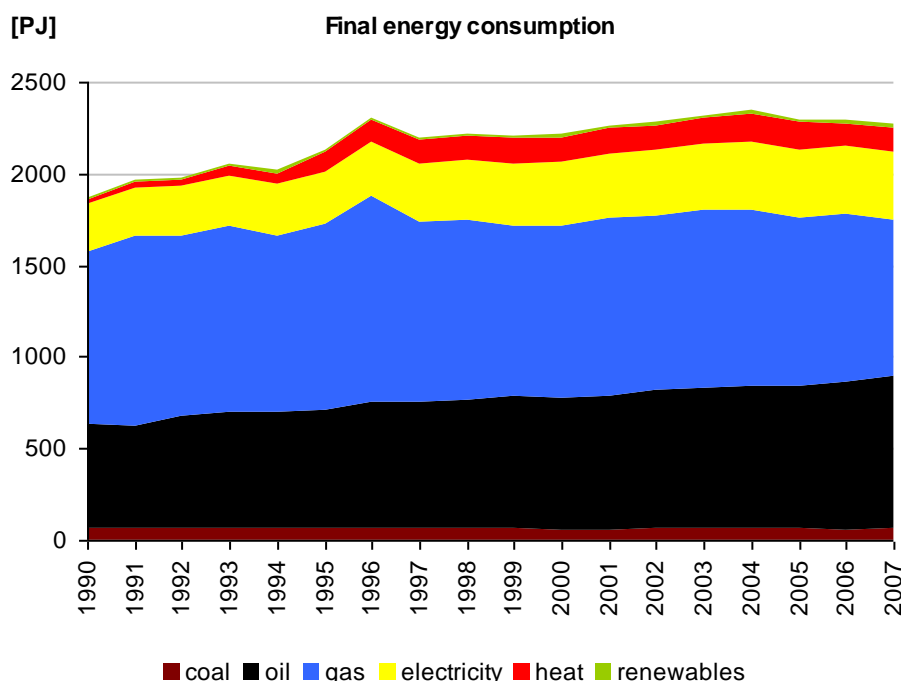


Figure 2-2 Final energy consumption 1990 – 2007

With respect to the distribution of the final consumption by sector (non-energy uses excluded), the most important feature is the increasing role of transport (23% in 1990 compared to 29% in 2007) and the services sector (growing from 11% in 1990 to 15%

in 2007). The share of the residential sector decreased substantially from 22% to 17%. The contribution of industry decreased slightly from 34% to 32% and agriculture decreased from 9% to 6%.

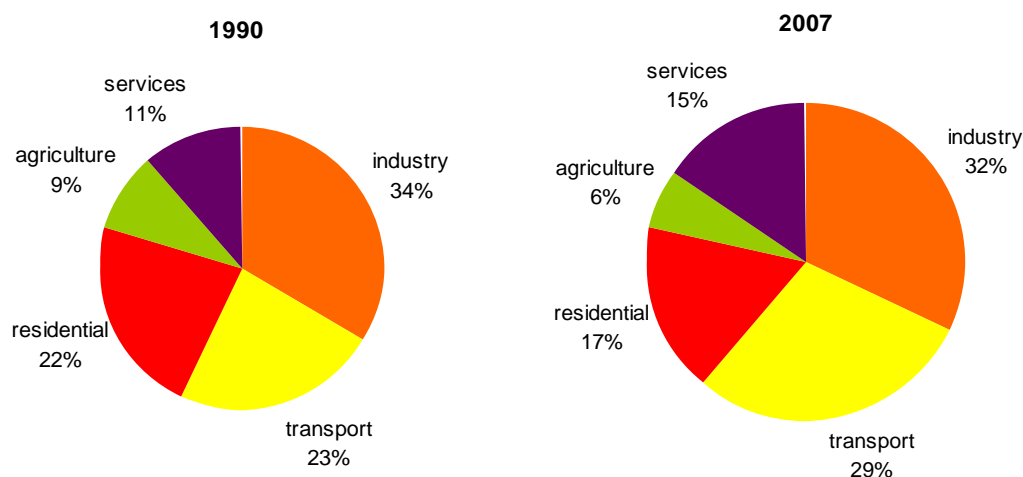


Figure 2-3 Final energy consumption by sector

2.3 The policy background to energy efficiency

The Dutch government published a new Energy Report in 2008. It states that a fundamental change in the energy supply is necessary to face global challenges in this area: rising energy demand and CO₂ emissions that lead to higher energy prices. The government wants the energy supply to be cleaner, smarter and more varied. 7 billion euro will be invested in the energy supply system until 2011, international energy policy will be intensified and policy measures will be adapted to improve energy markets and stimulate investments. Together with commercial partners the Dutch government will expand the natural gas hub, develop the North Sea as a renewable energy source and will take action for the development of a smart and flexible energy infrastructure.

The “Clean and Efficient” programme

In 2007 the “Clean and Efficient” programme was launched. Its goals are to reduce greenhouse gas emissions (mainly CO₂) with 30% in 2020 compared with 1990, to increase annual energy savings from 1% to 2% during the next few years, and to increase the share of renewable energy to 20% in 2020. It is a package of measures that can be implemented in the short term. It consists of three waves. The first wave is a collection of measures that have already been developed, but have not been imple-

mented yet. The second wave is faster development of options that still need some development time, like innovations that need to be sped up. The third wave is an innovation agenda for the medium and long term, among others by an intensified continuation of the energy transition. The programme uses a mix of instruments to achieve its objectives:

- Financial instruments: the European Emission Trading Scheme (ETS) to reduce CO₂ emissions
- Normative measures for energy efficiency, CO₂ emissions and sustainability
- Instruments to stimulate innovation
- Temporary stimuli like subsidies for renewable energy or fiscal stimuli
- International climate and energy diplomacy

The Clean and Efficient programme includes measures for all sectors.

Measures for the built environment include measures for new and for existing buildings. Some measures for existing buildings.

A sector that is included in Clean and Efficient but is no part of this study is the energy sector. Sustainable energy and CHP are stimulated. There is a lot of attention for the efficient use of heat. Extra wind power has been planned, both on land and at sea. The electricity grid will get a higher capacity and will be better connected to neighbouring countries. There will be demonstration projects for CCS.

For the large industrial companies, the emission trading scheme ETS is leading. Long Term Agreements and the Benchmarking Covenant also play an important role.

In Transport, measures exist for a higher share of bio fuels, a kilometre pricing scheme for cars is planned that is based on time, place and fuel efficiency, and promotion campaigns are running to improve driving behaviour.

The agricultural sector is a large energy user in the Netherlands because of the large horticulture sector with heated greenhouses. Long Term Agreements are in place to improve energy efficiency there and technical developments in greenhouse technology will be stimulated.

As the “Clean and Efficient” programme only started in 2007, the effects cannot be seen yet in the presently available Odyssee data.

3 Overall Assessment of Energy Efficiency Trends

3.1 Overall trends in energy intensity

Three general indicators have been selected for characterising overall energy intensity trends (Energy Efficiency Indicators, 1998). The first one is the primary energy intensity, which relates the total amount of energy used in a country to the GDP in constant prices. This indicator includes both efficiency changes in the energy transformation sector and efficiency changes at the level of final consumers, and various other effects.

The second indicator concentrates on final consumers only: the final energy intensity. This is the ratio of final energy consumption over GDP. Since energy efficiency policy often focuses on final consumers, this indicator is suitable for monitoring the overall development of end-use energy efficiency. It is also possible to use two separate indicators for this purpose: one related to fossil fuel use, and one related to electricity consumption. However, care must be taken in interpreting electricity-related indicators when electricity is substituted for fossil fuels.

The third indicator denotes the relation between the previous ones, and will be discussed further below.

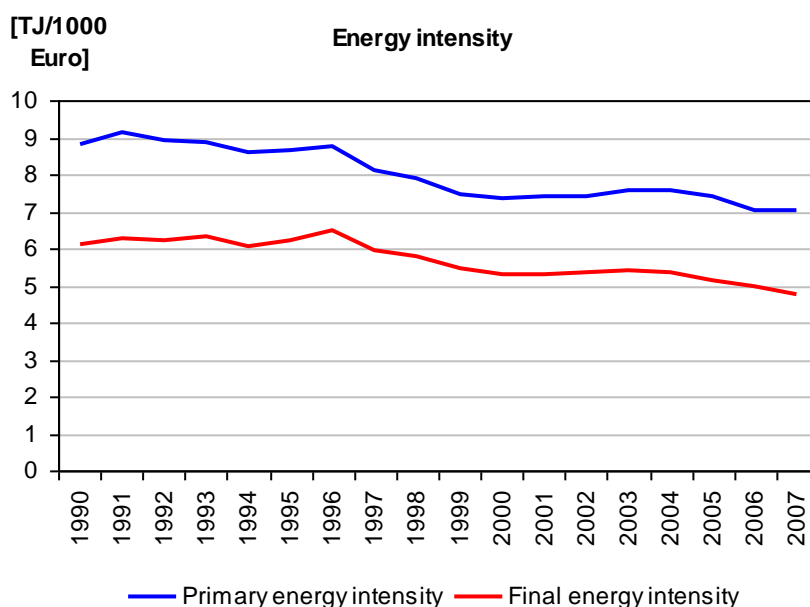


Figure 3-1 *Primary and final energy intensities 1990 - 2007*

In Figure 3-1 the trends in these indicators are presented. The improvement of the final energy intensity since 1990 was about 22%. In the second half of the nineties, it shows a steady decrease, as shown in Table 3.1. This is mainly due to the high level of eco-

conomic growth. After 2000 the intensity increased slightly due to decreasing economic growth. Compared to other countries, the level of this indicator is high, mainly because of the energy intensive character of the industry in the Netherlands.

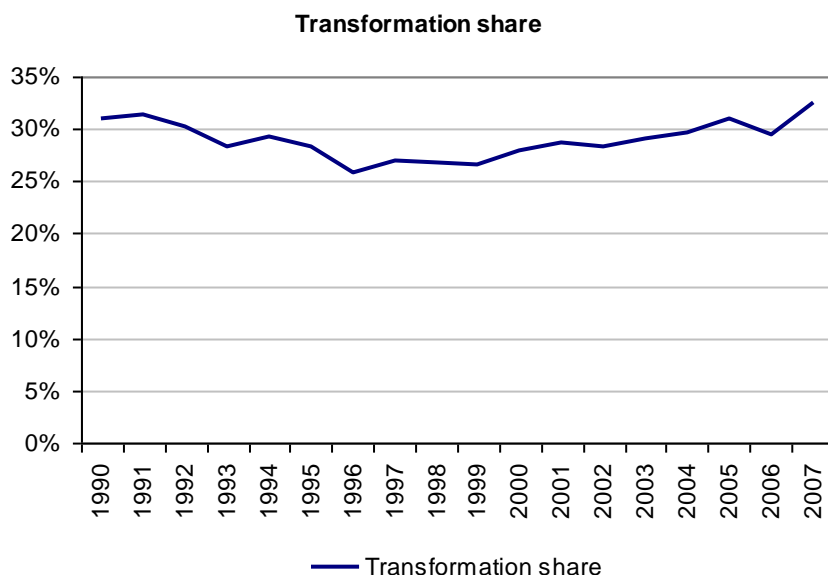


Figure 3-2 Transformation share

The transformation share¹ indicates the difference between the primary energy intensity and the final intensity. It is the share of primary energy that is consumed in energy sectors, e.g. conversion losses for electricity generation and refineries, together with non-energy uses of fuels and bunkers. It is relatively large in the Netherlands, because of the large chemical industry and refinery sector.

The difference between final and primary energy intensity gives an indication of the consumption and losses in the transformation sector, the role of non-energy uses and bunkers for international transport that have been excluded from the final consumption. The transformation share indicator is presented in Figure 3-2. After a decrease starting in 1990 and lasting until 1999, the transformation share has been increasing and is now back at 33%, a level comparable with that of 1990. This means that about 33% of the primary energy consumption is due to the transformation sector, non-energy uses and bunkers. This share is large, mainly because of the non-energy use in the large petrochemical industry sector and the bunkers used in main port Rotterdam. It could be consistent with the achieved capacity expansion of basic chemical industries and re-

¹ This is equal to 1-ratio final/primary energy consumption.

lated non-energy consumption, compared to the modest growth of the economy as a whole.

3.2 Industry

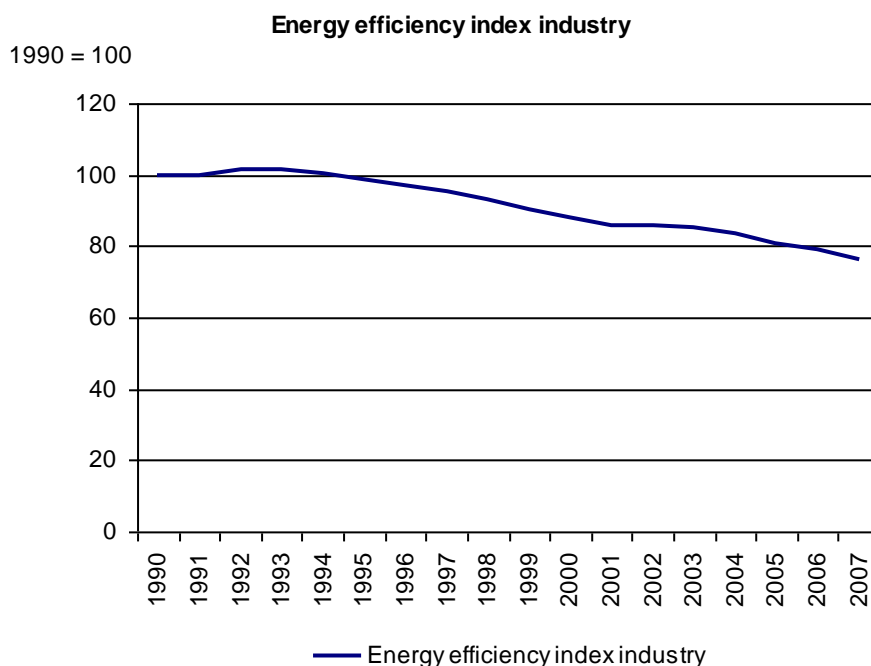


Figure 3-3 *Energy efficiency index in the industrial sector*

The energy efficiency in the industrial sector shows a steady improvement after 1993. Compared to 1990, the efficiency improved by 24%. The improvement was almost completely realised after 1994. During this period the production of goods grew substantially because of a time of economic prosperity. Between 2000 and 2003 the production growth of less energy intense products came to a halt, whereas the more energy intensive production of primary metals and chemicals continued to grow. This caused a temporary standstill in the rate of energy efficiency improvement.

Energy Efficiency Policies and Measures in The Netherlands in 2007

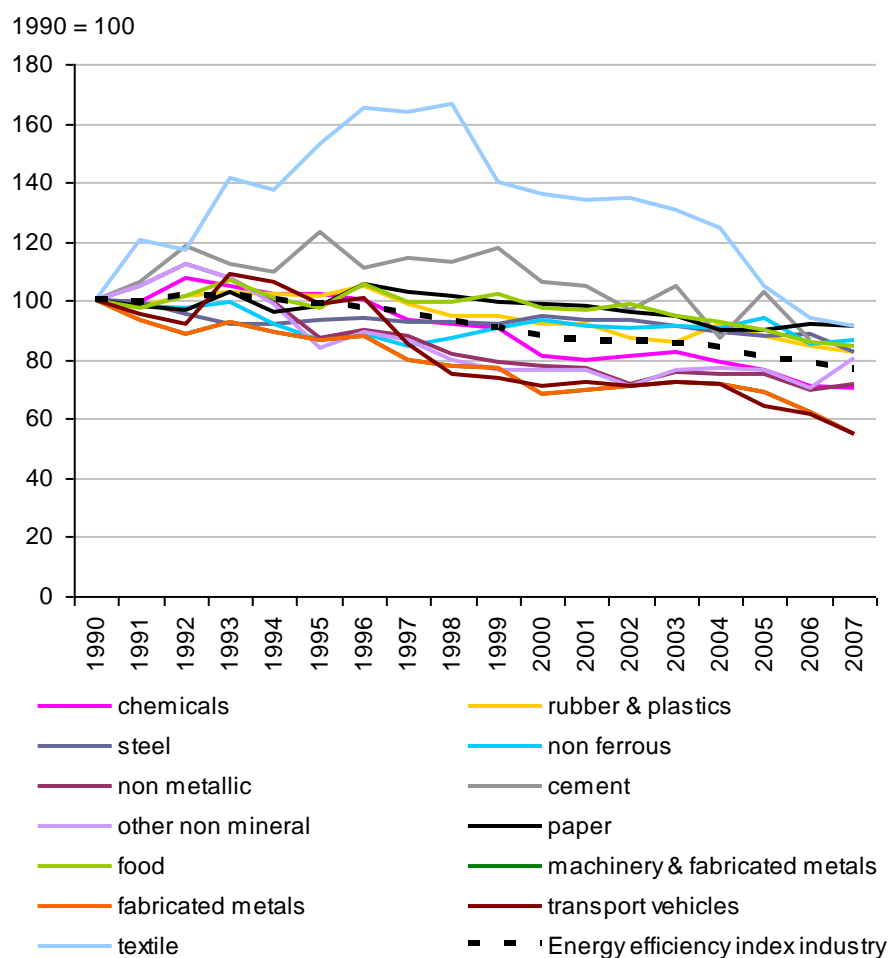


Figure 3-4 *Energy efficiency developments in the industrial sector*

The energy efficiency developments in the industrial subsectors roughly follow the trend of the industrial sector as a whole. Only the textile industry is an obvious exception, but this sector has a rather small share in the energy use of the industrial sector of around 1%. The subsectors with the largest share of energy use in industry are chemical industry (a 49% share in 2007), steel (16%) and food (14%). The chemical industry showed a higher improvement than the industrial sector as a whole, with 29% compared to 24%. The steel industry did better than average until 1998, but worse afterwards, and improved by 17% over the 1990-2007 timeframe. The food industry did worse than average from 1995 onwards, and improved by 15%.

3.3 Households

Of all energy consuming sectors, the residential sector improved most with regard to energy efficiency. Between 1990 and 2007 energy efficiency increased by 28%. With

an yearly average improvement rate of 1.8 percent a year, the Dutch residential sector is one of the best performing sectors in Europe. Stringent building standards which have been tightened several times have improved the energy efficiency of newly built dwellings considerably. A large penetration rate of condensing boilers is also an important factor in this improvement.

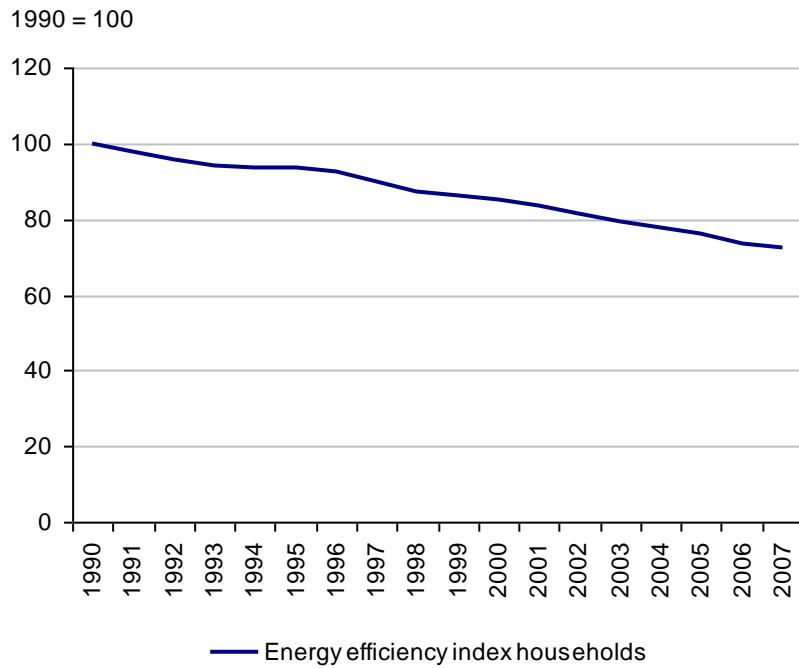


Figure 3-5 *Energy efficiency index households*

Although it is a bit less than in the past, space heating is still by far the biggest energy use in households with a 70% share. This means that an improvement in efficiency of space heating is the most important contribution to the overall energy efficiency in households. Space heating efficiency has improved by 31% (see Figure 3-6).

Energy Efficiency Policies and Measures in The Netherlands in 2007

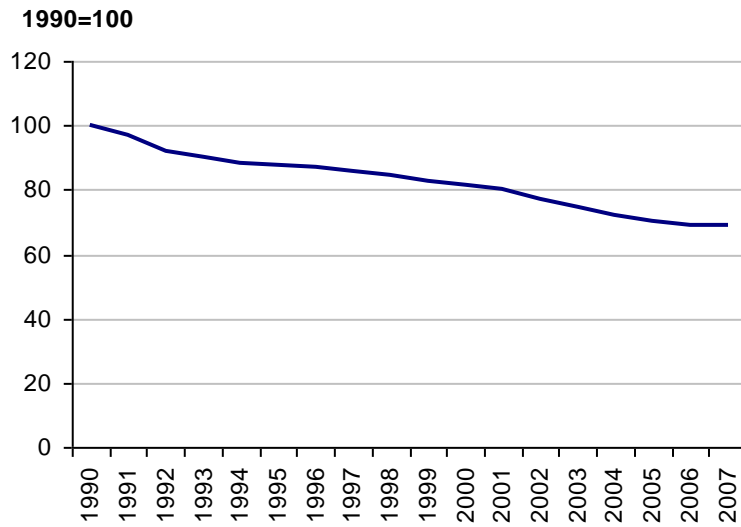


Figure 3-6 Energy efficiency for space heating in households

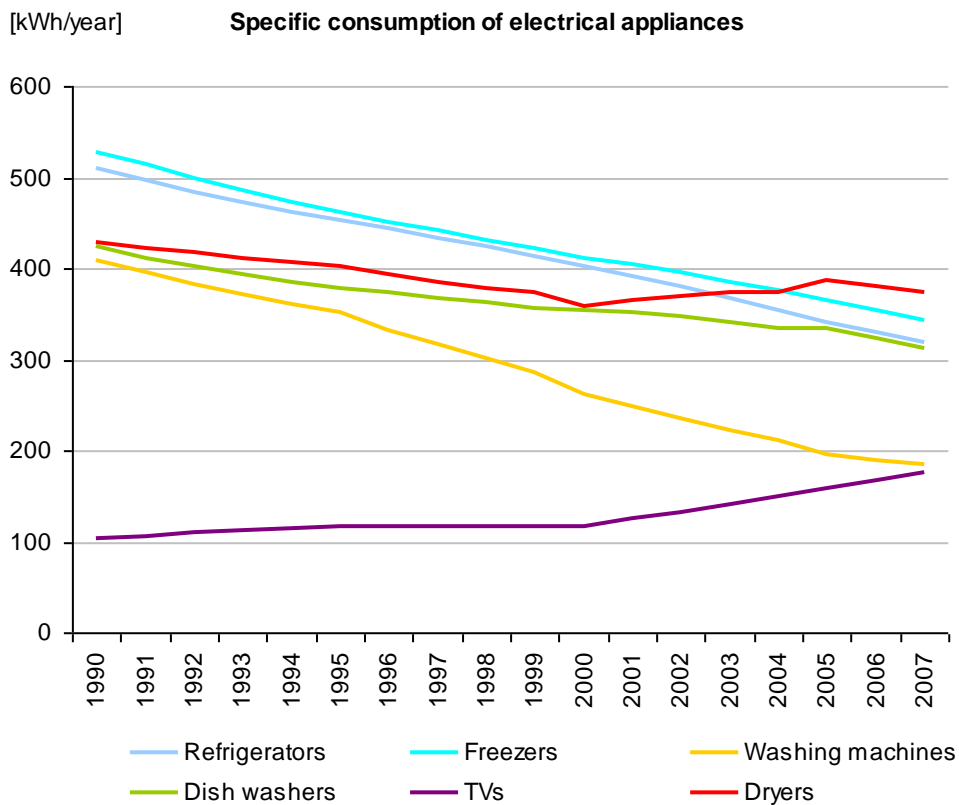


Figure 3-7 Specific energy use of electrical appliances

Almost all electrical appliances consume less energy than in 1990. Dryers showed less improvement, but the only appliance with an energy use that has been increasing since 1990, and mostly so since 2000 is the TV. This reflects the growing share of larger and later also flat screen TV sets. Of course for the total energy use per dwelling not only the specific energy use of appliances is important, but also the share of households with one or more of these appliances.

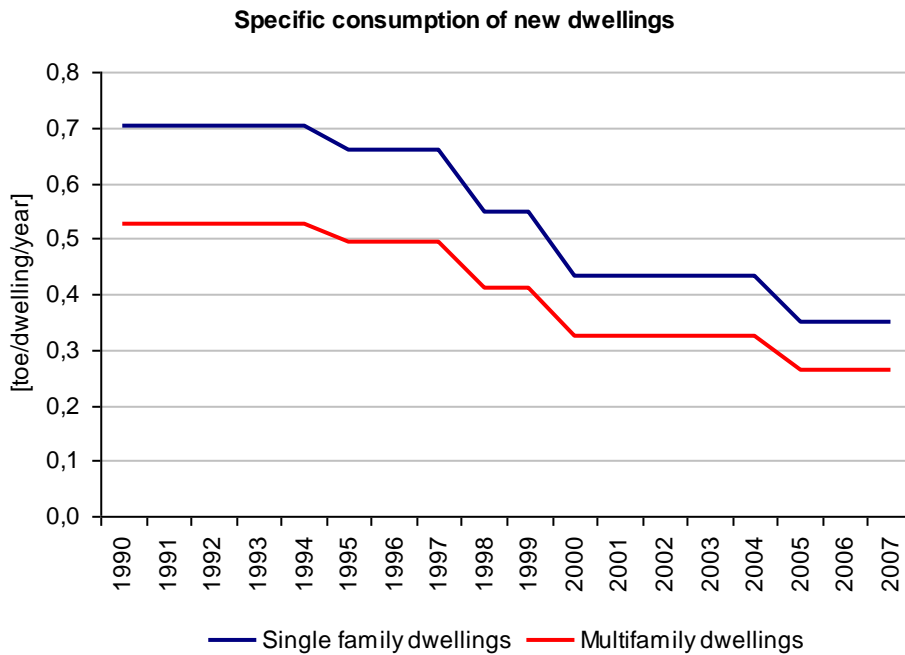


Figure 3-8 *Specific consumption of new dwellings*

The specific consumption of new dwellings has decreased substantially since 1994, because of regulations for new buildings, the Energy Performance Standard.

3.4 Services

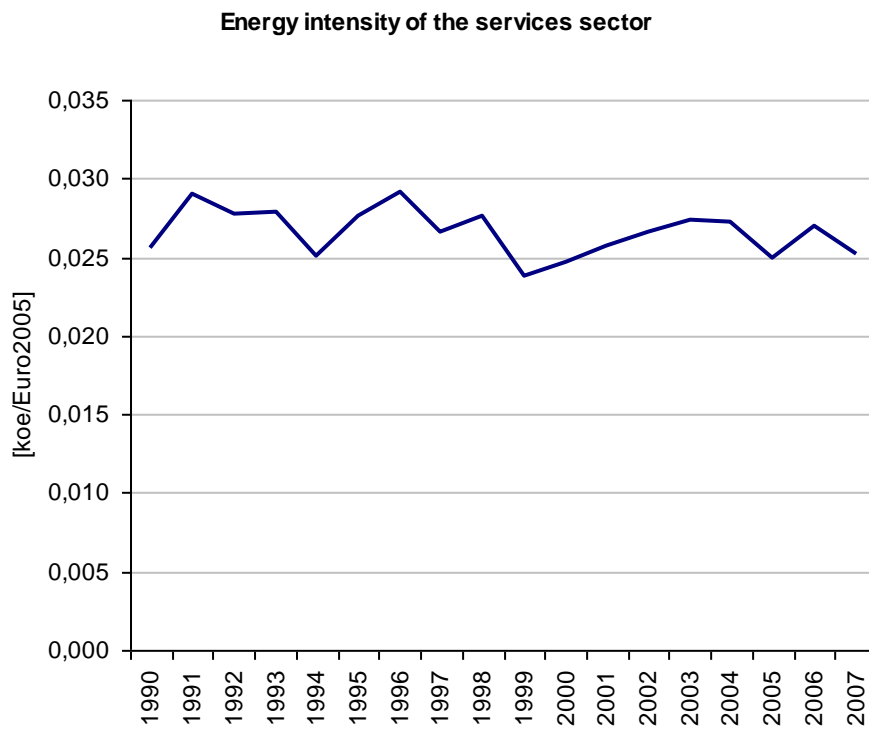


Figure 3-9 *Energy intensity of the services sector*

There is a lack of reliable data on energy consuming activities in the services sector. No clear trend is visible in the energy intensity development.

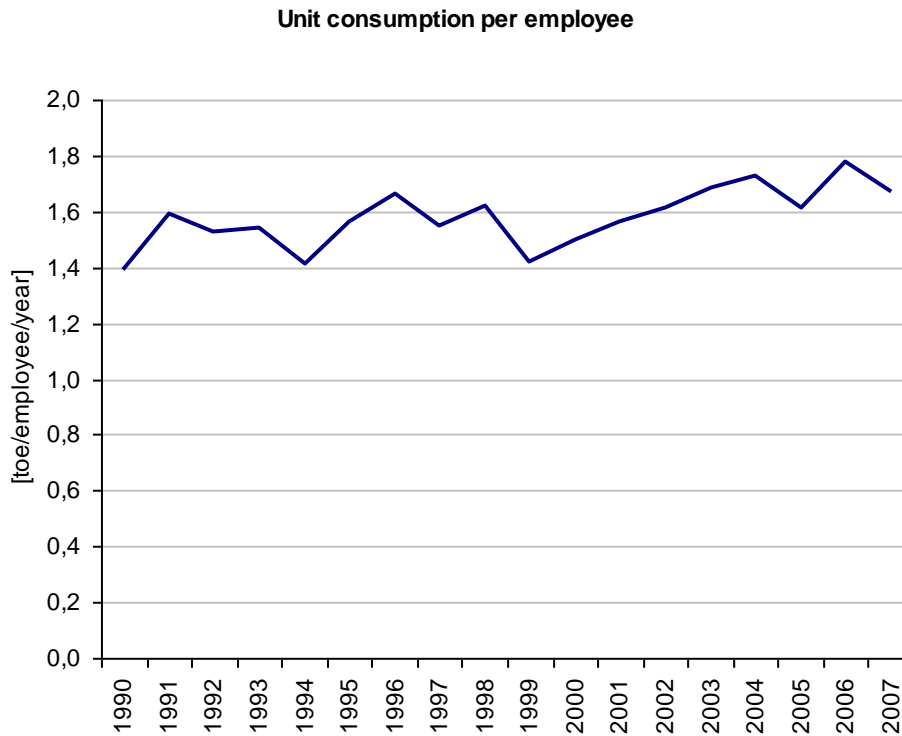


Figure 3-10 *Unit consumption per employee*

The energy consumption per employee has been increasing from 1,4 toe (ton of oil equivalent) to about 1.7 toe in 2007.

3.5 Transport

The energy efficiency of the transport sector hasn't increased much since 1990. Figure 3-11 shows an improvement after 1997, but the efficiency has not improved by more than 4 percent over a period of 17 years. Engines did become more efficient, but this effect was almost completely compensated by the increase of the average vehicle weight.

Energy Efficiency Policies and Measures in The Netherlands in 2007

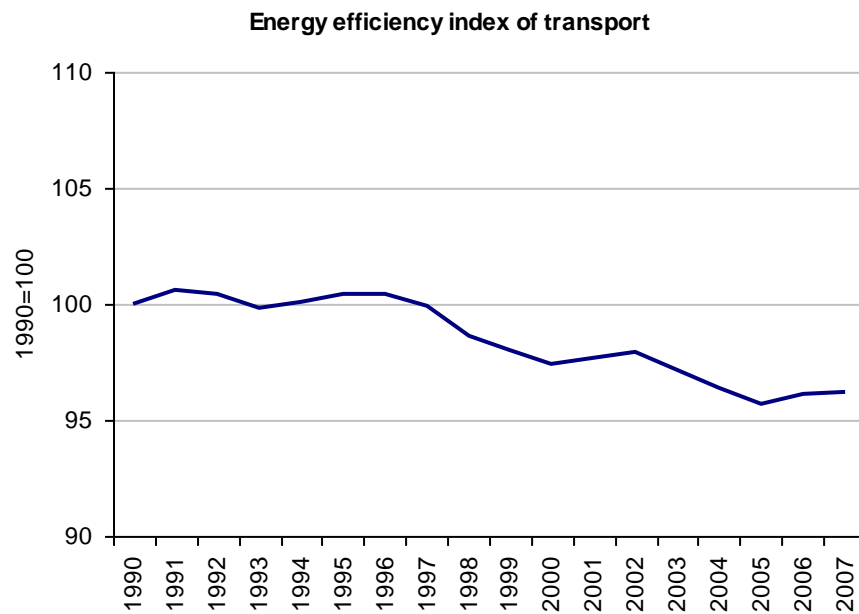


Figure 3-11 *Energy efficiency index of transport*

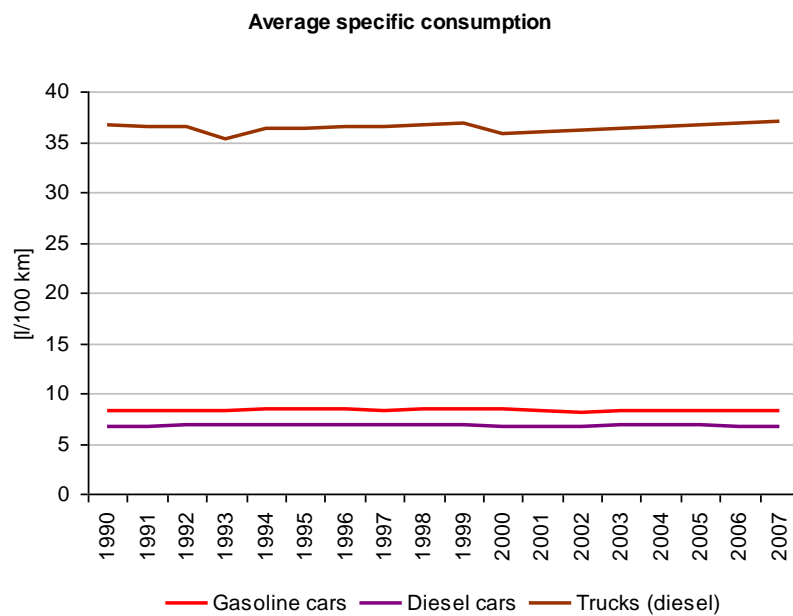


Figure 3-12 *Average specific consumption for road transport vehicles*

3.6 Assessment of energy efficiency/savings through ODEX: total and by sector

The Energy Efficiency Index is based on energy consumption in relation with physical output. This so-called ODEX has been developed as an indicator for energy efficiency next to energy intensity, which is based on economical output.

Figure 3-13 shows that the energy efficiency index for final consumption in the Netherlands in the industrial, households and transport sectors combined has decreased steadily over the past 17 years, indicating a higher energy efficiency. The average annual decrease was about 1.2%. The energy efficiency for industry has also improved considerably, as mentioned before for a large part due to a much improved efficiency of the large chemistry sector.

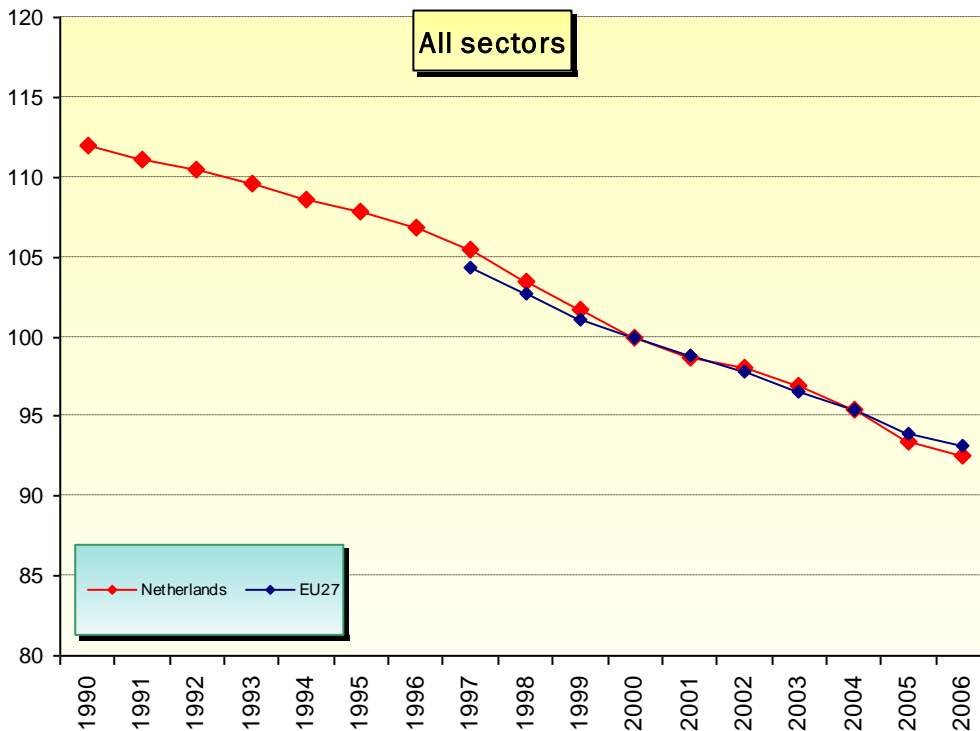


Figure 3-13 Combined energy use: Global ODEX

Energy Efficiency Policies and Measures in The Netherlands in 2007

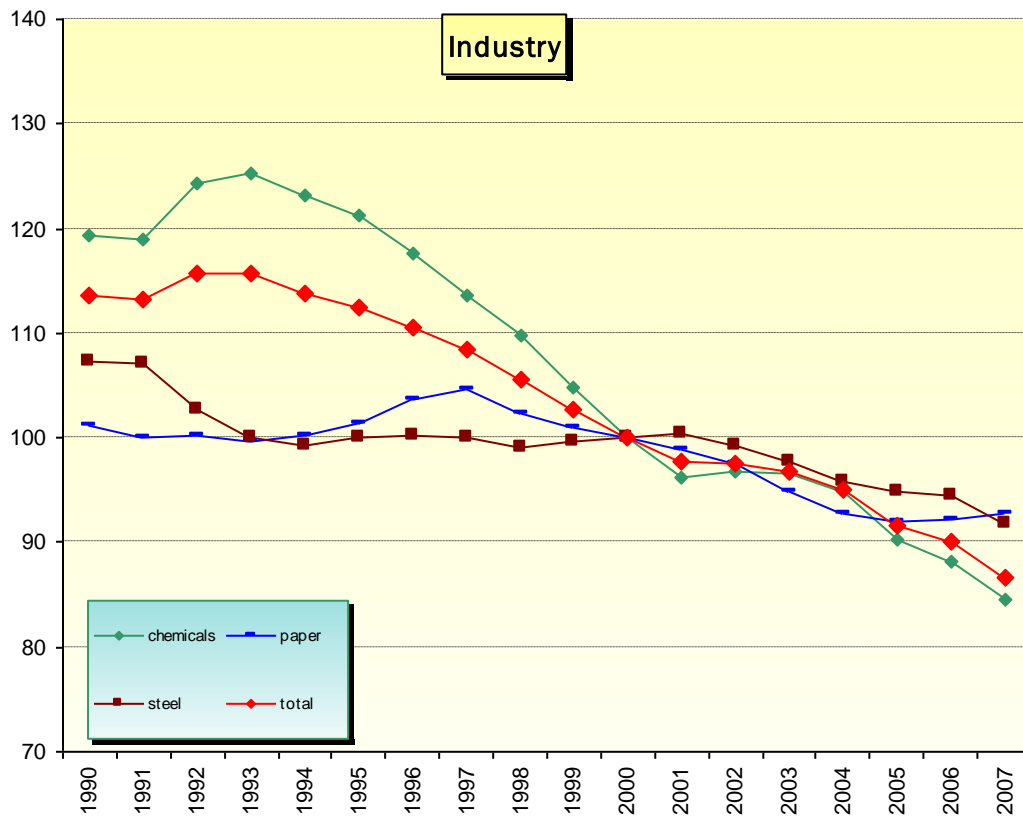


Figure 3-14 Industry ODEX

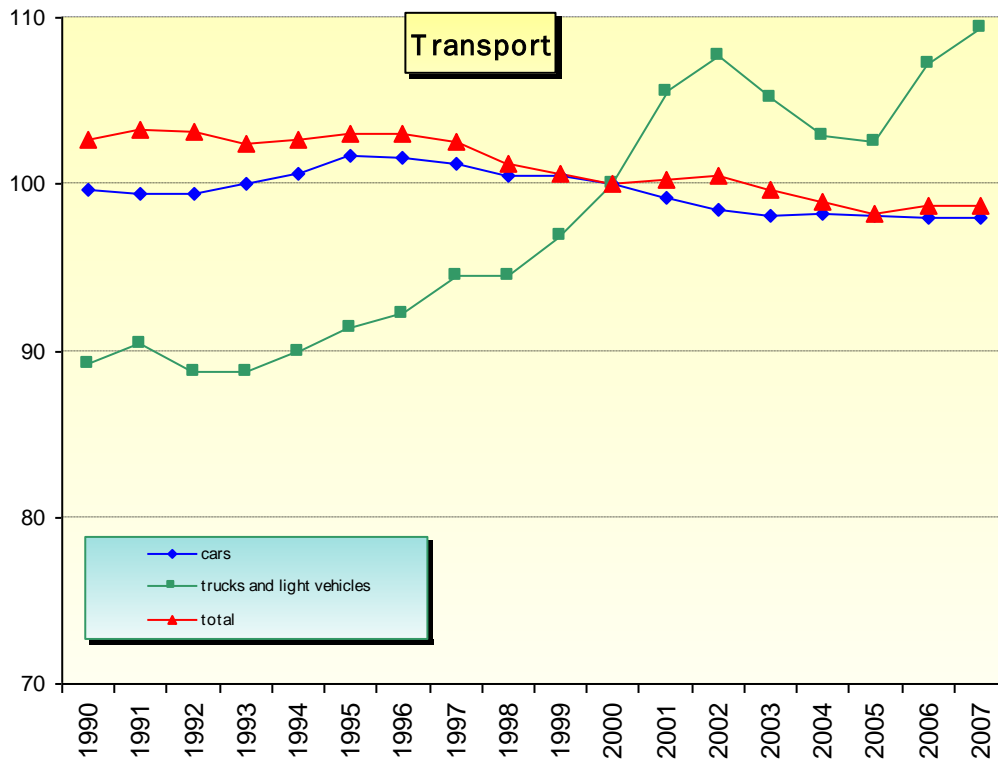


Figure 3-15 *Transport ODEX*

Energy Efficiency Policies and Measures in The Netherlands in 2007

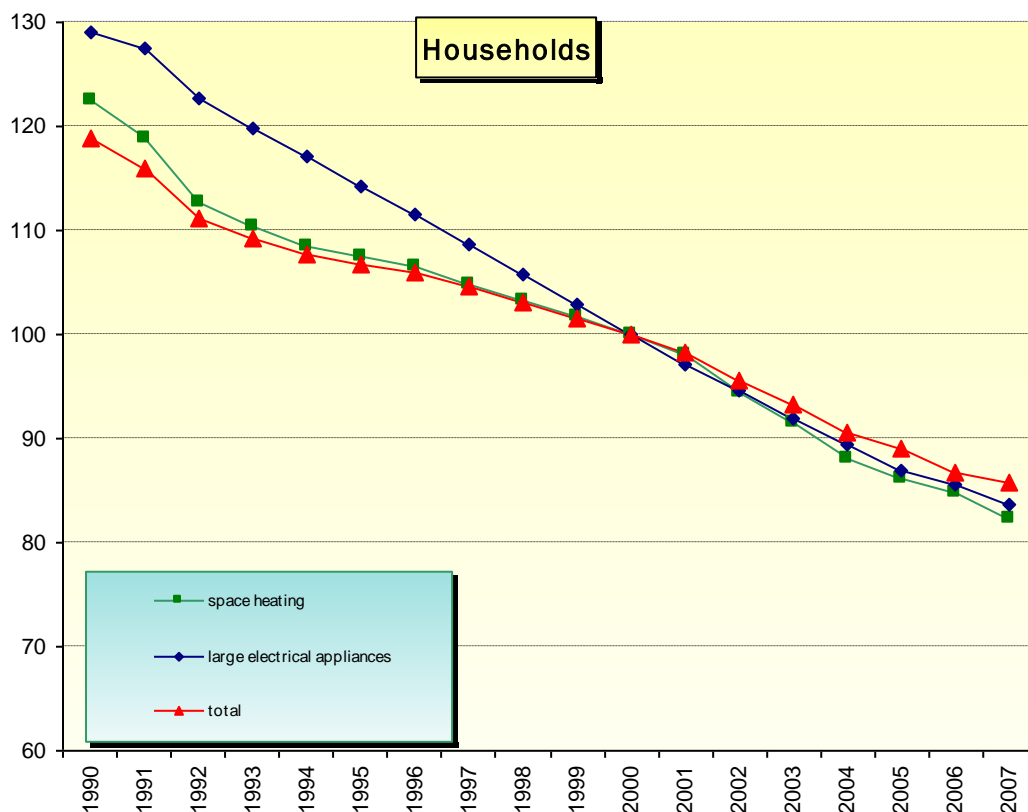


Figure 3-16 *Households ODEX*

3.7 CO₂-emissions trends

Between 1990 and 2007, national energy related CO₂ emissions have increased by 16 Mton. A decomposition into many different factors shows the contribution of different developments. Some factors increase the emissions, like the growing BNP, but other factors result in a lower emission, like improved energy efficiency (-25 Mton) and fuel substitution (-12 Mton). All of these factors together (most of them not mentioned here) add up to the 16 Mton increase.

The CO₂ emissions of the industrial sector *decreased* between 1990 and 2007 with 4 Mton. The main decreasing component was structural change (-10 Mton), but improved efficiency (-7 Mton) and fuel substitution (-7 Mton) were also important. Other factors like volume growth had an increasing effect, so the total effect was -4 Mton.

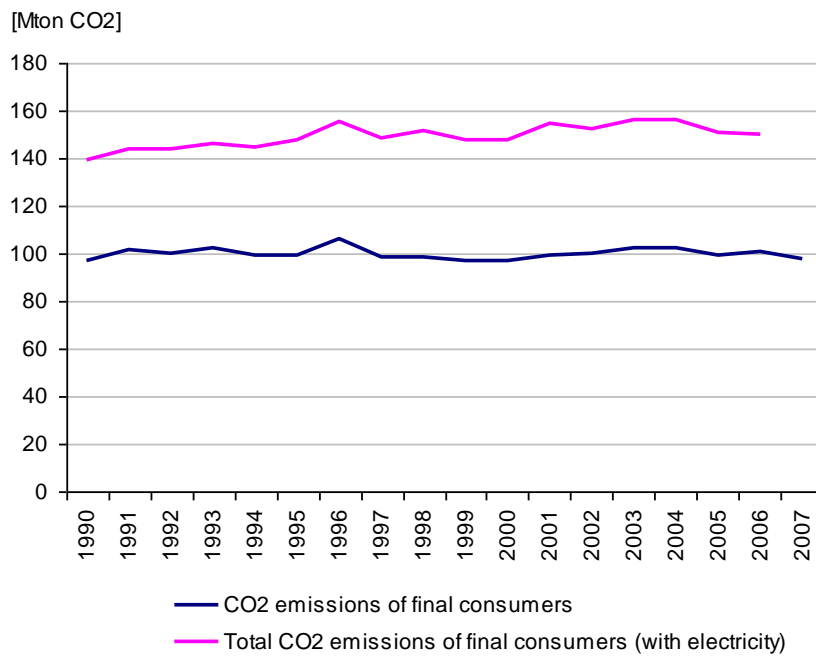


Figure 3-17 *CO₂ emissions of all final consumer sectors, with and without emissions from electricity generation*

Energy Efficiency Policies and Measures in The Netherlands in 2007

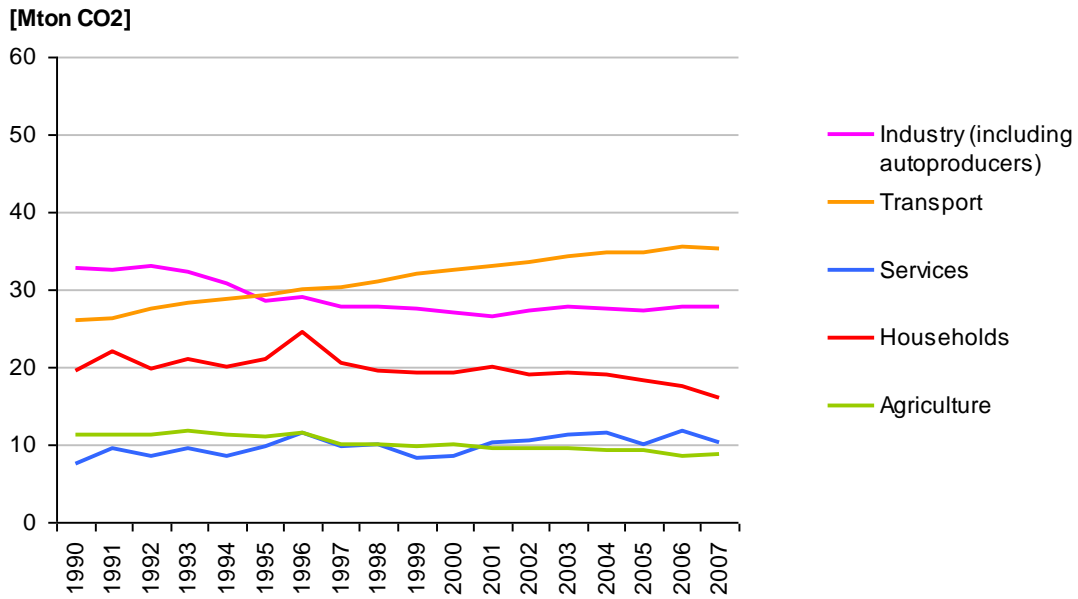


Figure 3-18 *CO₂ emissions of the different sectors without emissions from electricity generation*

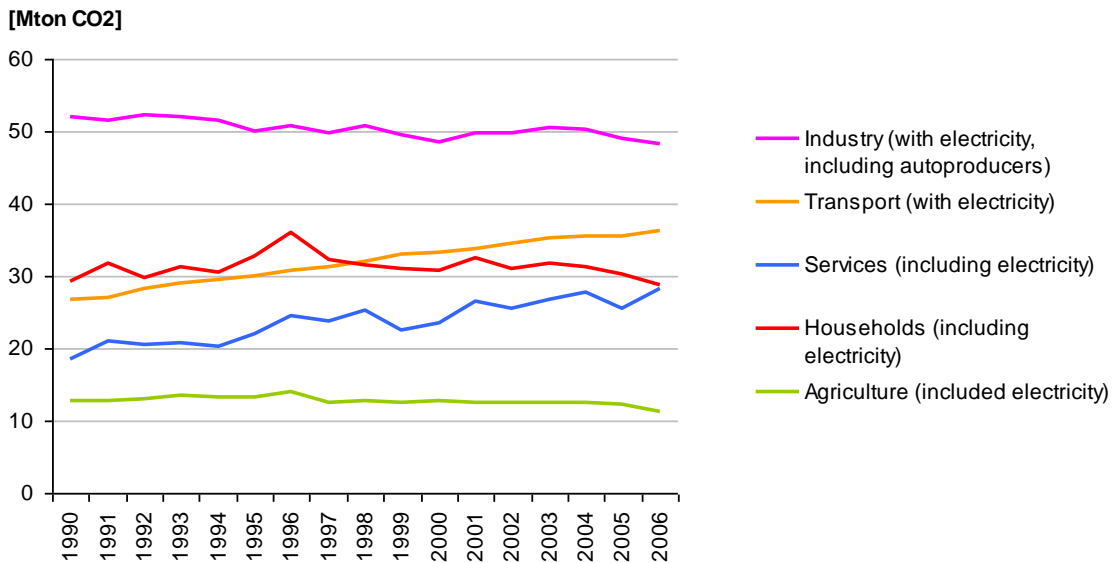


Figure 3-19 *CO₂ emissions of the different sectors with emissions from electricity generation*

Comparing Figure 3-18 and Figure 3-19 makes clear in which sectors a large part of CO₂ emissions is the effect of electricity consumption. The emissions of the Transport and Agriculture sectors hardly change when electricity is included, but the emissions of the other sectors do. In industry, and to a lesser extent in the residential sector, the decrease of emissions over the years becomes less when including electricity, indicat-

ing that electricity consumption has increased. The transport sector stands out with a fast growth of CO₂ emissions. One of the reasons emissions of the transport sector have been growing faster than the volume of transport is a larger share of transport by light trucks. A large and growing part of the energy consumption in the services sector is electricity, which is reflected in a much larger growth of CO₂ emissions with the emissions caused by electricity generation included compared to the situation without electricity taken into account.

4 Energy efficiency measures

4.1 Recent Energy Efficiency Measures

Residential Sector

For household energy savings the most innovative and effective policy measures are performance standards on dwellings and appliances, performance programs such as White Certificate systems and broad action plans with the right combination of policy measure types. Taxes on energy or CO₂ and policy measures on inspection and maintenance are innovative complementary policy measures.

Transport Sector

The Transport tax scheme was made energy efficiency dependent in 2006. Buyers of new cars have to pay Private Motor Vehicle & Motorcycle Tax (Dutch: BPM). On 1 July 2006 the new 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. 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 fuel efficiency. Freight transport does not seem to be well covered by measures.

Industrial Sector

In Industry a measure Environmental Quality Electricity Production (Dutch: MEP) for CHP (Combined Heat and Power) and for sustainable energy was in effect from 2003 to 2006. It applied to both energy suppliers and larger industrial corporations. Furthermore Benchmarking Covenants and Long Term Agreements are ongoing.

Tertiary Sector

For the tertiary sector about the same innovative policy measures are in effect as those in the residential sector. Here Energy Performance Contracting using ESCOs (Energy Service Companies) is of importance because the whole process of implementing saving measures is in one hand.

As for trends in the built environment as a whole, energy performance standards are continuously tightened. Measures for existing buildings are not very robust yet.

Cross-cutting measures

Important general cross-cutting measures are Long Term Agreements and the Energy Investment Tax Deduction.

4.2 Patterns and Dynamics of Energy Efficiency Measures

Residential Sector

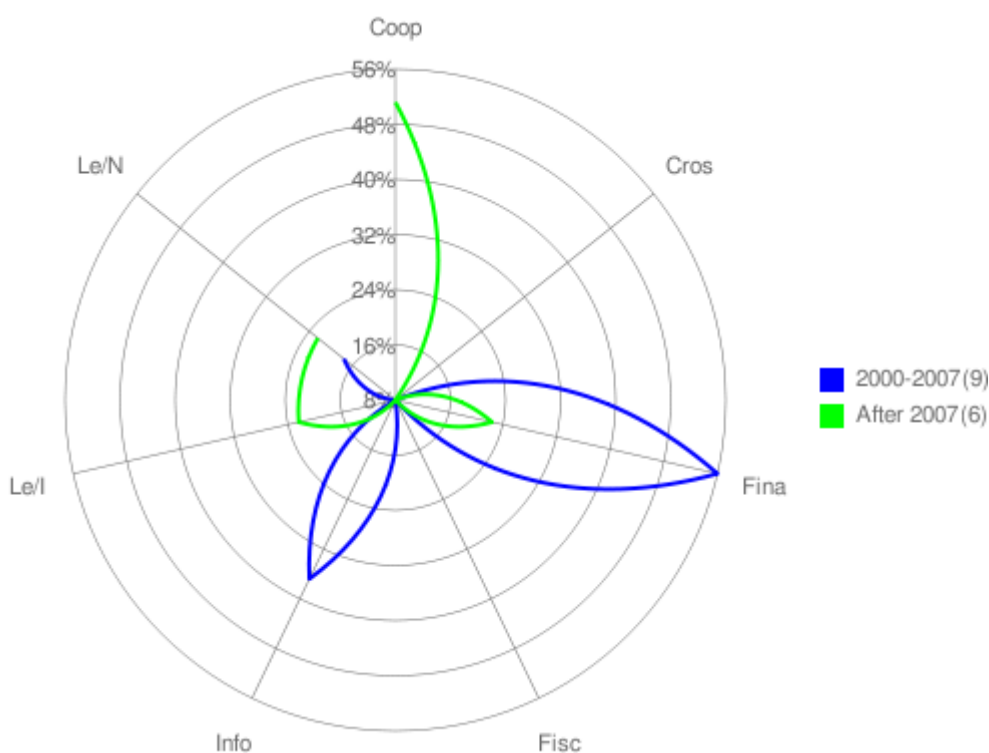


Figure 4-1 *Measure types for the residential sector*

In the residential sector, the financial and informational measure types that formed the majority of measures introduced between 2000 and 2007 were less numerous after 2007. The cooperative measures form the clear majority of newly introduced measures now. No fiscal measures were introduced in either period. The Energy Performance Standards (legislative) that have a high impact have been in effect since 1995.

Transport Sector

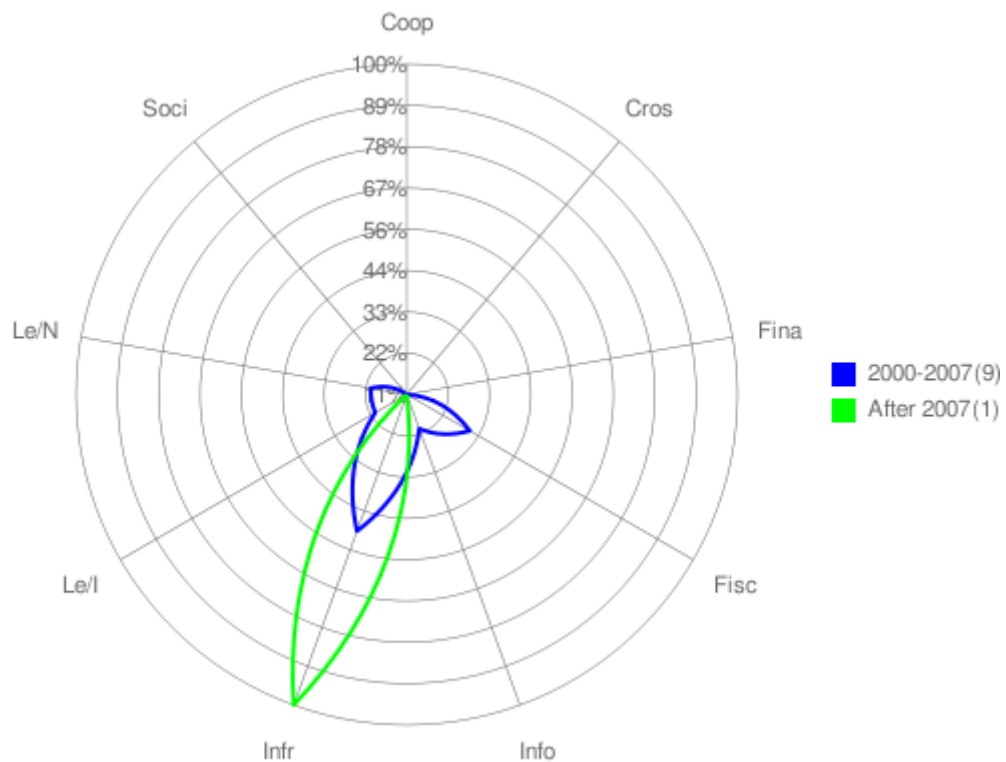


Figure 4-2 *Measure types for the transport sector*

After 2007 the strong focus on infrastructure, that already existed before, was intensified, although this type of measure has a low impact. New fiscal measures in the form of efficiency dependent taxes were introduced before 2007. An increase of fuel tax was already introduced in 1990, and is not visible in the figure.

Industrial Sector

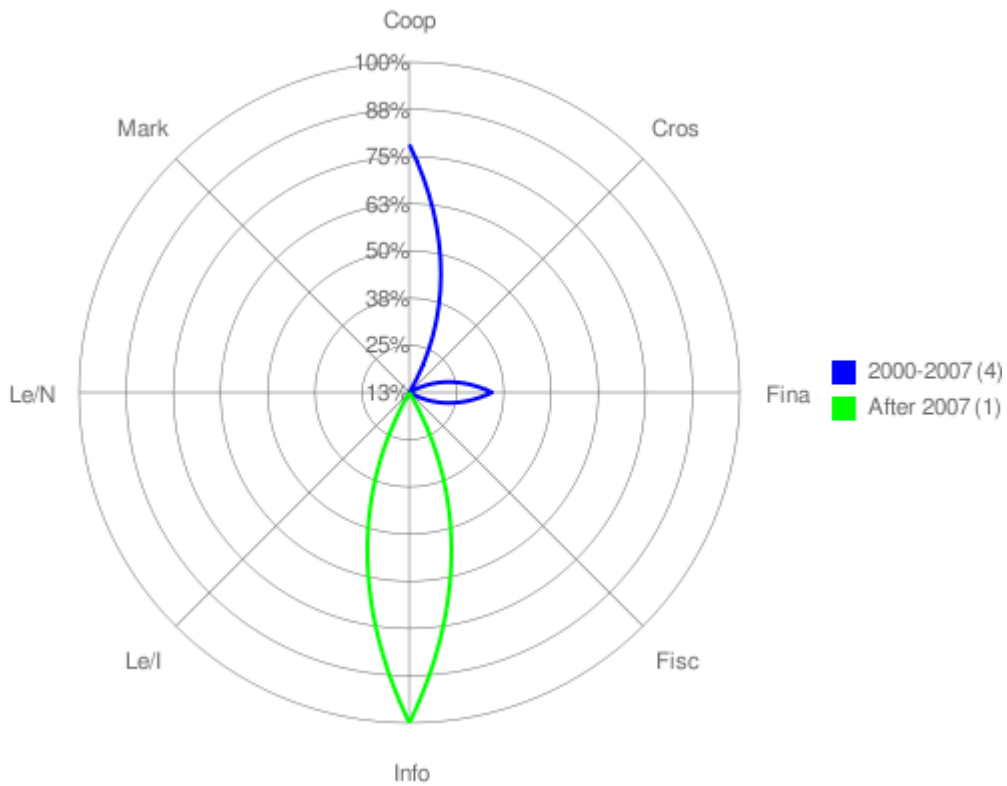


Figure 4-3 *Measure types for the industrial sector*

The majority of measures introduced between 2000 and 2007 were cooperative measures: the Benchmarking Covenant and Long Term Agreements. A financial measure with a high impact was in effect from 2003 until 2006: the Environmental Quality Electricity Production measure. The single measure introduced after 2007 addresses information about heat maps.

Tertiary Sector

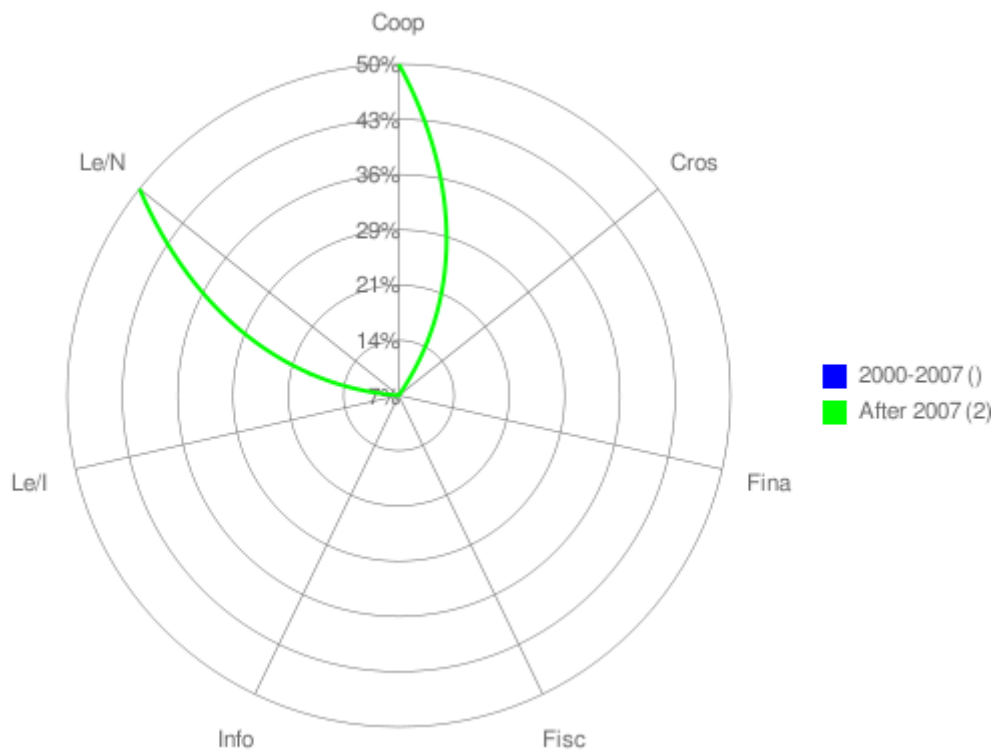


Figure 4-4 *Measure types for the tertiary sector*

No new measures were introduced for the tertiary sector from 2000 until 2007. The new measures after 2007 are both in the proposal stadium.

Cross-cutting measures

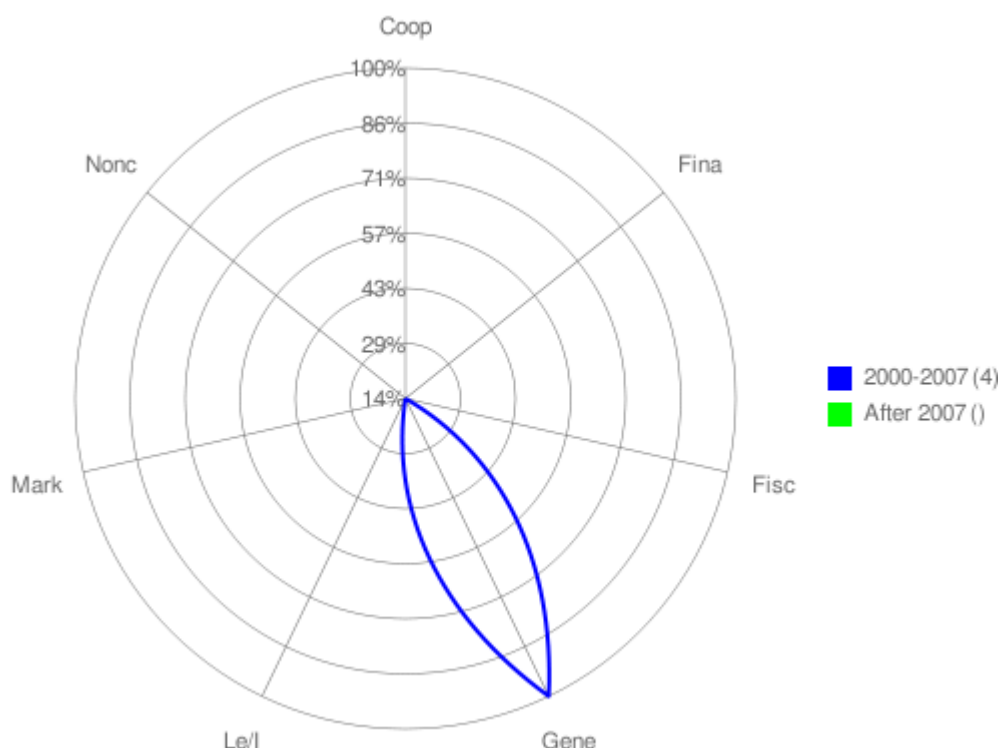


Figure 4-5 *Measure types, cross-cutting*

The measures introduced after 2000 were all of the „General“ type: Energy Awareness in Living and Working and Transition Platforms. No new cross-cutting measures were introduced after 2007.

Influence of European policy

More and more policy measures are directly or indirectly a result of EU policy, such as the directives on Labels for electrical appliances, Energy Performance of Buildings (EPBD), Energy efficiency and Energy Services (ESD), Ecodesign (energy using systems) and measures on car standards. After joining the EU the amount of new policy measures introduced by new member states increased considerably. However, because EPBD, ESD and Ecodesign directives did not result yet in national policy measures up to 2006, EU policy cannot have had much effect on the energy savings until 2007, which are analysed here.

4.3 Innovative Energy Efficiency Measures

As stated earlier, for household energy savings, the most innovative and effective policy measures are performance standards on dwellings and appliances, performance programs such as White Certificate systems and broad action plans with the right combination of policy measure types. Taxes on energy or CO₂ and policy measures on inspection and maintenance are innovative complementary policy measures. For the tertiary sector about the same innovative policy measures are in effect as those in the residential sector. Here Energy Performance Contracting using ESCOs (Energy Service Companies) is of importance because the whole process of implementing saving measures is in one hand.

Furthermore, the government will apply innovative energy concepts in mobility. Through its buying volume, the government can give a strong impetus to the development of innovative concepts, products and services.

4.4 Energy efficiency measure evaluations

4.4.1 Semi-quantitative Impact Estimates of Energy Efficiency Measures

Erreur ! Référence non valide pour un signet. gives an overview of Dutch policy measures focused on the residential sector. The positive development of energy-efficiency in this sector in the Netherlands is mainly due to legislation. Specific energy saving standards for in-house equipment and insulation standards for roofs, facades, windows and floors have been part of the building decree for years now. In 1996 this decree has been expanded with a general Energy Performance Standard (EPN). This standard is based on a method to calculate the energy performance of buildings and express it in an Energy Performance Coefficient (EPC). In 1996 newly built dwellings had to have an EPC of less than 1.4. This standard has been strengthened several times since, and the maximum is now put at 0.8. Many of the other measures, such as the energy premiums are supportive to this decree.

Different measures have been implemented to influence the behaviour of people as to reduce their energy consumption. Energy tax and energy labelling do have a moderate effect.

Table 4-1 *Policy measures for the residential sector*

Measure Title	Measure Type	Semi-quantitative Impact
Energy Tax - Formerly Regulating Energy Tax (REB)	Cross-cutting with sector-specific characteristics	Medium
Sustainable building program	Co-operative Measures	Low
Energy Performance Standards (EPN)	Legislative/Normative	High
Voluntary agreements social housing corporations	Co-operative Measures	Low
The Environmental Action Plan (MAP) of the Energy Distribution Sector	Financial	High
Optimal energy infrastructure (OEI): 1997 onwards	Co-operative Measures	Low
The Building Decree (2002 onwards)	Legislative/Normative	High
Subsidies sustainable energy within the energy premiums	Financial	Low
The Building Decree 1991	Legislative/Normative	High
Energy Efficient Retrofitting Programme	Co-operative Measures	Low
Ecoteams	Information/Education	Low
Energy Performance Advice	Financial	Low
Energy Premiums (except renewables)	Financial	Medium
Energy labels on appliances	Legislative/Informative	Medium
MilieuCentraal, COEN (Consumer & Energy) and HIER campaign	Information/Education	Low
Compass - Energy-awareness in living and working	Information/Education	Medium
Energy performance certificate for buildings	Legislative/Informative	Low
(Temporary) Subsidy scheme on Energy savings for Low Income households (TELI)	Information/Education	Low
Temporary subsidy scheme Buildings and CO2 reduction (Tijdelijke subsidieregeling Gebouwen en CO2 emissie reductie)	Financial	Low
Heat distribution law (warmtewet)	Legislative/Normative	Low
More with Less plan (Meer met Minder)	Co-operative Measures	High
Pilots energy saving for homeowners and private landlords in combination with district approach	Unknown	Low
Financial support homeowners	Financial	Medium
Change the housing assessment system for social housing	Unknown	High

Energy Efficiency Policies and Measures in The Netherlands in 2007

Covenant energy savings in newly produced buildings (Spring Agreement)	Unknown	Low
Covenant energy savings by housing corporations	Co-operative Measures	High

The measures in **Erreur ! Référence non valide pour un signet.** vary to a great extent in their approach to save energy in the transport sector. The most effective ones are speed limits on motorways and enforcement, fuel taxes and energy efficiency dependent taxes.

Table 4-2 *Policy measures for the transport sector*

Measure Title	Measure Type	Semi-quantitative Impact
Motor vehicles speed limit	Legislative/Normative	High
New driving campaign	Information/Education/Training	Low
Energy labelling passenger cars	Legislative/Informative	Low
Transaction and modal shift	Infrastructure	Low
Traffic performance on location	Infrastructure	Low
Carpooling, park and ride and similar measures	SocialPlanning/Organisational	Low
Increase in Fuel Tax	Fiscal	High
Periodic Motor Vehicle Test (APK)	Legislative/Normative	Medium
Railfreight (Betuwelijn)	Infrastructure	Low
Speed limiters for trucks	Legislative/Normative	High
Parking as a means of managing and restraining mobility	Infrastructure	Low
Ecoteams	Information/Education/Training	Low
Improved accessibility to Schiphol Airport	Infrastructure	Low
Urban remodelling scheme	Infrastructure	Low
Long Term Agreements with The Netherlands Railway Company (NS)	Co-operative Measures	Medium
Energy efficiency dependent Taxes: Private Motor Vehicle & Motorcycle Tax (Dutch: BPM) and Motor Vehicle Taxes (MRB)	Fiscal	Medium
Mandatory Introduction of biofuels	Legislative/Normative	High

Long Term Agreements (LTAs) have had the highest impact in reducing energy consumption in the industrial sector. In **Erreur ! Référence non valide pour un signet.** different forms of these agreements are mentioned, including Benchmark Covenant in which industrial companies promise to become the most efficient companies in their sector worldwide. Fiscal instruments to reduce the investments costs for energy saving measures are also very successful.

Table 4-3 *Policy measures for the industrial sector*

Title	Type	Semi-quantitative Impact
GasUnie's Environmental Plan for the Industry	Financial	Medium
The Vamil Scheme : Accelerated Depreciation on Environmental Investment	Fiscal/Tariffs	High
Long Term Agreements with the Refineries Sector	Co-operative Measures	High
Energy Production from Waste and Biomass (EWAB)	Financial	Low
Energy Tax	Cross-cutting with sector-specific characteristics	High
Energy Investment Deduction Tax (EIA)	Fiscal/Tariffs	Medium
CO2 Reduction Plan	Financial	High
Environmental Licensing: Energy Conservation Requirements	Legislative/Normative	Low
Long-Term Programme : Intersectoral Technologies for Industry (MINT)	Information/Education/Training	Low
Long Term Agreements with Industry on Energy Efficiency	Co-operative Measures	High
Energy Conservation and Environmental Consultancy Subsidy Scheme (EMA)	Financial	Low
Long Term Agreements with the Industry, second phase (MJA2)	Co-operative Measures	High
Environmental Action Plans by the Energy Distribution Sector	Financial	High
The Industrial Energy Conservation Tender Scheme (TIEB)	Financial	Low
Long Term Agreements with the Oil- and Gas Industry	Co-operative Measures	High
Benchmarking Covenant	Co-operative Measures	High
Environmental Quality Electricity Production (Dutch: MEP) for CHP (Dutch: WKK) and MEP for sustainable energy	Financial	High
Long Term Agreements with the industry, third phase (MJA3)	Co-operative Measures	Medium
Heatmaps	Information/Education/Training	Low

Energy Efficiency Policies and Measures in The Netherlands in 2007

Like in the residential sector, legislation has most impact in the tertiary sector. The building decree and energy performance standards have reduced the amount of energy used in tertiary buildings. A fiscal stimulation measure, comparable to that of the industrial sector, is also very successful and helps companies to invest in energy saving techniques.

Table 4-4 *Policy measures for the tertiary sector*

Title	Type	Semi-quantitative Impact
Building Decree and Energy Performance Standard	Legislative/Normative	High
The environmental Action Plan of the energy distribution companies (Milieu Actie Plan, MAP)	Co-operative Measures	High
Energy Investment Tax Deduction (EIA and EINP)	Fiscal/Tariffs	High
Energy Efficiency Programme for National Government Buildings (EER)	Information/Education/Training	Low
Environmental Licensing: Energy Conservation Requirements	Co-operative Measures	Low
CO2 Reduction Plan	Financial	Low
Energy Efficient Lighting Promotion Scheme (STIMEV)	Financial	Low
Long Term Agreements in Agriculture (flower bulbs, greenhouses, mushrooms)	Co-operative Measures	Low
Regulatory Energy Tax (REB: Reguliere Energie Belasting)	Cross-cutting with sector-specific characteristics	Medium
Long Term Agreements in service sector	Co-operative Measures	Low
The Vamil Scheme: Accelerated Depreciation on Environmental Investments	Fiscal/Tariffs	Medium
Subsidy schemes (IRE, MEI, UKR), Programme Greenhouse as Energy Source (Kas als Energiebron)	Information/Education/Training	Medium
Internal emission trading system for the greenhouse sector	Legislative/Normative, Unknown	Medium
Taskforce lighting	Co-operative Measures	Low

Table 4-5 *Policy measures, cross-cutting*

Title	Type	Semi-quantitative Impact
COMPASS- Energy awareness in living and working: CO2 reduction in the built environment	General Energy Efficiency / Climate Change / Renewable Programmes	Medium
Energy Investment Tax Deduction (Energie Investerings Aftrek (EIA))	Non-classified Measure Types	High
Long-Term Agreements (LTA) and Benchmarking Agreement (Meerjarenaafspraken en Benchmark convenant)	Non-classified Measure Types	High
Regulatory Energy Tax (REB) (Reguliere Energie Belasting)	Non-classified Measure Types	Low
CO2 Reduction Plan	General Energy Efficiency / Climate Change / Renewable Programmes	Low
Green investment arrangements & green funds (Groen beleggen)	Non-classified Measure Types	Low
Transition Platforms (Transitie platformen)	General Energy Efficiency / Climate Change / Renewable Programmes	Medium

4.4.2 Lessons from Quantitative Energy Efficiency Measure Evaluations

Long Term Agreements with the industry

The Dutch Long Term Agreements (LTAs; in Dutch: meerjarenaafpraak or MJA) have received international acknowledgement for their success. This led to an extension and revision of the existing LTA version 2 for medium level energy consumers to LTA version 3 for 2001-2020 on July 1st 2008. It has been signed by the government, all provinces, some municipalities, trade organizations and participating companies. The goal has been set to an annual energy efficiency target of 2%, thereby resulting in 30% energy efficiency for the period 2005-2020.

A large part of the ETS-companies are subject to the Covenant Benchmarking, which aims to upgrade as many units as possible up to the world-top with respect to energy efficiency. Negotiations about continuation of this Covenant Benchmarking are ongoing (July 2009). The government and industrial branches made agreements within LTA 2001-2012 (MJA2) about improvement of the energy efficiency for smaller companies. The target of improving the energy efficiency by 30% for the period 2005-2020 consists of an improvement by 20% within plant limits and for 10% outside (e.g. by less material use or recycling, waste heat or renewables use/generation, or by making efficient products).

The companies are obliged to develop energy-efficiency plans, to implement these plans and to report about the results. The participating sectors within LTA3 will start a pre-study to a 'road-map' devoted to obtain an energy efficiency improvement of 50% in 2030, which has already started. Based on these pre-studies it will be decided for which sectors the roadmap will be developed.

Covenants are supported by additional policy instruments, since companies point out that investments are high in order to meet their own efficiency targets and via covenants alone this efficiency potential is often not realized. At this moment, there are no plans to exchange the covenants by more compelling policy instruments if the industry does not meet the agreements. Covenants contribute to awareness, commitment of all parties and exchange of information, thereby making optimal use of the knowledge of other companies. The covenants also realize via innovation policy that companies investigate options for energy efficiency. The Dutch method of covenants has been set internationally as an example for its interaction between the government and the industrial sector, the way of monitoring and its concrete targets.

In return for signing an LTA, a company is more likely to be granted the environmental permit that it needs to operate. This permit will incorporate the required energy efficiency improvement. The local authorities that enforce these permits also commit themselves to provide an equivalent alternative to LTAs for companies that do not sign up.

The reported "Total Energy Efficiency Improvement" (TEEI) for the participating industrial subsectors was 23,7% compared to 1998. It has been estimated that 30 to 75 PJ will be saved in 2020 due to the covenants combined with ETS and innovation policy. However, this estimate refers to a covenant that also includes the larger energy consumers who have been participating in the benchmarking covenant.

Energy labels for household appliances

Various directives from the European Union on energy labelling of appliances have been transposed into national regulations. Under these regulations retailers must ensure that energy labels are shown for domestic refrigerators and freezers, washing machines and electric tumble dryers, combined washers and tumble dryers, dishwashers, lighting and stoves. After 2002 no new equipment has been added. It is expected that labels for other equipment such as boilers and hot water equipment will also become obligatory. Information that must be shown on the label must include the logo and name of manufacturer, the type number, the energy efficiency class (A-G) with

different colours and energy consumption. Other information that may be shown includes noise level and recycling potential. The aim of energy labels is to increase the awareness of energy use by domestic electrical appliances. They allow the customer to make an informed decision on the basis of the energy consumption and running costs when purchasing new domestic equipment.

The introduction of energy-labels took place at nearly the same time that REB (Regulatory Energy Tax) was introduced. It was concluded that it is not possible to separate the influence of REB and labels, so the results show the combined effects. The combined effects in 2000 were 600 kt of avoided CO₂ emissions and 3 to 4 PJ of avoided energy consumption.

The success of the measure is obvious for large household appliances: 95% now has an A label. Apparently people are willing to buy energy efficient appliances when the information is readily available. Now that almost all of these appliances have an A label, A+ and A++ labels have been introduced to still be able to distinguish between differences in energy efficiency.

5 National Developments under the EU Energy Efficiency Directive and the 20% Energy Efficiency Target of the EU

Public sector

Within Europe, the Netherlands are a frontrunner when it comes to sustainable procurement. It has been agreed upon by 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), 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.

Residential sector

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.

Tertiary sector

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.

Industry (non-ETS)

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.

Transport

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, CO₂-differentiation BPM, and tax discount for most efficient leased cars; long term agreements; limiting maximum speed; energy labelling of cars; the 'Eco driving' programme; subsidy schemes and longer and heavier lorries.

Agriculture

The package contains the following measures: Long term agreements, subsidy schemes, e.g. for CHP and renewables, energy tax, Energy Investment Deduction, the programme "The greenhouse as an energy source", the Green Funds Scheme and Financing (MIA, Vamil), and an internal emission trading scheme for the greenhouse sector.

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 ₂ reduction	X	X			

Annex 1

Energy Efficiency Measure Summary by Country

Policy measures for the residential sector

Code	Measure Title	Status	Measure Type	Starting Year	Ending Year	Semiquantitative Impact
NLD1	Energy Tax - Formerly Regulating Energy Tax (REB)	Ongoing	Cross-cutting with sector-specific characteristics	1996		Medium
NLD2	Sustainable building program	Ongoing	Co-operative Measures	1995		Low
NLD3	Energy Performance Standards (EPN)	Ongoing	Legislative/Normative	1995		High
NLD4	Voluntary agreements social housing corporations	Completed	Co-operative Measures	1998	2005	Low
NLD5	The Environmental Action Plan (MAP) of the Energy Distribution Sector	Completed	Financial	1991	2000	High
NLD6	Optimal energy infrastructure (OEI): 1997 onwards	Ongoing	Co-operative Measures	1997		Low
NLD7	The Building Decree (2002 onwards)	Ongoing	Legislative/Normative	2002		High
NLD8	Subsidies sustainable energy within the energy premiums	Completed	Financial	2001	2004	Low
NLD9	The Building Decree 1991	Completed	Legislative/Normative	1992	2002	High
NLD10	Energy Efficient Retrofitting Programme	Completed	Co-operative Measures	1994	2000	Low
NLD11	Ecoteams	Completed	Information/Education	1991	2001	Low
NLD12	Energy Performance Advice	Completed	Financial	2000	2007	Low
NLD13	Energy Premiums (except renewables)	Completed	Financial	2000	2003	Medium
NLD14	Energy labels on appliances	Ongoing	Legislative/Informative	1996		Medium
NLD15	MilieuCentraal, COEN (Consumer & Energy) and HIER campaign	Ongoing	Information/Education	2000		Low
NLD16	Compass - Energy-awareness in living and working	Ongoing	Information/Education	2002		Medium
NLD17	Energy performance certificate for buildings	Ongoing	Legislative/Informative	2008		Low
NLD18	(Temporary) Subsidy scheme on Energy savings for Low Income households (TELI)	Completed	Information/Education	2002	2006	Low

Energy Efficiency Policies and Measures in The Netherlands in 2007

NLD19	Temporary subsidy scheme Buildings and CO2 reduction (Tijdelijke subsidieregeling Gebouwen en CO2 emissie reductie)	Completed	Financial	2006	2006	Low
NLD20	Heat distribution law (warmtewet)	Proposed (advanced)	Legislative/Normative	2009		Low
NLD21	More with Less plan (Meer met Minder)	Ongoing	Co-operative Measures	2008	2020	High
NLD22	Pilots energy saving for homeowners and private landlords in combination with district approach	Proposed (medium/long-term)	Unknown	2008		Low
NLD23	Financial support homeowners	Ongoing	Financial	2008		Medium
NLD24	Change the housing assessment system for social housing	Proposed (advanced)	Unknown			High
NLD25	Covenant energy savings in newly produced buildings (Spring Agreement)	Ongoing	Unknown	2008	2015	Low
NLD27	Covenant energy savings by housing corporations	Ongoing	Co-operative Measures	2008	2020	High

Policy measures for the transport sector

Code	Measure Title	Status	Measure Type	Starting Year	Ending Year	Semiquantitative Impact
NLD2	Motor vehicles speed limit	Ongoing	Legislative/Normative	1988		High
NLD3	New driving campaign	Ongoing	Information/Education/Training	2000		Low
NLD5	Energy labelling passenger cars	Ongoing	Legislative/Informative	2001		Low
NLD6	Transaction and modal shift	Completed	Infrastructure	1999	2003	Low
NLD7	Traffic performance on location	Ongoing	Infrastructure	2001		Low
NLD11	Carpooling, park and ride and similar measures	Ongoing	SocialPlanning/Organisational	1974		Low
NLD13	Increase in Fuel Tax	Ongoing	Fiscal	1990		High
NLD16	Periodic Motor Vehicle Test (APK)	Ongoing	Legislative/Normative	1981		Medium
NLD18	Railfreight (Betuwelijn)	Ongoing	Infrastructure	2008		Low
NLD19	Speed limiters for trucks	Ongoing	Legislative/Normative	1995		High
NLD20	Parking as a means of managing and restraining mobility	Ongoing	Infrastructure	1995		Low
NLD21	Ecoteams	Completed	Information/Education/Training	1991		Low
NLD22	Improved accessibility to Schiphol Airport	Ongoing	Infrastructure			Low
NLD23	Urban remodelling scheme	Completed	Infrastructure	2002	2004	Low

Energy Efficiency Policies and Measures in The Netherlands in 2007

NLD26	Long Term Agreements with The Netherlands Railway Company (NS)	Ongoing	Co-operative Measures	1997	2010	Medium
NLD27	Energy efficiency dependent Taxes: Private Motor Vehicle & Motorcycle Tax (Dutch: BPM) and Motor Vehicle Taxes (MRB)	Ongoing	Fiscal	2006		Medium
NLD30	Mandatory Introduction of biofuels	Ongoing	Legislative/Normative	2005	2010	High

Policy measures for the industrial sector

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
NLD1	GasUnie's Environmental Plan for the Industry	Ongoing	Financial	1991		Medium
NLD3	The Vamil Scheme : Accelerated Depreciation on Environmental Investment	Ongoing	Fiscal/Tariffs	1995		High
NLD4	Long Term Agreements with the Refineries Sector	Completed	Co-operative Measures	1995	2000	High
NLD5	Energy Production from Waste and Biomass (EWAB)	Completed	Financial	1993	2000	Low
NLD6	Energy Tax	Ongoing	Cross-cutting with sector-specific characteristics	1996		High
NLD7	Energy Investment Deduction Tax (EIA)	Ongoing	Fiscal/Tariffs	1997		Medium
NLD8	CO2 Reduction Plan	Completed	Financial	1997	2002	High
NLD9	Environmental Licensing: Energy Conservation Requirements	Ongoing	Legislative/Normative	1993		Low
NLD10	Long-Term Programme : Intersectoral Technologies for Industry (MINT)	Completed	Information/Education/Training	1994	1999	Low
NLD11	Long Term Agreements with Industry on Energy Efficiency	Completed	Co-operative Measures	1992	2000	High
NLD12	Energy Conservation and Environmental Consultancy Subsidy Scheme (EMA)	Completed	Financial	1990	2000	Low
NLD13	Long Term Agreements with the Industry, second phase (MJA2)	Ongoing	Co-operative Measures	2001	2012	High
NLD14	Environmental Action Plans by the Energy Distribution Sector	Completed	Financial	1991	2000	High
NLD15	The Industrial Energy Conservation Tender Scheme (TIEB)	Completed	Financial	1990	1999	Low
NLD16	Long Term Agreements with the Oil- and Gas Industry	Completed	Co-operative Measures	1996	2000	High
NLD17	Benchmarking Covenant	Ongoing	Co-operative Measures	2000	2012	High

Energy Efficiency Policies and Measures in The Netherlands in 2007

NLD18	Environmental Quality Electricity Production (Dutch: MEP) for CHP (Dutch: WKK) and MEP for sustainable energy	Completed	Financial	2003	2006	High
NLD19	Long Term Agreements with the industry, third phase (MJA3)	Ongoing	Co-operative Measures	2001	2020	Medium
NLD20	Heatmaps	Ongoing	Information/Education/Training	2009	2020	Low

Policy measures for the tertiary sector

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
NLD1	Building Decree and Energy Performance Standard	Ongoing	Legislative/Normative	1995		High
NLD2	The environmental Action Plan of the energy distribution companies (Milieu Actie Plan, MAP)	Completed	Co-operative Measures	1991	2000	High
NLD3	Energy Investment Tax Deduction (EIA and EINP)	Ongoing	Fiscal/Tariffs	1997		High
NLD4	Energy Efficiency Programme for National Government Buildings (EER)	Completed	Information/Education/Training	1994	1998	Low
NLD5	Environmental Licensing: Energy Conservation Requirements	Ongoing	Co-operative Measures	1993		Low
NLD7	CO2 Reduction Plan	Ongoing	Financial	1996		Low
NLD8	Energy Efficient Lighting Promotion Scheme (STIMEV)	Completed	Financial	1992	2000	Low
NLD9	Long Term Agreements in Agriculture (flower bulbs, greenhouses, mushrooms)	Ongoing	Co-operative Measures	1989	2011	Low
NLD10	Regulatory Energy Tax (REB: Reguliere Energie Belasting)	Ongoing	Cross-cutting with sector-specific characteristics	1996		Medium
NLD11	Long Term Agreements in service sector	Completed	Co-operative Measures	1989	2006	Low
NLD14	The Vamil Scheme: Accelerated Depreciation on Environmental Investments	Ongoing	Fiscal/Tariffs	1991		Medium
NLD16	Subsidy schemes (IRE, MEI, UKR), Programme Greenhouse as Energy Source (Kas als Energiebron)	Ongoing	Information/Education/Training			Medium

Energy Efficiency Policies and Measures in The Netherlands in 2007

NLD19	Internal emission trading system for the greenhouse sector	Proposed (medium/long-term)	Legislative/Normative, Unknown	2010	Medium
NLD20	Taskforce lighting	Proposed (advanced)	Co-operative Measures	2008	Low

Policy measures, cross cutting

Code	Title	Status	Type	Starting Year	Ending Year	Semiquantitative Impact
NLD1	COMPASS- Energy awareness in living and working: CO2 reduction in the built environment	Ongoing	General Energy Efficiency / Climate Change / Renewable Programmes	2005		Medium
NLD2	Energy Investment Tax Deduction (Energie Investerings Aftrek (EIA))	Ongoing	Non-classified Measure Types	1997		High
NLD3	Long-Term Agreements (LTA) and Benchmarking Agreement (Meerjarenaafspraken en Benchmark covenant)	Ongoing	Non-classified Measure Types	1989		High
NLD4	Regulatory Energy Tax (REB) (Reguliere Energie Belasting)	Ongoing	Non-classified Measure Types	1996		Low
NLD5	CO2 Reduction Plan	Completed	General Energy Efficiency / Climate Change / Renewable Programmes	1997	2007	Low
NLD6	Green investment arrangements & green funds (Groen beleggen)	Ongoing	Non-classified Measure Types	1995		Low
NLD7	Transition Platforms (Transitie platformen)	Ongoing	General Energy Efficiency / Climate Change / Renewable Programmes	2006		Medium

Annex 2

Country Profile

Energy Efficiency Profile: Netherlands

September 2008

Energy Efficiency Trends

Overview

The combined energy efficiency of final consumers has improved by 17% between 1990 and 2006. Between 1990 and 1995, the improvement rate was only 0.6% per year. The rate of improvement accelerated to an average of 1.6% between 1995 and 2000 and was higher than the EU-27 average during these years. Since 2000 the developments are very close to the EU-27 average of 1.1% yearly. The largest improvements since 1990 have been realised in the households and manufacturing industry sectors, while transport lags behind considerably.

Industry

The energy efficiency progress in the manufacturing industry was nearly 21% between 1990 and 2006. From 1993 on, the starting year of Long Term Agreements on energy savings, the improvement was more than 1.5% per year. The chemical sector, which is responsible for half the energy consumption of the industry in the Netherlands, improved energy efficiency by 25% since 1990. The energy efficiency of the steel industry remained stable between 1993 and 2001, but has started to improve after 2001. The energy efficiency in the paper industry decreased until 1997, but the overall increase of efficiency since 1990 was 9%.

Households

Households improved their energy efficiency by more than 25% over the period 1990-2006. Progress came mainly from heating, with an improvement of 32%. The unit consumption for specific uses of electricity (large electrical appliances) varied considerably due to the coun-

teracting effects of improved efficiency and increased penetration; this resulted in a net improvement of about 4%.

Transport

The energy efficiency performance numbers for transport show no large improvements apart from the years between 1996 and 2000. The efficiency of cars improved to a level of 1.6% lower than in 1990 by the year 2006. The efficiency of trucks and light vehicles decreased by more than 12% between 1990 and 2002. This is the result of the increased share of goods transport by light trucks, which are less efficient. There has been a slight improvement in later years, but in 2006 consumption was still 11% higher than in 1990. As a result of a larger share for air transport (from 17% to 24% of the total energy consumption in the transport section) and a 27% better energy efficiency in air transport, the energy intensity of the transport sector decreased by 5% since 1990 despite the unsatisfactory trends for cars and trucks and light vehicles.

Energy Efficiency Policy Measures

Institutions and programmes

In the Clean and Efficient (Dutch: Schoon en Zuinig) programme, introduced in 2007, the Dutch government set ambitious targets for Greenhouse gas emission reduction (-30%), share of renewables in the energy mix (20%) and improvement in energy efficiency (increasing to 2,0% per year) in 2020.²

The programme can be seen as an intensification of the existing policy approach, which characterizes itself by a multi-level approach. General cross-cutting measures such as energy taxation, fiscal measures such as the energy investment deduction and the European emission trading scheme form a general base for stimulating energy efficiency. Voluntary sectoral or sub-sectoral agreements were made with industries, services, major transport organisations and key players within the household sector. These agreements aim at a continuous improvement in efficiency. Energy efficiency standards are in effect for most sectors to set a lower limit for efficiency. Innovators and frontrunners are (financially) supported.

² The full text of this programme can be downloaded here:

<http://www2.vrom.nl/docs/internationaal/New%20Energy%20for%20Climate%20Policy.pdf>

Households and Services

Since 1995 the building Decree contains minimum standards for new buildings. They are based on a standardised method for the calculation of an Energy Performance Coefficient (EPC) which is related to the size of the building. The standards were strengthened multiple times, which led for example to an energy efficiency gain of new dwellings with over 50% since 1995.

As part of the More with Less programme (Dutch: Meer met Minder), the government signed voluntary agreements with key players within the Dutch housing, energy and construction sector, to reduce energy consumption in existing buildings with 100 PJ in 2020. Reducing barriers for owners of buildings must stimulate them to invest in energy saving measures, which should lead to over 200.000 buildings being refurbished annually. The programme uses the recently introduced energy performance certificates for buildings (a result of the EPBD directive), to identify saving potential and monitor progress.

The Energy Labelling for appliances has been introduced in 1996, and was originally combined with a national grant scheme. This led to a very high market share of A-label appliances.

Industry

Since 1992, long-term agreements (LTAs) on energy efficiency have been entered into with energy intensive industries. In 1998 less energy intensive industries were addressed. Industries are required to introduce all appropriate process efficiency measures with a pay-back period of five years and to implement energy management systems.

Since 2000 LTAs are replaced by a covenant on benchmarking for the energy intensive industries in which they agree to be among the most efficient companies in the world.

Transport

To stimulate more efficient cars and efficient driving, the government introduced a mix of financial policy measures.

- Fuel taxes, among other things, make Dutch fuel prices the highest in Europe.
- Motor vehicle tax (Dutch: MRB) and private motor vehicle and motorcycle tax (Dutch: BPM) are taxation schemes to raise tax on car possession. The tariffs are differentiated based on CO₂ emissions to stimulate the selling of energy efficient cars.
- A discount on tax is given to the most efficient leased cars.

Energy Efficiency Policies and Measures in The Netherlands 2007

Many of the taxation schemes mentioned use energy labels for cars as a criterion.

The New Driving Force Campaign (eco-driving) started in 2000. Initiatives are developed in the following areas: driving lessons, driving style training, use of energy saving in-car equipment, improvement of tyre pressure and energy labels for cars.

Several programmes aiming at energy efficiency in transportation of goods are running. Long term agreements with major transportation organisations in combination with subsidies for innovation are running.

Selected Energy Efficiency Measures

Sectors	Title of Measure	Since	Energy * (PJ)	CO ₂ * (kt)
General				
General	Energy investment deduction (EIA)	1997	199.8 ^a	11183
Buildings	Energy Performance Standard (EPN)	1995	4.5 ^b	240
Buildings	More with less plan	2008	50-100 ^c	
Households	Energy Labelling Appliances	1996	3.5 ^d	600
Services	Long-term agreements (hospitals, agriculture etc.)	1993	-	-
Industry	Environmental Action Plan	1990	170.0 ^b	3800
Industry	Long-term agreements 2	1998	11.8 ^e	5.140
Transport	Long-term agreement with road transport	1994	2.7 ^b	195
Transport	Energy saving in transport (EBIT)	2000	54.0 ^f	5300
Transport	New driving force campaign	2000	-	1250 ^f

^a Realised until 2006

^e Realised between 2001 and 2006

^b Realised until 2000

^d Realised until 2000 (combined effect with Regular Energy Tax)

^c Ex-ante 2020

^f Ex-ante 2010