Energy Efficiency Policies and Measures in The Netherlands

ODYSSEE - MURE 2012

Monitoring of EU and national energy efficiency targets

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1 Executive Summary

The combined energy efficiency index of industry, households and transport has improved by 16% between 2000 and 2010. Improvements were higher in industry (21%) and households (20%) and much lower in transport (7%).

The Netherlands no longer has a national energy efficiency target; targets for CO_2 emissions and renewable energy are considered leading; these may result in efficiency improvements as a means to achieve those goals. However, according to Energy Services Directive, there is a target for energy efficiency improvements in non-ETS sectors.

Total final energy consumption has not changed much since 2000. The most important issues are the influence of the economic crisis in 2008, most notable in industry and transport, and the effect on natural gas consumption of the warm winter of 2007 and the cold winter of 2010.

The final consumption of the industrial sector is still clearly below that of 2000. The intensity within primary metals and chemistry is decreasing. As a result, the national energy intensity decreased as well.

The largest efficiency improvement in households has been achieved in heating, but large electrical appliances are also improving. Almost all appliances are getting more efficient; only televisions are doing worse. Overall the improvement for households is slowing down.

Efficiency gains in the transport sector are small. This is caused in part by a lack of progress for freight transport due to a shift from transport by large trucks to light vehicles. The improvement of car efficiency is accelerating, which results in a small improvement of the combined efficiency of passenger and freight transport.

Overall, efficiency improvement in the Netherlands is higher than the EU average in households and industry, but lower in transport.

Long term agreements with industry are effective measures. For household energy savings, the most innovative and effective policy measures are performance standards for dwellings and appliances, performance programs and broad action plans with the right combination of policy measure types.

The green deals are an innovative approach to facilitate initiatives in the area of energy efficiency and sustainability by both citizens and companies, that will also have a positive effect on the economy.

2 Key messages

- The economic crisis that started in 2008 has caused a slower improvement rate of energy efficiency in all sectors
- More measures are needed for the transport sector to achieve an efficiency improvement rate that is at least as high as the European average

3 The Background to Energy Efficiency

3.1 Overall economic context

The global economic crisis that started in 2008 is visible as a lower growth of GDP in 2008, and as a considerable decline of GDP in 2009 (see **Figure 3.1**, shown in real terms). A recovery is visible in 2010, but the GDP was still below the value in 2007.

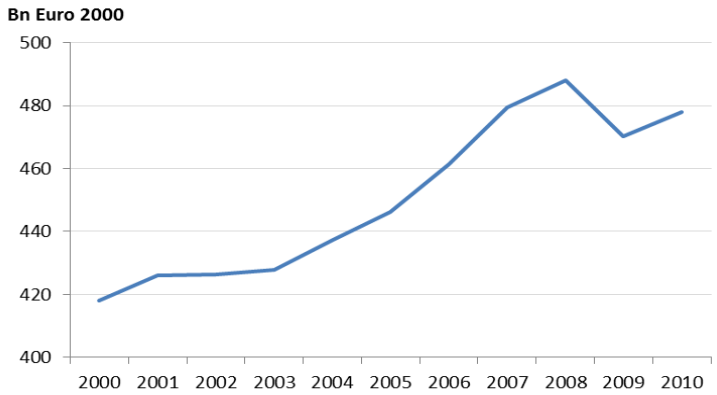


Figure 3.1 – *Gross domestic product of The Netherlands*

3.2 Energy consumption trends: by fuel and by sector

Figure 3.2 shows the total final consumption by energy carrier. The effect of the financial crisis can be seen in a lower consumption of oil products and electricity from 2008 onwards. The low consumption of natural gas in 2007 and the high consumption in 2010 were the result of a warm winter in 2007 and a cold winter in 2010.

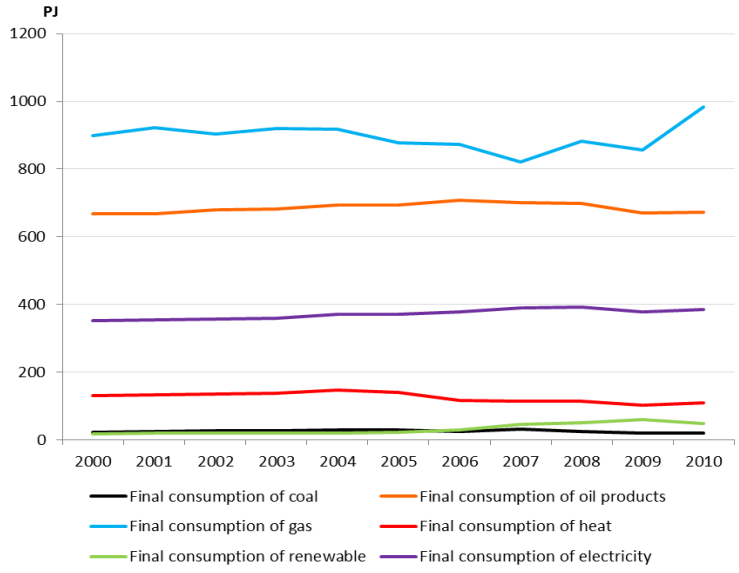


Figure 3.2 – *Total final consumption by energy carrier*

The consumption developments in the industry sector are shown in **Figure 3.3**. The influence of the crisis is clearly visible in the lower consumption of gas, electricity and heat in 2009. The total final consumption of industry in 2010 is still clearly below the level in 2000.

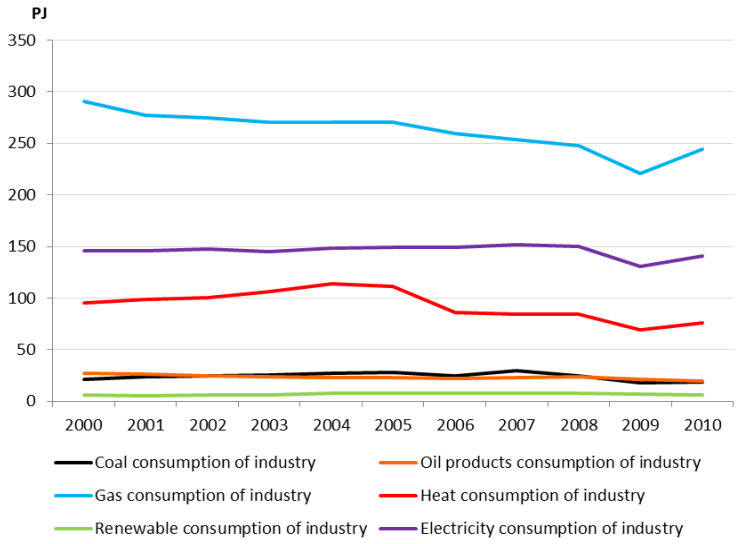


Figure 3.3 – *Final consumption in the industry sector by energy carrier*

Energy consumption in transport is dominated by oil products (**Figure 3.4**). The developments suggest a lower transport volume since the economic crisis. The jet fuel con-

sumption includes international air traffic. National air traffic is very small in the Netherlands.

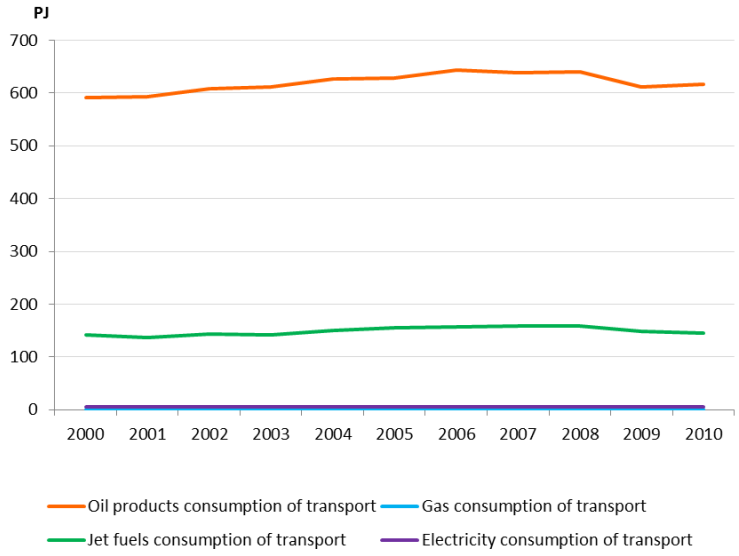


Figure 3.4 – *Final consumption in the transport sector by energy carrier*

The households sector is dominated by gas and electricity. The vast majority of Dutch dwellings is heated by natural gas. An improvement in energy efficiency can be seen from 2000 until 2007. 2007 was a relatively warm year, and 2010 a relatively cold one, which explains the low consumption in 2007 and the high consumption in 2010.

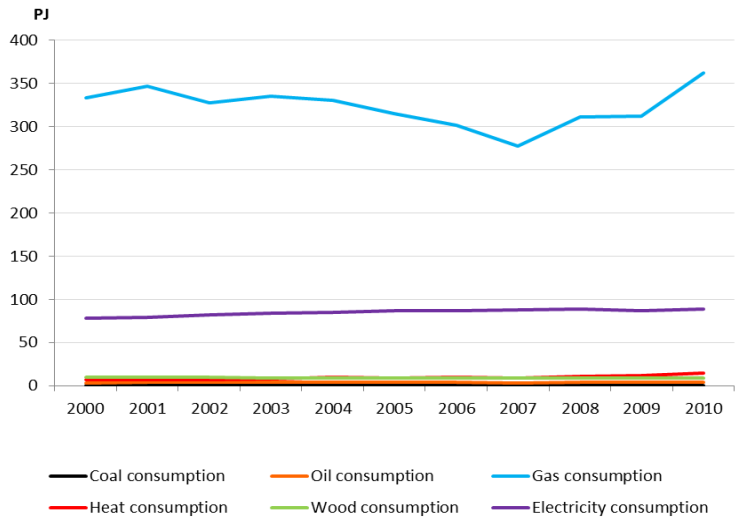


Figure 3.5 – *Final consumption in the residential sector by energy carrier*

3.3 The policy background to energy efficiency

The new government that came into power in 2010 did not, unlike the government before, have a national target for energy efficiency. The former target was set for 2020, to achieve 2% annual savings on average from 2011 onwards. The policy for non-ETS sectors continued as before; a second National Energy Efficiency Action Plan as required by the Energy Services Directive was prepared in 2011. The new government lowered the targets for the share of renewable energy and the amount of greenhouse gas emissions to the level of EU targets. Although no national target was set for energy efficiency, the government still regarded energy efficiency important as a means to achieve the renewables and greenhouse gas emission targets.

4 Overall Assessment of Energy Efficiency Trends

4.1 Overall trends in energy intensity

The intensity of the Dutch economy, as expressed in MJ per Euro2000 of the GDP started to decline around 2005 (see **Figure 4.1**). Both the final and the primary intensities are shown. Final intensity is based on the amounts of electricity, heat and fuel that were consumed, primary intensity includes energy that was lost during electricity production, refining of crude oil and for non-energetic use in industry, for example polymer and fertilizer production. The final energy intensity stabilized after 2007, but the primary intensity increased somewhat after 2008.

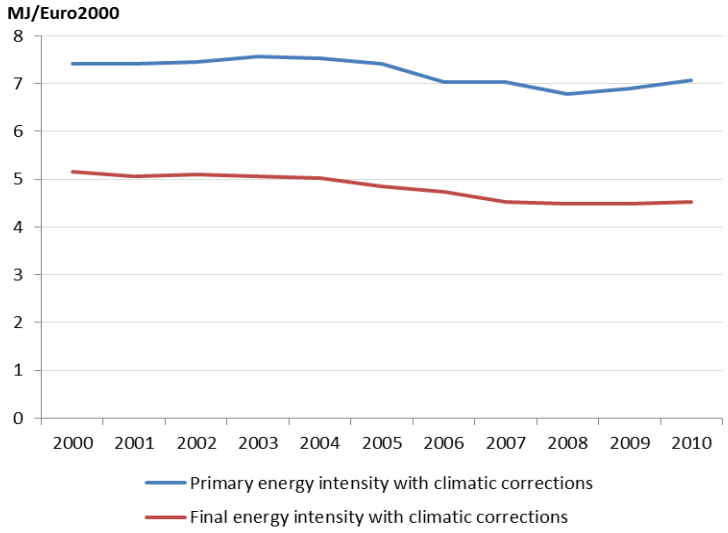


Figure 4.1 – *The energy intensity of the Dutch economy*

4.2 Industry

The three subsectors in industry that consume most energy are the chemical industry, primary metals and the food industry (see **Figure 4.2**). Two of these have an energy intensity that is far above the average (see **Figure 4.3**). The decreasing energy consumption of these sectors is in line with a lower energy intensity within these sectors, and with a structural change at national level towards less energy intensive production, as shown in **Figure 4.1**.

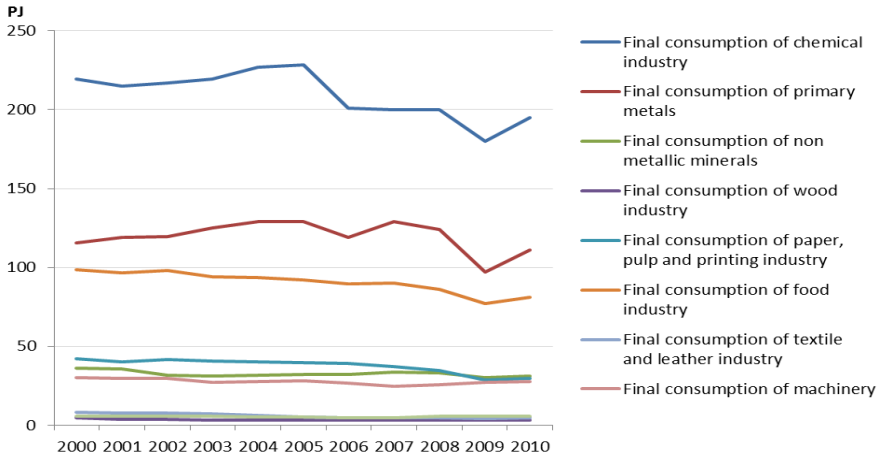


Figure 4.2 – *Energy consumption by branch*

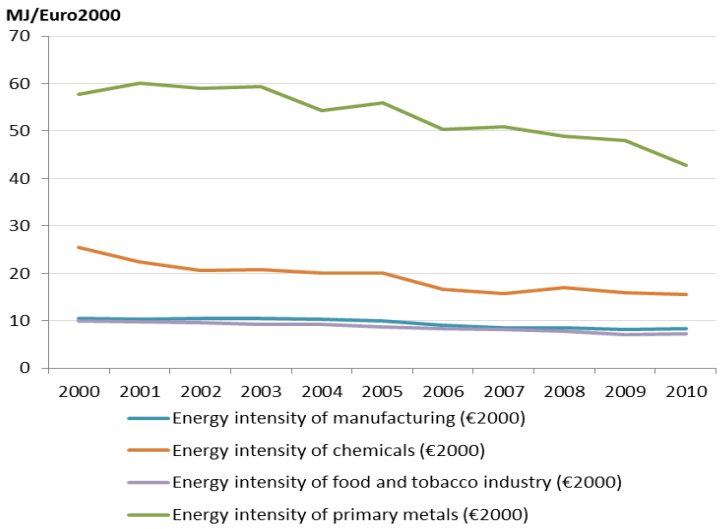


Figure 4.3 – *Intensity of the chemical, primary metals and food industries*

The average industrial energy intensity is much lower than for the industrial subsectors in **Figure 4.3**, which means that the other subsectors create a high added value with a small amount of energy.

4.3 Households

The energy consumption of households is dominated by natural gas and electricity (see **Figure 4.4**). The low gas consumption in 2007 and the high consumption in 2010 disappear when climate corrections are applied.

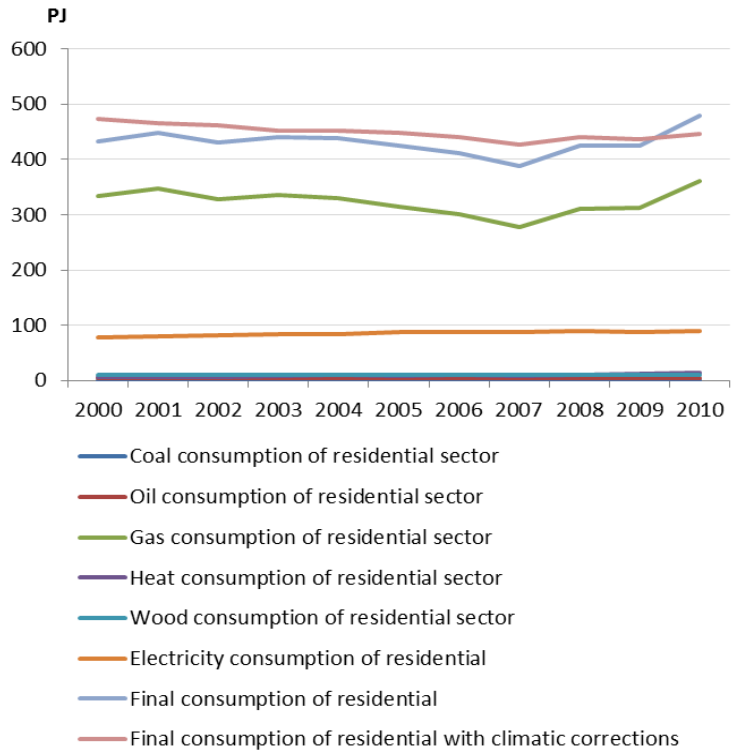


Figure 4.4 – *Energy consumption by households*

The energy efficiency gains are largest for heating, but the efficiency electrical of large appliances has also improved (see **Figure 4.5**).

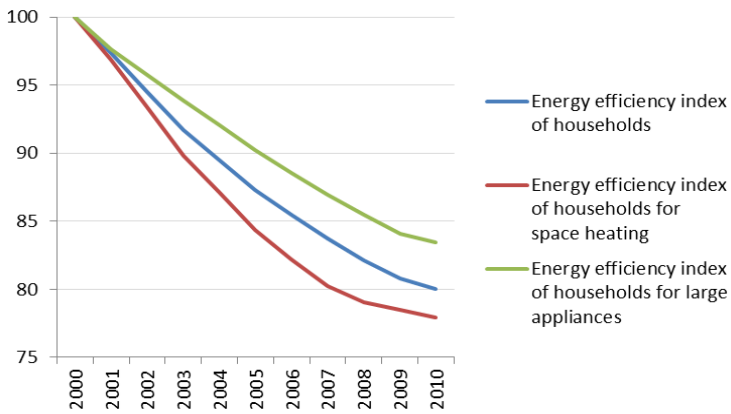


Figure 4.5 – *Efficiency gains in households*

The energy consumption of most large electrical appliances has decreased (**Figure 4.6**). Dryers only became more efficient after 2005; televisions are the only appliances that keep using more electricity, because the higher efficiency is offset by ever growing screen sizes.

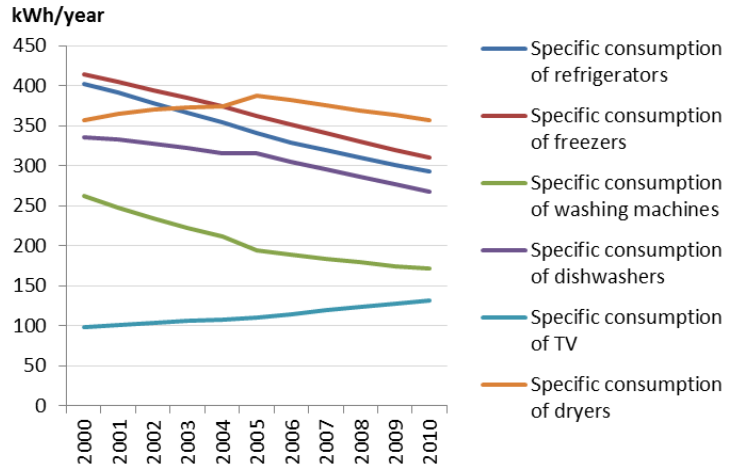


Figure 4.6 – *Specific consumption of large electrical appliances*

4.4 Services

Like households, the energy consumption of the services is dominated by gas and electricity. The total final energy per sector is shown in **Figure 4.7**. The trade and commercial offices use most energy, while the education and the health sectors show the largest growth. 2010 consumption is high due the cold winter.

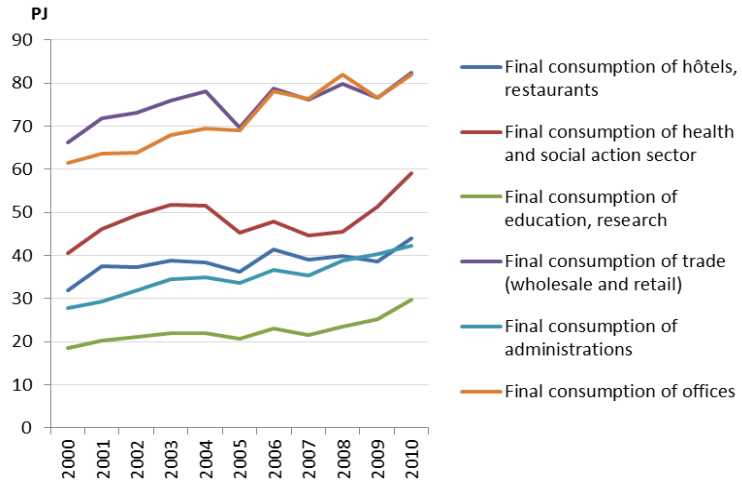


Figure 4.7 – *Total final energy consumption by subsector*

The picture for electricity consumption in **Figure 4.8** looks different. Electricity consumption is decreasing, while total consumption has been growing. This seems to be related to the economic crisis of 2008. And while total consumption in the health sector is average, electricity consumption was less than average, indicating that the health

sector has a relatively high energy use for heating. This makes sense as hospitals are heated constantly, and offices and other buildings only during working hours.

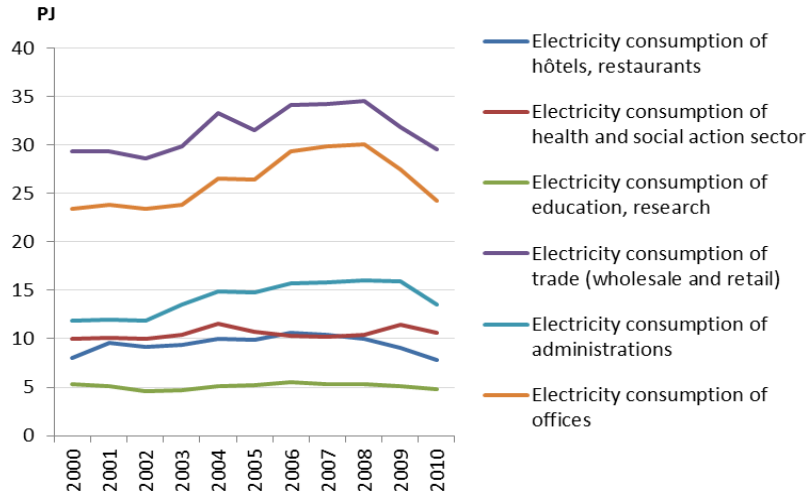


Figure 4.8 – *Electricity consumption by subsector*

4.5 Transport

Of all energy consumption in domestic transport, 98.6% is road transport (see **Figure 4.9**).

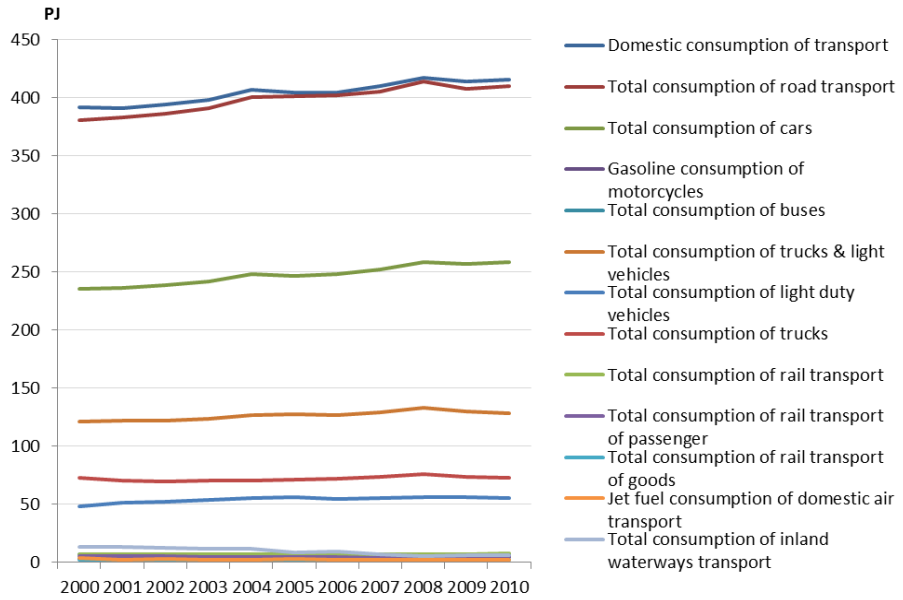


Figure 4.9 – *Energy consumption in domestic transport*

The average efficiency of all cars is increasing slowly as a result of the accelerating efficiency improvement of new cars (see **Figure 4.10**).

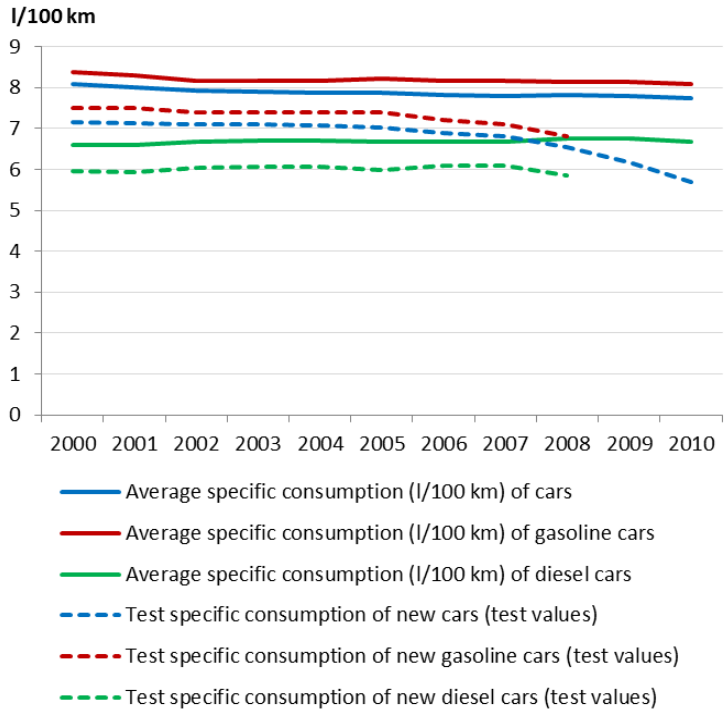


Figure 4.10 – *Efficiency of cars*

The efficiency of freight transport is decreasing in recent years, due to a larger share of transport by light vehicles instead of trucks (see **Figure 4.11**).

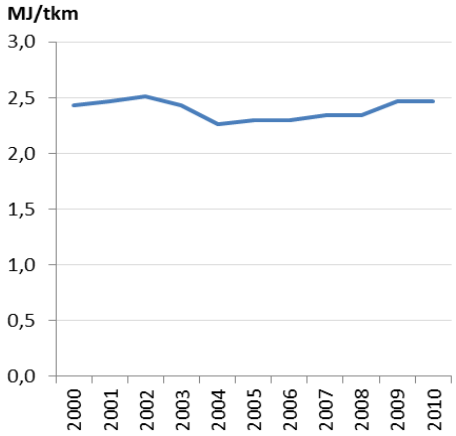


Figure 4.11 - *Efficiency of freight transport*

The combined effect of increasing efficiency in cars and decreasing efficiency in freight transport is a stagnating or decreasing overall efficiency since 2005 (**Figure 4.12**).

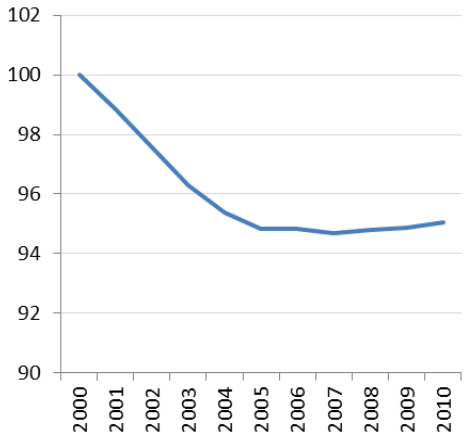


Figure 4.12 – *Energy efficiency index of passenger and freight transport combined*

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

The ODEX energy efficiency indicators for The Netherlands as a whole and for the households, industry and transport sectors are shown in **Figure 4.13**. Households efficiency has improved steadily, industry has improved by about the same amount since 2000 but mainly from 2004 to 2007, and transport is clearly lagging.

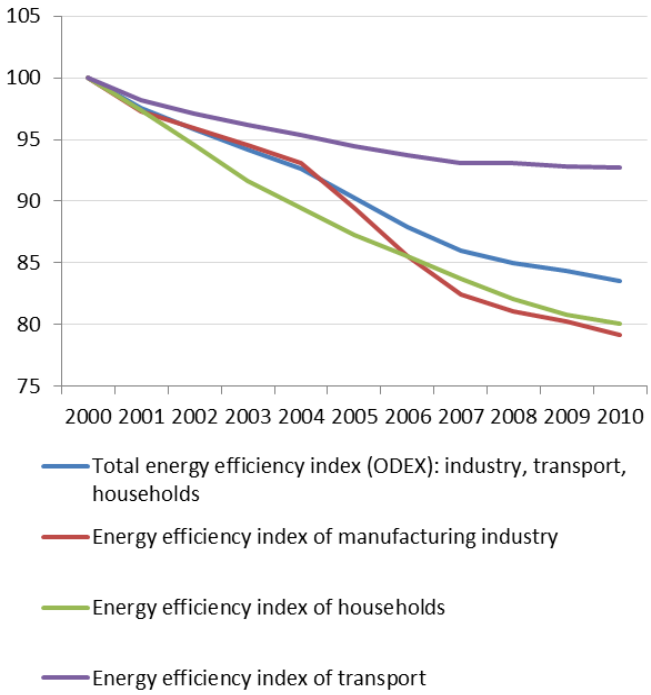


Figure 4.13 – *ODEX efficiency indices for The Netherlands*

As can be concluded from the charts in **Figure 4.14**, the Dutch progress in efficiency is better than the average for the EU as a whole for the national level, for households and for industry, but the Netherlands is behind the European average in improving transport efficiency.

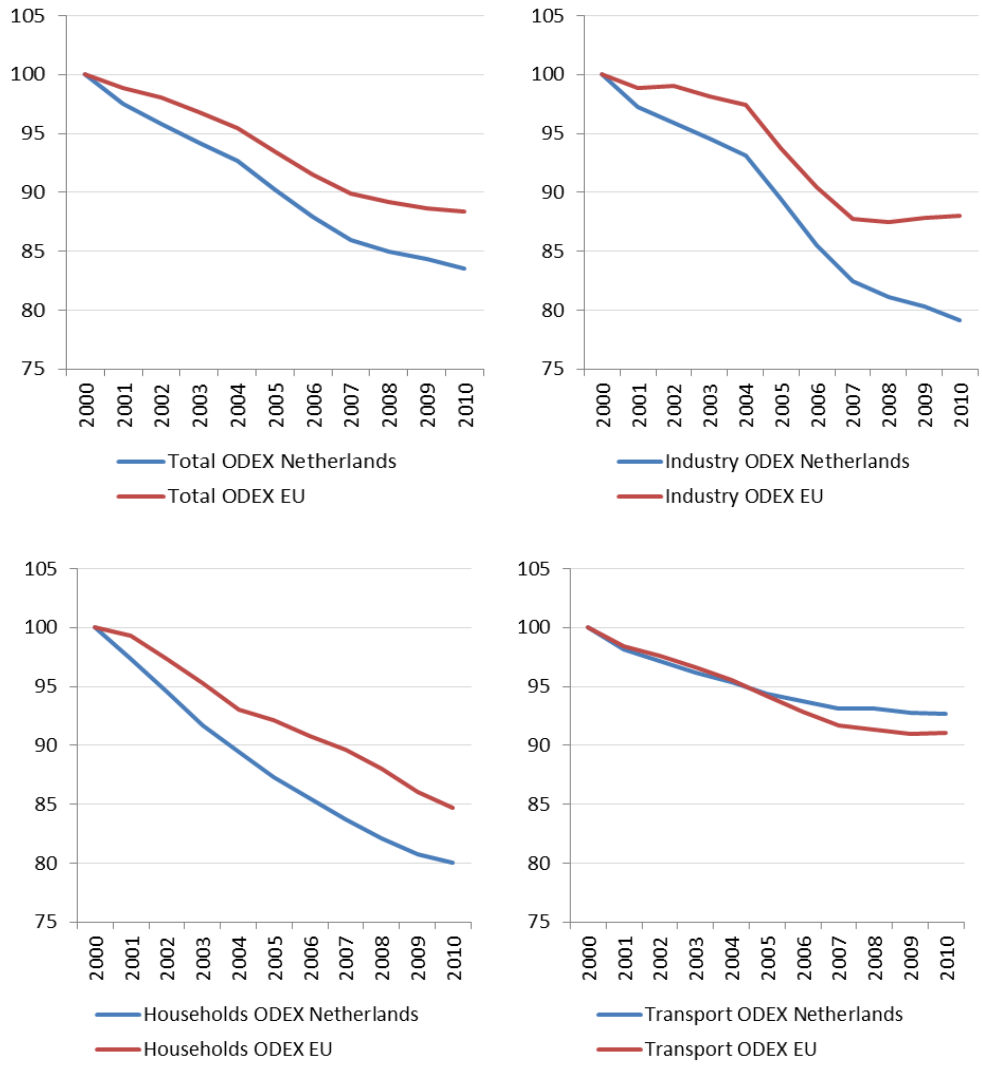


Figure 4.14 – *ODEX indicators compared to the EU averages*

4.7 CO_2-emissions trends

The CO_2 emissions for the Netherlands are displayed in **Figure 4.15**.

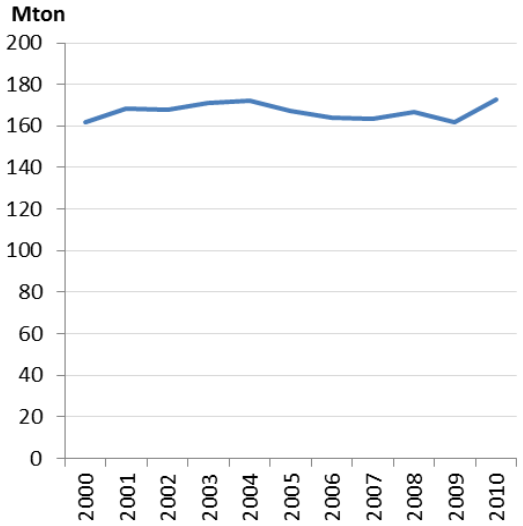


Figure 4.15 – *CO_2 emissions from fuel combustion*

Figure 4.16 shows CO_2 emissions per sector. The effects of the economic crisis in the autumn of 2008 is clearly visible in the industry and also in the transport sector in 2009. The industry recovered in 2010. The emissions in households are the combined result of higher efficiency of condensing boilers and increased ownership and usage of electrical appliances. The increase in 2010 is caused by a cold winter. This is also visible in the emissions of the services sector. Agriculture has increased emissions due to a considerable growth of combined heat and power since 2004.

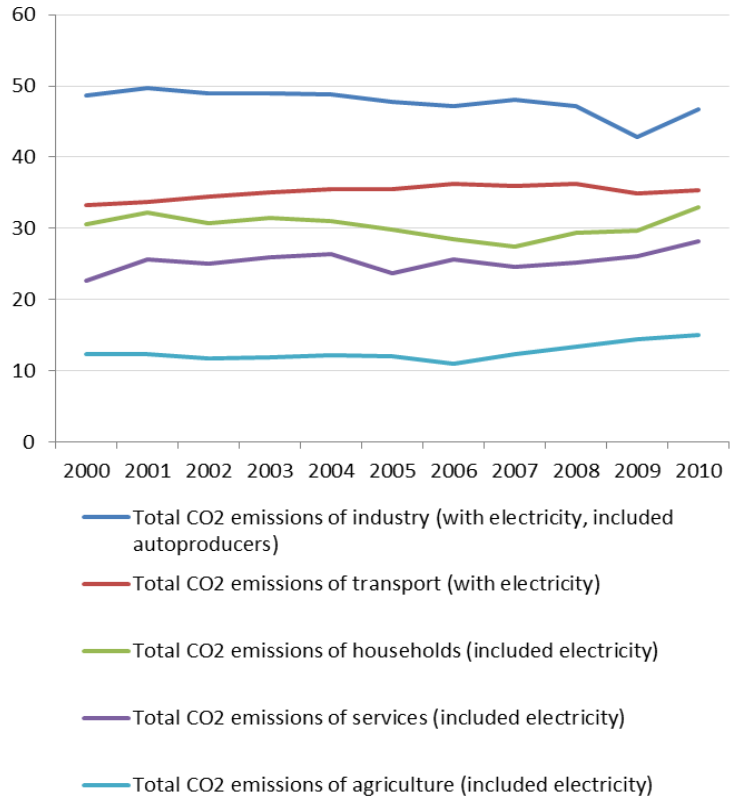


Figure 4.16 – *CO_2 emissions per sector*

5 Energy efficiency policy measures

5.1 Recent Energy Efficiency Measures

Residential Sector

For household energy savings, the most innovative and effective policy measures are performance standards for dwellings and appliances and broad action plans with the right combination of policy measure types. High taxes on energy or CO_2 and policy measures on inspection and maintenance are innovative complementary policy measures.

Transport Sector

The Transport tax scheme was coupled to energy efficiency performance 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

Long Term Agreements are on-going; the Benchmarking Covenant was amended by the Long term agreement on Energy efficiency for ETS enterprises (LEE) in 2008. In Industry a measure called "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.

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

A “green deal” scheme was started by the government in 2011. The idea is to let government eliminate obstacles for initiatives from citizens and companies related to energy efficiency and sustainability. The initiatives should lead to results within 3 years and also have a positive effect on economic activities.

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

5.2 Patterns and Dynamics of Energy Efficiency Measures

The following sections contain charts that indicate what type of measure is applied in the different sectors. For the charts, the measure types have been weighted according to the impact they have.

Residential Sector

Figure 5.1 shows that in recent years, the majority of new measures in the residential sector was of a cooperative nature rather than legislative/normative as was the case for most measures before 2004.

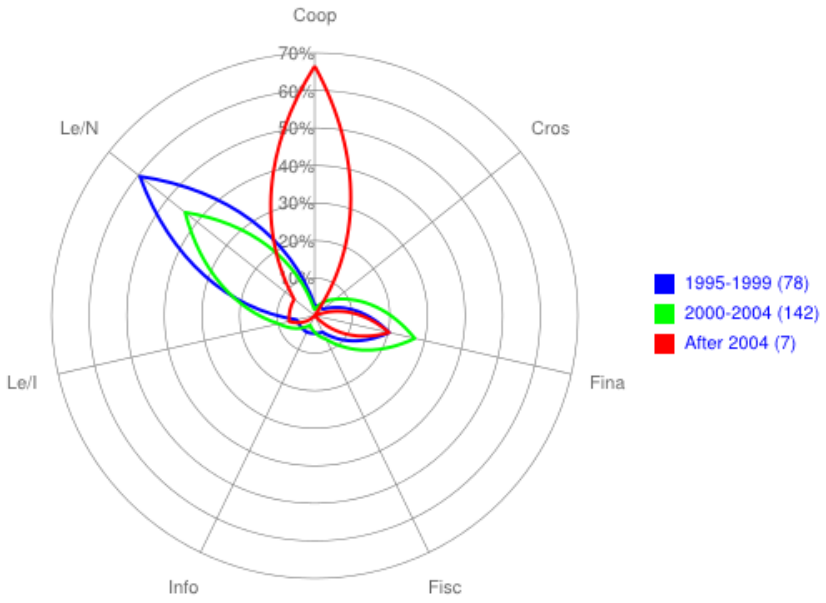


Figure 5.1 – *Measure types in the residential sector*

(Coop: Co-operative Measures, Cros: Cross-cutting with sector-specific characteristics, Fina: Financial, Fisc: Fiscal/Tariffs, Info: Information/Education, Le/I: Legislative/Informative, Le/N: Legislative/Normative)

Transport Sector

In the transport sector, most measures are fiscal in recent years. These measures have resulted in a higher share of fuel efficient new cars being sold.

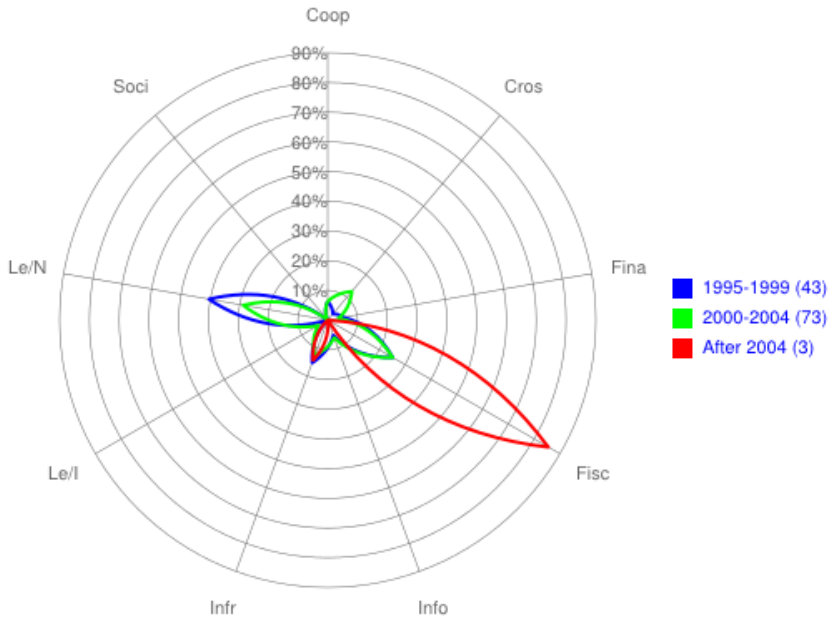


Figure 5.2 – *Measure types in the transport sector*

(Coop: Co-operative Measures, Cros: Cross-cutting with sector-specific characteristics, Fina: Financial, Fisc: Fiscal, Info: Information/Education/Training, Infr: Infrastructure, Le/I: Legislative/Informative, Le/N: Legislative/Normative, Soci: Social Planning/Organisational)

Industrial Sector

The growing role of cooperative measures can be clearly seen in **Figure 5.3**.

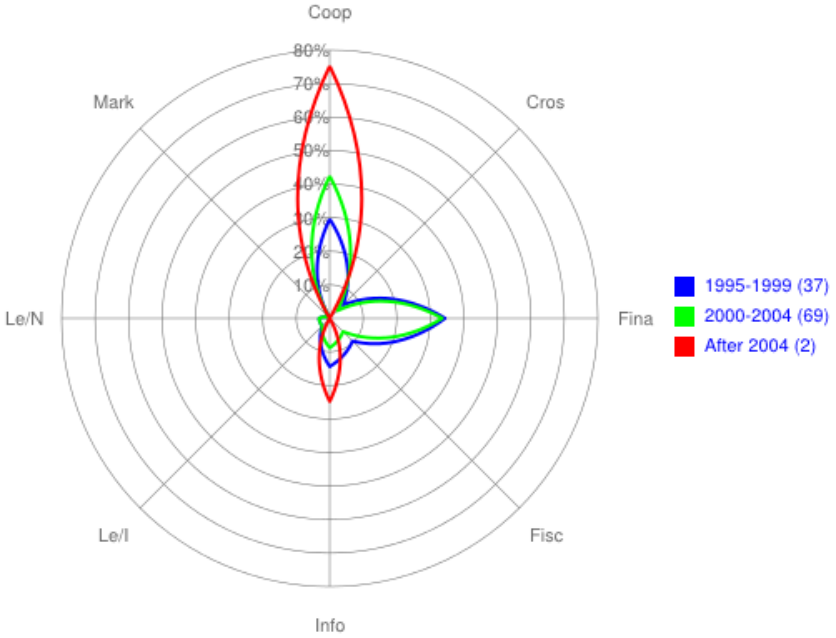


Figure 5.3 – *Measure types in the industry sector*

(Coop: Co-operative Measures, Cros: Cross-cutting with sector-specific characteristics, Fina: Financial, Fisc: Fiscal/Tariffs, Info: Information/Education/Training, Le/I: Legislative/Informative, Le/N: Legislative/Normative, Mark: New Market-based Instruments)

Tertiary Sector

Measures in the tertiary sector are mostly of the legislative/normative variety.

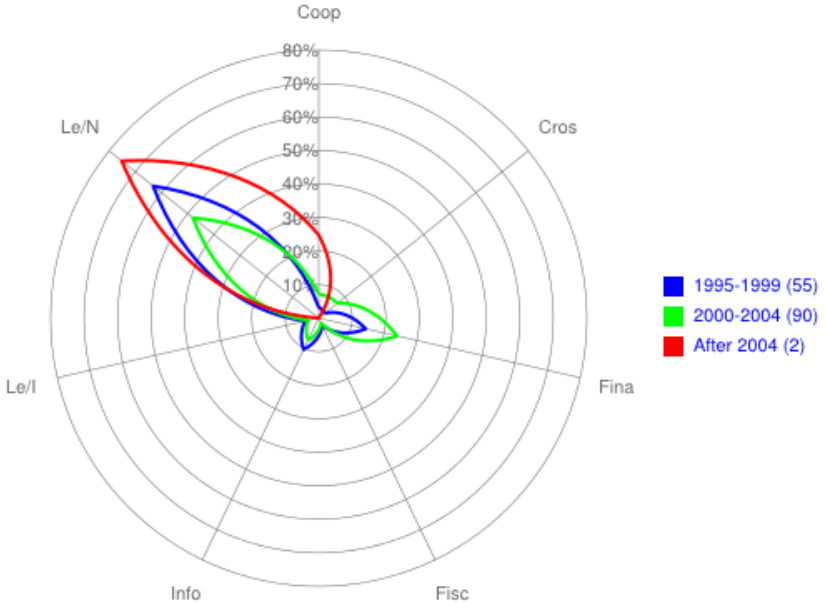


Figure 5.4 – *Measures in the tertiary sector*

(Coop: Co-operative Measures, Cros: Cross-cutting with sector-specific characteristics, Fina: Financial, Fisc: Fiscal/Tariffs, Info: Information/Education/Training, Le/I: Legislative/Informative, Le/N: Legislative/Normative)

Cross-cutting measures

Most cross-cutting measures by far are general energy efficiency measures, as Figure 5.5 shows.

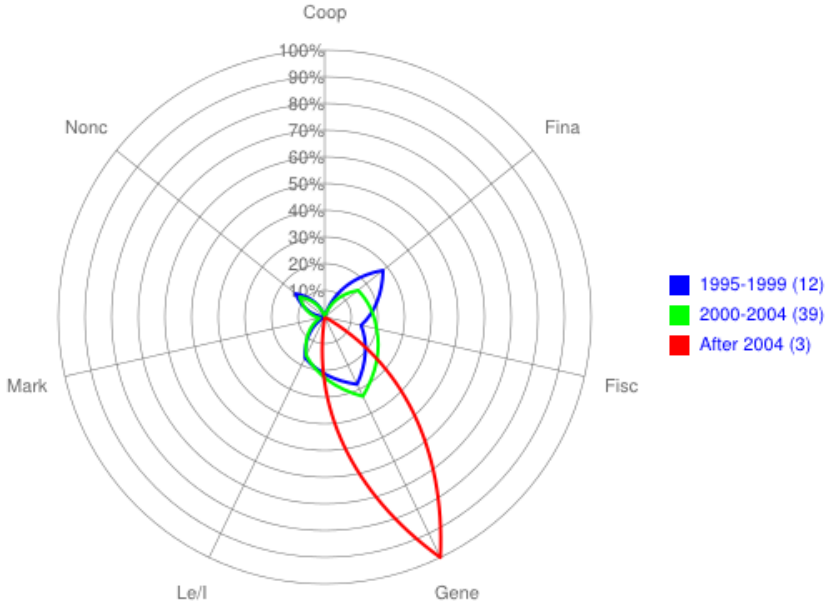


Figure 5.5 – *General cross-cutting measures*

(Coop: co-operative measures, Fina: financial measures, Fisc: fiscal measures/tariffs, Gene: general energy efficiency / climate change / renewable programmes, Le/I: legislative/normative measures, Mark: market-based instruments, Nonc: non-classified measure types)

5.3 Innovative Energy Efficiency Measures

For household energy savings, the most innovative and effective policy measures are performance standards on dwellings and appliances and broad action plans with the right combination of policy measure types. Taxes on energy or CO_2 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.

The green deals are an innovative approach to facilitate initiatives in the area of energy efficiency and sustainability by both citizens and companies, that will also have a positive effect on the economy.

5.4 Energy efficiency measure evaluations

5.4.1 Semi-quantitative Impact Estimates of Energy Efficiency Measures

Households

Table 5.1 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.

Table 5.1 – *Households sector measures*

Measure title	Measure type	Semi-quantitative impact
Change the housing assessment system for social housing	Unknown	High
Sustainable building program	Co-operative Measures	Low
Energy Performance Standards (EPN)	Legislative/Normative	High
Energy Tax	Cross-cutting with sector-specific characteristics	Medium
EU-related: Recast Ecodesign Directive for Energy-related Products (Directive 2009/125/EC) - Energy labels on appliances	Legislative/Informative	Medium
Optimal energy infrastructure (OEI): 1997 onwards	Co-operative Measures	Low
MilieuCentraal, COEN (Consumer & Energy) and HIER campaign	Information/Education	Low
The Building Decree (2002 onwards)	Legislative/Normative	High
Compass - Energy-awareness in living and working	Information/Education	Medium
EU-related: Energy Performance of Buildings EPBD Recast (Directive 2010/31/EU) - Energy performance certificate for buildings	Legislative/Informative	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
Covenant energy savings in newly produced buildings (Spring Agreement)	Co-operative Measures	Low
Covenant energy savings by housing corporations	Co-operative Measures	High
Heat distribution law (warmtewet)	Legislative/Normative	Low

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.

Transport

The measures in **Table 5.2** 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 5.2 – *Transport sector measures*

Title	Type	Semi-quantitative Impact
Improved accessibility to Schiphol Airport	Infrastructure	Low
Carpooling, park and ride and similar measures	SocialPlanning/Organisational	Low
Periodic Motor Vehicle Test (APK)	Legislative/Normative	Medium
Motor vehicles speed limits	Legislative/Normative	High
Increase in fuel tax/excise tax (Verhoging brandstofbelasting/brandstofaccijns)	Fiscal	High
Speed limiters for trucks	Legislative/Normative	High
Parking as a means of managing and restraining mobility	Infrastructure	Low
The "New Driving" Programme (Programma : Het Nieuwe Rijden"(HNR)	Information/Education/Training	High
EU-related: Emission performance standards new passenger cars (Regulation 443/2009/EC) - Energy labelling of vehicles/tyres (Energielabel autos's/banden	Legislative/Informative	Low
Traffic performance on location	Infrastructure	Low
Mandatory Introduction of biofuels	Legislative/Normative	High

Other transport taxes (Motor Vehicle Tax/Private Car and Motorcycle Tax, CO2 differentiation, lease cars) (Overige transportbelastingen (MRB?BPM, CO2-differentiatie, lease-auto's))	Fiscal	Medium
Railfreight (Betuwelijn)	Infrastructure	Low

Industry

Long Term Agreements (LTAs) have had the highest impact in reducing energy consumption in the industrial sector. In **Table 5.3**, 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 5.3 – *Industry measures*

Title	Type	Semi-quantitative Impact
GasUnie's Environmental Plan for the Industry	Financial	Medium
Environmental Licensing: Energy Conservation Requirements	Legislative/Normative	Low
Green Investment and Finance (MIA,Vamil) (Groen Beleggen en Financieren(MJA,Vamil)	Fiscal/Tariffs	High
Energy Tax, Industry (Energiebelasting, industrie)	Cross-cutting with sector-specific characteristics	High
EIA: Energy Investment Allowance (EIA: Energie Investerings Aftrek)	Fiscal/Tariffs	Medium
Long Term Agreements with the industry, third phase (MJA3)	Co-operative Measures	Medium
Heatmaps	Information/Education/Training	Low

Tertiary sector

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 5.4 – *Tertiary sector measures*

Title	Type	Semi-quantitative Impact
Subsidy schemes (IRE, MEI, UKR), Programme Greenhouse as Energy Source (Kas als Energiebron)	Information/Education/Training	Medium
Long Term Agreements in Agriculture (flower bulbs, greenhouses, mushrooms)	Co-operative Measures	Low
The Vamil Scheme: Accelerated Depreciation on Environmental Investments	Fiscal/Tariffs	Medium
Environmental Licensing: Energy Conservation Requirements	Co-operative Measures	Low
EU-related: Energy Performance of Buildings (Directive 2002/91/EC) - Building Decree and Energy Performance Standard	Legislative/Normative	High
CO2 Reduction Plan	Financial	Low
Regulatory Energy Tax (REB: Reguliere Energie Belasting)	Cross-cutting with sector-specific characteristics	Medium
Energy Investment Tax Deduction (EIA and EINP)	Fiscal/Tariffs	High
Taskforce lighting	Co-operative Measures	Low
Internal emission trading system for the greenhouse sector	Legislative/Normative, Unknown	Medium

5.4.2 Lessons from Quantitative Energy Efficiency Measure Evaluations

Long Term Agreements with the industry

The Dutch Long Term Agreements (LTAs; in Dutch: meerjarenafspraak 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 participating in the MEE covenant (Long term agreement Energy efficiency ETS companies), that replaces the benchmark covenant. 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; with 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 “Total Energy Efficiency Improvement” (TEEI) for the participating industrial subsectors has been estimated to amount to savings of 30 to 75 PJ 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, dishwash-

ers, lighting and stoves. 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. In was concluded that it is not possible to separate the influence of REB and labels, so the results show the combined effects.

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.

6 National Developments under the EU Directive on energy end-use efficiency and energy services 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”. The 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 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. 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) that was aimed at both efficiency improvement and renewable electricity production has been replaced by the SDE (Stimulating Renewable Energy production) and later SDE+ that is only targeted at renewable energy production.

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, CO_2-differentiation of the BPM, and tax discounts for the 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

Table 6.1 – *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_2 reduction	X	X			

Annex 1

Energy Efficiency Measure Summary by Country

Households

Code	Title	Status	Type	Starting Year	Semi-quantitative Impact
NLD24	Change the housing assessment system for social housing	Proposed (advanced)	Unknown		High
NLD5	The Enviromental Action Plan (MAP) of the Energy Distribution Sector	Completed	Financial	1991	High
NLD11	Ecoteams	Completed	Information/Education	1991	Low
NLD9	The Building Decree 1991	Completed	Legislative/Normative	1992	High
NLD10	Energy Efficient Retrofitting Programme	Completed	Co-operative Measures	1994	Low
NLD2	Sustainable building program	Ongoing	Co-operative Measures	1995	Low
NLD3	Energy Performance Standards (EPN)	Ongoing	Legislative/Normative	1995	High
NLD1	Energy Tax	Ongoing	Cross-cutting with sector-specific characteristics	1996	Medium
NLD14	EU-related: Recast Ecodesign Directive for Energy-related Products (Directive 2009/125/EC) - Energy labels on appliances	Ongoing	Legislative/Informative	1996	Medium
NLD6	Optimal energy infrastructure (OEI): 1997 onwards	Ongoing	Co-operative Measures	1997	Low
NLD4	Voluntary agreements social housing corporations	Completed	Co-operative Measures	1998	Low
NLD12	Energy Performance	Completed	Financial	2000	Low

	Advice				
NLD13	Energy Premiums (except renewables)	Completed	Financial	2000	Medium
NLD15	MilieuCentraal, COEN (Consumer & Energy) and HIER campaign	Ongoing	Information/Education	2000	Low
NLD8	Subsidies sustainable energy within the energy premiums	Completed	Financial	2001	Low
NLD7	The Building Decree (2002 onwards)	Ongoing	Legislative/Normative	2002	High
NLD16	Compass - Energy-awareness in living and working	Ongoing	Information/Education	2002	Medium
NLD18	(Temporary) Subsidy scheme on Energy savings for Low Income households (TELI)	Completed	Information/Education	2002	Low
NLD19	Temporary subsidy scheme Buildings and CO2 reduction (Tijdelijke subsidieregeling Gebouwen en CO2 emissie reductie)	Completed	Financial	2006	Low
NLD17	EU-related: Energy Performance of Buildings EPBD Recast (Directive 2010/31/EU) - Energy performance certificate for buildings	Ongoing	Legislative/Informative	2008	Low
NLD21	More with Less plan (Meer met Minder)	Ongoing	Co-operative Measures	2008	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
NLD25	Covenant energy savings in newly produced buildings (Spring Agreement)	Ongoing	Co-operative Measures	2008	Low
NLD27	Covenant energy savings by housing corporations	Ongoing	Co-operative Measures	2008	High
NLD20	Heat distribution law (warmtewet)	Proposed (advanced)	Legislative/Normative	2009	Low

Tertiary

Code	Title	Status	Type	Starting Year	Semi-quantitative Impact
NLD16	Subsidy schemes (IRE, MEI, UKR), Programme Greenhouse as Energy Source (Kas als Energiebron)	Ongoing	Information/Education/ Training		Medium
NLD9	Long Term Agreements in Agriculture (flower bulbs, greenhouses, mushrooms)	Ongoing	Co-operative Measures	1989	Low
NLD11	Long term agreements Service sector, first and second phase (MJA1 and MJA2 service sector)	Completed	Co-operative Measures	1989	Low
NLD2	The environmental Action Plan of the energy distribution companies (Milieu Actie Plan, MAP)	Completed	Co-operative Measures	1991	High
NLD14	The Vamil Scheme: Accelerated Depreciation on Environmental Investments	Ongoing	Fiscal/Tariffs	1991	Medium
NLD8	Energy Efficient Lighting Promotion Scheme (STIMEV)	Completed	Financial	1992	Low
NLD5	Environmental Licensing: Energy Conservation Requirements	Ongoing	Co-operative Measures	1993	Low
NLD4	Energy Efficiency Programme for National Government Buildings (EER)	Completed	Information/Education/ Training	1994	Low
NLD1	EU-related: Energy Performance of Buildings (Directive 2002/91/EC) - Building Decree and Energy Performance Standard	Ongoing	Legislative/Normative	1995	High
NLD7	CO2 Reduction Plan	Ongoing	Financial	1996	Low
NLD10	Regulatory Energy Tax (REB: Reguliere Energie Belasting)	Ongoing	Cross-cutting with sector-specific characteristics	1996	Medium
NLD3	Energy Investment Tax Deduction (EIA and EINP)	Ongoing	Fiscal/Tariffs	1997	High
NLD20	Taskforce lighting	Proposed (advanced)	Co-operative Measures	2008	Low
NLD19	Internal emission trading system for the greenhouse sector	Proposed (medium/long-term)	Legislative/Normative, Unknown	2010	Medium

Industry

Energy Efficiency Policies and Measures in The Netherlands in 2012

Code	Title	Status	Type	Starting Year	Semi-quantitative Impact
NLD12	Energy Conservation and Environmental Consultancy Subsidy Scheme (EMA)	Completed	Financial	1990	Low
NLD15	The Industrial Energy Conservation Tender Scheme (TIEB)	Completed	Financial	1990	Low
NLD1	GasUnie's Environmental Plan for the Industry	Ongoing	Financial	1991	Medium
NLD14	Environmental Action Plans by the Energy Distribution Sector	Completed	Financial	1991	High
NLD11	Long Term Agreements with Industry on Energy Efficiency	Completed	Co-operative Measures	1992	High
NLD5	Energy Production from Waste and Biomass (EWAB)	Completed	Financial	1993	Low
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	Low
NLD3	Green Investment and Finace (MIA,Vamil) (Groen Beleggen en Financieren(MJA,Vamil)	Ongoing	Fiscal/Tariffs	1995	High
NLD4	Long Term Agreements with the Refineries Sector	Completed	Co-operative Measures	1995	High
NLD6	Energy Tax, Industry (Energiebelansting, industrie)	Ongoing	Cross-cutting with sector-specific characteristics	1996	High
NLD16	Long Term Agreements with the Oil- and Gas Industry	Completed	Co-operative Measures	1996	High
NLD7	EIA: Energy Investment Allowance (EIA: Energie Investerings Aftrek)	Ongoing	Fiscal/Tariffs	1997	Medium
NLD8	CO2 Reduction Plan	Completed	Financial	1997	High
NLD17	Benchmarking Agreement (Benchmarking convenant	Completed	Co-operative Measures	2000	High
NLD13	Long Term Agreements with the Industry, second phase (MJA2)	Completed	Co-operative Measures	2001	High
NLD18	Environmental Quality Electricity Production (Dutch: MEP) for CHP (Dutch: WKK) and MEP for sustainable energy	Completed	Financial	2003	High

NLD19	Long Term Agreements with the industry, third phase (MJA3)	Ongoing	Co-operative Measures	2008	Medium
NLD20	Heatmaps	Ongoing	Information/Education/Training	2009	Low

Transport

Code	Title	Status	Type	Starting Year	Semi-quantitative Impact
NLD22	Improved accessibility to Schiphol Airport	Ongoing	Infrastructure		Low
NLD11	Carpooling, park and ride and similar measures	Ongoing	SocialPlanning/Organisational	1974	Low
NLD16	Periodic Motor Vehicle Test (APK)	Ongoing	Legislative/Normative	1981	Medium
NLD2	Motor vehicles speed limits	Ongoing	Legislative/Normative	1988	High
NLD13	Increase in fuel tax/exicse tax (Verhoging brandtofbelasting/brandstofaccijns)	Ongoing	Fiscal	1990	High
NLD21	Ecoteams	Completed	Information/Education/Training	1991	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
NLD26	Long Term Agreements with The Netherlands Railway Company (NS) (Meerjarenafspraaak Energie-efficiey van de Nederladse spoorwegen (MJA-NS)	Completed	Co-operative Measures	1997	Medium
NLD3	The "New Driving" Programme (Programma : Het Nieuwe Rijden"(HNR)	Ongoing	Information/Education/Training	1999	High
NLD6	Transaction and modal shift	Completed	Infrastructure	1999	Low
NLD5	EU-related: Emission performance standards new passenger cars (Regulation 443/2009/EC) - Energy labelling of vehicles/tyres (Energielabel autos's/banden	Ongoing	Legislative/Informative	2001	Low
NLD7	Traffic performance on location	Ongoing	Infrastructure	2001	Low
NLD23	Urban remodelling scheme	Completed	Infrastructure	2002	Low
NLD30	Mandatory Introduction of biofuels	Ongoing	Legislative/Normativ	2005	High

			e		
NLD27	Other tranport taxes (Motor Vehicle Tax/Private Car and Motorcycle Tax, CO2 differentiation, lease cars) (Overige transportbelastingen (MRB?BPM, CO2-differentiatie, lease-auto's))	Ongoing	Fiscal	2006	Medium
NLD18	Railfreight (Betuwelijn)	Ongoing	Infrastructure	2008	Low

Cross-cutting

Code	Title	Status	Type	Starting Year	Semi-quantitative Impact
NLD3	Long-Term Agreements (LTA) (Meerjarenafspraken)	Ongoing	Non-classified Measure Types	1989	High
NLD6	Green Investment and Finance (MIA, Vamil) Groen Beleggen en Financieren (MIA, Vamil)	Ongoing	Non-classified Measure Types	1995	Low
NLD4	Energy Tax (Energiebelasting)	Ongoing	Non-classified Measure Types	1996	Low
NLD2	EIA: Energy Investment Allowance (EIA: Energie-investeringsaftrek)	Ongoing	Non-classified Measure Types	1997	High
NLD5	CO2 Reduction Plan	Completed	General Energy Efficiency / Climate Change / Renewable Programmes	1997	Low
NLD1	COMPASS- Energy awareness in living and working: CO2 reduction in the built environment	Ongoing	General Energy Efficiency / Climate Change / Renewable Programmes	2005	Medium
NLD7	Transition Platforms (Transitie platformen)	Ongoing	General Energy Efficiency / Climate Change / Renewable Programmes	2006	Medium

Annex 2

Country Profile

Energy Efficiency Trends

Overview

Energy efficiency of final consumers has improved by almost 32% between 1990 and 2010, which translates into an average effect of almost 1.9%/year. Between 1990 and 2000 the improvement rate was 2.0% per year. After 2000 the efficiency improvement decreased to an average rate of 1.8%/year. The largest improvements since 1990 have been realised in the household sector (2.2%/year) and manufacturing industry (2.4%/year), while transport lags behind with about 0.8%/year.

Industry

The energy efficiency progress in the manufacturing industry was 38% between 1990 and 2010 (2.4%/year), including negative developments since 2007 due to the economic crisis. From 1993, the starting year of Long Term Agreements on energy savings, the improvement was 2.9% per year. In the chemical sector, which is responsible for half the energy consumption of industry, energy efficiency improved by 55% since 1990 (3.9%/year). However, the results for the efficiency gains in the chemicals sector have been amplified by hidden structural effects, as efficiency is calculated using energy intensity (i.e. energy consumption per Euro of added value), and the added value has increased faster than the physical production quantities. The energy efficiency of the steel industry remained stable between 1993 and 2001, but has improved between 2001 and 2007. Negative savings occurred after 2007, due to the economic crisis. The overall improvement for the steel industry since 1990 was 15% (0.8%/year). The energy efficiency in the paper industry decreased until 1997, but the overall increase of efficiency since 1990 was 18% (1.0%/year).

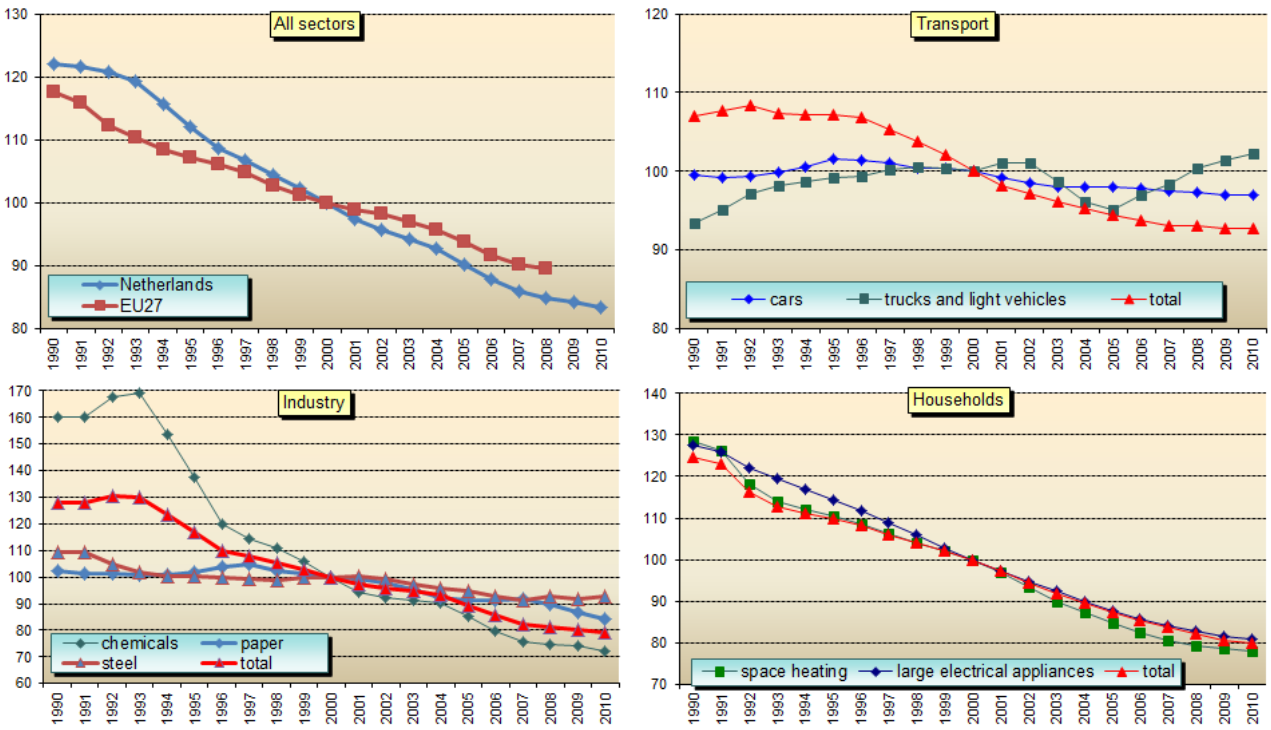
Households

Households improved their energy efficiency by 36% between 1990 and 2010. Progress came mainly from space heating, with an improvement of almost 39% and a share in household energy consumption of about 67%. The improvement for electrical appliances was 37% with a share in final energy consumption of 7%. The reason that the overall improvement of energy efficiency is not closer to the 39% of space heating is the limited improvement for the others uses: water heating (14%) and cooking (15%) with a share of energy consumption of 15% and 3% respectively.

Transport

The efficiency of cars improved by only 2.5% between 1990 and 2010. The efficiency of trucks and light vehicles decreased by 9% between 1990 and 2010 (0.4%/year). This is the result of the increased share of goods transport by light trucks, which are less efficient. Despite the unsatisfactory trends for cars and trucks and light vehicles, the energy efficiency of the transport sector as a whole increased by 13% since 1990 as a result of a larger share for air transport (from 18% to 26%) and its 31% higher energy efficiency.

Energy efficiency index (base 100=2000)*



* Indicators measured as a three-year moving average

Energy Efficiency Policy measures

Institutions and programmes

In the Clean and Efficient programme (Dutch: Schoon en Zuinig), introduced in 2007, the Dutch government set ambitious targets for 2020 for Greenhouse gas emission reduction (-30%), the share of renewables in the energy mix (20%) and the improvement in energy efficiency (increasing to 2,0% per year).

The programme can be seen as an intensification of the existing multi-level policy 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 have been introduced for most sectors to set a lower limit for efficiency. Innovators and frontrunners are (financially) supported.

Industry

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

Since 2000, LTAs for the energy intensive industries have been replaced by a covenant on bench-marking in which they agree to be among the most efficient companies in the world.

Households, 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 a 50% energy efficiency gain for new dwellings 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 by 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 energy 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 for some A-label appliances.

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. The motor vehicle tax (Dutch: MRB) and private motor vehicle and motorcycle tax (Dutch: BPM) are differentiated according to CO_2 emissions to stimulate the sale of energy efficient cars. A discount on tax is given to the most efficient leased cars. Many of the taxation scheme 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.

Selected Energy Efficiency Measures

Sectors	Title of Measure	Since	Energy (PJ)	CO_2 (kt)
All	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 b) Realised until 2000 c) Ex-ante 2020