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Second Energy Efficiency Plan Region of Flanders

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1. OVERALL CONTEXT OF THE SECOND FLEMISH ENERGY EFFICIENCY ACTION PLAN

1.2 Summary of the Second Flemish Energy Efficiency Action Plan

In the Second Flemish Energy Efficiency Action Plan, the policy measures from the First Action Plan will be evaluated. The continuation of and (expected) amendments to the implementation of measures will be described, and the energy savings achieved or expected in 2010 and 2016 respectively will be re-calculated.

Compared to the First Action Plan, five measures have been added: the insulation requirements for homes in connection with an application for an urban development permit between 1 September 1992 and 31 December 2005, the benchmark covenant for businesses not falling within the scope of the Emission Allowance Trading Directive, financial incentives for the installation of photovoltaic solar panels, the reduction of property tax for energy-efficient new buildings and the additional subsidy from the Flemish Authority for the laying of roof insulation. The first three measures were already being implemented when the First Action Plan was submitted, but their impact had not been assessed because of a lack of models and/or detailed data.

In view of the strong interaction between the large number of individual underlying measures, energy saving in relation to mobility policy is assessed top-down. For the other sectors, the savings of individual Flemish policy measures are calculated bottom-up given that the input data per measure are available. Calculations are made

as far as possible on the basis of the harmonised methods, lifespans and default values recommended by the European Commission. If harmonised methods do not exist or if the Flemish data are not available for the harmonised methods to be applied (this is the case only once), our own calculation methods are applied and are described in the annex.

The savings for 2010 are calculated on the basis of real input data to the extent that they are already available. This is indicated in the tables for the measures in question.

Particular care has been taken to avoid overlaps between the calculated savings of various policy measures. In particular, two measures from the First Action Plan for schools are no longer quantified separately in this Action Plan because the savings are largely included in the impact of other measures.

This Second Flemish Energy Efficiency Action Plan is based on the energy savings targets of the First Action Plan for 2010 and 2016: 5 653 GWh and 16 959 GWh.

It appears from the calculations that the savings in 2010 were almost twice as high as the interim absolute objective. The energy savings targets for 2016 are also being well exceeded: they stand at almost one and a half times the absolute objective. In the First Action Plan, the expected savings in 2016 were only 107% of the objective (see 1.3).

66% of the total expected saving for 2016 in this Action Plan is achieved by six measures (packages): financial support for the laying of roof insulation in homes (17%), insulation and energy performance rules for new dwellings (13%), mobility policy with an impact on energy consumption by passenger vehicles (12%), financial support for the replacement of domestic boilers (9%), subsidies for energy-investments in the glasshouse horticultural sector (8%), and the energy efficiency covenant concluded with businesses (7%). The remaining 34% of saving is spread across a wide range of measures.

The policy measures are divided into 5 sectors: buildings, industry, the energy sector, mobility and agriculture. In line with the recommendation in the template, the savings achieved by network operators at the level of final customers in the context of their public service obligations regarding rational energy use are assigned to the energy sector. Given that these obligations have been in force since 2003, have a wide reach and have been stepped up a number of times, about half of the savings in this Action Plan can be attributed to the energy sector.

The fact that the objective has been exceeded compared to the First Action plans is a result of:

- the addition of three measures which were already being implemented when the First Action Plan was submitted, but the savings of which had not been evaluated at the time: the insulation requirements for homes in connection with an application for an urban development permit between 1 September 1992 and 31 December 2005, the benchmark covenant for businesses not falling within the scope of the Emission Allowance Trading Directive and financial incentives for the installation of photovoltaic solar panels;
- the addition of two measures which have been in force since 1 January 2009: the additional subsidy from the Flemish Authority for the laying of roof insulation in homes and the reduction of property tax for new buildings which perform better than the standard;
- the great success of grants for energy saving measures granted by the network operators in the context of their public services obligations regarding rational energy use and the stepping-up and widening of those obligations;

- the tightening of energy performance standards for new buildings.

This Action Plan also describes in detail which measures and actions by the Flemish Authority and local authorities contribute to implementing the provisions in the Directive relating to the exemplary role of the public sector in providing information and advice to final consumers (Articles 5(1) and 7(2)).

Notwithstanding the fact that the Directive does not lay down any requirement to report on Articles 6(2) (requirements for energy distributors and suppliers) and 6(3) (stimulation of other market actors), although it is asked for in the template, these aspects are also reported on.

1.2. Context of the Flemish energy efficiency policy

A new Flemish Government entered office in June 2009. A number of environmental factors were behind the importance attached to the subjects of “green economy” and “rational energy use” in the Coalition Agreement for 2009-2014.

- in May 2008, the price of oil peaked at \$ 135 per barrel; awareness rose that the period of cheap and apparently inexhaustible fossil fuels would be over sooner than had been thought;
- in the last quarter of 2008, Flanders, an industrialised region with an open and highly export-oriented economy, was hard hit by the economic crisis;
- increasing scientific understanding stirred the general awareness of climate issues. Nevertheless, the average person in Flanders seemed to minimise his own share in the solution. In 2009, only 58% of the Flemish considered themselves to use energy rationally;
- the increase in passenger and goods transport in densely populated Flanders had a negative impact on the Flemish economy, the logistical position of Flanders in Western Europe, traffic safety, the environment and health;
- the number of socially vulnerable citizens, such as people living alone and pensioners, is growing. The number of families finding it difficult to pay energy bills is rising;
- more and more existing homes are being insulated, but there is still much to do in order to create an energy-efficient housing stock in Flanders.

The Flemish Government is determined to take the measures necessary to maintain the reduction in energy consumption and energy intensity in Flanders first seen in 2005.

Above all in a number of industrial sectors (chemicals, foodstuffs, textiles, iron, steel and metalworking) and the electricity industry, energy efficiency (energy consumption per product) has risen significantly in recent years.

The Flemish Government will do more to make the economy greener. Eco-innovation, an increase in energy efficiency and a pioneering policy in the area of the eco-efficiency of materials, products and services are ensuring that the environmental pressure is falling but are also preparing the Flemish economy for the future and creating green jobs.

Stimulating energy-efficient renovation, optimal energy performance standards and innovations in the construction sector must ensure that, by 2020, energy consumption also falls considerably in buildings. These efforts must also result in a substantial increase in housing quality and lower family energy bills, particularly for the socially weak.

Managing mobility and making it more sustainable is an enormous challenge. The Flemish Government is aiming to adopt a new mobility plan for Flanders at the end of 2012 which will contain measures to meet the five objectives of the Mobility Decree of 2009: Improving reachability, accessibility, transport safety and transport quality and reducing damage to the environment and nature.

1.3. Review of energy saving targets and forecasts in the context of the Energy Efficiency Directive

Table 1. Overview of final energy saving targets and the expected energy savings.

	<i>Final energy saving targets in the First and Second Action Plans (in GWh)</i>	<i>Expected final energy saving of measures in the First Action Plan (GWh)</i>	<i>Expected final energy saving of measures in the Second Action Plan (GWh)</i>	<i>Expected primary energy saving of measures in the Second Action Plan (GWh)</i>
2010	5 653	9 184	10 818	14 041
2016	16 959	18 174	25 093	29 005

2 ENERGY SAVINGS IN END-USE SECTORS

2.1 Review of final energy saving targets and forecasts in absolute and relative terms

Table 2. Overview of final energy saving targets and forecasts in the context of the Energy Efficiency Directive, in absolute and relative terms

	<i>Final energy saving target</i>		<i>Final energy saving forecast</i>	
	<i>In absolute terms (GWh)</i>	<i>percentage (%) (compared to reference consumption of 188 429 GWh)</i>	<i>In absolute terms (GWh)</i>	<i>percentage (%) (compared to reference consumption of 188 429 GWh)</i>
2010 (interim period)	5 653	3	10 818	5.7
2016 (full period)	16 959	9	25 093	13.3

It appears from the calculations that the final savings in 2010 were almost twice as high as the interim absolute objective. The energy savings targets for 2016 are also being well exceeded: they stand at almost one and a half times the absolute objective. In the First Action Plan, the expected savings in 2016 were only 107% of the objective.

The fact that the objective has been exceeded compared to the First Action plans is a result of:

- the addition of the savings achieved by three measures which were already being implemented when the First Action Plan was submitted, but the savings of which had not been evaluated at the time: the insulation requirements for homes in connection with an application for an urban development permit between 1 September 1992 and 31 December 2005, the benchmark covenant for businesses not falling within the scope of the Emission Allowance Trading Directive, financial incentives for the installation of photovoltaic solar panels;
- the addition of two measures which have been in force since 1 January 2009: the additional subsidy from the Flemish Authority for the laying of roof insulation in homes and the reduction of property tax for new buildings which perform better than the standard;
- the great success of grants for energy saving measures granted by the network operators in the context of their public services obligations regarding rational energy use and the stepping-up and widening of those obligations;
- the tightening of energy performance standards in new buildings.

2.2. Measures in end-use sectors and energy saving per measure

2.2.1 Calculation methodology for energy savings

The savings of the policy in the transport sector are calculated on a top-down basis according to the recommended harmonised methodology of the EU (Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services).

The savings of all other energy-saving measures (in buildings, the industrial, energy, agricultural and horticultural sectors) are calculated on a bottom-up basis. The recommended harmonised calculation methods, lifespans and default values are applied. If harmonised methods do not exist or if the Flemish data are not available for the harmonised methods to be applied (this is the case only once, namely in the case of relighting/new lighting), our own calculation methods are applied and are described in the annex.

Table 3. Overview of calculation methods for savings under the Energy Efficiency Directive

Sector	Bottom-up (BU) or top-down (TD)	Calculation method
Buildings	BU	Harmonized methodology: BU formulas 2.3
Industry	BU	Own methodology
Energy sector	BU	Harmonized methodology: BU formulas 2.2, 2.4, 2.7 European default values Own methodology: see Annex
Mobility	TD	Harmonised methodology: TD-indicators P8, P9, P10, P11, P12 and P13 in combination with M7
Horticultural sector	BU	Own methodology: see Annex

The data sources and assumptions used are very diverse and specific. They are indicated in the various tables of measures (see 2.2.2). The tables also indicate for each measures how overlapping is avoided.

The final saving for each measure is divided into fuel and electricity saving. The final saving is converted into a primary saving using the correction coefficient 2.5 for electricity.

2.2.2 All individual measures

Sector	Title of the energy saving measure	Achieved/expected energy savings in 2010 (GWh)	Expected energy savings in 2016 (GWh)
Buildings (B.1.)	Introduction of insulation standards and energy-performance and indoor-climate (EPB) requirements	1 727 GWh final 1 821 GWh primary	3 674 GWh final 3 688 GWh primary
Buildings (B.2.)	Reduction of property tax	24 GWh final 18 GWh primary	80 GWh final 59 GWh primary
Industry (I.1)	Audit covenant	1 249 GWh final 1 993 GWh primary for audit and benchmark covenant together	1 760 GWh final 2 640 GWh primary for audit and benchmark covenant together
Industry (I.2)	Benchmark covenant	1 249 GWh final 1 993 GWh primary For the audit and benchmark covenant combined	1 760 GWh final 2 640 GWh primary For the audit and benchmark covenant combined
Energy sector (E.1.)	Introduction of public-service rational-energy-use obligations for electricity distribution network operators as regards roof insulation combined with a subsidy from the Flemish Authority	5 037 GWh final 6 369 GWh primary	10 500 GWh final 12 885 GWh primary
Energy sector (E.2)	Stimulation of high-quality cogeneration via a system of cogeneration certificates	852 GWh final 1 044 GWh primary	1 407 GWh final 1 032 GWh primary
Energy sector (E.3.)	Stimulation of photovoltaic solar panels via green electricity certificates preceded by subsidies	474 GWh final 1 185 GWh primary	571 GWh final 1 427 GWh primary
Mobility (T.1.)	Policy measures to manage mobility demand and bring about a modal shift	639 GWh final 795 GWh primary	5 010 GWh final 5 183 GWh primary
Mobility (T.2.)	Extension of greener car fleet by adjusting taxes on motor vehicles	Not yet applicable	Not yet known

Agriculture and horticulture (A.1.)	Subsidies for energy saving measures in the glasshouse horticultural sector	816 GWh final 816 GWh primary	2 091 GWh final 2 091 GWh primary
Total energy savings		10 818 GWh final 14 041 GWh primary	25 093 GWh final 29 005 GWh primary

2.2.2.1 Measures in the building sector

Table 4. Overview of individual measures in the building sector

No	Title of the energy-saving measure	End-use target	Duration	Achieved/expected energy savings in 2010 (GWh)	Expected energy savings in 2016 (GWh)
B.1.	Introduction of insulation standards and energy-performance and indoor-climate (EPB) requirements	New buildings and existing buildings in respect of which an urban development permit is being applied for	01/09/1992 - no end date	1 727 GWh final 1 821 GWh primary	3 674 GWh final 3 688 GWh primary
B.2.	Reduction of property tax	All new buildings to which an E-level is applicable	01/01/2009 – no end date	24 GWh final 18 GWh primary	80 GWh final 59 GWh primary
			Total savings:	1 751 GWh final 1 839 GWh primary	3 754 GWh final 37 47 GWh primary

Table B.1. Measure B.1. of the building sector

<i>Title of the energy saving measure</i>		Introduction of insulation standards and energy-performance and indoor-climate (EPB) requirements. <i>Compared to the first action plan, the insulation rules which were applicable to homes are now taken into account in connection with an application for an urban development permit between 1 September 1992 and 31 December 2005.</i>
<i>Index</i>		B.1.
Description	Category	1. Regulation 1.1. Energy performance requirements and enforcement
	Timeframe	<i>Start:</i> 1 September 1992 (“early action”) <i>End:</i> No end date <i>Foreseen major changes:</i> A long-term route (2015-2021) with stricter energy performance requirements will be included in the “almost energy-neutral buildings” action plan. Energy performance requirements for buildings other than homes, offices and schools are being developed and are likely to be implemented in 2014.

	<p>Aim/brief description</p>	<p>From 1 September 1992, the initial insulation rules in the Flanders Region imposed thermal insulation requirements on new buildings in connection with an application for an urban development permit: an overall heat insulation standard of K65 and requirements for the thermal transmission coefficient (U values) of the walls of the heat-losing surface of a building. New buildings with an urban development permit from 1 September 1993 must meet an overall insulation standard of K55.</p> <p>In order to significantly increase the energy performance of the entire building stock, not just homes but also other buildings, minimum energy performance and indoor climate (EPN requirements) obligations have, since 1 January 2006, been imposed on new buildings and new activities in existing buildings for which an urban development permit is required.</p> <p>The requirements vary according to the type of activities and the purpose of the building.</p> <p>For new buildings, renovations or large home extensions, offices or schools and major renovations of offices of schools larger than 3 000 m³, the requirements are as follows:</p> <ol style="list-style-type: none"> 1) thermal insulation requirements: maximum insulation standard of the building (K45) and maximum U values or minimum R values for windows, walls, floors and roofs; 2) indoor climate requirements (minimum ventilation facilities); 3) A primary energy performance standard of E100. The E standard is a measure of the building's energy performance. The lower the E standard, the more energy-efficient the building is. The E standard takes account of the insulation of the building envelope and of the technical heating, warm water (only for homes) and ventilation installations, solar energy and lighting (only for offices and schools). <p>For other new buildings (e.g. hospitals, hotels, sports facilities), requirements are imposed for thermal insulation (maximum insulation standard of K45 for the building and maximum U values and minimum R values for windows, walls, floors and roofs) and minimum ventilation facilities. There is no E standard.</p> <p>Minor conversions to existing buildings subject to an urban development permit must comply with maximum U values or minimum R values for the converted and new parts, and if window frames are replaced, minimum openings for ventilation must be provided.</p> <p>Following an evaluation in 2008, which suggested that new homes were meeting an average E standard of E80 and that this standard was economically achievable, the maximum E standard for homes for which an urban development application was lodged after 1 January 2010 was raised to E80. The insulation requirements for the external walls and roofs of all types of buildings being built or converted and for which a permit is applied for were thus tightened. From 2011, extra heat losses through building joints ("cold bridges") must be included in the K and E standards, which also means a tightening of standards.</p> <p>As a consequence of a second evaluation in 2010, and following the recast of the EPBD Directive, the Flemish Government finally approved an amendment of the energy performance rules on 20 May 2011. New homes, offices and schools applying for an urban development</p>
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		permit from 1 January 2012 and 2014 will not be allowed to exceed an E standard of 70 and 60 respectively. In order to improve the quality of the building envelope, the K standard requirement is being reduced from 2012 for all types of buildings to K40, and U and R values are being tightened in two stages in 2012 and 2014. This involves the introduction of a new requirement, i.e. a maximum net energy requirement for heating.
	Target end-use	All new buildings and existing buildings for which an urban development permit must be applied for.
	Target group	Households, tertiary sector, public sector, industry
	Region	Region of Flanders

Information on implementation	List and description of implementation measures	<p><u>Regulations:</u></p> <ul style="list-style-type: none"> - Decree of the Flemish Government of 18 September 1991 introducing minimum requirements relating to the thermal insulation of residential buildings: introduction of the initial insulation rules (<i>inter alia</i> K65-K55) - The Energy Performance Decree of 7 May 2004 (replaced by the EPB Directive of 22 December 2006, since replaced by the Energy Decree of 8 May 2009) and the Decree of the Flemish Government of 11 March 2005 laying down the requirements concerning energy performance and the indoor climate of buildings (amended by the Decree of 20 March 2009 and replaced by the Energy Decree of 19 November 2009: introduction of EPB requirements (<i>inter alia</i> maximum E standard 100 – 80). - Amending Decree of 20 May 2011: further tightening of the energy performance requirements up to 2014. <p>Various back-up measures are needed for implementing the energy performance rules:</p> <ul style="list-style-type: none"> - development of user-friendly software; - extension of the Energy Performance Databank as a central collection point for a complete flow of electronic information from municipal authorities re. permit data and from reporters re. initial statements and EPB declarations. - enforcement: the Authority monitors whether all administrative procedures have been met. It then performs inspections at building sites. If it seems that the reporter has not reported correctly in the “as-built” energy performance report (EPB declaration), the reporter will be fined. If the building does not meet the requirements set, the Authority imposes an administrative fine on the person responsible for reporting (usually the holder of the urban development permit). - the provision of training to the building sector, the conducting of communication campaigns and ongoing supply of information to the developer, architects, reporters (including via the electronic newsletter, on www.energiesparen.be), award of the “Energy-Conscious Architect” label from 2008.
	Implementing body	Flemish Energy Agency
	Monitoring authority	Flemish Energy Agency

Energy savings	Method for monitoring/measuring the resulting savings	<p>BU – formula 2.3. in “Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services”.</p> <p>Acting on behalf of the Flemish Energy Agency, the Flemish Institute of Technological Research has created a model for the annual (energy) characterisation of the Flemish household on the basis of 2001 census data, annual land registry and building permit data, data from energy audits, energy performance declarations and certificates, grant conditions, etc. This model is used to calculate the savings of building codes</p>
	Savings achieved in 2010	<p>1 727 GWh final for residential and tertiary: - of which fuels: 1 664 GWh - of which electricity: 63 GWh 1 821 GWh primary for residential and tertiary: - of which fuels: 1 664 GWh - of which electricity: 157 GWh</p> <p>The saving for the residential sector is estimated at 1 637 GWh final, which is significantly more than the estimate of 747 GWh final in the first action plan. This difference is largely due to the fact that, alongside the energy performance rules from 2006 (since tightened up from 1 January 2010), this action plan also includes savings from the thermal insulation rules for homes for which an urban development permit was applied for between 1 September 1992 and 31 December 2005.</p>
	Expected energy savings in 2016	<p>3 674 GWh final for residential and tertiary: - of which fuels: 3 665 GWh - of which electricity: 9 GWh 3 688 GWh primary for residential and tertiary: - of which fuels: 3 665 GWh - of which electricity: 24 GWh</p> <p>The saving for the residential sector is estimated at 3 348 GWh final, which is significantly more than the estimate of 2 018 GWh final in the first action plan. See explanation above.</p>
	Assumptions	<p>The saving from the energy performance requirements has been calculated for new homes and new buildings in the tertiary sector. Owing to a lack of data relating to the industrial building stock, no calculation could be made of the saving brought about by energy performance requirements for industrial buildings.</p> <p>The conversion factor for final electricity to primary electricity is 2.5.</p>
	Avoidance of overlaps	<p>The saving from the energy performance requirements for alterations to existing buildings subject to a permit has not been calculated in order to avoid an overlap with the saving from grants for energy-saving investments awarded by network operators in the context of their public service obligations regarding rational energy use (see measure E.1.).</p> <p>The measure “accelerated investment in (new) school infrastructure via alternative funding” and the measure “granting of subsidies for energy-saving projects in welfare and healthcare facilities” from the first action plan are no longer quantified separately because it can be assumed that the saving is largely included in the calculated saving from the EPB rules.</p>

Table B.2. Measure B.2. of the building sector

<i>Title of the energy saving measure</i>	Reduction of property tax for energy-efficiency new buildings
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<i>Index</i>		B.2.
Description	Category	3. Financial instruments 3.2. Tax rebates or taxes
	Timeframe	<i>Start: 01/01/2009</i> <i>End: No end date</i> <i>Foreseen major changes:</i> As the energy performance requirements (see B.1.) become stricter, the conditions for the reduction of property tax will also be tightened up.
	Aim/brief description	Since 1 January 2009, the Flemish Tax Service has automatically granted a reduction in property tax for new building which performs significantly better than the energy performance standards laid down. The reduction is granted to: – homes which, on 1 January of the assessment year, meet an E standard (see B.1.) of not more than E60; – other buildings (e.g. offices) which, on 1 January of the assessment year, meet an E standard (see B.1.) of not more than E70. The E standard must apply to the entire building or home. The reduction of property tax is granted for 10 years. For homes with a maximum E standard of 60 and for offices with a maximum E standard of 70, the reduction corresponds to 20% of property tax. For homes and other buildings with a maximum E standard of E40, a 40% reduction is granted. The reduction was first granted in 2009. Buildings which had previously submitted an EPB declaration and met the conditions also received a reduction of property tax for the first time in 2009.
	Target end-use	All new buildings to which an E standard is applicable.
	Target group	Households, tertiary-sector buildings, public sector
	Region	Region of Flanders
Information on implementation	List and description of implementation measure	<u>Regulations:</u> The Decree of 23 May 2008 laying down provisions accompanying the adjustment of the 2008 budget (BS 13 June 2008) lays down the conditions for the reduction of property tax as applied from the 2009 tax year. <u>Supporting measures:</u> The Flemish Energy Agency provides information to the public on the financial support that can be obtained for new buildings and buildings that meet a low E standard, including on the website www.energiesparen.be .

		The Flemish Energy Agency checks whether the EPB declaration is correct before the reduction of property tax is granted.
	Implementing body	Flemish Tax Service
	Monitoring authority	Flemish Tax Service and Flemish Energy Agency
Energy savings	Method for monitoring/measuring the resulting savings	BU – formula 2.3. in “Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services”. The buildings model (see B.1.) is also used to determine the parameters necessary to calculate the saving from the reduction of property tax on the basis of formula 2.3.
	Savings achieved in 2010	24 GWh final for residential and tertiary: - of which fuels: 28 GWh - of which electricity: -4 GWh 18 GWh primary for residential and tertiary: - of which fuels 28 GWh - of which electricity: -10 GWh
	Expected energy savings in 2016	80 GWh final for residential and tertiary: - of which fuels: 94 GWh - of which electricity: -14 GWh 59 GWh primary for residential and tertiary: - of which fuels: 94 GWh - of which electricity: -35 GWh
	Assumptions	The saving from the reduction of property tax is calculated for new residential buildings and new office buildings. Real data from the Energy Performance Data bank are used for this purpose up to and including 2010. For forecast up to and including 2016, it is assumed that the number of buildings for which a reduction of property tax is granted will remain the same annually as in 2010. The conversion factor for final electricity to primary electricity is 2.5.
	Avoidance of overlaps	In order to avoid duplication with the measure “grant for new homes with an E standard of at least 20 points below the applicable E standard requirement” applied by the electricity distribution network operators (see E.1.), only the impact of the reduction of property tax has been calculated for homes with an E standard of not more than E60. The final energy saving of these homes has only been taken account in respect of this measure (B.2.).

2.2.2.2 Measures in industry

Table 5. Overview of individual measures in industry

No	Title of the energy-saving measure	End-use target	Duration	Expected energy savings in 2010 (GWh)	Expected energy savings in 2016 (GWh)

I.1.	Audit covenant	Utilities and processes in medium-sized energy-intensive companies with an annual primary energy consumption of between 0.1 and 0.5 PJ which do not fall within the scope of the Emission Allowance Trading Directive	10/06/2005 – 10/12/2013	1 249 GWh final 1 993 GWh primary For the audit and benchmark covenants combined.	1 760 GWh final 2 640 GWh primary For the audit and benchmark covenants combined.
I.2.	Benchmark covenant	Utilities and processes in large energy-intensive companies with an annual primary energy consumption of above 0.5 PJ which do not fall within the scope of the Emission Allowance Trading Directive	From 2003 – end 2012	1 249 GWh final 1 993 GWh primary For the audit and benchmark covenants combined	1 760 GWh final 2 640 GWh primary For the audit and benchmark covenants combined
			Total savings:	1 249 GWh final 1 993 GWh primary	1 760 GWh final 2 640 GWh primary

Table I.1. Measure I.1. in industry

Title of the energy saving measure		Audit covenant
Index		I.1.
Description	Category	4. Voluntary agreements and co-operative instruments 4.1 Industrial companies
	Timeframe	<i>Start:</i> 10 June 2005 (“early action”) <i>End:</i> 10 December 2013 <i>Foreseen major changes:</i> The 2009-2014 Coalition Agreement of the Flemish Government envisages an extension of the energy covenant to 2012.

	Aim/brief description	<p>The companies involved undertake to carry out an energy audit and draw up an energy plan to improve energy efficiency. In the first phase, (not later than 4 years after acceptance of the energy plan), they must implement all cost-effective measures with an IRR of at least 15% after tax. In the second phase, not later than 4 years after the acceptance of the updated energy plan, companies must implement energy efficiency measures with an IRR of at least 13.5%.</p> <p>The Flemish Authority offers a number of benefits in return:</p> <ul style="list-style-type: none"> – the Flemish Authority exempts the companies involved from specific measures and rules intended to improve energy efficiency which are replaced by the covenant; – the Flemish Authority does not impose any specific energy tax and does everything to ensure that businesses are exempted from a Federal energy tax;
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		<ul style="list-style-type: none"> – European Directive 2003/96/EC provides for full or partial exemption from the Community minimum rate of energy taxation for covenant companies if it can be shown that the achievable energy saving is equivalent. The companies involved are thus fully or partially exempt from a number of excise duties; – target-group companies that do not sign or implement the covenant lose the right to the degressive application of the Federal electricity contribution; – the Flemish Authority undertakes to provide additional aid to promote energy efficiency, targeted initially at businesses who have signed up to the audit covenant; – from the 2009 tax year, companies that have signed an energy policy agreement with the Flemish Authority are fully exempted from property tax on new equipment and machinery.
	Target end-use	Utilities and processes (cooling, compressed air, heating, ventilation, electricity generation, heat recovery, lighting)
	Target group	Medium-sized energy-intensive industrial companies with an annual primary energy consumption of between 0.1 and 0.5 PJ which do not fall within the scope of the Emission Allowance Trading Directive.
	Region	Region of Flanders

Information on implementation	List and description of implementation measures	<p>The REU (rational energy use) Decree of 2 April 2004 (replaced by the Energy Decree of 8 May 2009) provides for the conclusion by the Flemish Government of energy policy agreements to stimulate rational energy use with businesses (business organisations).</p> <p>The Flemish Government finally approved the audit covenant relating to energy efficiency in industry on 10 June 2005.</p> <p>An audit committee was set up as a steering body with representatives of the Flemish Authority and sectorial organisations. This committee is responsible for overall coordination, seeks to resolve implementation bottlenecks, monitors progress and publishes reports on the results of the covenant.</p> <p>The independent Audit Covenant Verification Bureau assesses energy plans and verifies the implementation of measures, monitoring and reporting (companies must, before 1 April of each year, submit a report on energy consumption during the previous calendar year and on the measures carried out). The Verification Bureau also issues advice and reports to the audit committee.</p> <p>Companies were able to join the covenant up to 10 December 2005 and had to submit an energy plan not later than 1 year after declaring their participation. By 10 June 2009, companies were required to submit their application for approval of the updated energy plan for implementation during the second phase of the audit covenant.</p> <p>In 2010, consultations were launched on drawing up the procedures and content of a covenant for the period after 2013. It is being examined how the energy covenant can be widened into an instrument which further stimulates companies to switch to fuels with a lower CO₂ emission</p>
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		factor and contributes to a reduction of other greenhouse gas emissions while improving energy efficiency. The first version of the new covenant text will be finalised in 2011.
	Implementing body	Audit committee
	Monitoring authority	Audit Covenant Verification Bureau
Energy savings	Method for monitoring/measuring the resulting savings	BU Companies each year report measures and savings in detail and on a confidential basis to the Audit Covenant Verification Bureau, whose job it is to independently verify them.
	Expected energy savings in 2010	1 249 GWh final for audit and benchmark covenants combined (see measure I.2.): - of which fuels: 753 GWh - of which electricity: 496 GWh 1 993 GWh primary final for audit and benchmark covenants combined (see measure I.2.): - of which fuels 753 GWh - of which electricity: 1 240 GWh

	Expected energy savings in 2016	1 760 GWh final for audit and benchmark covenants combined (see measure I.2.): - of which fuels: 1 173 GWh - of which electricity: 587 GWh 2 640 GWh primary for audit and benchmark covenants combined (see measure I.2.): - of which fuels: 1 173 GWh - of which electricity: 1 467 GWh
	Assumptions	The conversion factor for final electricity to primary electricity is 2.5.
	Avoidance of overlaps	

Table I.2. Measure I.2. in industry

Title of the energy saving measure		Benchmark covenant <i>This measure was not included in the first action plan.</i>
Index		I.2.
Description	Category	4. Voluntary agreements and co-operative instruments 4.1 Industrial companies
	Timeframe	<i>Start:</i> 2003 ("early action") <i>End:</i> end of 2012 <i>Foreseen major changes:</i> The 2009-2014 Coalition Agreement of the Flemish Government envisages an extension of the energy covenant to 2012.
	Aim/brief description	The companies involved are bound under a benchmark covenant to achieve and maintain the world benchmark performance in terms of energy efficiency up to 2012. A business undertakes to be inspected once every four years by a consultant to check to what extent the specific energy consumption of its process installations achieves world benchmark levels and also to produce an energy plan aimed at achieving that goal. The covenant stipulates that

		<p>a business must take all cost-effective measures (with an IRR after tax of at least 15%) as quickly as possible, but not later than by 2005, or at least take the decision to implement them rapidly by the end of 2005. If this was not enough to achieve the benchmark, less cost-effective measures (with an IRR after tax of at least 6%) must also have been implemented by 2007. If these measures do not achieve the benchmark by the end of 2008, the company must then have reached that level or have achieved an acceptable approximation of it, with an equivalent result in the area of energy efficiency, by not later than 2012. This might involve the use of flexible instruments, such as joint implementation, a clean development mechanism and emissions trading.</p> <p>The Flemish Authority offers a number of benefits in return:</p> <ul style="list-style-type: none"> - the Flemish Authority exempts the companies involved from specific measures and rules intended to improve energy efficiency which are replaced by the covenant; - the Flemish Authority does not impose any specific energy tax and does everything to ensure that businesses are exempted from a Federal energy tax; - European Directive 2003/96/EC provides for full or partial exemption from the Community minimum rate of energy taxation for covenant companies if it can be shown that the achievable energy saving is equivalent. The companies involved are thus fully or partially exempt from a number of excise duties; - target-group companies that do not sign or implement the covenant lose the right to the degressive application of the Federal electricity contribution; - the Flemish Authority undertakes vis-à-vis a company that can show that it is operating energy-efficiently in accordance with the criteria laid down in the benchmark covenant to allocate the emission allowances required to comply with the Emission Allowance Trading Directive; - the Flemish Authority undertakes to provide additional aid to promote energy efficiency, targeted initially at businesses who have signed up to the benchmark covenant; - from the 2009 tax year, companies that have signed an energy policy agreement with the Flemish Authority are fully exempted from property tax on new equipment and machinery.
	Target end-use	Cooling, compressed air, heating, ventilation, electricity generation, heat recovery, lighting
	Target group	Large energy-intensive industrial companies with an annual primary energy consumption of more than 0.5 PJ which do not fall within the scope of the Emission Allowance Trading Directive.
	Region	Region of Flanders

Information on implementation	List and description of implementation measures	The REU Decree of 2 April 2004 (replaced by the Energy Decree of 8 May 2009) provides for the conclusion by the Flemish Government of energy policy agreements to stimulate rational energy use with businesses (business organisations).
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		<p>The Flemish Government finally approved the benchmark covenant relating to energy efficiency in industry on 29 November 2002.</p> <p>The Benchmarking Committee was set up as a steering body with representatives of the Flemish Authority and sectorial organisations. This committee is responsible for overall coordination, seeks to resolve implementation bottlenecks (e.g. in particular situations, take part in determining the benchmark), monitors progress and publishes reports on the results of the covenant.</p> <p>The independent Benchmarking Verification Bureau approves benchmarking consultants, benchmark inspection methods and energy plans and verifies the implementation of measures, monitoring and reporting (companies must, before 1 April of each year, submit a report on energy consumption during the previous calendar year and on the measures carried out). The Verification Bureau also issues advice and reports to the Benchmarking Committee.</p> <p>The first energy plans of the companies involved had to be ready by 30 June 2004. The second covenant round was launched on 1 January 2007. The revised plans had to be submitted by the end of June 2008.</p> <p>Consultations have been launched on drawing up the form and content of the covenant for the period after 2012. It is being examined how the energy covenant can be widened into an instrument which further stimulates companies to switch to fuels with a lower CO₂ emission factor and contributes to a reduction of other greenhouse gas emissions while improving energy efficiency. The first version of the new covenant text will be finalised in 2011.</p>
	Implementing body	Benchmarking Committee
	Monitoring authority	Benchmarking Verification Bureau
Energy savings	Method for monitoring/measuring the resulting savings	<p>BU</p> <p>Companies each year report measures and savings in detail and on a confidential basis to the Benchmarking Verification Bureau, whose job it is to independently verify them.</p>

	Expected energy savings in 2010	<p>1 249 GWh final for audit and benchmark covenants combined (see measure I.1.):</p> <ul style="list-style-type: none"> - of which fuels: 753 GWh - of which electricity: 496 GWh <p>1 993 GWh primary final for audit and benchmark covenants combined (see measure I.1.):</p> <ul style="list-style-type: none"> - of which fuels: 753 GWh - of which electricity: 1 240 GWh
	Expected energy savings in 2016	<p>1 760 GWh final for audit and benchmark covenants combined (see measure I.1.):</p> <ul style="list-style-type: none"> - of which fuels: 1 173 GWh - of which electricity: 587 GWh <p>2 640 GWh primary for audit and benchmark covenants combined (see measure I.1.):</p> <ul style="list-style-type: none"> - of which fuels: 1 173 GWh - of which electricity: 1 467 GWh
	Assumptions	The conversion factor for final electricity to primary electricity is 2.5.

	Avoidance of overlaps	
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2.2.2.2 Measures in the energy sector

Table 6. Overview of individual measures in the energy sector

No	Title of the energy-saving measure	End-use target	Duration	Achieved/expected energy savings in 2010 (GWh)	Expected energy savings in 2016 (GWh)
E.1.	Imposition of REU public service obligations on electricity distribution network operators for roof insulation combined with a subsidy from the Flemish Authority	- New and existing buildings - Heating, warm-water production, ventilation, lighting, appliances, etc.	01/01/2003 – no end date	5 037 GWh final 6 369 GWh primary	10 500 GWh final 12 885 GWh primary
E.2.	Stimulation of qualitative cogeneration via a system of cogeneration certificates	Heating, warm-water production, electricity generation, electrical applications	01/01/2005 – no end date	852 GWh final 1 044 GWh primary	1 407 GWh final 1 032 GWh primary
E.3.	Stimulation of photovoltaic solar panels via a system of green-energy certificates, preceded by subsidies	Electrical appliances and lighting	01/01/1998 - 2020	474 GWh final 1 185 GWh primary	571 GWh final 1 427 GWh primary
			Total savings:	6 363 GWh final 8 598 GWh primary	12 478 GWh final 15 344 GWh primary

Table E.1. Measure E.1. in the energy sector

Title of the energy saving measure		Imposition of REU public service obligations on electricity distribution network operators for roof insulation combined with a subsidy from the Flemish Authority (the latter was not included in the first action plan).
Index of the measure		E.1.
Description	Category	7. Energy saving mechanisms and other combinations of previous (sub)categories 7.1. Public service obligation for energy companies on energy savings 3. Financial instruments 3.1. Subsidies
	Timeframe	<i>Start:</i> 1 January 2003 (“early action”) <i>End:</i> No end date <i>Foreseen major changes:</i>

		After an evaluation in 2010, a reform of the REU publication services obligations are envisaged from 2012. An amending decree was approved in principle by the Flemish Government on 10 June 2011.
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	Aim/brief description	<p>Since 2003, electricity distribution network operators have been obliged to achieve an amount of primary energy saving each year by stimulating energy-saving investments by the end customers. Each operator is able to determine which actions it wishes to implement. If the target is not reached, a fine of 10 cents per kWh of the difference between the actual saving and the target is payable by the operator. This fine is paid into the Energy Fund.</p> <p>Alongside this obligation to achieve results, the electricity distribution network operators are also subject to a number of active obligations, including the promotion of rational energy use through awareness-raising and the provision of information, the performance of energy scans in homes, the obligation to make an extra effort to promoting REU among protected customers, i.e. people on low incomes (increased benefits, discount coupons for washing machines and fridges, specific information sessions) and the offering of an energy accounting system to local authorities, educational establishments, and welfare and healthcare facilities.</p> <p>The main point of departure when drawing up new rules is to convert the obligation to achieve results into a number of well-coordinated active obligations which fit in with policy priorities in the area of the energy performance of buildings.</p>
	Target end-use	<p>Homes and non-residential buildings, existing and new buildings.</p> <p>Heating, production of warm water, lighting, appliances</p>
	Target group	Households, the tertiary sector, the public sector, industry, agriculture and horticulture
	Region	Region of Flanders
Information on implementation	List and description of implementation measures	<p><u>Decree of the Flemish Government of 29 March 2002 on the public service obligations to promote rational energy use:</u></p> <p>From 2003, the electricity distribution network operators have been required each year to achieve a primary energy saving target. The target is set in terms of a percentage of the quantity of electricity supplied two years previously to end consumers, both high and low-voltage.</p> <ul style="list-style-type: none"> - low-voltage: 1% in 2003, 2% in 2004, 2.1% in 2005, 2.2% in 2006 and 2007 - high-voltage: 1% of 2003-2007 <p><u>Decree of the Flemish Government of 2 March 2007 on the public service obligations to promote rational energy use:</u></p> <p>In 2008 and 2009, the electricity distribution network</p>

		<p>operators were set an energy saving target of 2% for household final customers and 1.5% for non-household final customers. A number of active obligations were clarified or added. For the period 2007-2009, the active obligation was imposed of performing energy scans for household final customers. (52 270 scans in total).</p> <p><u>Decree of the Flemish Government of 19 December 2008:</u></p> <p>The obligation was introduced for electricity distribution network operators to offer a roof-insulation grant to household customers which, if more than 40 m² of a roof or loft floor was insulated, would also automatically give rise to an additional Flemish roof-insulation grant directly paid by the Flemish Authority.</p> <p>This amending decree also required additional energy scans to be carried out in 2009 (13 069 extra scans) and annually from 2010 (26 134 scans).</p> <p><u>Decree of the Flemish Government of 18 September 2009:</u></p> <p>Since 2010, the energy saving target of the electricity distribution network operators has been based on the overall quantity of electricity supplied without any distinction being made between categories of customer, although with the obligation to target actions at both domestic and non-domestic customers. The target is 3.5% of total electricity supplied for “normal” network operators and 2.5% of electricity supplied for network operators with fewer than 2 500 final customers.</p> <p>In addition, the extra scans for 2009 (13 069) were spread over three years, i.e. 2009-2011.</p> <p>Every year before 1 June, each electricity distribution network operator submits an action plan to the Flemish Energy Agency for the coming year. Actions cannot be launched until the Flemish Energy Agency has authorised the calculation methods presented by the network operators for primary energy savings, the amount of grants and the grant terms. Each year the network operators report to the Flemish Energy Agency before 1 May on the results of the actions implemented in the previous year.</p> <p>The network operators supply information to their customers via various channels, including on websites, at trade fairs, in their showrooms, in customer magazines, through the distribution of brochures, etc. For the specific target group of protected customers, the network operators are required to organise information sessions (generally in conjunction with Public Social Welfare Centres).</p> <p>The Flemish Energy Agency also provides information to the public concerning the grants offered by network operators for energy saving, including on its website www.energiesparen.be (which has more than 1.4 million visitors each year), where users can find a grant module and energy gain calculator, through the distribution of a grant brochure (with an annual print run of approximately 150 000 copies), through its participation at the main construction trade fairs, and by organising campaigns (the “Energy Saving Month” organised each year in October, television and radio campaigns). In addition to supplying general information, the Flemish Energy Agency annually answers some 3 000 individual online enquiries about existing grant arrangements.</p>
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	Implementing body	The Flemish Energy Agency
	Monitoring authority	The Flemish Energy Agency
Energy savings	Method for monitoring/measuring the resulting savings	<p>BU</p> <p>For the following measures, the methodology set out in the “Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services” is applied:</p> <ul style="list-style-type: none"> - roof, wall and floor insulation, glass replacement: BU formula 2.2; - boiler replacement: BU formula 2.4; - solar-powered boilers: BU formula 2.7; - energy-efficient fridges and washing machines: BU European default values; - low-energy lamps: BU European default values. <p>Acting on behalf of the Flemish Energy Agency, the Flemish Institute of Technological Research has created a model for the annual (energy) characterisation of the Flemish household on the basis of 2001 census data, annual land registry and building permit data, data from energy audits, energy performance declarations and certificates, grant conditions, etc. This model is used to calculate the savings from investments in buildings using harmonised methods.</p> <p>For the following measures we use our own methodology to calculate energy savings (please refer to the Annex): relighting and new lighting, running speed control, ventilation with heat recovery, water-economy shower heads).</p>

	Savings achieved in 2010	<p>5 037 GWh final total:</p> <ul style="list-style-type: none"> - of which fuels: 4 149 GWh - of which electricity: 888 GWh <p>6 369 GWh primary total:</p> <ul style="list-style-type: none"> - of which fuels 4 149 GWh - of which electricity: 2 220 GWh <p>The final saving per technology is as follows:</p> <ul style="list-style-type: none"> - roof insulation: 1 453 GWh - replacement of glass with high-efficiency glass: 571 GWh - wall insulation: 169 GWh - cellar and floor insulation: 6 GWh - boiler replacement: 2 043 GWh - solar-powered boilers: 38 GWh - reduced E standard: 34 GWh - water-economy shower heads: 24 GWh - energy-efficient fridges and washing machines: 0.3 GWh - relighting and new lighting: 160 GWh - running speed control: 460 GWh - ventilation with heat recovery: 79 GWh
	Expected energy savings in 2016	<p>10 500 GWh final total:</p> <ul style="list-style-type: none"> - of which fuels: 8 910 GWh - of which electricity: 1 590 GWh <p>12 885 GWh primary total:</p> <ul style="list-style-type: none"> - of which fuels: 8 910 GWh - of which electricity: 3 975 GWh

		<p>The final saving per technology is as follows:</p> <ul style="list-style-type: none"> - roof insulation: 4 461 GWh - replacement of glass with high-efficiency glass: 1 247 GWh - wall insulation: 490 GWh - floor insulation: 50 GWh - boiler replacement: 2 477 GWh - solar-powered boilers: 690 GWh - reduced E standard: 60 GWh - low-energy lamps: 29 GWh - water-economy shower heads: 68 GWh - energy-efficient fridges and washing machines: 1.1 GWh - relighting and new lighting: 278 GWh - running speed control: 548 GWh - ventilation with heat recovery: 101 GWh
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	Assumptions	<p>The network operators' actions which have been included are as follows:</p> <ul style="list-style-type: none"> - roof insulation (number of grants each year): <ul style="list-style-type: none"> * historically <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2003</td> <td style="width: 10%;">2004</td> <td style="width: 10%;">20052006</td> <td style="width: 10%;">2007</td> <td style="width: 10%;">2008</td> <td style="width: 10%;">2009</td> <td style="width: 10%;">2010</td> </tr> <tr> <td>1317</td> <td>2706</td> <td>57664728</td> <td>9022</td> <td>19842</td> <td>52984</td> <td>59297</td> </tr> </table> * forecasts <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2011</td> <td style="width: 10%;">2012-2016</td> </tr> <tr> <td>59297</td> <td>60033</td> </tr> </table> - replacement of glass with high-efficiency glass (number of grants each year): <ul style="list-style-type: none"> * historically <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2003</td> <td style="width: 10%;">2004</td> <td style="width: 10%;">20052006</td> <td style="width: 10%;">2007</td> <td style="width: 10%;">2008</td> <td style="width: 10%;">2009</td> <td style="width: 10%;">2010</td> </tr> <tr> <td>2082</td> <td>5970</td> <td>786511123</td> <td>28467</td> <td>49227</td> <td>64690</td> <td>65146</td> </tr> </table> * forecasts <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2011</td> <td style="width: 10%;">2012-2016</td> </tr> <tr> <td>65146</td> <td>55438</td> </tr> </table> - wall insulation (number of grants each year): <ul style="list-style-type: none"> * historically <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2003</td> <td style="width: 10%;">2004</td> <td style="width: 10%;">20052006</td> <td style="width: 10%;">2007</td> <td style="width: 10%;">2008</td> <td style="width: 10%;">2009</td> <td style="width: 10%;">2010</td> </tr> <tr> <td>135</td> <td>445</td> <td>11431758</td> <td>1894</td> <td>4151</td> <td>7347</td> <td>9352</td> </tr> </table> * forecasts <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2011</td> <td style="width: 10%;">2012-2016</td> </tr> <tr> <td>7363</td> <td>9367</td> </tr> </table> - cellar and floor insulation (number of grants each year): <ul style="list-style-type: none"> * historically <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">2004</td> <td style="width: 10%;">2005</td> <td style="width: 10%;">20062007</td> <td style="width: 10%;">2008</td> <td style="width: 10%;">2009</td> <td style="width: 10%;">2010</td> </tr> <tr> <td>16</td> <td>17</td> <td>16 155</td> <td>477</td> <td>924</td> <td>1226</td> </tr> </table> * forecasts 	2003	2004	20052006	2007	2008	2009	2010	1317	2706	57664728	9022	19842	52984	59297	2011	2012-2016	59297	60033	2003	2004	20052006	2007	2008	2009	2010	2082	5970	786511123	28467	49227	64690	65146	2011	2012-2016	65146	55438	2003	2004	20052006	2007	2008	2009	2010	135	445	11431758	1894	4151	7347	9352	2011	2012-2016	7363	9367	2004	2005	20062007	2008	2009	2010	16	17	16 155	477	924	1226
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		<p>- relighting and new lighting (number of grants):</p> <ul style="list-style-type: none"> * historically: from 270 in 2005 to 342 in 2010 * forecasts: 342 in 2011 (=2010), 233 from 2012 (grant only available for relighting) <p>- running speed control (number of grants)</p> <ul style="list-style-type: none"> * historically: from 1 211 in 2005 to 1 744 in 2010 * forecasts: 1 744 in 2011 (=2010) <p>- ventilation with heat recovery (number of grants)</p> <ul style="list-style-type: none"> * historically: from 10 in 2004 to 566 in 2010 * forecasts: 566 in 2011 (=2010) <p>Source for historical data: network operators' annual monitoring reports.</p> <p>The conversion factor for final electricity to primary electricity is 2.5.</p>
	Avoidance of overlaps	The measure "Grant of subsidies for rational energy use in existing schools" in the first action plan is no longer quantified separately because it can be assumed that the savings are largely included in the savings calculated for grants offered by network operators.

Table E.2. Measure E.2. in the energy sector

Title of the energy saving measure		Stimulation of qualitative cogeneration via a system of cogeneration certificates
Index of the measure		E.2.
Description	Category	7. Energy saving mechanisms and other combinations of previous (sub)categories 7.1. Public service obligation for energy companies on energy savings
	Timeframe	<i>Start:</i> 1 January 2005 ("early action") <i>End:</i> No end date provided for <i>Foreseen major changes:</i> On 6 May 2011, the Flemish Government announced a draft decree providing for an increase of the guaranteed minimum price of cogeneration certificates, a tightening of the certificate obligation on the part of suppliers and a reduction in the amount of the fine for missing certificates. In 2011, a thorough evaluation is being carried out regarding the cogeneration certification arrangements with a view to developing a long-term vision for support for cogeneration.
	Aim/brief description	A certificate is issued to a cogeneration producer for each MWh of primary energy savings achieved through qualitative cogeneration. Cogeneration certificates can be

		<p>sold at a guaranteed minimum price to the electricity network operators.</p> <p>Electricity suppliers are obliged to present a certain number of cogeneration certificates each year. In 2006, they were required to submit certificates corresponding to 1.19% of the electricity supplied in 2005. This proportion is increased each year, up to a level of 10.5% in 2018.</p> <p>Only certificates that are issued in respect of installations that entered into service or were significantly altered after 1 January 2002 are accepted in order to meet supplier's certificate obligations. Certificates are fully accepted for the first 4 years after the entry into service of the cogeneration installation. Thereafter their acceptability is reduced on a linear basis depending on the efficiency of the installation. This means that after approximately 10 years of operation, certificates are no longer acceptable and thus have no further value.</p>
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	Target end-use	Heating, production of warm water and electricity generation, electrical applications
	Target group	Tertiary sector, industry, agriculture and horticulture
	Region	Region of Flanders
Information on implementation	List and description of implementation measures	<p>The Electricity Decree of 17 July 2000 (amended by the Decree of 10 July 2003, replaced by the Energy Decree of 8 May 2009, amended by the Decree of 6 May 2011) introduced the cogeneration certificate and the certification obligation on the part of electricity suppliers.</p> <p>The Decree of the Flemish Government of 5 March 2004 laying down the public service obligation to promote electricity generation in qualitative cogeneration installations (replaced by the Decree of 7 July 2006 and the Energy Decree of 19 November 2010) regulates the procedure for applying, granting, registration and use (<i>inter alia</i> in the context of the obligation on the part of electricity suppliers) of certificates</p> <p>In the amending decree of 6 May 2011, cogeneration is given an extra pat on the back. The minimum price per cogeneration certificate will rise from € 27 to € 31 from 1 January 2012. The percentage of certificates to be submitted is increased for 2012 from 5.2% to 7.6% and will rise further to 10.5% in 2018 and subsequently. The fine for missing certificates has been reduced.</p> <p>As provided for in the Energy Decree, a thorough evaluation of the cogeneration support mechanism is carried for completion by 2012.</p>
	Implementing body	Flemish Regulator of the Electricity and Gas Market (VREG)
	Monitoring authority	Flemish Regulator of the Electricity and Gas Market (VREG)
Energy savings	Method for monitoring/measuring the resulting savings	BU own method (see Annex) in accordance with FAQ document supplied by the EC on 14 March 2011.

	Expected energy savings in 2010	<p>852 GWh final:</p> <ul style="list-style-type: none"> - of which fuels: 0 GWh - of which electricity: 852 GWh <p>1 044 GWh primary:</p> <ul style="list-style-type: none"> - of which fuels: 1 044 GWh - of which electricity: 0 GWh
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	Expected energy savings in 2016	<p>1 407 GWh final:</p> <ul style="list-style-type: none"> - of which fuels: 0 GWh - of which electricity: 1 407 GWh <p>1 032 GWh primary:</p> <ul style="list-style-type: none"> - of which fuels: 1 032 GWh - of which electricity: 0 GWh
	Assumptions	<p>Heat production by cogeneration installations in non-VER companies increased from 284 TJ in 2005 to 5 845 TJ in 2009. For 2016, a heat production of 6 117 TJ is expected.</p> <p>See Annex for assumptions.</p>
	Avoidance of overlaps	<p>Cogeneration savings achieved in the context of the audit and benchmark covenants (see measures I.1. and I.2.) and notified by the Verification Bureau have been deducted from the cogeneration savings from this measure.</p>

Table E.3. Measure E.3. in the energy sector

<i>Title of the energy saving measure</i>		<p>Stimulation of photovoltaic solar panels via a system of green-energy certificates, preceded by subsidies</p> <p><i>This measure was not included in the first energy action plan.</i></p>
<i>Index of the measure</i>		E.3.
Description	Category	<p>7. Energy saving mechanisms and other combinations of previous (sub)categories</p> <p>7.1. Public service obligation for energy companies on energy savings</p> <p>3. Financial instruments</p> <p>3.1. Subsidies</p>
	Timeframe	<p><i>Start:</i> 1 January 1998 (“early action”)</p> <p><i>End:</i> 2010</p> <p><i>Foreseen major changes:</i></p> <p>Given the fact the solar panels have gained acceptance in recent years thanks to support they have enjoyed in Flanders and have thus become much cheaper, the support for new installations is, from 1 July 2011, gradually being aligned with the actual additional cost in comparison with traditional energy supply.</p>

		In 2011, a thorough evaluation is being carried out regarding the green electricity certification arrangements with a view to developing a long-term vision for support for green electricity.
	Aim/brief description	<p>From 1998 to 2007, a subsidy was granted in Flanders for photovoltaic panels: 50% in 1998, 75% in 1999-2002, 50% in 2003-2005, 10% in 2006 and 2007. The subsidy was gradually replaced by a guaranteed minimum price for photovoltaic panels in the context of the green electricity certification system.</p> <p>Since 2002, photovoltaic panels have been included in the green electricity certification system. Electricity suppliers are obliged to present a certain number of green electricity certificates each year. The owner receives a green electricity certificate for each 1000 kWh of electricity generated using solar panels. Each certificate can be exchanged for a guaranteed value with the network manager. The guaranteed minimum price for a certificate for photovoltaic panels was € 150/MWh from 2003 and € 450/MWh from 2006 for a period of 20 years.</p> <p>Support for the certificate is being reduced as of 2010 because of the falling investment costs for photovoltaic panels. The current minimum price for a certificate is € 330/MWh. The guaranteed minimum price for installations smaller than 250 kWp is being further reduced from €300/MWh from 1 July 2011 to € 90/MWh from 1 January 2016. From 1 January 2013, the period of support for new installations will be shortened from 20 to 15 years. Installations larger than 250 kWp receive € 240/MWh on 1 July 2011, and the support is also being reduced for such installations to € 90/MWh.</p>
	Target end-use	Electrical appliances and lighting
	Target group	Households, tertiary sector, public sector, industry, agriculture and horticulture.
	Region	Region of Flanders
Information on implementation	List and description of implementation measures	<p>The Royal Decree of 10 February 1983 laying down incentive measures for rational energy use (repealed by the Energy Decree of 19 November 2010) provided for subsidies to be granted for photovoltaic panels.</p> <p>The Electricity Decree of 17 July 2000 (replaced by the Energy Decree of 8 May 2009) introduced the green electricity certificate and the certification obligation on the part of electricity suppliers.</p> <p>The Decree of the Flemish Government of 5 March 2004 on the promotion of electricity generation from renewable energy sources (amended by the Decree of 5 June 2009 and replaced by the Energy Decree of 19 November 2010) regulates the procedure for applying, granting, registration and use (<i>inter alia</i> in the context of the obligation on the part of electricity suppliers) of certificates.</p> <p>On 6 May 2011, the Flemish Government announced a decree amending the support arrangements from 1 July 2011. Support for new solar panels will be reduced faster in coming years.</p>

		As required by the Energy Decree, a thorough evaluation of the support mechanism or green energy will be carried out by 2012.
	Implementing body	Flemish Energy Agency (subsidy) Flemish Regulator of the Electricity and Gas Market (VREG) (green electricity certificates)
	Monitoring authority	Flemish Energy Agency (subsidy) Flemish Regulator of the Electricity and Gas Market (VREG) (green electricity certificates)
Energy savings	Method for monitoring/measuring the resulting savings	BU – own method (see Annex)
	Savings achieved in 2010	474 GWh final: - of which electricity: 474 GWh - of which fuels: 0 GWh 1 185 GWh primary: - of which electricity: 850 GWh - of which fuels: 0 GWh
	Expected energy savings in 2016	571 GWh final: - of which electricity: 571 GWh - of which fuels: 0 GWh 1 427 GWh primary: - of which electricity: 1 427 GWh - of which fuels: 0 GWh
	Assumptions	Installed power: - 2010: 560 MWp - forecasts: an increase is expected in accordance with the renewable energy action plan Average electricity production of 850 kWh/kWp
	Avoidance of overlaps	

2.2.2.4 Measures in the transport sector

Table 7. Overview of individual measures in the transport sector

No	Title of the energy-saving measure	End-use target	Duration	Expected energy savings in 2010 (GWh)	Expected energy savings in 2016 (GWh)
T.1.	Policy measure to control mobility demand and give rise to a modal shift	Transport	17/10/2003 – to end of 2012	639 GWh final 795 GWh primary	5 010 GWh final 5 183 GWh primary

T.2.	Development of a more eco-friendly car fleet by adjusting taxation of motor vehicles	Transport	01/01/2013 – no end date	Not yet applicable	Not yet known
			Total savings:	639 GWh final 795 GWh primary	5 010 GWh final 5 183 GWh primary

Table T.1. Measure T.1. in the transport sector

Title of the energy saving measure		Policy measure to control mobility demand and give rise to a modal shift
Index of the measure		T.1.
Description	Category	7. Energy saving mechanisms and other combinations of previous (sub)categories
	Timeframe	<i>Start:</i> 17 October 2003 (“early action”) <i>End:</i> End of 2012 <i>Foreseen major changes:</i> The Flemish Government wishes to have a new Mobility Plan by the end of 2012.
	Aim/brief description	On 17 October 2003 the Flemish Government approved the Flemish Mobility Plan in principle. In implementation of this Mobility Plan, various measures are being taken in an attempt to control mobility demand and bring about a modal shift.
	Target end-use	Transport
	Target group	Users of roads, railways and inland navigation in Flanders.
	Region	Region of Flanders
Information on implementation	List and description of implementation measures	<p>The following measures are being implemented further to the 2003 Mobility Plan:</p> <ul style="list-style-type: none"> – Investment in dynamic transport management to improve road traffic flow by means of traffic information; – Improvement of traffic flow and speed optimisation by applying a “reduced disruption” approach in carrying out road works, clearing roads more quickly after accidents, dissemination of road and weather information; – Most links on the main passenger railway network which are newly planned or to be improved have been completed or are in progress (this in contrast to the road network, to which practically no extension has been carried out); – A general transport plan has been developed for the area within 30 km of Brussels, the so-called Regional Express Network (GEN). A phased implementation over the period 2004-2016 is ensuring the availability of rapid suburban connections by train, tram and bus; – The public train company (NMBS) is investing in an improved connection with the national airport, the so-called Diabolo Project, which will be completed at the end of 2012; – Alongside the development of separate lanes for trams and buses (dedicated roads,

		<p>tracks separated from cars), a number of specific arrangements are being implemented to guarantee that trams and buses keep moving. Network standardisation and basic mobility have been introduced. A network has been developed with various levels of use with regard to speed and the distance between stops. To meet requirements in rural areas, the availability of call-up bus services has been significantly enhanced. An effort has also been made to improve the public transport service of commercial sites. For example, the Max Mobiel project has been operational for a number of years in the Ghent region. More attractive and simpler season tickets have also been introduced;</p> <ul style="list-style-type: none"> - The provision of information and advice to travellers has been improved on the basis of cooperation between the provincial mobility desks and the mobility consultants of De Lijn. Companies and employees can receive a reply to all questions relating to mobility at the mobility desks; - In cooperation with the five provinces, the above-ground bicycle route network has been defined. This network connects a large number of the main hubs and centres of attraction with each other. The above-ground bicycle route network forms the backbone to the general bicycle route network and still needs to be defined in more detail at local level. In 2007, the catching-up operation to establish safe bicycle tracks was extended to ensure that safe bicycle facilities will be available as part of the above-ground bicycle route network by 2016; - In 2007, the Flemish Cycling Manager took up his functions as a point of contact for functional cycling policy and became operational as the person to whom bottlenecks on bicycle paths are to be notified; - The bicycle allowance granted by an employer to its employees who travel to work entirely or partially by bicycle was increased from € 0.15 to €0.2 per km; - The implementation of company transport plans is funded by the Authority via the Commuting Fund [<i>Pendelfonds</i>] in order to influence the method of transport used by employees and thus to reduce the use of cars to travel to work. A business travel plan therefore promotes public-transport use, company buses, carpooling, cycling, walking and more efficient use of vehicles; - A Flemish e-Government Coordination Unit (CORVE) has been set up with the task of formulating and supporting ICT projects for the supply of accessible, demand-driven, simplified and integrated public services; - Carpooling car parks have been expanded. These are normally located as close as possible to junctions on roads leading to areas with high traffic congestion. In Flanders, most of these car parks are situated at motorway junctions. Two car-sharing schemes are supported by the Flemish Authority. - A range of initiatives relating to driving behaviour, fleet management and mobility management were integrated in 2008 through the establishment of Mobimix, a digital platform for fleet managers, purchasers and mobility officers. Mobimix.be has grown into a well-functioning platform with a number of business members; - In 2009, the Flemish Authority's strategic project Flanders Logistics was launched with the logistics sector. The purpose of Flanders Land Logistics is to develop policy-related actions and projects in the area of land and process logistics;
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		<ul style="list-style-type: none"> - The Flemish Government has decided to introduce a kilometre tax on freight vehicles from 2013 (see measure M.2.); - On the main inland waterway network, a number of investments have been carried out or are planned to eliminate bottlenecks: <ul style="list-style-type: none"> • Albert Canal: doubling of the Evergem lock (completed), renovation of the Royer lock (planned for 2014-2017) and the Van Cauwelaert lock (execution in 2008-2011) at the Port of Antwerp and the widening of the Albert Canal between Antwerp and Wijnegem (in progress); • widening at Bovenscheide (new dams and locks are currently being examined); • Completion of the Wintam-Willebroek canal on the Ship Canal for vessels of up to 10 000 tonnes (completed); • Leie crossing at Kortrijk (completed) - The Flanders Inland Shipping Network has been established as part of the Flanders Logistics project. In 2007, the focal point of a policy-relevant examination of mobility and public works was launched, which also covered goods flows; - Various initiatives to develop new transport concepts or to transport certain types of goods on water on the basis of innovative projects are in progress; - The use of telematics applications on the navigable waterways network should allow traffic flows to be managed better and more safely and contribute to an optimisation of infrastructure use and transport planning; - The waterway operators are continuing to develop the RIS (River Information Services) enabling them to organise traffic on waterways in an optimum, smooth and safe manner. This system and an Automatic Identification System (AIS) allow exchange of data such as name, position, speed, direction, draught and load between ships, infrastructure operators and other on-shore stakeholders. In Flanders, this system is already being applied or implemented by the larger waterways; - other measures to promote the use of inland waterways are: <ul style="list-style-type: none"> • subsidies for loading and unloading quays; • automation of locks, widening of canals, • reduction of navigation rights; • electronic exchanges; • investment on the basis of public-private cooperation (PPS) in the construction of quay walls and the development of business sites linked to water. <p>The Mobility Decree was approved in 2009. It focuses on the five following objectives: reachability, accessibility, transport safety, liveability of transport and reduction of damage to the environment and nature. An important area in which the Decree brings added value is primarily by making the Flemish Mobility Plan mandatory as a strategic, directive plan for Flanders and the inclusion of monitoring as an essential part of mobility policy. The adoption of early participation and involvement as a basic principle is also an important plus.</p> <p>It is the aim of the Region of Flanders for there to be a new Flemish Mobility Plan by the end of 2012 which meets the requirements of the Decree.</p>
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	Implementing body	Department of Mobility and Public Works and the agencies which implement mobility policy
	Monitoring authority	Department of Mobility and Public Works

Energy savings	Method for monitoring/measuring the resulting savings	TD, indicators P8, P9, P10, P11, P12 and P13 in combination with M7. "Recommendations on Measurement and Verification Methods in the Framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services".
	Expected energy savings in 2010	639 GWh final 795 GWh primary
	Expected energy savings in 2016	5 010 GWh final 5 183 GWh primary
	Assumptions	Data sources used to calculate the indicators: <ul style="list-style-type: none"> – Annual energy balances (www.emis.vito.be) – MIRA Indicator Report (www.milieurapport.be) – 2030 Environmental reconnaissance (www.milieurapport.be) – Reporting in the context of the "Decision for a monitoring mechanism of greenhouse gas emissions".
	Avoidance of overlaps	

Table T.2. Measure T.2. in the transport sector

Title of the energy saving measure		Development of a more eco-friendly car fleet by adjusting taxation of motor vehicles
Index of the measure		T.2.
Description	Category	3. Financial instruments 3.2. Tax rebates or taxes
	Timeframe	<i>Start:</i> 2013 <i>End:</i> No end date provided for.
	Aim/brief description	With the aim of introducing a fairer taxation of motor vehicles, improving the transport and mobility system and increasing environmental performances in transport systems, the Regions of Flanders and Wallonia and the Brussels-Capital Region have concluded a political agreement concerning the overall reform of taxation on motor vehicles. The three regions wish to pass on the cost of using the transport infrastructure and external environmental costs objectively to road users. The main points of the planned reform are as follows: <ul style="list-style-type: none"> – In 2013, the three regions want to introduce a smart kilometre tax for freight vehicles of 3.5 tonnes and above. The rates could vary according to the distance covered, the place, time and environmental characteristics of the vehicle. The intention is to introduce the kilometre tax in every region at least on the roads belonging to the Eurovignette network. The system will be made operational via a private partner. – For passenger vehicles and other vehicles below 3.5 tonnes, the current system of

		<p>taxation of road vehicles based on horsepower is being converted into a new system based on 2 components: a fixed amount for road use using an electronic tax disc and a variable amount determined by the vehicle's environmental performance.</p> <p>The Flemish Coalition Agreement also provides in the short term (from January 2012) for a reform of the taxation applicable to the placing of vehicles on the road for the first time in respect of private vehicles (BIV). An important component of the new tax rates is the level of the vehicle's CO₂ emissions.</p>
	Target end-use	Transport
	Target group	Users of Flemish roads, Belgians as foreigners, companies and individuals
	Region	Region of Flanders together, on the basis of a common vision, with the Region of Wallonia and the Brussels-Capital Region
Information on implementation	List and description of implementation measures	<p>The political agreement provides for the launch of an inter-regional working group to draw up cooperation agreements between the three regions. The working group will also deal with a number of technical aspects, such as the tariff structure.</p> <p>In the area covered by the Regional Express Network (GEN), a pilot project is being launched regarding a kilometre tax for passenger cars, conditional on the cost being reasonable.</p>
	Implementing body	Department of Finance and the Budget in cooperation with the Departments of the Environment and of Mobility.
	Monitoring authority	Not yet applicable
Energy savings	Method for monitoring/measuring the resulting savings	A reliable estimate of the possible energy savings from the reform will not be possible until after the tariffs and other details have been determined.
	Expected energy savings in 2010	Not yet applicable
	Expected energy savings in 2016	Not yet known

	Assumptions	
	Avoidance of Overlaps	

2.2.2.5 *Measures in the horticultural sector*

Table 8. Overview of individual measures in the horticultural sector

No	Title of the energy-saving measure	End-use target	Duration	Expected energy savings in 2010 (GWh)	Expected energy savings in 2016 (GWh)

A.1.	Subsidies for energy-saving measures in the glasshouse horticultural sector	Primarily heating of glasshouses, CO ₂ dosing, climate regulation, lighting, etc.	From 2001 – no end date	816 GWh final and primary	2 091 GWh final and primary
			Total savings:	816 GWh final and primary	2 091 GWh final and primary

Table A.1. Measure A.1. in the horticultural sector

Title of the energy saving measure		Subsidies for energy-saving measures in the glasshouse horticultural sector
Index of the measure		A.1.
Description	Category	3. Financial instruments 3.1. Tax rebates or taxes
	Timeframe	<i>Start:</i> 2001 (“early action”) <i>End:</i> No end date provided for.
	Aim/brief description	Via the Flemish Agricultural Investment Fund (VLIF) agricultural and horticultural businesses can obtain investment support for energy-saving measures and renewable-energy technologies. The levels of support (percentage of investment costs) from 06/09/2010 are as follows: <ul style="list-style-type: none"> – new buildings and construction of glasshouses (18%); – energy-saving glasshouse enclosures (28%); – energy screens (28% for the first screen, 18% for the second); – natural gas applications, cogeneration, heat buffers, gas condensers, gas purification, renewable energy (28%); – heat pump in combination with cold-heat storage (28%). <p>Between 2001 and 2008, most support levels stood at 40% (except for newly built glasshouses (20%) and the use of biofuels, primarily wood (30%)).</p>

	Target end-use	Primarily heating of glasshouses, CO ₂ dosing, climate regulation, lighting.
	Target group	Agricultural and horticultural sector, in particular glasshouse horticulture
	Region	Region of Flanders
Information on implementation	List and description of implementing measures	Decree of the Flemish Government of 24 November 2000 concerning support for investment and installation in agriculture, amended by the Decree of the Flemish Government of 23 December 2010 (no amendments on the matter of energy saving in glasshouse horticulture).

		<p>Back-up measures are as follows:</p> <ul style="list-style-type: none"> – financing of demonstration projects; – information by practical centres on fruit and vegetable growing; – technological services (IWT projects, Glasreg, Advice Centre for Climate Regulation in Ornamental Plant Cultivation); – ERDF project: energy-conscious farmers (also applicable to the glasshouse horticultural sector); – Subsidies for energy consultants.
	Implementing body	Flemish Agricultural Investment Fund (VLIF)
	Monitoring authority	<p>Department of Agriculture and Fisheries, Monitoring and Study Department, where appropriate the EAFRD (Rural Development Programme in the context of the CAP), of which the VLIF forms part.</p> <p>The calculations of energy savings are outsourced to the Flemish Institute of Technological Research [Vlaamse Instelling voor Technologisch Onderzoek].</p>
Energy savings	Method for monitoring/measuring the resulting savings	<p>Bottom-up (see annex).</p> <p>The calculation in the first action plan for this measure was a top-down calculation. The bottom-up calculation in this second action plan allows for better correction of overlaps with other measures, as a result of which the savings in this action plan are lower than in the first one.</p>
	Expected energy savings in 2010	<p>816 GWh final and primary:</p> <ul style="list-style-type: none"> - of which fuels: 816 GWh - of which electricity: 0 GWh
	Expected energy savings in 2016	<p>2 091 GWh final and primary:</p> <ul style="list-style-type: none"> - of which fuels: 2 091 GWh - of which electricity: 0 GWh
	Assumptions	See annex.

	Overlaps, multiplication effect, synergy	<p>The savings from technologies for glasshouse horticulture included in other measures (see E.2. for cogeneration, E.3. for PV panels and E.1. boilers and solar-powered boilers) are not included in this table. The savings in this table are mainly limited to screens, heat buffers and gas condensers.</p>
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2.2.3 Summary of energy savings

Table 9. Summary of final energy savings

Sector/subsector	Reference to tables of measures	Calculation method	Achieved/Expected energy savings in 2010 (GWh)	Expected energy savings in 2016 (GWh)
Buildings	B.1. and B.2.	BU formula 2.3, harmonized methodology	<p>1 751 GWh final</p> <p>1 839 GWh primary</p>	<p>3 754 GWh final</p> <p>3 747 GWh primary</p>

Industry	I.1. and I.2.	Own methodology	1 249 GWh final 1 993 GWh primary	1 760 GWh final 2 640 GWh primary
Energy sector	E.1., E.2. and E.3.	BU formulas 2.2, 2.4, 2.7. European default values own methodology: see Annex	6 363 GWh final 8 598 GWh primary	12 478 GWh final 15 344 GWh primary
Transport sector	T.1. and T.2.	TD, indicators P8, P9, P10, P11, P12 and P13 in combination with M7, harmonised methodology	639 GWh final 795 GWh primary	5 010 GWh final 5 183 GWh primary
Horticulture	A.1.	Own methodology, see Annex	816 GWh final and primary	2 091 GWh final and primary
Total energy savings under ESD			10 818 GWh final 14 041 GWh primary	25 093 GWh final 29 005 GWh primary

2.3 Public sector

2.3.1 Exemplary role of the public sector

The Flemish Authority and local authorities are themselves making serious efforts to limit their final energy consumption with a view to doing at least as well as the target groups to which their policy is addressed. They are focussing on rational energy use, sustainable electricity generation, sustainable mobility and raising awareness among households and other target groups.

2.3.1.1 Energy management in buildings and the vehicle fleet of the services of the Flemish Authority

The Flemish Authority is fulfilling its exemplary role in the area of energy management. This is an important signal to local authorities, businesses and households.

In order to fulfil its exemplary role, the Flemish Authority has established two action plans: one entitled “Energy management in the buildings of the Flemish Authority” covering the period 2006-2010, and another entitled “Environmental management in the vehicle fleet of the Flemish Authority” covering the period 2007-10. These action plans contain an overview of existing initiatives in the area of environmental and energy management and a concrete road map of measures and targets for the period from 2006 to 2010 inclusive.

a) The “Energy management in the buildings of the Flemish Authority” Action Plan

This Action Plan aims to achieve rational energy use and sustainable electricity generation within the buildings of the Flemish Authority. It is targeted at all civil servants of the Flemish Authority with special emphasis on those responsible for energy, environmental management focal points, building managers, maintenance firms, contractors and buyers. The action plan covers four steps comprising separate targets and actions.

On 29 May, an interim report of progress in implementing the Action Plan was submitted to the Flemish Government. The final report with the results and an evaluation of the entire period (2006-2010) will be presented to the Flemish Government in 2011.

The four steps of the Plan are as follows:

1. Creation of a basis for energy management with structural anchoring supported by senior civil servants

Energy management was incorporated into most management agreements for 2008-2010 between the Flemish Government and the agencies and departments of the Flemish Authority. The following overriding principle is formulated in these agreements: "The Flemish Authority undeniably has an exemplary function vis-à-vis all other actors in our society: Citizens, businesses, civil society and other authorities. Guidelines imposed on these actors by the Flemish Authority must of course also be complied with by the agencies of the said authorities. The agency must undertake to implement such guidelines, e.g. concerning energy management, environmental management, mobility, etc., rigorously as a consequence of the exemplary role incumbent on the agency as part of the Flemish Authority".

On 15 February 2008, the Flemish Government issued new circulars containing recommendations relating to energy management addressed, on the one hand, to all users occupying buildings of the Flemish Authority and, on the other, to energy managers and staff responsible for the technical management of installations. In 2011, the principles and guidelines relating to rational energy use were incorporated into the tasks of key functions such as building managers, etc.

2. Recording of energy consumption through energy accounting and energy audits

78 buildings/sites of the Flemish Authority situated in the Region of Flanders and having a surface area greater than 1000 m² hold an energy performance certificate (EPC) for public buildings based on the recording of measured energy consumption (situation as at January 2011) (see 2.3.1.4).

For the purposes of performing detailed energy audits, the Facilities Management Agency [*Agentschap voor Facilitair Management*] will establish a framework contract to which Flemish bodies will be able to sign up. In the autumn of 2010, the specifications for energy audits and sustainability studies and surveys relating to renewable energy for (large) buildings of the Flemish Authority were published. A decision will be taken in the course of 2011.

3. Reduction of energy consumption by producing, implementing and adapting a plan to tackle management, employee awareness, amendment of purchasing procedures, etc.

For each existing building housing bodies of the Flemish Authority and where an energy audit already took place during the previous legislature, the Facilities Management Agency has drawn up an inventory of possible energy-saving measures and the respective payback periods. Taking account of factors such as budget, the internal customer's priorities, a master plan containing measures in the subsequent phase and indicating other solutions, the availability of staff, planned office moves, etc., the following projects with a payback period of not more than 10 years are being implemented as a priority:

- placing of condenser batteries;
- placing of thermostatic valves;
- maintenance of heating, cooling and ventilation installations.

In 2001, a framework contract for the performance of energy audits and sustainability studies on renewable energy will be supplied by the various bodies of the Flemish Authority. The aim is that sustainable energy-saving measures will then be implemented on the basis of these audits by means of a call for tenders.

Periodic awareness-raising, information provision and education are extremely important as far as energy management is concerned. The energy management action plan has been explained to all civil servants and building managers.

In 2006 and 2007, a central awareness-raising and information campaign on the subject of energy management and aimed at civil servants was implemented using posters, cartoons, an energy quiz and an energy blog. Every spring, a "Thick Pullover Day" is organised on which the temperature in offices is reduced in order to remind civil servants of the signing of the Kyoto Protocol. In 2012, a "green ICT" campaign is planned to make civil servants and ICT managers aware of the possibilities of using environmentally responsible and energy-efficient ICTs and their role in that respect.

Various information initiatives have been taken vis-à-vis building, logistics and technical facilities managers. On study days, the energy performance regulations and the EPC, the circulars on rational energy use and practical examples of energy management are explained. In 2009, the Facilities Management Agency distributed folders containing information on projects implemented (e.g. relighting, use of glass film, etc.).

Please refer to section 2.3.2 for information on the incorporation of energy management into the procurement procedures of the Flemish Authority.

4. Introduction of eco-friendly energy.

On 23 November 2007 the Flemish Government gave its final approval to the decision introducing a sustainability study for alternative energy systems for new heated buildings larger than 1000 m². The Annex to the Ministerial Decision of 11 January 2008 laid down the techniques to be examined in this sustainability study. The rules require a sustainability study to be carried out but do not require the alternatives examined to actually be implemented. .

New large buildings of the Flemish Authority situated in the Region of Flanders are subject to these rules. For these buildings, therefore, an (eco-) technical and economic sustainability study for alternative systems (cogeneration, heat pump, etc.) must be carried out.

On 4 February 2011, Key Project 4.2 "Sustainable Presence of the Flemish Authority" of the multi-annual "Strong Authority" [*Slagkrachtig overheid*] programme 2011-2014 was approved. This involves the Flemish Authority making its processes more sustainable and setting a good example. In the context of the general aim of the multi-annual programme, it is also hoped to reduce internal operating costs and internal and external environmental costs. One of the aims of the Key Project is to reduce energy consumption by the buildings of the Flemish Authority as measured against the reference year 2009. Clear agreements and descriptions of functions, the necessary back-up (information and training), monitoring and reporting of energy indicators and the system of allocating generic budgets can enable cost savings to be achieved. With this project, important breakthroughs will be achieved and the foundation laid for a new action plan entitled "Energy Management in the buildings of the Flemish Authority", to be launched in 2015.

The new energy management action plan will follow on from the "almost energy-neutral buildings" [*bijna-energieneutrale gebouwen*] action plan developed in 2011. The Directive of 19 May 2010 on the energy performance of buildings indeed requires all new public buildings to be almost energy-neutral from 2019. A

pioneering policy is expected from the authorities regarding the thorough renovation of existing public buildings so as to make them almost energy-neutral.

Important aspects of the new energy management action plan will be:

- The principle of subsidiarity: implementation will take place at the most appropriate level which has both the means and possibilities in that respect. This might involve the use of pilot projects (pilot entities).
- An information point (digital signpost) will be set up to offer relevant information on energy management (training packages, manuals, practical tips, technical information) in a user-friendly manner to various key functions (e.g. building managers, those responsible for energy use, etc.). An attempt will also be made via the information point to spread good practices better internally within the Flemish Authority. All bodies will be called on to pay more attention to internal communication of energy savings measures carried out. External communication concerning the results obtained also stimulates and rewards those who have made an effort. It will therefore be examined which entities within the Flemish Authority should take charge of this external communication (to local authorities, organisations, citizens).
- Guidelines (criteria) relating to energy efficiency and energy savings as regards relevant product categories in public contracts are being developed in the Flemish Sustainable Purchasing Action Plan (see section 2.3.2). The Flemish Authority has set a target of achieving 100% sustainable public procurement by 2020.

b) The “Environmental management in the vehicle fleet of the Flemish Authority” Action Plan

On the basis of this Action Plan for 2007-2010, the Flemish Authority wanted to pay more attention to environmental management in its vehicle fleet. The target group comprised initially of all civil servants of the Flemish Authority.

More specifically, the plan was addressed, *inter alia*, at drivers, audit and inspection staff, staff of the Waterwegen en Zeekanaal nv [Waterways and Canals plc] and nv De Scheepvaart, bos- en natuurwachters [Shipping, Forest and Countryside Wardens plc] and bus drivers from De Lijn, district nurses and carers from Kind en Gezin [Child and Family Association], and civil servants who operate large machinery.

In concrete terms, the Action Plan comprised the following aims and actions:

1. The number of (official) journeys was to be limited as far as possible. To that end, the Flemish Government promotes teleworking via the “Alternative Working” [*Anders Werken*] project and is creating clusters of administrative buildings in the vicinity of (railway) stations.

In 2006, the Flemish Authority obtained a new structure on the basis of its “Better Manageability” policy [*Beter Bestuurlijk Beleid*]. The reorganisation also took place at the level of accommodation, whereby most services of the Flemish Authority in Brussels moved to buildings close to the North Station. Its services in the provinces (external services) are clustered as far as possible into Flemish Administrative Centres (VACs), also situated close to public transport.

The location of a building is scored for the purposes of assessing office buildings on the basis of a system applied by the Facilities Management Agency (AFM) to new, altered or renovated buildings of the Flemish Authority (see 2.3.2).

Flemish Administrative Centres are established according to the principles of “alternative working”: involving a combination of teleworking and flexible office space. Teleworking is possible in smaller satellite offices or from home. The “Working Differently” project was launched in 2000 as a small-scale

pilot project and resulted in an “Alternative Working” unit (active until the end of 2008) and the Circular of 18 August 2006 on the rules governing structural teleworking.

2. For (official) travel, civil servants apply the STOP principle (STOP = Stappen [walk], Trappen [pedal], Openbaar vervoer [public transport] and Privé-vervoer [private transport]). These aims are subdivided into a number of sub-aims.

a) All useful mobility information to be readily available to civil servants and visitors.

Information on the buildings of the Flemish Authority can be found on the internal buildings information site (<http://bz.vonet.be/nlapps/docs/default.asp?fid=495>) and is coupled with a general accessibility guide (<http://www.mobielvlaanderen.be/bereikbaarheidsgids>) with links to the route planners of the public transport companies. For a number of buildings, bicycle routes are also indicated. It is planned to introduce a link in the accessibility guide to information on safe cycling on <http://www.fiets.irisnet.be>.

b) The use of means of transport is inventoried and is regularly monitored for the long-term adjustment of internal mobility policy.

The Federal Programming Law of 8 April 2003 requires all employers employing 100 or more employees to collect certain data for each location with 30 or more employees on the travel to work of staff. Data analyses for 2005 and 2008 can be consulted on the website of the Federal Public Service (FPS) Mobility and Transport.

In 2009, an initial benchmark measurement was made concerning the use of official bicycles within the Flemish Authority and the nature of official travel conducted by car. 348 bicycles were available and were used three times a week on average in the first half of June 2009. Most vehicles are used for mixed use (90%). A further analysis must examine whether the present fleet can be used more rationally.

c) Where possible, (official) travel over short distances to be on foot or by bicycle.

Official bicycles, reflective clothing, wet-weather clothing and bicycle maps of the Brussels Region are made available at the bicycle pick-up sites of administrative buildings.

In 2008 and 2009, 1 957 and 1 358 Flemish civil servants respectively took part in the “Bike to Kyoto” campaign, a bicycle promotion campaign of the Bond Beter Leefmilieu [Better Environment Association].

d) For longer (official) journeys, public transport will be used where possible.

For travel to work, all civil servants receive a free season ticket for public transport. Administrative buildings are also located close to railway stations.

e) The transport company De Lijn is expanding its eco-friendly public transport fleet. It is also providing training on energy-efficient driving for instructors and new drivers and offering refresher courses to existing drivers. Fuel consumption is also being monitored. The aim is to achieve a fuel saving of 5%.

De Lijn owns a fleet of 761 Euro II buses, 711 Euro III buses, 253 Euro IV buses, 214 Euro V buses and 79 hybrid buses. The first measurement results of these hybrid buses reveal a fuel saving of at least 20%, or 500 000 litres of fuel per year.

In 2005, all De Lijn bus drivers received training in preventive driving. This included training in special looking, driving, braking and accelerating techniques aimed at enabling them to drive as efficiently as possible. Since the autumn of 2008, greater emphasis has been placed on safe and energy-efficient driving, including on compliance with the new European Directive on professional competence.

3. Official travel by car is done in an as eco-friendly manner as possible. When purchasing official vehicles, the environmental performance of a car is an important criterion. When using official cars, the principles of energy efficiency and defensive driving conduct are applied.

For 2010 a target was set of ensuring that 80% of newly purchased passenger vehicles had an eco-score of at least 66%. This target figure was incorporated into the first Flemish Sustainable Procurement Action Plan, approved by the Flemish Government on 5 June 2009 (see 2.3.2).

Eco-scores are included in the framework contract for official vehicles of the Facilities Management Agency. Fleet managers using this framework contract, will of course automatically comply with the targets set.

In the Circular of 23 December 2008 concerning the use, procurement and disposal of official vehicles (replacing the Circular of the Flemish Government of 29 April 2005), eco-score thresholds were also set for each category of vehicle.

A benchmark assessment carried out in 2009 revealed the following average eco-scores for the Flemish Authority's fleet:

- 85% of diesel vehicles obtained an average eco-score of 51.5;
- 14% of petrol-driven vehicles obtained an average eco-score of 58.8.

In 2006-2007, 10 professional drivers from the Flemish Authority received training in energy-efficient driving. Alongside theoretical aspects, a number of practical sessions were offered involving driving in traffic accompanied by an instructor who monitored distance, time and fuel consumption. The drivers achieved an average fuel saving of 10.6%. In view of the positive assessment given to this pilot project, it was decided to include training in energy-efficient driving in the training courses offered by the Flemish Authority. The tendering period for the framework contract will be launched in the course of 2011.

The final evaluation of the 2007-2010 Action Plan indicates that more efforts are needed to work towards eco-friendly mobility within the actual operations of the Flemish Authority. In anticipation of a new action plan, proposals for new actions relating to eco-friendly mobility and improving the energy-efficiency of the fleet were included in key project 4.2 "Sustainable conduct by the Flemish Authority" of the multi-annual "Strong Authority" programme 2011-2014 in 2010. The main points are as follows:

1. work on achieving a significant modal shift among the staff of the Flemish Authority by raising awareness of the STOP principle (regarding both travel to work and official journeys) and the further development of teleworking;
2. work on establishing an eco-friendly and energy-efficient vehicle fleet by increasing the eco-scores of newly purchased vehicles, the phasing-out of older and polluting cars and through the launch of a pilot project relating to electric vehicles;
3. stimulating energy-efficient driving by raising awareness and adding training on energy-efficient driving to the range of courses offered by the Flemish Authority.

The fleet data, the average eco-score and the annual fuel consumption of official vehicles will be regularly monitored.

The aspect of efficient fleet management also appears in key project 2.1. “Rationalisation of management-supporting functions” of the multi-annual “Strong Authority” programme. This key project is aimed at making service provision more efficient while using fewer resources. Project proposals relating to the sharing of facilities (including official vehicles) between different entities might contribute to achieving this objective. For example, a car pool could be made available at each provincial Flemish Administrative Centre, which could be used by staff members who work in Brussels or at another Centre for multi-modal official travel (e.g. taking the train to a Centre and then using a car from the local pool to reach one’s final destination). Alongside enhanced cooperation between different policy areas, this requires a central reservation system for cars similar to that of the Cambio spare-part exchange system.

2.3.1.2 Cooperation agreements between the Flemish Authority and local authorities in the area of environmental policy

Since 2002, municipal and provincial authorities have been able to conclude a voluntary agreement with the Region of Flanders in the area of environmental policy. The first cooperation agreement ran from 2002 up to and including 2007. The second cooperation agreement entered into force on 1 January 2008 and will run until the end of December 2013.

a) Cooperation agreement from 2002 up to the end of 2007

The cooperation agreement “Environment as a step towards sustainable development” [*Milieu als opstap naar duurzame ontwikkeling*] was a voluntary agreement that a municipal or provincial authority could enter into with the Flemish Government in the area of environmental policy. Through the agreement, the municipal or provincial authority undertook to work actively on a package of environmental issues (clusters), including energy and mobility. In exchange for this, it received financial support from the Flemish Authority. The agreement involved three target levels: the higher the target level, the stricter the requirements, but the more sustainability principles were achieved. At the highest target level 3, local authorities had to implement an integrated project involving all clusters.

Each year the municipalities had to submit an annual environmental report to the Flemish Authority before 1 April on implementation in the previous year.

Energy cluster

Local authorities were encouraged to develop an energy policy both internally (own services) and externally (target groups, such as population, schools, etc.). They were required to:

- play a significant guiding and encouraging role in the sustainable use of energy;
- set up an energy management system for a certain proportion of their own buildings or sites that produced a reduction in their own energy consumption;
- implement energy saving measures that produced measurable results.

Implementation of the 2002-2007 cooperation agreement was completed in 2008. Cities and municipalities increasingly opted for the energy cluster. In so doing, not only the lowest level was chosen but there was also a continuous increase in the number of municipalities which acted more ambitiously with regard to their municipal energy policy. In 2002, 103 municipalities opted for level 1 and 46 for level 2. At the end of the cooperation agreement, 128 municipalities were implementing the requirements of level 1, and 76 those of level 2. No local authority had signed up to the most ambitious level 3.

The main achievement was the development of an energy accounting system serving as a basis for energy management; this was used in 2007 by 204 municipalities. At the start of the agreement, only 149 municipalities used an energy accounting system of this nature.

The exemplary function of municipalities has come to the fore in the various actions involving awareness-raising amongst the public and in the use of renewable energy in their own operations and the information provided on that matter.

All of the Flemish provinces correctly implemented all of the requirements of the energy cluster over the period 2002-2007.

Mobility cluster

The general objectives of the mobility cluster were to promote cooperation between environment and mobility departments and to provide input from the environment department for the development of environmental aspects in mobility policy. It was expected of local authorities that they would carry out an environmental review of mobility policy and develop specific actions aimed at reducing pressure on the environment.

Implementation of the 2002-2007 cooperation agreement was completed in 2008. At the launch in 2002, 170 municipalities were dealing with the matter of mobility well. Only 17 municipalities opted for the second target level. At the end of 2007, only 116 municipalities were implementing the first level correctly, while 22 others were taking a step further. All of the Flemish provinces correctly implemented all of the requirements of the mobility cluster over the period 2002-2007. At target level 3, for which projects have to be submitted, not a single local authority had signed up.

b) 2008-2013 cooperation agreement

A new cooperation agreement was launched on 1 January 2008.

The municipalities, cities or provinces which sign up to the cooperation agreement undertake to implement at least the basic requirements for all issues (instruments, refuse, environmentally responsible use of products, water, nuisance, energy, mobility, nature, land and sustainable development). In the event of a positive evaluation, a basic subsidy is paid.

In order to stimulate Flemish cities and municipalities to take a step further, an optional distinction level has been introduced. For each requirement making up the distinction level, it is determined how many points can be earned if it is implemented. The municipality can choose from all the requirements making up the ten issues. If 35 points are ultimately earned and a sustainability officer is also appointed (compulsory where the population is more than 12 000), the city or municipality receives additional subsidies.

Municipalities, cities and provinces which sign up for the basics can also submit projects. Apart from a few exceptions, a project can be subsidised up to a level of 50% of direct costs.

As with the first cooperation agreement, local authorities must each year submit a report by 1 April via the multi-annual programme on the implementation of the various issues in the previous year.

Energy

In signing up to the cooperation agreement, the municipality accepts a number of general objectives regarding energy.

For example, it must contribute through its energy policy to achieving the Flemish Kyoto objective in a socially and economically responsible manner, and give broad social support to rational energy use and renewable energy. The municipality also plays an important exemplary role in terms of guiding and stimulating the public, whereby the principles of sustainable energy use are paramount.

The province also pursues a policy which is targeted, through its energy policy, at reducing its impact on the environment to a minimum. At the same time, it implements actions and measures to encourage the public or other target groups to act in a similar way. In support of their policy, the provinces also ensure that they assume a pioneering role.

Interim results for the period 2008-2009

In 2008, 268 municipalities signed up to the cooperation agreement. 249 municipalities were approved in terms of the basic requirements regarding energy. All of the Flemish provinces were also approved.

Of the 273 municipalities which signed up for 2009, 219 were approved in terms of the basic requirements regarding energy. All of the Flemish provinces were also approved.

In 2008, 155 municipalities implemented 831 actions at the distinction level. These figures were up in 2009: 175 municipalities implemented 959 actions.

In concrete terms, the following actions were implemented in the period 2008-2009:

- 98 municipalities operated a comprehensive energy accounting system in 2008; the 2009 figure saw an increase to 114;
- in 2008, 16 municipalities issued energy performance certificates to public buildings not falling within the scope of the EPC system; the number increased to 22 municipalities in 2009;
- 380 (166 in 2008 and 214 in 2009) active awareness-raising campaigns on the subject of rational energy use and 267 (137 in 2008 and 130 in 2009) active awareness-raising campaigns on renewable energy were conducted;
- in 2008, 21 municipalities produced green electricity amounting to 20% (27 amounting to 30% and 65 amounting to 40%) of their overall consumption; in 2009 there was an increase in the number of municipalities producing green electricity: 13 municipalities opted for 20% green electricity, 32 produced 30% green electricity and 105 at least 40% green electricity;
- 160 (84 in 2008 and 76 in 2009) training courses on energy were followed by municipal civil servants;
- in 174 (80 in 2008 and 94 in 2009) calls for tender, energy efficiency was included as a criterion in the purchasing and replacement of equipment. In 2009, there was also an increase in the inclusion of energy efficiency as a criterion in calls for tender relating to the (re)construction and renting of buildings.
- in 2008, energy consumption was reduced by 1% in 30 municipal buildings, and 55 municipalities managed to achieve a 1% reduction in at least two municipal buildings; in 2009, energy consumption was reduced by 1% in 57 municipal buildings, with 80 municipalities managing to achieve a reduction in energy consumption in at least two municipal buildings;
- 104 (52 in 2008 and 2009) actions were implemented to stimulate minor energy-saving measures, such as the use of low-energy light bulbs and water-economy shower heads.

During the period 2008-2010, 398 project applications were submitted relating to energy. A total of 85% of them (339 projects) were approved.

Within the energy project module, municipal and provincial authorities are largely submitting projects designed to make municipal buildings more energy efficient (183 project applications approved). These mainly involve the placing of insulation and high-efficiency glazing, the replacement of old heating installations and the replacement of lighting with energy-efficient alternatives.

94 projects were also approved for the fitting of renewable energy installation, in particular photovoltaic panels and solar-powered boilers.

A number of other projects were submitted relating to energy-efficient new buildings, energy-efficient (public) lighting and awareness-raising projects.

Mobility

In the context of the 2008-2013 cooperation agreement, the subject of mobility is focussed primarily on stimulating the integration of environmental and mobility issues at municipal level. In signing up to the cooperation agreement, the municipal or provincial authority undertakes to pursue a policy targeted at promoting the integration of environmental policy, mobility policy and land-use policy. In this way, they are seeking to make a contribution to reducing the pressure on the environment exerted by the transport sector. This pressure on the environment includes air pollution, effects on nature, green structures, disruption and water pollution.

The municipal and provincial authorities will also stimulate responsible transport conduct among their inhabitants on the basis of awareness-raising campaigns relating to the environmental issues created by the transport sector. To back up its policy, the municipal or provisional authority will ensure that it assumes a pioneering role by, for example, expanding its eco-friendly vehicle fleet.

Interim results for the period 2008-2009

In 2008, 268 municipalities signed up to the cooperation agreement. A total of 244 municipalities were approved in terms of the basic requirements regarding the issue of mobility. All of the Flemish provinces were also approved.

Of the 273 municipalities which signed up for 2009, 219 were approved in terms of the basic requirements regarding mobility. All of the Flemish provinces were also approved.

In 2008, 149 municipalities implemented 400 actions meeting the criteria. In 2009, a slight increase was observed in the number of municipalities submitting actions at the distinction level. 173 municipalities together implemented 504 actions which could be approved under the heading of mobility.

In concrete terms, the following actions were implemented in the period 2008-2009:

- 98 (32 in 2008 and 55 in 2009) eco-driving courses were organised for municipal staff;
- 90 (43 in 2008 and 47 in 2009) rapid checks were carried out to determine whether the mobility plan was still up-to-date;
- 14 (9 in 2008 and 5 in 2009) municipalities compiled maps of air pollution caused by traffic;
- 521 (224 in 2008 and 297 in 2009) active awareness-raising actions were carried out relating to the environment and mobility;
- 58 (22 in 2008 and 36 in 2009) analyses of the vehicle fleet were carried out;
- 92 (53 in 2008 and 39 in 2009) inclusions of environmental aspects in the vehicle purchasing plan
- 34 (13 in 2008 and 21 in 2009) municipalities established an action plan for an eco-friendly vehicle fleet;
- 8 (4 in both 2008 and 2009) business transport plans were established.

During the period 2008-2010, 255 project applications were submitted relating to mobility. A total of 95 % of them (241 projects) were approved.

On the basis of this project module, municipal and provincial authorities are largely buying eco-friendly vehicles. These vehicles must meet the minimum environmental requirements. In the case of passenger vehicles and delivery vans, the vehicle must obtain a minimum eco-score. For freight vehicles, the European

standard is taken into account. By buying electric vehicles, for example, the municipal or provincial authority also fulfils its exemplary function.

2.3.1.3 Exemplary role of schools

By investing in energy-efficient school buildings and through rational energy use in schools, the energy bill for schools can be reduced in a structural manner. At the same time, schoolchildren and students receive tangible proof of what is possible in the area of energy saving. After all, it is much easier and more convincing to teach schoolchildren, the future generation, about the content and importance of sustainable development if the ideas behind sustainable development are applied by the school itself.

a) Subsidies for energy-saving measures in schools

A programme has been established under which schools have been able since 2006 to apply to the Flemish Educational Infrastructure Agency [*Vlaams Agentschap voor Infrastructuur in het Onderwijs*] (AGION) for a subsidy for energy-saving investment such as energy-efficient heating and lighting, floor, wall and roof insulation, pipe insulation and improved double-glazing. Between 2006 and 2011, a € 153 million budget was released for such subsidies. For the coming years, only € 25 million per year is available.

In 2006 and 2007, subsidies were granted to more than 600 schools. Approximately 300 schools have already implemented energy-saving measures. They have saved more than € 1 million in total on their energy bill and have reduced their energy consumption by an amount corresponding to the energy consumption of 1 750 families.

b) Construction of new energy-efficient school buildings

Following a scientific study which revealed that E70 was the optimum energy performance standard in economic terms for new schools, the E standard for all subsidised newly built schools for which an urban development permit was applied for after 1 January 2008 was reduced to E70 (Decree of 7 December 2007 concerning energy performance in schools). The extra investment costs involved in meeting the E70 standard are subsidised in full via AGION.

By way of a pilot project, 25 passive schools spread across all provinces are being built. It is expected that these exemplary projects will lead to significant growth of the market for passive building products and greater experience on the part of architects, consultancy firms and building contractors in the area of passive buildings, as a result of which the construction price of passive schools and other passive buildings will fall. The additional costs of passive buildings are subsidised in full. For this pilot project, a separate budget of € 21 million is available. AGION's appeal for the construction of passive schools produced 74 applications. A selection committee assessed the projects on the basis of a number of predetermined criteria. Account was taken, for example, of the speed within which the project could be completed, the representativeness of the project, the readiness to pursue energy performance on a permanent basis and to open the project up to interested parties, and the overall vision of the competent authority concerning sustainability. Ultimately, 25 projects were selected from all educational networks which together represented a total construction volume of 65 565 m². The building phase of the first project will be launched during 2011.

c) Accompanying measures (Education Department)

Subsidies for the start-up of energy accounting, energy auditing and heating oil meters and the adjustment of heating installations

Since 10 March 2006, the operator of the electricity distribution network has been required in accordance with its public service obligations (see 2.2.2.3, measure E.1) to offer energy accounting free-of-charge where this is requested by educational establishments for buildings or building sites larger than 1 000 m². Energy

accounting should make it possible to monitor electricity, gas, heating oil and water consumption. Only the start-up costs are not borne by the network operator, but by the school itself. In 2008, the start-up of accounting was subsidised by the Flemish Ministry of Education and Training so that both the start-up and follow-on costs of energy accounting were free-of-charge.

Alongside the start-up of energy accounting, the carrying-out of an energy audit is an essential component of any energy management system. An energy audit gives an idea of the energy-saving potential in a school or centre, indicates how much the possible energy-saving measures would cost and how quickly those costs will be recovered. In addition to the subsidy from the electricity distribution network operator, a subsidy was also granted in 2006 by the Flemish Ministry of Education and Training so that a total of 85% of the costs of an audit were subsidised.

Schools and higher-education establishments could, in the period from 1 January to 30 June 2006, receive a subsidy from the Flemish Ministry of Education and Training for the installation of heating oil meters. This subsidy covered 100% of the cost, subject to a maximum of € 350 per meter.

During the 2006-2007 academic year, schools were able to ask for a subsidy of € 350 to have their heating installation adjusted by a specialist. In addition, the heating installation was examined in full by a specialised consultancy firm in three pilot schools. On the basis of the experience of these schools, a brochure outlining a model approach was distributed to all schools in 2009. The subsidy arrangement for the adjustment of heating installations was repeated in the 2009-2010 academic year with a subsidy of € 500 per project.

Provision of information and training

Various activities have been targeted at changing the behaviour of teachers and pupils.

In order to help management, technical services, building managers, teachers and pupils in developing energy-saving actions, a brochure containing 20 tips for an eco-friendly school was distributed in 2005.

At the end of February 2007, the Flemish Ministry of Education and Training provided all secondary schools with a DVD of the film “An Inconvenient Truth” on climate change together with a folder containing specific energy-saving tips for teachers and pupils.

In January 2008, five free brochures on rational energy use were distributed to all schools. In addition to a brochure entitled “Energiezorg” [energy management] containing general information and tips to make schools more energy-friendly, four brochures dealt with specific topics: lighting, heating, insulation and ventilation and passive schools.

The website www.ond.vlaanderen.be/energie is being further developed.

To support schools and, in particular, the energy coordinator, general training sessions were given in all provinces in 2006, 2008, 2010 and 2011.

In 2009 and 2011 a more technical training entitled “energy coordinator in schools” was organised in conjunction with the vzw Centrum Duurzaam Bouwen [Centre for Sustainable Construction]. In this way, schools are receiving the necessary information in-house to set up an energy management system in a structural manner. In 2010 two feedback and review days were organised at which energy coordinators who had already received training could exchange their experiences.

Training on energy accounting will be organised in 2011-2012 together with the distribution network operators.

2.3.1.4 Energy performance certificates for public buildings

Under the Decree of the Flemish Government of 20 April 2007 on the introduction of an energy performance certificate for public buildings, (REPLACED BY THE Energy Decree of 19 November 2010), public organisations were required to have an EPC by 1 January 2009. New public buildings must obtain the EPC within 15 months of their entry into use.

Public buildings are defined as buildings of the Federal, Flemish, provincial or municipal authorities and buildings in which public services such as education or healthcare are provided.

This transposes European Directive 2002/91/EC on the energy performance of buildings, which stipulated that public buildings frequently visited by the public and with a total floor area of more than 1 000 m² should have an EPC and display it in a prominent place visible to the public.

The EPC does not impose requirements on the building but assigns the building a score which provides the owner and users with information on the building's quality in terms of energy efficiency. The EPC also contains a summary of the energy-saving measures which would be worthwhile in the short term. The EPC must be displayed in a prominent place visible to the public in order specifically to help raise awareness among the public.

The public organisation must itself take the initiative to produce the EPC. To that end, a request can be made for assistance to one of the energy experts for public buildings accredited by the Flemish Energy Agency [*Vlaams Energieagentschap*]. The public organisation may also appoint an internal energy expert to prepare the EPC. This must be an employee of the public organisation who has worked within the organisation for at least two years and who has experience in the field of energy management. Internal energy experts may only prepare an EPC for the public organisation for which they work.

There are two training institutes which are recognised for the purposes of organising training for accredited type C energy experts.

The EPC must be prepared using a web application which has been made available to energy experts by the Flemish Energy Agency. The score is calculated the basis of metered energy consumption over a period of exactly one year. The input data are forwarded for each EPC to an energy performance databank maintained by the Flemish Energy Agency so that the latter can process the data and, on the basis of all the data collected, develop appropriate policy measures.

At the end of 2010, 5 989 public buildings had an EPC. A total of 1 844 energy experts for public building were registered, of which 1 045 were type C experts and 799 internal experts.

In the new European Directive on the energy performance of buildings (2010/31/EC), the floor area threshold for obtaining an EPC has been reduced for public buildings from 1 000 m² to 500 m² by 9 January 2013 and 250 m² by 9 July 2015. As a result of the new Directive, the Flemish Government finally approved an amendment to the scope of the requirement for public buildings to have an EPC on 6 May 2011. The draft Decree submitted to the Flemish Parliament stipulates that, from 1 January 2013, buildings with a floor area of more than 500 m² which are frequently visited by the public will have to display an EPC. From 1 January 2015, this requirement will apply to all public buildings larger than 250 m².

2.3.1.5. Additional measures taken by the Flemish Authority in support of local energy policy

The Flemish Authority has also taken a number of legislative and promotional initiatives to support local authorities.

a) 20% subsidy from the Flemish Authority for the installation of solar-powered boilers systems, heat pumps or micro cogeneration plants by local authorities

In addition to the grant from network operators (see point 2.2.2.3, measure E.1.), local authorities have since 2007 been eligible for a subsidy from the Flemish Authority covering 20% of the investment costs of installing a solar-powered boiler (Ministerial Decree of 26 September 2006). In 2007 and 2008, 18 and 8 applications respectively were approved for a total volume of subsidies of some € 175 000 corresponding to a surface area of approximately 750 m². From 2009, the subsidy remained in force in an amended form, i.e. as a project subsidy under the Cooperation Agreement (see 2.3.1.2.).

Since 2009, local authorities have been able to obtain a subsidy from the Flemish Authority covering 20% of the investment costs of installing a heat pump or micro cogeneration plant, on top of the network operator grant (Ministerial Decree of 24 October 2008). In 2009 and 2010, a total of 21 projects were approved (5 micro cogeneration plants and 16 heat pumps). From the middle of 2010, local authorities have been able to receive a project subsidy of 50% via the Cooperation Agreement (see 2.3.1.2.).

b) Financial support for energy-technology demonstration projects

On the basis of the “energy-technology demonstration projects” project, the Flemish Authority wishes to stimulate the use of certain innovative technologies which have not penetrated the Flemish market to a sufficient degree. By demonstrating the use of new technologies in real circumstances, the Authority wishes to promote confidence in such technologies and enable potential investors to benefit from the experiences which a first independent user has had with them. Applications may be submitted by firms, non-commercial bodies, individual persons, inter-municipal agencies, non-profit associations, and municipal and other authorities. The financial support amounts to a maximum of 50% (excluding VAT) of the costs directly linked to the application of the innovative element of the new technology. The selection criteria include the amount of energy saved, the innovative nature, the reduction of CO₂ emissions, the economic return and the reproducibility of the project.

From 2006 to the present, six demonstration projects have been selected, but not one by a public authority. The programme will remain in force in the coming years, with an estimated annual budget of € 400 000.

c) Public-service obligations of the electricity distribution network operators in respect of rational energy use

On the basis of their public-service obligations relating to rational energy use (see 2.2.2.3, measure E.1.), operators of electricity distribution networks are required to give support to municipal and provincial authorities in their local energy policy. In this respect, they are required to offer the following:

- a progress check on energy accounting;
- support in carrying out energy audits (financial support, support in drawing up specifications, support in interpreting audit results);
- organisational support in implementing energy-saving investments arising from the energy management system;
- third-party financing or other financing mechanisms for the implementation of energy-saving investments.

For more information on these actions, please refer to point 2.5.

d) Communication initiatives in support of local authorities

The Flemish Authority also offers municipal authorities a number of supporting communication resources:

- on the website www.energiesparen.be, there is a grant module listing all financial support measures for energy-saving investments for each municipality. This includes a search function for individuals, companies, associations, schools and authorities;

- municipal authorities can request all brochures from the Flemish Authority free of charge to distribute to their residents. The Flemish Authority also offers new brochures to all authorities as a matter of course;
- the Flemish Authority also provides off-the-peg articles on energy saving for inclusion in municipal information sheets.

2.3.2. Specific measures for public procurement

On 5 June 2009, the Flemish Government approved the Flemish Sustainable Public Procurement Action Plan [*Vlaams Actieplan Duurzame Overheidsopdrachten*]. The Flemish Authority is seeking to achieve 100% sustainable public procurement up to 2020 for the product categories for which it has established sustainability criteria. To achieve this, it will develop and implement four consecutive action plans.

To support Flemish bodies in respect of their purchasing policy, the following instruments are already recommended:

- the Public Waste Agency of Flanders [Openbare Vlaamse Afvalstoffenmaatschappij – OVAM] has developed a calculation mode in the form of a software package which is available via the internet at www.producttest.be. Organisations can use it to test how well they perform with regard to environmentally responsible consumption and product use. The software package also supplies a list of criteria, including energy criteria, to which can be added in specifications. The criteria for the product category “electronic and electrical equipment” are being updated in 2011;
- the Department of Environment, Nature and Energy subsidises the environmental purchase indicator (www.milieukoopwijzer.be). This instrument lists criteria, including energy criteria, in ranking order and provides an overview of suitable products and suppliers of those products. Some examples are lighting, drinks machines and calculators;
- the Federal Authority manages the “Guide Sustainable Procurement (www.gidsvoorduurzameaankopen.be), which indicates sustainability criteria for certain product categories. In 2010, the Flemish Authority established cooperation with the Federal policy level in order to align the Federal and Flemish development of criteria with each other. This cooperation came further to the request from sectorial federations, producers and suppliers for a set of criteria to be developed for Belgium. In future (provided the Flemish Government gives its approval) purchasers within the Flemish Authority will for certain product categories will be referred to the criteria of the Guide Sustainable Procurement;
- agreements have been reached with the ICT service provider (HP-Belgacom) relating to an energy and environment-conscious purchasing policy. The products in the ICT contract product catalogue meet environmental and energy-related criteria and are accompanied by an eco-fact sheet. In all future negotiations with suppliers under this contract, account will be taken of these environmental and energy-related criteria;
- in February 2008, the first version of the guide 'Waardering van kantoorgebouwen - op weg naar een duurzame huisvesting voor de Vlaamse overheid' [Office Building Assessment – towards a sustainable housing of the Flemish Authority] was published. This guide containing criteria is taken into account in all specifications relating to the construction, renovation or rental of the Authority’s buildings and is therefore decisive for the award of contracts. A building is assessed on the basis of criteria relating to three aspects: energy, liveability and well-being, environment and sustainability. For each criterion, a score of 1 to 4 is given. On the basis of the total score, a building is finally awarded 1 to 4 stars. This guide has been evaluated and tested on various buildings in Belgium and abroad which stand out in terms of

sustainability. In October 2010 a revised version of the guide was published (see www.vlaanderen.be/duurzaamkantoor). The guide has now also become a reference document for the construction sector;

- in the Circular of 23 December 2008 concerning the use, procurement and disposal of official vehicles (replacing the Circular of the Flemish Government of 29 April 2005), eco-score thresholds were also set for each category of vehicle. Eco-scores are included in the framework contract for official vehicles of the Facilities Management Agency. All vehicles available on the Belgian market are included in the databank www.ecoscore.be with an indication of their eco-score.

On the basis of the abovementioned measures, it would appear that measures b), c) and f) from the list in Annex VI to the Energy Efficiency Directive are being implemented.

Local authorities are also stimulated on the basis of the Cooperation Agreement (see 2.3.1.2) to include energy efficiency as a criterion for public contracts.

2.4. Ensuring availability of advice and information

Communication campaigns are being carried out within the Flanders Region for the various target groups

2.4.1. Private individuals

2.4.2.1 Promotion of rational energy use and green energy in housing

According to the most recent survey on energy awareness among households conducted for the Flemish Energy Agency (2009), 92% of respondents considered energy saving to be important or very important. This fairly high level of energy awareness is partly the result of all the communication campaigns carried out.

Through publications, media campaigns, free publicity, presence at building trade fairs, the Energy Saving Month (an annual campaign in October), the distribution of an annual energy calendar, the website www.energiesparen.be and digital newsletters, continuous awareness and a growing basis is created for rational energy use.

In the period 2008-2010, the Flemish Energy Agency distributed some 1.3 million printed publications, of which 480 000 related to financial support for energy-saving investments, 220 000 to the energy performance certificate in respect of purchase and renting, 90 000 to the energy performance rules for new buildings, 70 000 to green energy and 30 000 to energy-efficient renovation.

These brochures were principally distributed via the following channels: information pillars of local authorities, on request via the telephone number 1700 (the free information service of the Flemish Authority), via construction trade fairs and other events, and through associations and companies active in the sector.

The number of brochures and folders that the Flemish Energy Agency continues to distribute in printed form has been reduced, but a large number of publications are downloadable in digital form.

The three digital newsletters distributed by the Flemish Energy Agency (concerning the energy performance rules, the energy performance certificate and energy auditing and eco-friendly energy) are a success. They have some 9 200, 5 900 and 4 600 subscribers respectively.

Large media campaigns have focussed in recent years on the following topics:

- 2008: "Green energy is not science fiction",
- end of 2008/beginning of 2009: Introduction of the energy performance certificate for the purchase and renting of residential buildings ("What will your house's energy report be like?");

- spring 2009: “Is your house also leaking money?”: Introduction of the Flemish roof insulation grant; a brochure with a print run of 1.9 million copies was distributed house-to-house.
- October 2009: continuation of the roof insulation campaign: “Keep your roof warm”;
- summer 2010 campaign concerning green heating (“Go for green heating”);
- October 2010: “Roof insulation for everyone”: an information package on roof insulation was distributed to potential groups via various intermediaries (Public Social Welfare Centres, poverty associations, etc.).

The website www.energiesparen.be plays an important role in communication on rational energy use. According to the survey of the Flemish Energy Agency, 48% of Flemish people had heard of the site in 2009. The average monthly visitor figures have increased over recent years (2007: 55 000, 2008: 80 000, 2009: 120 000, 2010: 110 000 visitors per month). The peak in 2009 was the result of the large-scale media campaign on roof insulation.

Most of the visitors are looking for the energy grants available in Flanders. The website has a handy search instrument which, if one enters a post code, immediately displays all the grants applicable in the municipality in question. The motivated visitor is further directed to an investment calculator for various investments relating to rational energy use. He is quickly able to calculate the energy saving and amortisation period of his planned investment, taking account of the energy grants available. Those sections of the website concerning the energy performance rules and the energy performance certificate in relation to the purchase or renting of residential buildings have been expanded in recent years and form an important source of information.

The Flemish Energy Agency responds to direct questions from private individuals and businesses both by telephone and in writing (primarily by e-mail). In 2009, almost 25 000 e-mail enquiries were answered, while the corresponding figures for 2010 was 20 000.

The Flemish Authority also encourages private individuals to seek external tailored advice on energy saving through its accreditation of energy experts. Type B energy experts have to follow training with an accredited training institute and take a test. There are two training institutions which are authorised to issue a recognised certificate to type B energy experts. Accredited energy experts use compulsory audit software (Energy Advice Procedure – EAP), which the Flemish Energy Agency supplies free-of-charge. In this way, it acts as a guarantor for high-quality advice. At the end of 2010, therefore, 1 496 accredited type B energy experts and a total of 1 332 independent energy audits were carried out

Energy performance certificates have also been required for apartments since 1 November 2009 (sold) and 1 January 2009 (rented). This certificate enables apartments to be compared with each other in terms of their energy performance. They can only be drawn up by accredited type A energy experts who have obtained a certificate from one of each accredited training institutes. At the end of 2010, there were slightly more than 4 200 accredited type A energy experts, and more than 306 000 valid energy performance certificates had been drawn up for existing residential buildings.

On the basis of the public service obligations incumbent on electricity distribution network operators, free energy scans have been offered to private individuals since 2007. Energy scanners follow a training course organised by the network operators in conjunction with external training partners. Each energy scan is entered by the scanner into a software programme. From the time this obligation took effect up to the end of 2010 around 84 000 energy scans were carried out.

The European Directive 2002/91/EC on the energy performance of buildings (since replaced by Directive 2010/31/EU) requires Member States to provide for a one-off inspection of heating installations older than 15 years. The Flemish Authority has transposed this requirement by means of its Decree of 8 December 2006. The inspection requires an assessment of the efficiency of the boiler and an assessment of the boiler sizing as compared to the heating requirements of the building.

For central heating boilers smaller than 100 kW, the audit must be carried out by an accredited technician for fluid and gaseous fuel within two years of the installation reaching the age of 15 years. In order to be accredited, the technician must follow an additional one day's training. If a heating installation which is at least 13 years old is inspected as part of the energy audit of an apartment (EAP, see above), this is also accepted as a heating audit. The audit is carried out using a calculating device made available free-of-charge by the Flemish Authority. There are at present some 5 800 accredited technicians in Flanders able to carry out this heating audit.

A heating audit is compulsory for larger boilers (above 100 kW) or if the heating installation comprises several boilers. This audit is also carried out by an accredited technician for fluid and gaseous fuel who must have followed extra training of at least 24 hours. The audit software is also supplied free-of-charge by the Flemish Authority. The first training course will start in the autumn of 2011.

Finally, various membership associations have in the last years received optional project subsidies for the use of one or more energy consultants. The money in question enabled the associations in question to develop their work in the area of energy saving within the context of their specific activities and aimed at their particular target group.

Families were targeted by the Gezinsbond [Families' Association], the ACW (linked to the Christian employees' associations), the Neos, Okra and S-Plus associations for the elderly and the Samenlevingsopbouw, an association representing the poor.

Under the energy performance rules which entered into force on 1 January 2006, architects play a crucial role in raising awareness among private individuals and in ensuring that the rules are correctly implemented. This target group is reached through an energy consultant within the NAV (Flemish Association of Architects) and the BVA (Federation of Flemish Architects). Building contractors are reached via their professional federations, the Bouwunie and the Vlaamse Confederatie Bouw.

Energy consultants have an enormous reach throughout Flanders. The focus lies not merely on targeting various categories of members (the elderly, poor, families, builders and renovators), but the organisations themselves work on developing their exemplary role.

Following an evaluation, the Flemish Government has decided to support projects involving energy consultants in a more structural manner from 2011. After a call for projects was launched at the end of 2010, four energy consultants were selected to support the target group of households: the Bond Beter Leefmilieu Vlaanderen vzw (environmental pollution), Samenlevingsopbouw Provincie Antwerpen (target group: the poor), Neos (target group: the elderly), Gezinsbond (target group: families). In the next three years, these organisations will raise awareness among the public and provide information on rational energy use. They will also try to achieve actual energy savings. Building contractors will also be supported by an energy consultant of the Bouwunie, while for architects there is still an energy consultant within the NAV.

2.4.1.2 Promoting green driving and green vehicles

Various awareness-raising campaigns relating to energy-efficient driving targeted at businesses, associations and motorists in general have been launched by the association Bond Beter Leefmilieu in the context of the European ECODRIVEN project. The website www.eco-driving.be gives 12 tips on how to drive more efficiently and more safely and also contains information on training bodies and examples of good practice.

The "Rustig op de Baan" [Gently on the road] campaign is being continued. Further target groups (e.g. lorry drivers) are being focussed on and large-scale campaigns are being carried out. The website www.ikbenrob.be not only offers tips on how to drive more energy-efficiently, but stickers, folders and posters can also be ordered.

Move for Climate (www.moveforclimate.be) is another initiative of Voka [the Flemish Business Network] and the Flemish Brabant Chambers of Commerce seeking to raise awareness among businesses, and above all their employees, of the damaging impact of car travel on the climate.

The concept of the “eco-score” of a vehicle based on emissions and energy consumption is being developed on behalf of the Flemish Authority. On the website www.ecoscore.be, general information can be found on how to calculate the score, and there is also a handy search engine with the eco-score of many leading models, an overview of the average eco-score of the entire Belgian fleet and, finally, the eco-score of one’s own vehicle. By means of brochures, folders, car magazines and car websites, the public and fleet holders are being made more aware of the eco-score.

2.4.2. Businesses

The Flemish Authority has been distributing information and advice on rational energy use via energy consultants since 2006. Various sectorial organisations receive financial support to recruit energy consultants, in particular agricultural and horticultural businesses, businesses, the building sector and architects.

The functions of these energy consultants are largely parallel and are coordinated via steering group meetings convened and chaired by the Flemish Energy Agency.

Their basic functions were as follows in the period 2006-2010:

- to make the target group aware of the project;
- to provide front-line advice on rational energy use;
- to publish a brief list on a website of information sources, publications, regulations, support measures and addresses of bodies relevant to the target group in the context of energy saving;
- to develop case studies relating to rational energy use for publication in the journals of the relevant target group;
- to organise feedback to policy on the basis of the results of the project.

From 2011, the Flemish Government is subsidising energy consultant projects in a more structured way. These projects will have to contribute in concrete terms to realising well-defined priority policy goals. The Minister for Energy launched calls for projects to that end at the end of 2010 for the target group of households (see 2.4.1.1), construction professionals (see 2.4.1.1) and businesses. Within the confines of the available resources, the best projects receive a subsidy for up to three years. As far as the target group of SMEs is concerned, emphasis is placed on the actual achievement of energy savings. In support of the target group of businesses, three energy consultants were selected at the beginning of February for a period of three years: BB Consult vzw (target group: agricultural and horticultural businesses, Unizo vzw. (the self-employed) and Voka-Vlaams Economisch Verbond vzw (SMEs)).

Together with VOKA, Unizo, Boerenbond and the Agentschap Ondernemen [Businesses Agency], the Flemish Energy Agency has developed a tool which enables businesses to themselves evaluate energy consumption within their company and which also gives recommendations on energy-saving measures to be carried out. The Agentschap Ondernemen has also developed a consultable reference databank of energy-saving measures implemented within businesses.

2.4.3 Education

The Milieuzorg op School (MOS) [Environmental management at school] project focuses on environmental management and is targeted at schools from infant schools to secondary education. The aim of MOS is to establish an environment management system in schools together with pupils, teachers, management and parents. The MOS project helps schools develop their environmental management system in a pedagogically

responsible manner. Schools receive the necessary tips and back-up to tackle one of the environment topics and make environmental management a permanent focal point in the school.

A number of topics are dealt with in primary schools: waste prevention, water, energy, mobility and nature at school. In secondary schools, the following topics can be selected: water and sustainable materials, energy, greening, mobility at school and water.

On the MOS website www.milieuzorgopschool.be, schools can choose an educational level in order to surf further. They will find more information on how to join the project, the five topics, educational material, the schools already taking part, the criteria for logos and the green flag, events concerning nature and environmental education, newsletters and links to interesting websites (e.g., "Thick Pullover Day", the environmental purchase indicator, inventory of events concerning nature and environmental education, websites of education centres, etc.).

The MOS project newsletter "MOSterd" comes out twice a year and is sent to all Flemish schools, bodies organising events concerning nature and environmental education, libraries, environmental officials, sustainability officials, inter-municipal bodies, environmental organisations and educational workers and bodies (educational advisers, the Schools' Inspectorate, the Education Department). MOSterd offers schools practical ideas on how to develop and expand their own environmental management system.

In 2010, a series of material on the subject of mobility was prepared for primary schools. The topic of "sustainable mobility" is central. Primary school children generally do not decide themselves how to get about. By focusing on the subject, they can form a nuanced opinion and later make a more conscious choice about their place in relation to transport. The material offers various opportunities to explore the subject with children through activities. In each province a study day was held to present the material with its new activities to teachers.

In secondary schools, MOS launched the MOS energy route in September 2010. The MOS route challenges schools to work towards a MOS logo. A blog (inzoomenopenergie.blogspot.com) is a central feature of this route. This blog regularly sets tasks following the MOS roadmap. Photos, short films, reports or newspaper articles concerning actions can also be found. In the 2010-2011 school year, about 20 schools took part in the energy project.

Schools are encouraged to obtain the MOS logo. The MOS logo comprises three sections. The quality label indicates that the school is entering an educational process. The school systematically organises environmental actions and makes an effort to ensure that all pupils in the school take an interest in environmental management. Emphasis is placed in prevention. Once the school is in possession of all three sections, the logo is complete. The school can request one part of the logo every school year. The school itself determines the rate at which it will earn the three sections; it does not have to happen in three years. The school also determines which topics it wishes to deal with. Schools may also deal with several topics in the same year or can focus on one topic in their activities for the year.

In 2007, 3 232 schools were MOS schools. That is 63% of all Flemish primary and secondary schools. In 2010, this figure had increased to 3 779 schools (74%). The number of logos granted is also increasing. In 2007, a total of 1 387 schools displayed one or more logos. By 2010, 1 935 schools had earned one or more logos.

True to its traditions, MOS has since 16 February 2005, the date on which the Kyoto Protocol entered into force, also organised its "Thick Pullover Day". 470 schools took part the first time round, but this figure had risen to 1 020 primary and secondary schools in 2010. This corresponds to approximately 383 000 participants.

What started as a symbolic action to welcome the Kyoto Treaty has grown into a permanent feature in schools. The campaign focuses on simple measures which can subsequently be stuck to in a structured way:

turning out lights when leaving a room, switching equipment off after use, setting heating at the correct temperature, etc. Schools also introduce a range of enjoyable and educational activities. The aim of the Thick Pullover Day is to raise awareness among pupils, teachers, management and other school staff of how to ensure that the school is energy-efficient. It is a virtue of the MOS schools opting for the topic of energy that they do not merely focus on energy on Thick Pullover Day. The energy debate is a permanent feature throughout the year. Activities take place in the classroom during lessons and at school through the implementation of concrete measures.

The MOS project has now been extended by the Flemish Government for a further three school years, from 1 September 2010 to 31 August 2013.

The focus has changed slightly in the new agreement. The guiding principle is now explicitly "Education on Sustainable Development".

The MOS project is no longer targeted at higher education, but teacher training by universities can still rely on support from the MOS project (though they can no longer become a MOS school). The Ecocampus project is concerned with environmental management on campus and within associations (see below).

Schools with all three sections of the logo can earn the Eco-School Green Flag every two years by integrating environmental management both in the structure and the educational programme of the school and by organising activities to that end.

Green Flag schools may also take part, also in the Eco-Schools context, on a voluntary basis in the International Eco-Schools Network.

In order to stimulate interest in environmental management in higher education, the Ecocampus project has been launched as a logical successor to MOS. In the middle of 2008, an agreement was concluded between the Flemish Authority and five associations within Flemish higher education in order to offer Ecocampus in all higher education institutions. There is provision for seven Ecocampus advisers housed within the five higher-education associations. In this way, they can reach all universities in an optimum fashion. The agreement was concluded for a period of three years running from 1 September 2008 until 31 August 2011.

The pivot for Ecocampus activities is the environmental working group. This is composed of students, university lecturers, environmental officers and other staff members. The environmental working group builds on ongoing initiatives and focuses on the three Eurocampus areas of action:

1) Environmental management in student life

Students are called on to roll their sleeves up. Each academic year, Eurocampus plans a number of actions relating to environmental management, specifically targeted at students. The following energy-related actions have been implemented:

- the drafting of a brochure on rational energy use full of tips and tricks for students;
- dissemination of energy tips for students on websites and in brochures;
- support for an energy campaign in student residences at the University of Ghent (lighting);
- follow-up to the "energy digs" competition;
- provision of material aimed at raising awareness of energy issues;
- Thick Pullover Day (see MOS).

2) Environmental management on campus

Universities have an exemplary function in the area of environmental management. Activities can focus on various topics: waste, water, sustainable nutrition, energy, mobility, sustainable purchasing, etc. For each

topic, Eurocampus provides suggestions and practical tips, but also a roadmap enabling as complex an issue as environmental management to be tackled. The following actions have been implemented regarding energy:

- providing a contact point for institutions to deal with questions relating to energy;
- mutual exchange of knowledge within the association;
- supply of energy meters and a manual for staff and students;
- drafting and supply of a guide to the energy performance certificate for buildings;
- promotion of the “Climate areas for buildings action” for institutions and student accommodation;
- regular energy measurements in cooperation with technical services, and explanation of results to staff and students.

3) Environmental management in training

It is very important that environmental management should feature in the curricula of all training courses. In this way, students are encouraged during their training to act in an eco-friendly manner and to maintain that attitude in future professional life. Ecocampus offers additional stimuli in this area, such as ready-made packages and other initiatives such as study days. Specifically with regard to energy, lecturers are encouraged to incorporate all aspects of energy in their teaching.

2.4.4 Associations

On the basis of the JeROM (Jeugd [youth], Ruimte [space], Omgeving [surroundings] en Milieu [environment]) project, support is granted to youth groups for the integration of environmental management into their activities. An energy management manual tailored to youth organisations has been produced and a project has been launched to assist youth groups with eco-friendly building, renovation and insulation of their meeting places (see <http://jerom.lne.be>). A number of tools have also been launched to promote eco-friendly youth camps. The Jerometer enables the ecological footprint of a camp or activity to be measured and also gives tips on reducing that footprint. An entire camp topic has been developed with sustainability at the centre.

Adult associations also receive public support to integrate of environmental and energy management into their activities.

A digital indicator for internal environmental management has been developed for various target groups, including socio-cultural organisations. This offers a user-friendly overview of information sources, instruments, methodologies and good examples of internal environmental management.

Adult associations are helped with the content of training offered to their departments. For example, vzw Ecolife developed the training package 'Kraak je energiekosten' [Break your energy costs] with support from the Flemish Authority and in conjunction with various socio-cultural organisations. Various methods (quizzes, photos, etc.) are offered to enable associations to reduce the energy costs of their members in an enjoyable way. Topics dealt with are global warming and CO₂ emissions, heating and warm water, electricity, mobility and nutrition. The package includes tips on making financial savings (see guide with the training package on <http://milieueducatie.be>).

The Flemish Authority has also subsidised a project by the KWB (Christian Employees Movement) to encourage families to make more rational use of energy around their homes. Firstly during an information evening on “My energy-efficient home”, information and practical tips were given concerning sustainable construction and living. This event was organised 850 times. This intention was then to follow this with concrete work on making homes sustainable by building solar panels. 24 technical information evenings were organised throughout Flanders on this subject. More than 1 300 people attended these information sessions and some 211 solar panels were built.

A training databank (“Milieuverlicht Verbruiken”) has been created at www.verlicht.be. This databank offers adults, consumers and socio-cultural organisations a complete overview of courses, lectures and workshops aimed at reducing one’s ecological footprint. A choice can be made from the various open training courses offered, or socio-cultural organisations can request training on a variety of subjects or have it tailored to their needs.

2.5 Obligations on the part of energy companies to promote energy saving by end-users

Under Article 6(2) of the Energy Efficiency Directive, Member States are required to choose one or more of the following requirements to be complied with by energy distributors, distribution system operators and/or retail energy sales companies:

1. ensure that their final customers are offered competitively priced energy services;
2. ensure that energy audits conducted in an independent manner and/or energy efficiency improvement measures are available to their final customers;
3. contribute to the funds and funding mechanisms targeted at the supply of energy-efficiency measures.

In the Region of Flanders, requirements are in force which comply with the first two of the above points.

Since 2003, electricity distribution system operators have been required each year to achieve a certain volume of primary energy savings by stimulating energy-saving investments and intervention at the level of their end customers. These actions consist of financial contributions and awareness-raising. In addition, there are a number of specific active obligations, such as drawing attention to rational energy use through awareness-raising and information provision, the provision of individual advice on rational energy use to household customers, the performance of energy scans in households (since 2007), the organisation of specific information sessions for protected customers and the offering of energy accounting to educational institutions and welfare and healthcare services. For a more detailed description, see measure E.1. in section 2.2.2.3.

As indicated in section 2.3.1.5(c), network operators are also required to support local authorities in formulating local energy policy by offering energy accounting, energy audits, energy management systems and by funding formulas (e.g. third-party financing) for the implementation of energy-saving measures.

In the period 2008-2010, network operators provided support for 2 568 energy accounting operations at the level of local authorities and 593 energy audits, and provided financial support to 3 978 energy-saving investments (by means of grants, interest-free loans and third-party financing).

In the context of their public service obligations regarding rational energy use, the distribution network operators, acting under the aegis of Eandis and Infrac, have concluded ESCO contracts with partners (municipal and city authorities) for measures in buildings falling under their management. In the context of its provision of ESCO services, Eandis has 507 contracts in force in 110 municipalities. These contracts correspond to a turnover of € 22 575 103 (including VAT). In the short term, Eandis will supply ESCO services to the autonomous municipal company Stedelijk Onderwijs Antwerpen for studies and project implementation in the context of fireplace renovation, insulation, high-efficiency glazing and the renovation of lighting in some 50 or so schools. Infrac, which started somewhat later in supplying these services, has concluded cooperation agreements with 33 municipal authorities. 122 feasibility studies are currently taking place in the municipalities in question. At present, Infrac has one ESCO contract which is being implemented worth € 53 000 (including VAT).

At the end of May 2007, a covenant was concluded between the Flemish Authority and Informazout vzw and a number of natural gas suppliers (Nuon, SPE-Luminus, Electrabel Customer Solutions). These organisations have

undertaken to encourage their members to include the provision of energy advice (information concerning grants and tax concessions, information on more energy-efficient alternatives, etc.) in their range of services.

2.6 Stimulation of the energy services market

Under Article 6(3) of the Energy Efficiency Directive, Member States are required to ensure that there are sufficient incentives for market actors other than energy distributors, distribution system operators and retail energy sales companies, such as ESCOs, installers, energy advisors and energy consultants, to offer and implement energy services, energy audits and energy efficiency improvement measures.

Various measures previously discussed in this action plan act as a stimulus for the expansion of the energy services market:

- the benchmark and audit covenants with industrial companies (see 2.2.2.2);
- the rules on energy performance certificates (see 2.3.1.4 and 2.4.1.1);
- the compulsory heating audit (see 2.4.1.1);
- the accreditation of energy experts for the provision of custom advice on energy saving in homes (EAP, see 2.1.1.1).

The Flemish Government has started setting up a Flemish energy company [Vlaams Energiebedrijf]. This company must play an important role in making our energy market greener. This might be done by investing heavily in energy saving and energy efficiency, on the one hand, and through the production of sustainable energy, on the other. € 200 million has been earmarked for this.

The Flemish Government decided on 16 July 2010 to develop a management structure for the establishment of the Vlaams Energiebedrijf.

The Vlaams Energiebedrijf is developing an ESCO to facilitate energy savings and sustainable energy projects in buildings. In the buildings of the Flemish Authority, tailor-made energy-efficiency projects will be developed and implemented. The ESCO can pre-finance roof-insulation and solar-energy projects in social housing. In public schools, many energy gains can be achieved through, *inter alia*, investment in sustainable lighting or more efficient heating installations.

Alongside this energy-saving pillar, the Vlaams Energiebedrijf will also develop an investment pillar.

2.7 Measures to support EPBD implementation

Article 10 of the Energy Performance of Buildings Directive requires Member States to draw up a list of existing and proposed measures and instruments including those of a financial nature, other than those required by the Directive, which promote the objectives of the Directive. In the Region of Flanders, the following measures promote the objectives of the Energy Performance of Buildings Directive:

- the reduction of property tax for new buildings which perform substantially better than the standard (see 2.2.2.1, B.2.);
- the grant from the electricity distribution network operators for homes with a reduced E standard (see 2.2.2.3, E.3.)
- the appointment of an energy consultant within NAV (Flemish Association of Architects) to raise awareness among private individuals and to ensure that the energy performance rules are correctly implemented (see 2.4.1.1).

3 SUPERVISORY AND MONITORING BODIES UNDER THE ENERGY EFFICIENCY DIRECTIVE

The three regions and the Federal Authority each have their own body responsible for monitoring reporting, supervision of the general energy-saving framework and for supervision of the exemplary role of the public sector. The coordination necessary regarding methodologies and reporting takes place in the framework of the formal ENOVER consultation arrangement (energy consultation between the State and the regions).

Within the Region of Flanders, the Flemish Energy Agency has been appointed supervisory body both for monitoring reporting and supervising the general energy-saving framework and for monitoring the exemplary role of the public sector.

The Flemish Energy Agency (VEA) was set up by Decree of the Flemish Government of 16 April 2004. It is an internal autonomous agency without legal personality operating within the Flemish Ministry of Environment, Nature and Energy. The VEA has been operational since 1 April 2006.

Its mission is to implement an energy policy focussed on sustainability on the basis of policy instruments and in a cost-efficient and high-quality manner.

Its functions are as follows:

1° to promote environmentally-friendly energy production and manage the resources and funds earmarked for that purpose;

2° to promote rational energy use and manage the resources and funds earmarked for that purpose;

3° to apply the rules relating to the management and development of distribution networks for electricity, gas and heating and of the local electricity transmission network;

4° to conduct its own awareness-raising and communication actions concerning eco-friendly energy production and rational energy use and coordinate awareness-raising and communication actions concerning environmentally-friendly energy production contracted out to third parties;

5° to conduct, by itself or by third parties, analyses to support the implementation of policy concerning sustainable energy;

6° to process information gathered in the course of policy implementation in order to provide policy-oriented input to the department;

7° to contribute to the execution of the Flemish Climate Policy Plan;

8° to perform any other tasks involving the implementation of energy policy entrusted to it by decree or by the Flemish Government.

The requirements on how the Agency should perform its tasks in quantitative and qualitative terms, with strategic and operational targets described on the basis of measurable criteria, are set out in the management agreement between the VEA and the Flemish Government.

In the management agreement for the period 1 January 2009-31 December 2010, the implementation of the requirements of the European Energy Efficiency Directive within the scope of the energy-related powers of the Region was included as an operational target for the VEA.

In the new management agreement, which runs from 1 January 2011 until 31 December 2015, it is again included as an operational target that the VEA will coordinate the implementation of the requirements of the European Energy Efficiency Directive within the scope of the energy-related powers of the Region.

4 ANNEX: OWN BOTTOM-UP CALCULATION METHODOLOGY

A. Relighting and new lighting

A.1 Formula for the calculation of energy saving

$$UPE = 2.5 \times R_d \times \frac{L}{100} \times m \times \frac{b}{1000}$$

Where:

UPE unitary primary energy saving [kWh]

2.5 factor for converting final electricity saving into primary energy saving, assuming a 40% efficiency of the electricity grid.

R_d ($R_o - R_n$) The difference in lighting efficiency between the old (R_o) and the new (R_n) installation [Watt/m²/100 lux]

L average light level of the new installation [lux]

m illuminated surface of the new installation [m²]

b number of hours of use of the new installation [h/year]

A.2 Assumptions and data

Lifespan

The lifespan given in Annex II (“preliminary list of harmonized average lifespans”) in the “Note on the refining and complementing of Annex IV of Directive 2006/32/EC” has been applied: 12 years. This means that installations fitted from 2005 will still be offering savings in 2016 and can therefore be taken into account for the savings target.

Data sources – number of installations

Around 1 May each year, the electricity distribution network operators must report to the Flemish Energy Agency on the number of grants paid out during the previous year. For 2005-2010 the number of grants for relighting and new lighting can be inferred from this annual monitoring report.

For 2011 up to and including 2016, the number of grants is estimated on the basis of the situation in 2010 and taking account of changes to the public service obligations regarding rational energy use of the network operators, as adopted in principal by the Flemish Government on 10 June 2011, under which there will be no specific grant for new lighting from 2012.

Parameters used in energy-saving formula

As far as the period 2005-2010 is concerned, the real values as indicated in individual grant applications are applied. On this basis, the network operators calculate the primary energy saving for each dossier on the basis of the above formula.

For the period 2011-2016, the average unitary primary energy saving of grants awarded in the period 2004-2010 are applied.

B. Running speed control

B.1 Formula for the calculation of energy saving

$$UFE = e \times P \times G \times s$$

Where:

UFE	unitary final energy saving [kWh]
P	electrical power [kW]
G	length of use [h]
s	scaling factor
e	average percentage energy saving [%]

B.2 Assumptions and data***Lifespan***

The lifespan given in Annex II (“preliminary list of harmonized average lifespans”) in the “Note on the refining and complementing of Annex IV of Directive 2006/32/EC” has been applied: 12 years. This means that installations fitted from 2005 will still be offering savings in 2016 and can therefore be taken into account for the savings target.

Data sources – number of installations

Around 1 May each year, the electricity distribution network operators must report to the Flemish Energy Agency on the number of grants paid out during the previous year. For 2005-2010 the number of grants for running speed control can be inferred from this annual monitoring report.

For 2011 the number of grants is estimated on the basis of the situation in 2010.

Parameters used in energy-saving formula

	2005-2010	2011
e	An average energy saving of 35% is applied on the advice of Laborelec, the Belgian competency centre for electrical applications and new energy technology.	An average energy saving of 35% is applied.
P	Real data available in individual grant applications.	The average power per installation is relatively constant for the period 2004-2010 (29 kW) and has therefore also been applied to 2011.
g	Real data available in individual grant applications.	The average length of use per installation is relatively constant for the period 2004-2010 (4 731 hours) and has therefore also been applied to 2011.
s		The scaling factor has been introduced because the product of average values is not necessarily equal to the average of the product. The factor has been derived from real data for 2004-2010 and has been set at 1.05.

C. Heat recovery ventilation**C.1 Formula for the calculation of energy saving**

$$UFE_{hh} = 3200 \text{ kWh}$$

$$UFE_{nh} = UFE_{hh} \times \frac{D_s}{D_{hh}}$$

Where:

- UFE_{hh} unitary final energy saving of domestic installation [kWh]
- UFE_{nh} unitary final energy saving of non-domestic installation [kWh]
- D_{hh} average ventilation output of domestic installation [m³/hour]
- D_s specific average ventilation output of non-domestic installation [m³/hour]

C.2 Assumptions and data

Lifespan

The lifespan given in Annex II (“preliminary list of harmonized average lifespans”) in the “Note on the refining and complementing of Annex IV of Directive 2006/32/EC” has been applied: 17 years for domestic systems and 20 years for non-domestic systems.

Data sources – number of installations

Around 1 May each year, the electricity distribution network operators must report to the Flemish Energy Agency on the number of grants paid out during the previous year. For 2005-2010 the number of grants for heat recovery ventilation can be inferred from this annual monitoring report.

For 2011 the number of grants is estimated on the basis of the situation in 2010.

Parameters used in energy-saving formula

	2004-2010	2011
UFE _{nh}	Based on the study by the Wetenschappelijk en Technisch Centrum voor het Bouwbedrijf [Scientific and Technical Centre for the Construction Industry](WTCB): 3 200 kWh.	Idem.
D _{hh}	Average ventilation output of 150 m ³ /hour.	Idem.
D _s	Real data available in individual grant applications.	Average ventilation output for the period 2004-2010.

D. Water-economy shower head

D.1 Formula for the calculation of energy saving

$$\text{Saving per shower head per year} = \frac{\text{heat saving per shower taken} \times \text{number of showers per person} \times \text{number of persons per family}}{\text{installation efficiency SWW} - \text{production}}$$

D.2 Assumptions and data

Lifespan

We assume an average lifespan of 10 years for a water-economy shower head (expert opinion of the Vlaamse Instelling voor Technologisch Onderzoek [Flemish Institute of Technological Research]). This means that shower heads fitted in 2007 will still be offering savings in 2016.

Data sources

Assumptions for the calculation of average heat saving per shower	Waterloket website: http://www.waterloketvlaanderen.be/waterstart.cgi?deel=gezinnen&onder=1&vragen=a&ant-woord=7 :
Assumptions for the number of showers per person per week → year	Household surveys concerning energy consumption conducted on behalf of the Flemish Energy Agency in 2005, 2008 and 2009 indicate an average number showers per family per week. An interpolation is carried out for interim years. For the years after 2009, the figure for 2009 is used.
Assumptions for the number of persons per family/home	<ul style="list-style-type: none"> – 2007-2008: Statistics of the Algemene Directie Statistiek en Economische Informatie [General Directorate for Statistics and Economic Information] (ADSEI); – 2009-2020: Report by MIRA-S (Flemish environmental company).
Assumptions for installation efficiency in terms of sanitary warm water production (SWW)	Acting on behalf of the Flemish Energy Agency, the Flemish Institute of Technological Research created a model for the annual (energy) characterization of the Flemish household on the basis of 2001 census data, annual land registry and building permit data, data from energy audits, energy performance declarations and certificates, grant conditions, etc. This model is used to calculate the average installation efficiency (SWW) per energy carrier and to determine the proportion of various energy carriers in the production of SWW demand in each of the years from 2007 to 2016.
Assumptions concerning the number of water-economy shower heads fitted	<ul style="list-style-type: none"> – 2007-2009: real figures for water-economy shower heads reported by network operators in their monitoring reports concerning their public service obligations relating to rational energy use – 2010-2016: estimates based on the target of network operators concerning the number of energy scans to be carried out in homes.

Assumptions

- Heat saving per shower = 5 l/min x 7 min x (40 - 12)°C x 4.18 kJ/kg°C = 4.10 MJ or 1.14 kWh
- Number of showers per person: from 3.2 in 2007 to 3.3 from 2010.
- Number of persons per family:

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
2.40	2.39	2.38	2.37	2.36	2.35	2.34	2.33	2.32	2.31

E. Cogeneration

E.1 Formula for the calculation of energy saving

$$UPE = P_e \times d \times \left[\left(\frac{1}{n_{ref,ele}} \right) + \left(\frac{n_w}{n_{ele} \times n_{ref,w}} \right) - \left(\frac{1}{n_{ele}} \right) \right]$$

Where:

UPE	unitary primary energy saving [MWh]
P_e	electrical power [MW]
$n_{ref,ele}$	efficiency reference value for separate electricity production [%]
n_{ele}	electricity return from cogeneration production, defined as the electricity/mechanical energy obtained from cogeneration on an annual bases, divided by the fuel input used to generate the total output of useful heat and electricity from cogeneration [%].
$n_{ref,w}$	efficiency reference value for separate heat production [%]
n_w	heat efficiency of cogeneration production, defined as the useful heat output on an annual basis, divided by the fuel input used to generate the total output of useful heat and electricity from cogeneration [%].
UFE	unitary final energy saving [MWh]
P_w	thermal power [MW]
$n_{ref,w}$	efficiency reference value for separate heat production [%]
D	production hours [h]

The final energy saving of a cogeneration plant is compared with the electricity produced which the consumer no longer needs to purchase from the network (in accordance with the FAQ document provided by the EC on 14 March 2011).

E.2 Assumptions and data

Type of installations

For companies falling within the scope of the Emissions Trading Directive, only cogeneration units with turbines having a power of less than 5 MW will be installed in the Region of Flanders, except for one turbine in a refuse incinerator.

Lifespan

The default lifespan given in Annex II (“preliminary list of harmonized average lifespans”) in the “Note on the refining and complementing of Annex IV of Directive 2006/32/EC” has been applied.

Based on a lifespan of 15 years and a “lasting effect”, the savings of installations fitted in 2002 may be counted in 2016. The most important policy measure, i.e. certification support and the certification requirement for electricity suppliers came into effect on 1 January 2005. There was limited support for investment in that respect.

Data sources – number of installations

Historical data (2002-2009) are taken from the annual cogeneration inventory for the Region of Flanders (see <http://www.energiesparen.be/milieuvriendelijke/cijfers>). The data sources used to draw up the inventory are as follows:

- the Decree of the Flemish Government of 14 July 2004 (amended by the Decree of 21 April 2009 and replaced by the Energy Decree of ...), which requires operators of cogeneration installations to report annually on the characteristics of the installations they own;
- data taken from individual cogeneration certification files.

As far as the forecasts (2010-2020) are concerned, a study on “Forecasts for renewable energy and cogeneration up to 2020” conducted by Vito on behalf of the Flemish Energy Agency (October 2009) was used (see <http://www.energiesparen.be/milieuvriendelijke/cijfers>). The pro-active policy scenario based on a system of cogeneration certification has been maintained. In this study, a distinction is made between cogeneration in the non-VER and VER sectors. The energy savings in the forecast study were divided for the years 2010-2020 between the non-VER and VER sectors according to the real breakdown for 2009.

Parameters used in energy-saving formula

	2004-2010	2011
P_w	The real installed thermal power per fuel type are taken from the annual cogeneration inventories.	The annual thermal power is calculated on the basis of the annual electrical power (P_e) and the ratio P_w/P_e in 2006.
P_e	Same as for P_w .	The electrical power to be installed for 2010-2020 is estimated in the study “Forecasts for renewable energy and cogeneration up to 2020” conducted by Vito on behalf of the VEA (October 2009) with a subsequent correction for 2010.
D	Calculated for the years 2006 up to and including 2009 using the real number of production hours of individual installations. For the other years, the average for 2006-2009 applied for each fuel.	See forecast study. The production times of cogeneration plants are based on data from the cogeneration inventories up to 2007, which show that turbines have a production of 4 000 to 7 000 h/y (the latter for industrial applications).
$n_{ref,w}$	The European reference efficiency as specified in the Ministerial Decree of 6 October 2006 determining reference efficiencies for application of the conditions for cogeneration plants.	The European reference efficiency as specified in the Ministerial Decree of 6 October 2006 determining reference efficiencies for application of the conditions for cogeneration plants.
$n_{ref,ele}$	The European reference efficiency as specified in the Ministerial Decree of 6 October 2006 determining reference efficiencies for application of the conditions for cogeneration plants.	The European reference efficiency as specified in the Ministerial Decree of 6 October 2006 determining reference efficiencies for application of the conditions for cogeneration plants.
n_{ele}	For the years 2006 up to and including 2008, the savings calculation is based on the real individual data in the cogeneration inventories. For the previous years, the average electrical efficiency from the years 2006-2008 per fuel type is used.	See forecast study. Efficiency for turbines: 32% (installations <200 kW) to 38% (installations > 1 000 kW).
N_w	For the years 2006 up to and including 2008, the savings calculation is based on the real individual data in the cogeneration inventories. For the previous years, the average electrical efficiency from the years 2006-2008 per fuel type is used.	See forecast study. Efficiency for turbines: 53% (installations <200 kW) to 47% (installations > 1 000 kW).

F. Photovoltaic solar panels (PV)

F.1 Formula for the calculation of final energy saving

From 1998 to 2007 inclusive, a public grant was available for photovoltaic panels. From 2002, photovoltaic panels were included in the system of green electricity certification. A certificate is issued to the owner for each MWh of electricity produced. The certificates thus enable electricity production by solar panels to be correctly monitored. During the first few years, however, certificates were not requested by all owners because there was no price guarantee. The number of subsidised installations was higher than the number of installations that could be derived from green electricity certificates. Up to and including 2006, electricity production by solar panels was thus calculated on the basis of the following formula:

$$FE = P \times e$$

Where:

FE electricity production = final energy saving [kWh]
P installed power [kWp]
E energy output [kWh/kWp]

F.2 Assumptions and data

Lifespan

The default lifespan of 23 years indicated in Annex II (“preliminary list of harmonized average lifespans”) in the “Note on the refining and complementing of Annex IV of Directive 2006/32/EC” has been applied: PV installation installed with the support of the Flemish Authority since 1998 will still not have reached the end of the lifespan by the end of 2016.

Data sources

Historical data (2002-2009) are taken from the annual sustainable-energy inventory for the Region of Flanders (see <http://www.energiesparen.be/milieuvriendelijke/cijfers>). The data sources used to draw up the PV inventory are as follows:

- up to and including 2006: the number of installations and installed power in the databank of grant files held by the Flemish Energy Agency and the statistics available from the Flemish Sustainable Energy Organisation [*Organisatie Duurzame Energie Vlaanderen (ODE)*], an organisation operating in the sector;
- from 2007: data for electricity production in the certification databank linked to green electricity certificates available from the Flemish Regulator of the Electricity and Gas Market [*Vlaamse Regulator van de Elektriciteits- en gasmarkt (VREG)*].

As far as the forecasts (2011-2020) are concerned, a study on “Forecasts for renewable energy and cogeneration up to 2020” conducted by Vito on behalf of the Flemish Energy Agency (October 2009) was used (see <http://www.energiesparen.be/milieuvriendelijke/cijfers>). The 2020 pro-active policy scenario based on a system of green-energy certification has been maintained. A subsequent adjustment was made to this scenario in view of the fact that the real electricity production figures for 2009 were higher than predicted in the forecast study.

Energy output of PV installations

The electricity output of a PV installation depends on the technology used, the quality of the panel, how they have been constructed and their location (annual number of hours of sunshine). Available data suggests that 850 kWh/kWp is the average energy output of a PV installation in the Region of Flanders.

G. Energy-saving technology in the glasshouse horticultural sector

G.1 Model for the calculation of energy savings

The savings made in the glasshouse horticultural sector are calculated with the help of the environmental cost model used by Markal/Answer as model software and GAMS with the CPLEX “solver” as an optimisation model.

Energy saving opportunities modelled by the environmental cost model are determined by energy requirements (depending on warm versus cold culture), the current degree of implementation of energy-saving technologies, the technical saving potential and the economic profitability, which depends on energy prices, investment costs, percentage of subsidisation and operating costs.

G.2 Assumptions and data

Economic growth and energy requirements of glasshouse horticulture

We assume a growth scenario as determined by the Federal Planning Office (December 2010) for the agricultural sector: growth in production (in volume terms) M€2000 between 2000 and 2020 of 16%.

Data concerning specific energy consumption per culture and unit of surface are based on a survey conducted by the Department of Agriculture and Fisheries (Monitoring and Study Department) in 2006.

Energy prices

The energy prices applied are based on “European Energy Trends, 2009 update” (http://ec.europa.eu/energy/observatory/trends_2030/doc/trends_to_2030_update_2009.pdf).

European fuel prices have been increased by the specific distribution costs in Flanders.

<i>Fuel Prices €2005/GJ</i>	<i>2005</i>	<i>2010</i>	<i>2015</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>
Natural gas	7.59	8.25	8.78	10.67	12.45	12.91
Heavy fuel oil	7.40	7.34	7.72	9.68	11.25	11.93
Light fuel oil	12.06	11.43	12.03	15.19	17.71	18.79
Wood pellets	9.35	11.29	13.23	15.17	17.11	19.05
Wood chips	4.15	6.56	8.97	11.37	13.78	16.19
Wood pieces	10.64	11.76	12.87	13.98	15.10	16.21

Type of installations

Because of the subsidies available from the Flemish Agricultural Investment Fund [Vlaams Landbouwinvesteringsfonds], the model focuses on:

- cogeneration, renewable energy technologies, energy-efficient boilers: these technologies are already included in the bottom-up calculation of savings for a number of other trans-sector policy measures (see E.2 for cogeneration, E.3 for PV and E.1 for boilers and solar-powered boilers) and are not discussed further here;
- movable screens
- heat buffers;
- gas condensers

Lifespans – cost prices

	Lifespan (years)	Investment costs	Annual operating costs
Boilers (average 4.6 MW)	30	€ 16.34 k/TJ (4.97 in the case of wood pieces)	€ 2.82 k/TJ/year (1.43 in the case of wood pieces)
Movable screens	10	€ 55 700/ha	€ 2 700/ha
Heat buffers	15	€ 52 000	€1 040/year
Gas condensers	10	€ 8 750	€ 87.5/year

Discount rate

We apply a (social) discount rate of 4 %.