

(Cabinet Order
No 460 of
16 September 2011)

Second National Energy Efficiency Action Plan of Latvia 2011 – 2013

Riga, 2011

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Abbreviations

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|--------------|---|
| First NEEAP | First National Energy Efficiency Action Plan |
| Second NEEAP | Second National Energy Efficiency Action Plan |
| CSB | Central Statistical Bureau |
| CH | Centralised heating |
| MoE | Ministry of Economics |
| ERDF | European Regional Development Fund |
| EU | European Union |
| EUR | Euro (common currency of the EU) |
| EL | Electricity |
| ELimp | Electricity import |
| HPP | Hydroelectric power plants |
| GDP | Gross domestic product |
| LVL | Latvian currency – the lats |
| NDP | National Development Plan |
| PJ | Petajoule (energy measurement) |
| GWh | Gigawatt hour (energy measurement) |
| WEP | Wind electricity plant |

INTRODUCTION

Latvia's Second Energy Efficiency Action Plan (hereinafter "second NEEAP") has been prepared on the basis of Article 17 and paragraph 4 of the transitional provisions of the Law on Energy End-Use Efficiency (adopted on 28 January 2010). The "Guide and template for the preparation of the second national energy efficiency action plans" (hereinafter "EC guide") drawn up by the European Commission's Joint Research Centre has been taken into account when preparing the second NEEAP. The measures proposed under the Second Energy Efficiency Action Plan of Latvia are provided in Annex 1. The categories and examples of end-use energy efficiency measures, according to the EC guide, are provided in Annex 2.

The objective of the second NEEAP is to increase energy efficiency in the energy end-use sectors and in energy transformation. The plan includes energy efficiency measures aimed at the rational use of energy and preservation of the environment.

The First Energy Efficiency Action Plan of Latvia for 2008-2010 (hereinafter "first NEEAP") was approved by Cabinet Order No 266 of 20 May 2008 "On Latvia's First Energy Efficiency Action Plan 2008-2010". The first NEEAP was prepared on the basis of Latvia's National Development Plan 2007-2013 and the Energy Development Guidelines for Latvia 2007-2016. Upon approval of the second NEEAP the first NEEAP will be deemed invalid. Under point 3 of Cabinet Order No 266 of 20 May 2008 (minutes No 30, para. 20), the Ministry of Economics must submit an information report to the Cabinet of Ministers by 1 July 2011 regarding the execution of the first NEEAP.

1. GENERAL OVERVIEW OF THE SITUATION IN LATVIA

1.1. DESCRIPTION OF THE CURRENT SITUATION

When preparing the first NEEAP, the national indicative energy savings target for 2016 was calculated in accordance with the methodology set out in Annex I to Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC. **The calculated national indicative energy savings target for 2016 is 3 483 GWh, and there has been no change to this target in the second NEEAP.**

The planned energy savings targets for 2016 are not being changed, and they will remain valid until 2014 when the Third National Energy Efficiency Action Plan is being prepared and energy savings for certain energy efficiency

improvement measures, calculated using the bottom-up method, will be available (the energy consumption of each project is measured individually both before and after the efficiency measures are implemented).

The energy savings targets calculated in the first NEEAP for the period 2008-2016 with respect to certain sectors of the economy are shown in table 1.4. The cumulative (summed-up) method has been used to reflect savings over each specific year against the reference year (2008).

Table 1

Calculated national energy savings targets by end-use sector, GWh

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|--------------------------|----------|-----------|-----------|------------|-------------|-------------|-------------|-------------|-------------|
| Residential | 3 | 15 | 52 | 360 | 900 | 1471 | 1921 | 2311 | 2701 |
| Transport | 0 | 1 | 4 | 26 | 68 | 111 | 145 | 175 | 204 |
| Industry and agriculture | 0 | 1 | 3 | 23 | 57 | 92 | 121 | 147 | 170 |
| Tertiary sector | 1 | 2 | 8 | 54 | 136 | 222 | 290 | 349 | 408 |
| TOTAL: | 4 | 19 | 67 | 464 | 1161 | 1896 | 2477 | 2980 | 3483 |

Under Article 17 of the Law on Energy End-Use Efficiency, the second NEEAP should be prepared only with respect to energy end-use sectors. When calculating and determining energy savings targets for 2020, the second NEEAP takes into account the recommendation of the EC guide to assess possible energy savings also in the transformation sector. The energy savings targets for 2020 have been determined both for the energy end-use sectors and for primary energy resources.

Given that Cabinet Regulation No 923 of 30 September 2010 "Procedures for recording national energy end-use savings and ensuring the operation of the energy efficiency monitoring system" (hereinafter "Cabinet Regulation No 923") only entered into force on 6 October 2010, the Ministry of Economics did not have at its disposal any energy monitoring data on energy efficiency improvement programmes approved before the entry into force of this Cabinet Regulation when the final version of the second NEEAP was being prepared in May 2011. The energy savings for certain end-use sectors were calculated for the first NEEAP using only the top-down energy savings calculation method. Central Statistical Bureau data has been used to prepare the second NEEAP, as well as an assessment of planned energy savings for certain energy efficiency measures. The planned and achieved energy savings in energy end-use sectors and the planned total energy savings (energy savings both in the end-use sectors and primary energy savings) for 2020 are shown in table 2.

Table 2**Total energy savings targets (both in the end-use sectors and primary energy savings) for 2010, 2016 and 2020**

| | Planned energy savings in end-use sectors, GWh (PJ) | Achieved energy savings in end-use sectors, GWh (PJ) | Planned total energy savings, GWh (PJ) |
|-------------|---|--|--|
| 2010 | 67 (0.24) | 3418 (12.30) | Unknown |
| 2016 | 3483 (12.55) | Unknown | Unknown |
| 2020 | 6050 (21.78) | Unknown | 7779 (28.00) |

The second NEEAP has been prepared on the basis of the planning document "Energy Development Guidelines for Latvia 2007-2016", which is currently in force and was approved by Cabinet Order No 571 of 1 August 2006 (hereinafter "guidelines"), and which lays down the Latvian government's key principles for policy, objectives and forms of action in the field of energy for the period up to 2016.

Figure 1 shows energy end-use by sector in 2010.

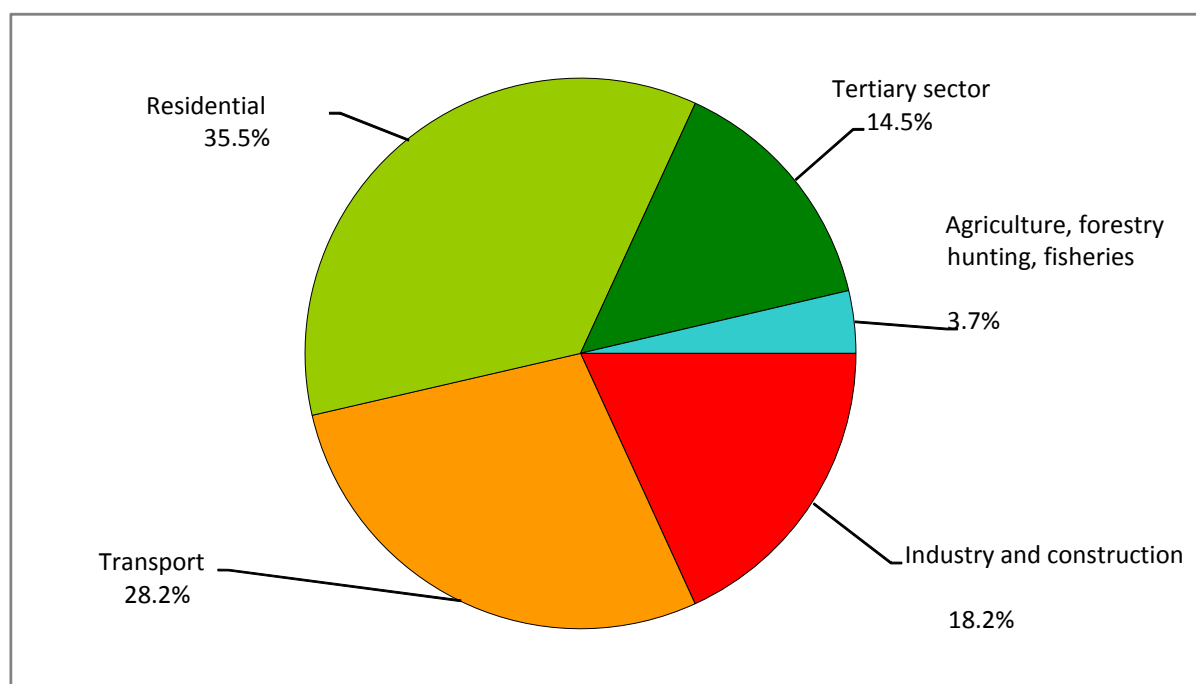


Figure 1. Energy end-use by sector, 2010 (Source: CSB)

Taking into account that the residential and transport sectors are the largest for energy end-use consumption, i.e. 35.5% and 28.2% respectively of total energy end-use consumption, these sectors have been designated as priority sectors.

The second NEEAP includes energy efficiency improvement measures for which financing is available until 2013 from the Structural Funds and the Cohesion Fund, as well as from the Climate Change Financial Instrument.

Furthermore, the second NEEAP also includes certain measures that are financed by economic operators.

The Ministry of Economics has begun work on preparing the planning document for development of the energy sector entitled "Latvia's Energy Strategy for 2030". This document is due to be approved in the autumn of 2011 and will also contain updated energy efficient improvement measures for the period up to 2030.

The second NEEAP has been prepared taking into account the following policy planning documents:

1. Latvia's Sustainable Development Strategy up to 2030 (approved by the Saeima decision of 10 June 2010);
2. The National Development Plan 2003-2013 (approved by Cabinet Regulation No 564 of 4 July 2006 "Regulations on Latvia's National Development Plan, 2007-2013");
3. Latvia's First National Energy Efficiency Action Plan 2008-2010" (approved by Cabinet Order No 266 of 20 May 2008);
4. The National Programme on Construction 2002-2012 (approved by Cabinet Order No 478 of 30 August 2002);
5. The Programme to Foster the Competitiveness of Economic Activities and Innovation 2007-2013 (approved by Cabinet Order No 406 of 28 June 2007);
6. The Climate Change Reduction Programme 2005-2010 (approved by Cabinet Order No 220 of 4 June 2004);
7. Latvia's National Reform Programme "EU 2020" (the programme for implementing the strategy was approved at the Cabinet meeting of 26 April 2011 (minute No 27, para. 34)).

Issues concerning energy efficiency are regulated in the following legislative acts:

1. The Energy Law (adopted on 3 September 1998; updated version of 4 July 2008). One of the objectives of the law is to promote the efficient use of energy and balanced consumption.
2. The Law on Energy End-Use Efficiency (adopted on 28 January 2010). The objective of the law is to ensure the efficiency of energy end-use consumption and the introduction of energy services, as well as the development of the energy services market. Cabinet Regulation No 923 of 30 September 2010 "Procedures for recording national energy end-use savings and ensuring the operation of the energy efficiency monitoring system" has been issued under this law, and Cabinet Regulation No 555 of 12 July 2011 "Procedures for concluding and supervising agreements on improving energy efficiency" entered into force on 15 July 2011.

3. The Law on the Energy Efficiency of Buildings (adopted on 13 March 2008). The objective of this law is to promote the rational use of energy resources and improve the energy efficiency of buildings. The law also lays down the competence of State and local authority bodies in the area of energy efficiency, as well as the legal and organisational basis for energy performance certificates for buildings. The following Cabinet Regulations have been issued under this law:

- Cabinet Regulation No 26 of 13 January 2009 "Regulations on energy auditors";
- Cabinet Regulation No 39 of 13 January 2009 "Method for calculating the energy efficiency of buildings";
- Cabinet Regulation No 504 of 8 June 2010 "Regulations on energy performance certificates for buildings";
- Cabinet Regulation No 1214 of 20 October 2009 "Regulations on energy efficiency requirements for centralised heating supply systems in the tenure of licensed energy supply economic operators, and verification procedures thereof".

4. The Electricity Market Law (adopted on 5 May 2005). One of the objectives of the law is to ensure, taking into account the requirements of legislation, that all users of electricity (hereinafter "users") are provided with a safe and high-quality supply of electricity in the most efficient way possible and for justifiable prices.

5. The Construction Law (adopted on 10 August 1995; updated version of 1 January 2011). With respect to energy efficiency requirements, the following Cabinet Regulations have been issued under this law:

- Cabinet Regulation No 495 of 27 November 2001 "Regulations on Latvian building standard LBN 002-01 "Thermal requirements of building envelopes"";
- Cabinet Regulation No 376 of 23 August 2001 "Regulations on Latvian building standard LBN 003-01 "Building climate"".

6. The Law on Apartment Ownership (adopted on 28 October 2010). This law defines the status of apartment properties, the rights, obligations and liability of apartment owners, as well as the competence of the community of apartment owners and the procedures for making decisions.

7. The Law on the Participation of the Republic of Latvia in the Flexible Mechanisms of the Kyoto Protocol (adopted on 8 November 2007) and related Cabinet Regulations to ensure the implementation of certain programmes.

8. The Road Traffic Law (approved on 20 December 1999). Cabinet Regulation No 466 of 29 April 2004 "Regulations on the State technical

inspection of vehicles and technical control on roads" has been issued under this Law.

9. The Law on the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (adopted on 16 October 1998), which adopts and approves the Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects and the annex thereto, which was signed in Lisbon on 17 December 1994.

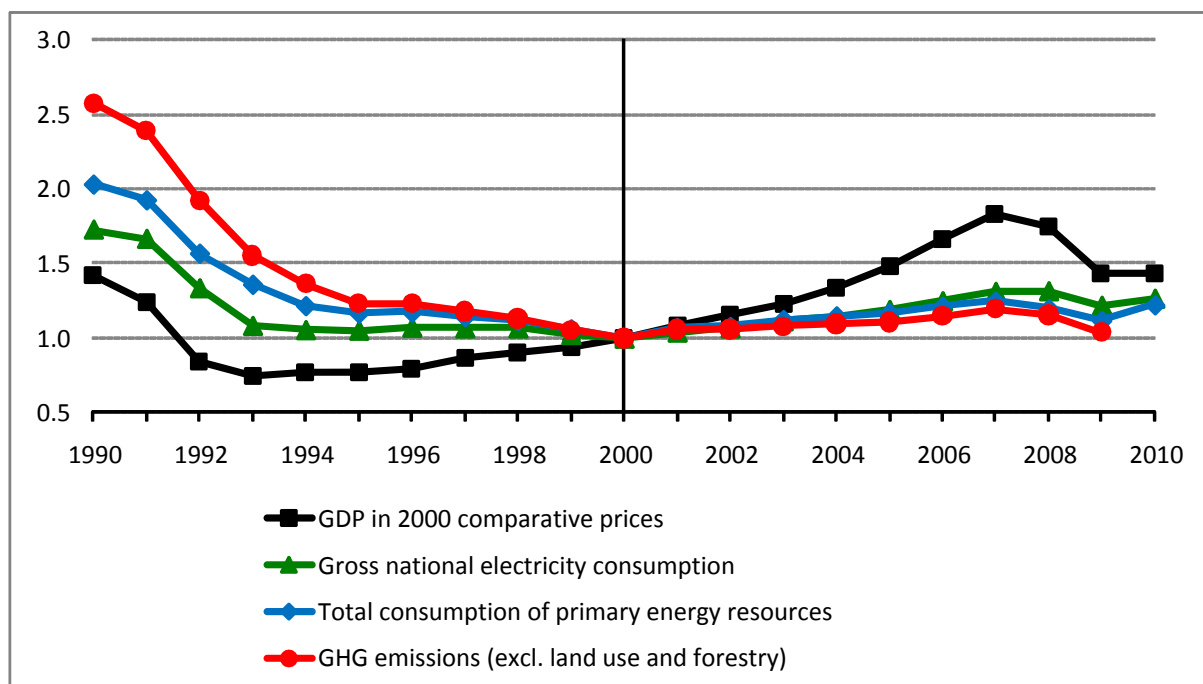
10. The Law on Duty for Operating a Vehicle and Duty for Light Commercial Vehicles (adopted on 20 December 2010).

11. The Law on Excise Duty (adopted on 30 October 2003).

After several years of rapid economic growth, when annual average GDP increased by almost 11% between 2005 and 2007, the Latvian economy suffered a recession in 2008 as a result of the global financial crisis. In 2008-2009 GDP fell by a total of 21.4%.

Since the beginning of 2010 the economic downturn has ended in Latvia and growth has restarted. The Ministry of Economics forecasts that overall growth will be positive in 2011.

The main directions of energy policy are aimed at increasing the safety of national energy supplies, promoting the diversification of the supply of primary energy resources and creating conditions to increase the self-generation of electricity, and, with the aid of new interconnections, to prevent the isolation of the regional electricity market. The creation of competitive conditions to promote the use of renewable and local energy resources, as well as improve energy efficiency, is also important.



* The reference point is the year 2000, where all the indicators shown have a relative value of 1

Figure 2. Interaction between energy, economic and environmental quality indicators*

Both the consumption of primary energy resources and the gross national electricity consumption follow the falling GDP trend, although this fall is not as rapid.

The energy end-use consumption forecast corresponding to the forecast given in the information report "The action of the Republic of Latvia in the area of renewable energy to implement Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC by 2020", on the basis of which the renewable energy consumption targets for 2020 were calculated, is shown in figure 3. The total energy end-use consumption for 2020 is forecast as 55 233 GWh.

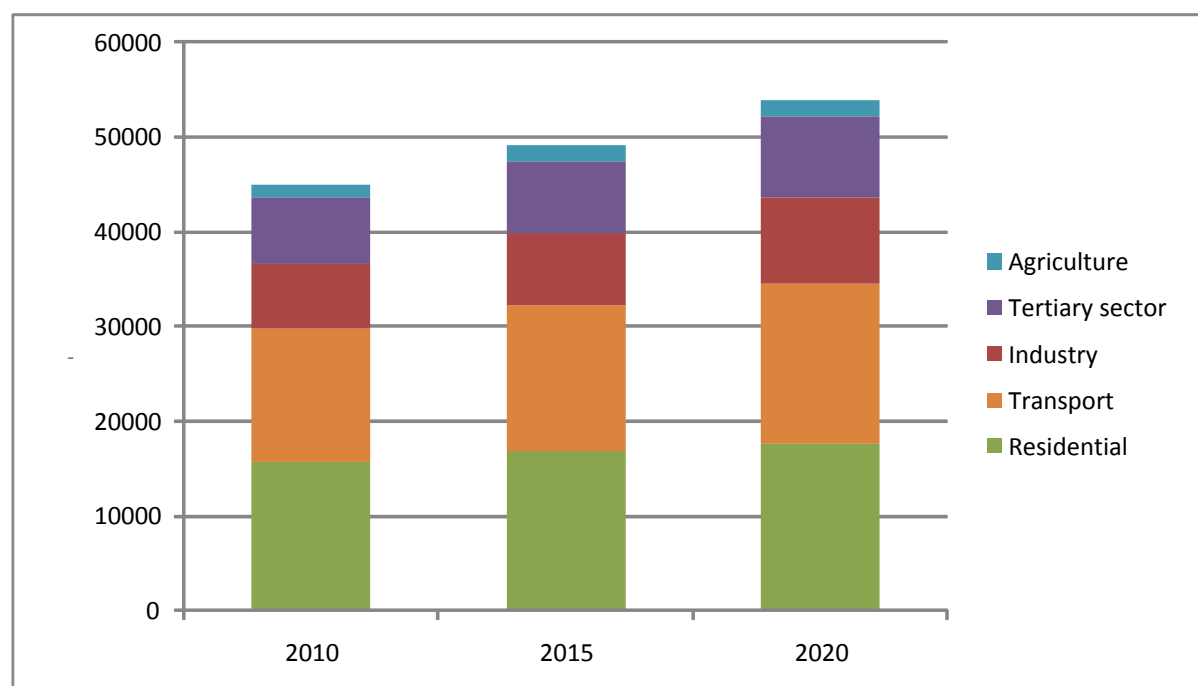


Figure 3. Forecasted energy end-use consumption dynamics by sector, GWh

Primary energy consumption has been forecasted according to energy end-use consumption and can be seen in figure 4.

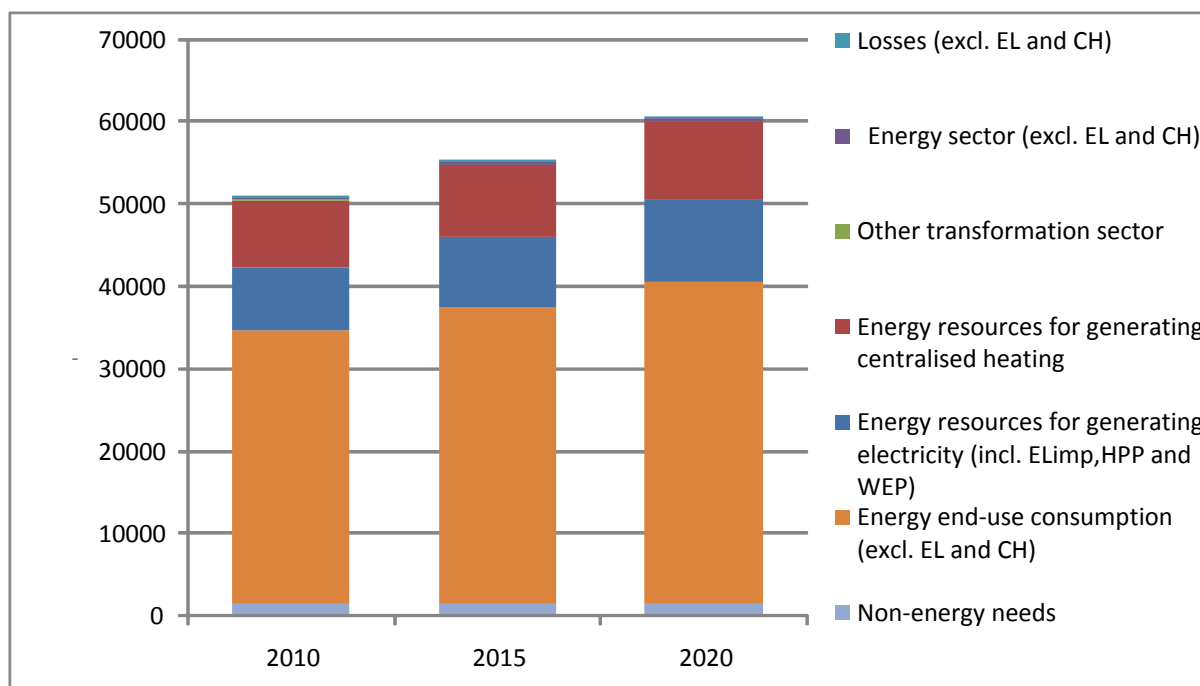


Figure 4. Forecasted primary energy consumption dynamics, GWh

1.1. REVIEW OF ENERGY SAVINGS TARGETS ACHIEVED IN 2010 FOR THE END-USE SECTORS

Latvia's first NEEAP proposed the implementation of energy efficiency improvement measures in five energy end-use sectors: residential, tertiary sector, industry, agriculture and transport.

Energy efficiency improvement measures were implemented in the energy end-use sectors, in order to achieve the energy savings targets for the period 2008-2010, with the residential sector being nominated as a priority, that is to say, the renovation of social housing and apartment blocks. The energy savings achieved can be attributed to changes in the structure of the economy, the development and implementation of technologies, as well as changes in consumer behaviour, which were largely due to the increased cost of energy and the economic crisis.

The most significant energy efficiency improvement measures in the previous period were taken in the area of improving the energy efficiency of buildings in both the residential and public sectors.

Use of EU Funds

When implementing EU regional policy, Latvia, as a Member State of the European Union (hereinafter "EU") makes use of financial assistance provided by the EU for economic and social development. The largest financial

instruments under which Latvia receives financial assistance are the EU Funds, which are managed in Latvia by the Ministry of Finance: the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund (CF). During the 2007-2013 programming period assistance from the EU Funds is aimed primarily at education, technological excellence and flexibility of companies, as well as the development of science and research in order to promote the formation of a knowledge-based economy in Latvia and strengthen other necessary prerequisites for sustainable economic development and people's lives in Latvia as a whole. The Ministry of Economics is supervising activities under the programme complement to the "Infrastructure and services" operational programme, which provide for the implementation of energy efficiency measures. In 2008-2009 projects were implemented under the aid programme "**Measures to improve the thermal stability of social housing**", with the objective of improving the energy efficiency of the local authority social housing sector, whilst at the same time improving the quality and sustainability, and providing population groups at risk of social exclusion with adequate housing. The aid intensity is up to 75%. The maximum amount of aid for one project is LVL 140 thousand. The total amount of ERDF financing available under activity 3.4.4.2 is LVL 6.92 million. The majority of projects are currently being implemented.

The target group for the activity is social housing tenants. The activities receiving assistance are as follows: reducing the energy consumption of buildings, renovation or reconstruction of buildings, if a minimum of two priority measures are implemented, as indicated in the building energy audit report, and also for preparing project documentation and monitoring projects.

The beneficiaries are local authorities with social housing, which was granted the status of social housing before 1 July 2007 on the basis of a local authority order.

The greatest effect of the energy efficiency improvement projects is expected in the residential sector. The objective of the activity "**Measures to improve the thermal stability of apartment blocks**", under the "Infrastructure and services" operational programme, is to improve the energy efficiency of homes in apartment blocks, in order to ensure the sustainability of the housing stock and the efficient use of energy resources.

The total amount of ERDF financing available under activity 3.4.4.1 to improve the thermal stability of apartment blocks is LVL 44.34 million. Project applications were accepted as from 14 April 2009 and will continue whilst financing is available.

Since the launch of activity 3.4.4.1, the majority of project applications have been received from the cities of Valmiera, Liepāja, Riga and Ventspils, as well as from Limbaži district.

Project applications for co-financing from the ERDF were accepted from 2009 until the end of April 2011 in respect of apartment blocks that were put into operation between 1944 and 1993 (inclusive). As from 27 April 2011 projects were accepted for buildings where construction had begun before 1993 (inclusive) and which were put into operation by 2002 (inclusive). The existing non-habitable area of an apartment block must not exceed 25% of the total area of the apartment block. The building must be divided into apartment properties and one owner cannot own more than 20% of the total number of apartments. However, this rule does not apply to apartments owned by the State or by local authorities.

Co-financing is granted for building works in the common areas owned by the apartment owners in an apartment block, by restoring the structural elements provided for in the technical design or in the simplified renovation documentation, as well as carrying out works relating to the energy efficiency improvement measures referred to in the energy audit report for the building, that is to say, insulation and replacement of the construction elements of a building's external envelopes, including restoration or replacement of windows in the external walls of the boundaries of certain apartment properties, insulation of the basement and top floor ceilings, renovation or reconstruction of the heating supply and hot water distribution system, installation, renovation or reconstruction of the ventilation system, renovation of the stairwell if energy efficiency works are carried out in the stairwell, renovation of elements that are functionally integral to the operation of the apartment block, as provided for in the technical design or the simplified renovation documentation, if it ensures the sustainability of the energy efficiency measures or if heat savings are achieved following the implementation of the measures, as well as for preparation of the energy audit, technical inspections and building design, and for carrying out construction supervision and project supervision.

Following renovation a building's heat savings must be at least 20% per year of the heat consumption before implementation of the project.

Apartment owners can recover 50% of the total eligible expenditure, but if 10% of the apartment owners have been granted the status of low-income or needy persons, a total of 60% can be recovered. The maximum amount of aid financed from the ERDF for the insulation of one building must not exceed LVL 35 per square metre of the total area of one apartment block.

A detailed description of the activity is provided in the summary table for measures in the residential sector.

Climate Change Financial Instrument (CCFI)

The Climate Change Financial Instrument (CCFI) is a State budget programme in Latvia. The objective of the CCFI is to prevent global climate change, adapt to the consequence of global climate change and reduce greenhouse gas (GHG)

emissions (for example, by implementing measures to improve the energy efficiency of buildings, both in the public and private sectors, developing and implementing technologies that make use of renewable energy resources, as well as by implementing Integrated solutions to reduce GHG emissions).

The CCFI is financed from the sale of State owned assigned amount units (hereinafter "AAU"), which is carried out as part of emissions trading system as set out in the Kyoto Protocol.

The operation of the CCFI is regulated by the terms of the international agreement signed by Latvia for the sale of AAUs, as well as by approved legislative acts, including the Law on the Participation of the Republic of Latvia in the Flexible Mechanisms of the Kyoto Protocol (in force from 13 December 2007), Cabinet Regulation No 312 of 28 April 2009 "By-laws of the consultative board of the climate change financial instrument", Cabinet Regulation No 644 of 25 June 2009 "Procedures for implementing, submitting reports and verifying projects financed from the climate change financial instrument".

Sector competitions have been organised and advertised within the framework of the CCFI programme, with the aim of reducing GHG emissions and implementing energy efficiency measures.

A detailed description on activities supported under the CCFI is provided in the summary table of measures for the sector in question (public, residential etc.).

The first NEEAP proposed energy efficiency improvement measures in the tertiary sector in the form of information campaigns on the use of energy efficient lighting and computers in company offices, as well as on the information provided on energy efficient labels for electrical equipment. These types of information campaigns were not carried out during the implementation of the first NEEAP, but interested parties can always receive information on the efficient use of electricity at the AS "Latvenergo" Energy Efficiency Centre, as well as on the website www.latvenergo.lv. Information can be obtained from the AS "Latvenergo" Energy Efficiency Centre regarding the information provided on energy efficient labels for electrical equipment, as well as on improving the efficiency of lighting both in industry and in offices. The information campaigns proposed in the first NEEAP for the tertiary sector were not carried out. One of the indicators chosen to calculate energy savings in the tertiary sector is the electricity consumption of electrical equipment used in the tertiary sector per full-time worker.

On the whole the economic crisis has had a negative effect on energy efficiency indicators in the industrial sectors, particularly in the wood processing sector.

Total energy savings in industry are calculated by adding together energy savings in individual sectors of industry. Energy consumption per volume index unit of industrial production is used as the basis for calculating energy savings

in industry. Together with the opportunities to apply for financing from the CCFI there has also been an increase in companies' interest in energy audits in industry. A draft Cabinet Regulation is being drawn up in order to align this area of energy audits. The technical process used in industry to improve energy efficiency, and proposed in the first NEEAP, is a market-generated measure used in order to ensure the advantages of a company's competitiveness. Energy savings in agriculture are assessed together with industry.

Given that Latvia does not have any car building industry and there is little opportunity to influence the technical development of cars, the key measures for more efficient use of energy are aimed at improving the technical conditions of vehicles, improving transport system planning and more efficient use of infrastructure, as well as disseminating information to traffic participants on the more efficient use of energy. The optimisation of traffic operations and improving the technologies used are of the utmost importance for energy savings in the transport sector.

The results of the measures implemented under the first NEEAP are not being assessed using the monitoring data provided for under Cabinet Regulation No 923, because the energy efficiency improvements programmes that have been implemented were approved before the entry into force of this Cabinet Regulation. Therefore, energy savings for certain end-use sectors in the first NEEAP have been calculated using only the top-down calculation method, where energy savings are calculated using indicators.

2. PRIMARY ENERGY SAVINGS

Under Article 17 of the Law on Energy End-Use Efficiency, the second NEEAP should be prepared only with respect to energy end-use sectors, however, when determining the energy savings targets for 2020 the second NEEAP takes into account the recommendation of the EC guide to assess possible energy savings in the transformation sector. The energy savings targets for 2020 are determined both for end-use sectors and for primary energy resources.

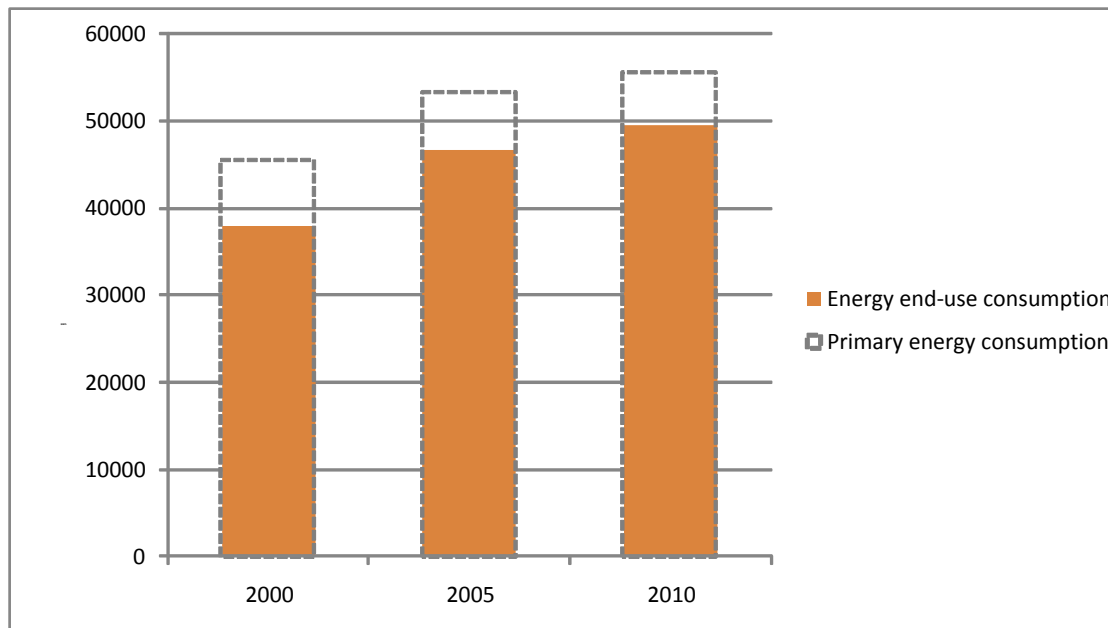


Figure 5. Actual dynamics of primary energy consumption and energy end-use consumption, GWh

In 2010 Latvia's annual primary energy consumption was 55708 GWh (200.5 PJ), incl. energy end-use consumption – 49569 GWh (178.4 PJ), non-energy needs – 848 GWh (3.1 PJ) and the energy transformation sector (incl. losses and energy sector own consumption) – 5291 GWh (19.0 PJ). Gross domestic energy consumption is 52800 GWh (190.0 PJ).

The energy transformation sector in Latvia only provides approximately 9% of the primary energy savings, but in the EU the figure is 30% (according to the non-paper: "Technical background on the energy efficiency target in Europe 2020").

In the case of Latvia the primary consumption of energy resources is 112% of energy end-use consumption. Energy savings are not expected in the energy transformation sector in 2020, due to the current high level of efficiency of the transformation sector as well as electricity imports. In 2010 the average efficiency of cogeneration plants and boiler houses was 82%. If electricity imports are also taken into account in an efficiency assessment (the efficiency of electricity imports is 100%), the level of efficiency reaches 85%.

According to the energy policy planning documents currently in force Latvia's energy policy promotes the use of renewable and local energy resources, which means a reduction in the efficiency of the transformation sector, because not only will wind energy and hydro energy be used (where the level of efficiency is 100%), but energy will also be obtained from less efficient electricity plants that use local fossil fuels and renewable energy resources. Therefore, it is anticipated that there will be no overall increase in energy efficiency in the

transformation sector up to 2020. A review of this plan could be important after Latvia's energy strategy for 2030 has been prepared.

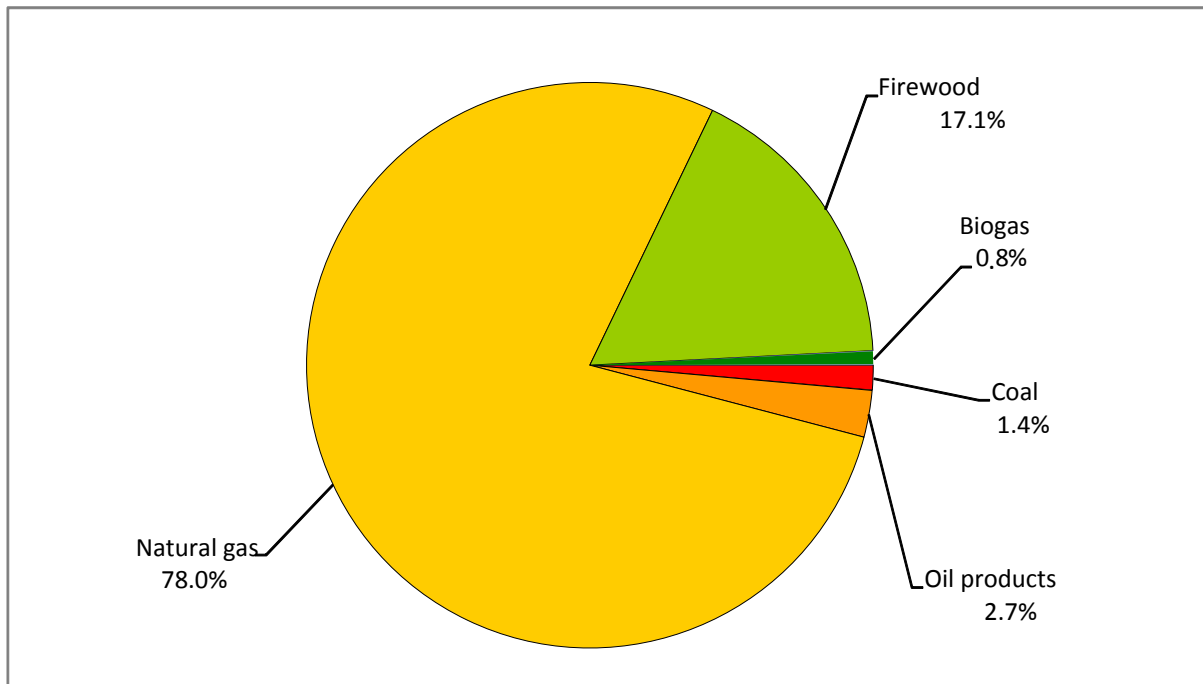


Figure 6. Structure of the transformation sector in 2009 (Source: CSB)

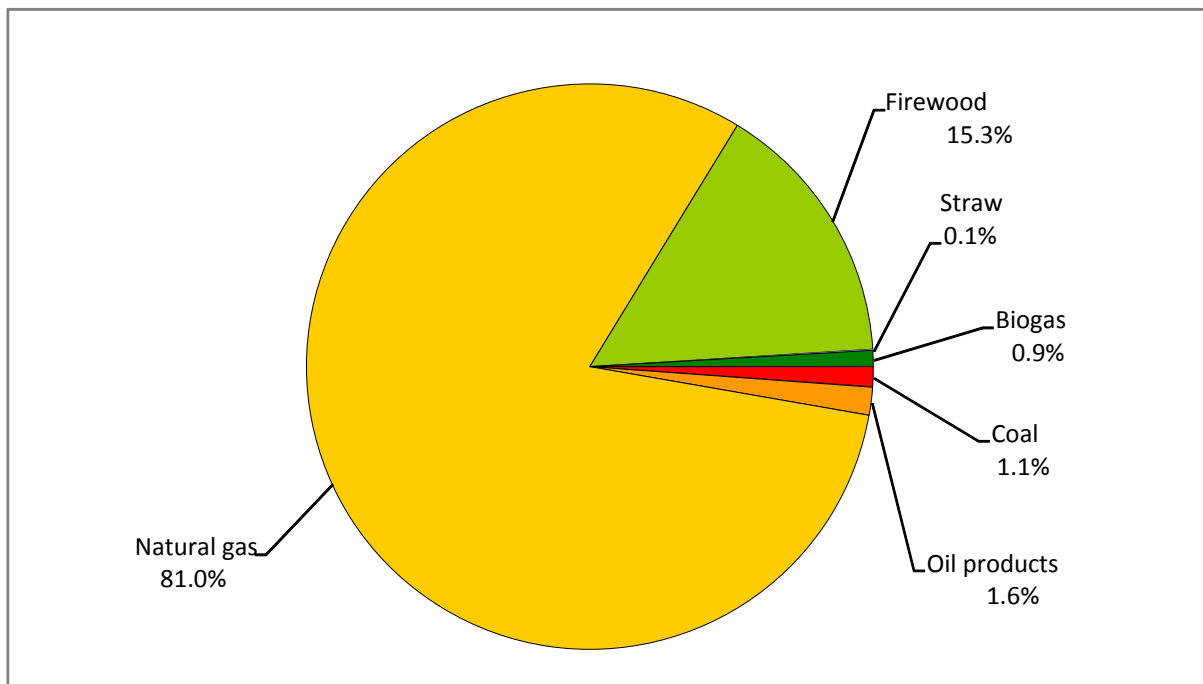


Figure 7. Structure of the transformation sector in 2010 (Source: CSB)

Latvia's consumption of primary resources is provided by local and renewable energy resources: firewood, charcoal, peat, straw, hydro resources, wind, biogas, biofuel and waste, as well as imported energy resources: oil products, natural gas, coal, electricity etc. At present Latvia's supply of primary resources is dominated by three types of energy resources, of almost equal amounts: oil products (mainly petrol and diesel), natural gas and timber. As with other

Member States Latvia is dependent on imports of primary resources. Nevertheless, this dependency has fallen over the last 20 years, from 86% in 1990 to 67% in 2010, mainly due to the increase in the use of timber resources.

With respect to primary energy savings the guidelines provide that:

- By 2016 the annual national level of efficiency for heat generation plants must rise from 68% to 80%-90% (84%-90% planned for 2020);
- The annual level of heat losses in the heating transmission and distribution networks must be reduced from 17% to 14% (12% planned for 2020).

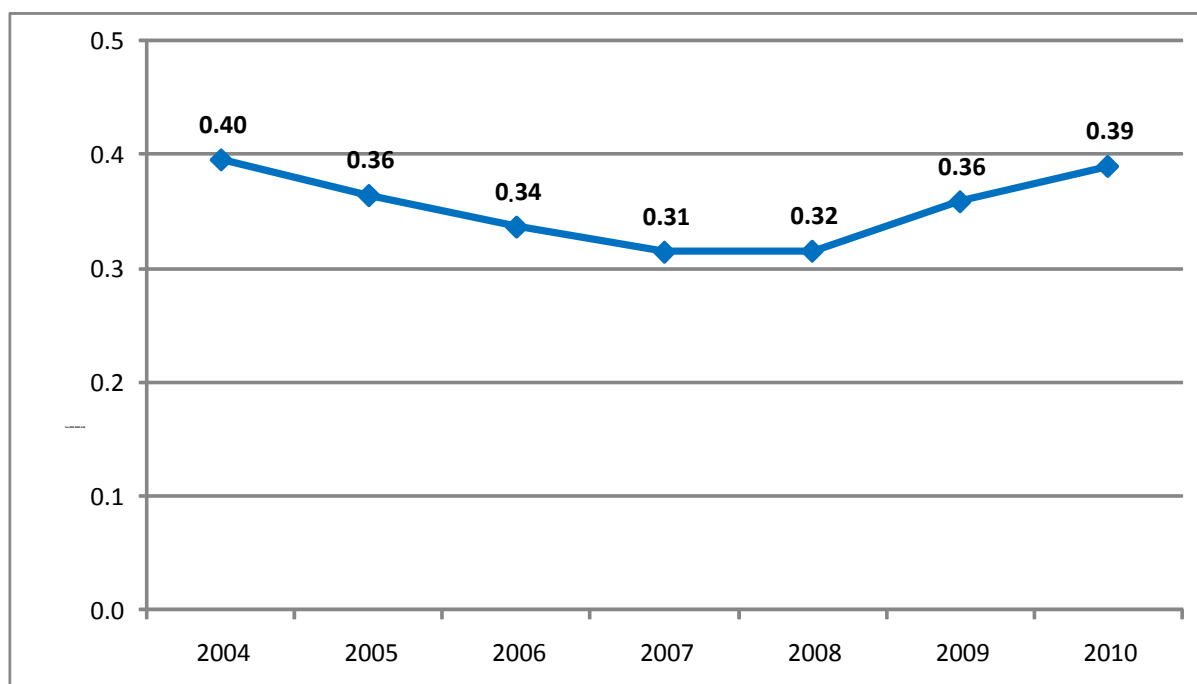


Figure 8. Energy intensity from 2004 to 2010 (Source: CSB)

Due to the effect of the economic crisis energy intensity, as shown in figure 8, started to grow from 2008 following a gradual fall in the period from 2004 to 2007.

2.1. MEASURES FOR ACHIEVING PRIMARY ENERGY SAVINGS (OVERALL DESCRIPTION)

In order to implement energy efficiency improvement measures, heating supply system modernisation programmes are currently being implemented with financial assistance from the Structural Funds and the Cohesion Fund, as well as the Climate Change Financial Instrument. Financing from these programmes is due to be used in the future, at least until 2013.

The operational programme "Infrastructure and services" provides supplementary assistance in the areas of transport, the environment and energy efficiency, by providing support for the development of transport networks of regional importance, the implementation of smaller scale environmental projects and also for the energy efficiency of homes.

The speed of energy efficiency improvement measures in centralised heating systems is hampered by the large volume of investments that are required, local authorities' restricted possibilities of taking out loans, as well as slow capital turnover. These are the reasons why local authorities continue to operate inefficient equipment that has an increased level of fuel consumption and cannot ensure the supply of heat at the quality required. If complex renovation of the system is carried out it will be possible to optimise the energy generation process and reduce heat losses in the transmission systems.

Energy efficiency improvement measures in the transmission and distribution of electricity and gas have not been included in the second NEEAP, but a general overview has been provided. Energy efficiency improvement measures in the transmission and distribution of electricity have been set out in the development plans of the subsidiaries AS "Augstsprieguma tīkls" [*High Voltage Network*] and AS "Sadales tīkls" [*Distribution Network*] of the holding company "Latvenergo", and measures for the natural gas transmission and distribution networks have been set out in the development plans of AS "Latvijas gāze".

2.2. ENERGY EFFICIENCY MEASURES IN CENTRALISED HEATING SUPPLY SYSTEMS

In Latvia's climatic conditions the supply of heat is a vitally important component of the energy sector. Approximately 22% of heat required by users is generated in centralised heating supply systems, whereas 78% of heat is generated in decentralised (local and individual) heating supply systems (Eurostat, 2009). In 2010 approximately 70% of centralised heat end-use was consumed by the residential sector.

In Latvia heat is supplied to consumers using centralised heating supply systems, as well as local (industrial, agricultural and tertiary sectors) and individual (household) heating supply systems. Records are kept of primary energy resources used in local and individual heating systems.

Heat consumption in centralised heating supply systems is on a downward trend following the implementation of energy efficiency measures, and also with certain structures being switched off from the centralised heating systems.

In 2010 heat totalling 7962 GWh (28.7 PJ) was generated in centralised heating supply systems in Latvia, and 53% of this volume was generated in Riga.

The largest heating supply company in Latvia is AS "Rīgas Siltums" [Riga Heat]. The total length of the heating network operated by the company has grown from 651.58 km in 2005 to 676.24 km in 2010. Over the last five years there has been a significant increase in the proportion of modern, industrially isolated ductless pipes. In the 2009/2010 financial year the length of the ductless heating network was 191.30 km, which is 28.3% of the total length of the heating network owned by AS "Rīgas Siltums". Furthermore, in order to improve the efficiency of the heating network the thermal insulation for heating networks located above ground and in the basements of buildings was replaced, and thermal insulation work was carried out on compensator plates, valves and pipes in 157 heating chambers. The energy efficiency measures that have been taken over the last few years have resulted in heat losses falling by up to 13% in the Riga heating networks.

With the operation of the new cogeneration block being launched in the centralised heating system in Riga, more than 90% of the heat consumed in the city is generated through a highly efficient cogeneration process. The remaining volume of heat required is generated by local and individual producers.

Data for centralised heating supply consumers in 2010 is as follows:

- Residential 4732 GWh (17.0 PJ);
- Industry and construction 108 GWh (0.4 PJ);
- Other consumers 1896 GWh (6.8 PJ).

In 2010 4673 GWh (16.82 PJ) or 58.7% of centralised heating was generated in cogeneration plants, but 3289 GWh (11.84 PJ) or 41.3% was generated in boiler houses.

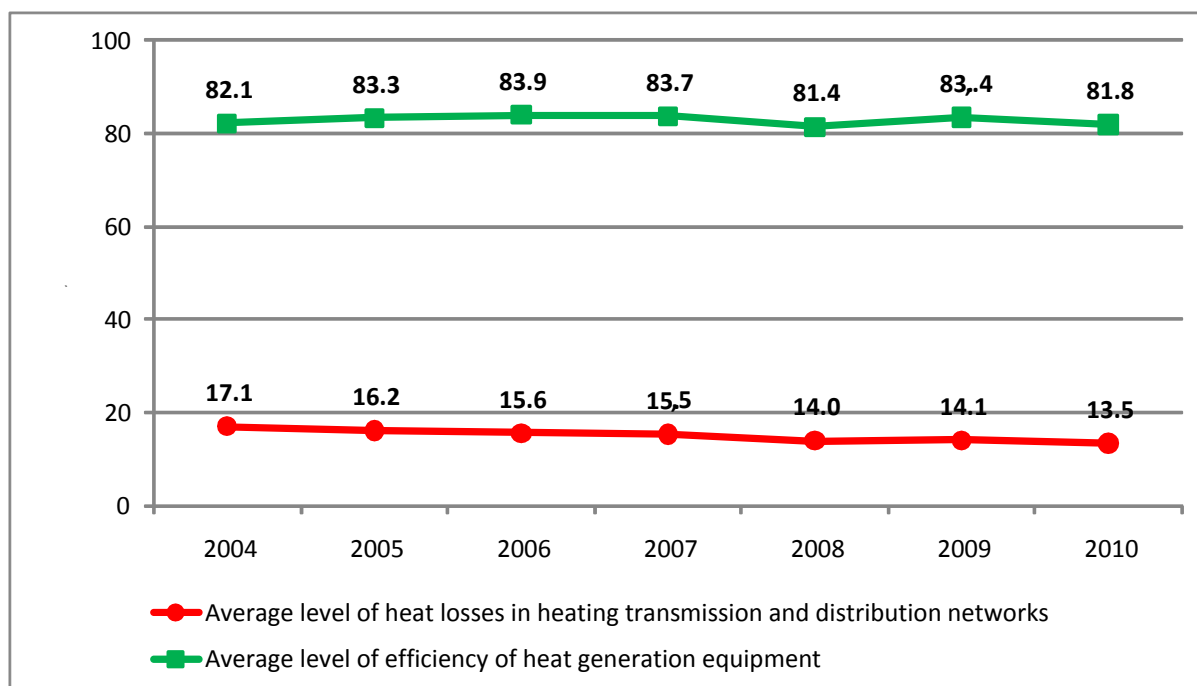


Figure 9. Average level of heat losses in heating transmission and distribution networks, and average level of efficiency of heat generation equipment from 2004 to 2010 (Source: CSB)

The average level of heat losses in the heating transmission and distribution networks is gradually falling and has almost reached planned levels. However, it should be noted that this fall is mainly due to the renovation of heating networks in the country's largest urban areas, particularly in Riga, and that there are local authorities where heat losses reach 30% and more.

The average level of efficiency of heat generation equipment complies with the level planned in the guidelines.

Activity "Measures to improve the efficiency of centralised heating supply systems" financed from the Cohesion Fund

The objective of activity 3.5.2.1 "Measures to improve the efficiency of centralised heating supply systems" under the programme complement to the "Infrastructure and services" operational programme is to significantly increase the efficiency of heat generation, reduce heat losses in the transmission and distribution systems and promotes the replacement of fossil fuels with renewable or other types of fuel. In order to ensure the implementation of the activity Cabinet Regulation No 162 "Regulations on stage one of selecting project applications for activity 3.5.2.1 "Measures to improve the efficiency of centralised heating supply systems" under the programme complement to the "Infrastructure and services" operational programme" entered into force on 17 February 2009, and Cabinet Regulation No 824 "Regulations on the stage two of selecting project applications and on further stages for "activity 3.5.2.1

"Measures to improve the efficiency of centralised heating supply systems" under the programme complement to the "Infrastructure and services" operational programme" entered into force on 31 August 2010. Implementation of activity 3.5.2.1 "Measures to improve the efficiency of centralised heating supply systems" as at 1 April 2011 shows that the amount of public financing available is LVL 42.32 million, and that 65 projects have been submitted, 10 contracts have been concluded and two projects have been completed.

The following is being carried out as part of the activity:

- Reconstruction and construction of thermal sources with the aim of improving efficiency or reducing the impact on the environment, or to replace fossil fuels with renewable fuels;
- Reconstruction and construction of transmission and distribution systems with the aim of reducing heat or heat carrier losses.

With Cabinet Order No 273 of 30 June 2011 "Amendments to the programme complement to the "Infrastructure and services" programme", two sub-activities have been established under activity 3.5.2.1 "Measures to improve the efficiency of centralised heating systems": sub-activity 3.5.2.1.1 "Measures to improve the efficiency of centralised heating systems with the aim of significantly improving the efficiency of heat generation, reduce heat losses in the transmission and distribution systems and promote the replacement of fossil fuels with renewable fuels", and sub-activity 3.5.2.1.2 "Measures to improve the efficiency of centralised heating systems with the aim of significantly improving the efficiency of heat generation by encouraging the use of heat in industry that has been generated using renewable energy resources".

Activity "Development of cogeneration power plants using renewable energy resources" financed from the Cohesion Fund

In order to ensure the implementation of activity 3.5.2.2 "Development of cogeneration power plants using renewable energy resources" under the programme complement to the "Infrastructure and services" operational programme, Cabinet Regulation No 165 "Regulations on activity 3.5.2.2 "Development of cogeneration power plants using renewable energy resources" under the programme complement to the "Infrastructure and services" operational programme" entered into force on 17 February 2009. Implementation of activity 3.5.2.2 "Development of cogeneration power plants using renewable energy resources" as at 1 April 2011 shows that the amount of public financing available is LVL 34.37 million, and that 65 projects have been submitted, 10 contracts have been concluded, but no projects have been completed.

The objective of the activity is to significantly increase the volume of electricity and heat generated using renewable energy resources, thereby reducing Latvia's dependence on imports of primary energy resources.

Under the activity assistance is due to be used for the construction of cogeneration plants that use renewable energy resources.

Installation of large capacity heat pumps to improve the supply of heat in the city of Riga

Under Council decision No 1644 Riga Council approved the "The sustainable energy action plan for the city of Riga, 2010-2020" on 6 July 2010. This plan also contains measures to improve the efficiency of the heating supply system in the city of Riga. AS "Rīgas siltums" is due to install large capacity heat pumps in the cogeneration plants in order to reduce the water temperature, as well as heat pumps in the waste water treatment plants in cooperation with AS "Rīgas ūdens" [*Riga Water*]. These heat pumps will increase the total volume of heat output in the centralised heating supply systems.

2.3. MEASURES TO IMPROVE ENERGY EFFICIENCY IN ELECTRICITY GENERATION

2.3.1. MEASURES AT THE DAUGAVA HYDROELECTRIC POWER PLANTS

Reconstruction carried out up to 2011

Pļaviņi HPP is the largest hydroelectric power plant on the river Daugava. The power plant has 10 hydro-aggregates with a total capacity of 825 MW and was put into operation in 1966. It was designed by the "Hydro-design" institute in Moscow. The turbines, generators and automatic operating system for hydro-aggregates Nos 4, 6, 9 and 10 at Pļaviņi HPP were reconstructed during the period from 1991 to 1996, hydro-aggregates Nos 2 and 8 were reconstructed from 1999 to 2001 and hydro-aggregates Nos 4, 5 and 7 were reconstructed from 2006 to 2010. Following reconstruction the capacity of the plant was increased to 883 MW, but electricity output has grown by approximately **70 GWh**.

Ķegums HPP-1 is located on the right bank of the river Daugava in the town of Ķegums. Construction began in 1936 and it was put into operation in 1939. Since the installation of an additional hydro-aggregate in 1954 there are four hydro-aggregates in operation at Ķegums HPP-1 with a total capacity of 72 MW. Given that this oldest power plant has been in operation for more than 60 years the main equipment and ancillary equipment is outdated, and reconstruction of Ķegums HPP-1 began in 1998 and was completed in 2001. Following reconstruction the capacity of the plant was increased to 74 MW, but electricity output has grown by approximately **5 GWh**.

The second power plant in Ķegums – Ķegums HPP-2 – is located on the left bank of the river Daugava. It was put into operation in 1979 and there are three hydro-aggregates in operation each with a capacity of 64 MW (total capacity is 192 MW). Riga HPP was put into operation in 1976 and it was the final stage of the Daugava HPP cascade that was constructed. The power plant has six hydro-aggregates in operation with a total capacity of 402 MW.

Following the reconstruction of Pļaviņi HPP and Ķegums HPP-1 electricity output has increased by approximately 75 GWh, from 2650 GWh to 2725 GWh.

Planned reconstructions

Reconstruction of hydro-aggregates Nos 1 and 3 is due to be carried out at **Pļaviņi HPP** with the replacement of the operating wheel and electric generator. After the reconstruction the new aggregates are due to be put into operation in 2017 and 2016 respectively. The capacity of each hydro-aggregate will increase from 82.5 MW to 90 MW following reconstruction, but the efficiency coefficient will rise by 5-9%. Electricity output will grow by **18 GWh**.

Reconstruction of hydro-aggregates Nos 5, 6 and 7 is due to be carried out at **Ķegums HPP (KPP-2)** with the replacement of the operating wheel and electric generator, as well as modernisation of the operating system. The reconstructed aggregates are due to be put into operation in 2017, 2016 and 2015 respectively. The capacity of each hydro-aggregate will increase from the existing 64 MW to 69 MW following reconstruction, but the efficiency coefficient will rise by 5-6%. Electricity output will grow by **22 GWh**.

Reconstruction of all six hydro-aggregates is due to be carried out at **Riga HPP** with the replacement of the operating wheel and electric generator, as well as modernisation of the operating system. After the reconstruction the new aggregates are due to be put into operation from 2015 to 2022. The capacity of each hydro-aggregate will increase from 67 MW to 69 MW following reconstruction, but the efficiency coefficient will rise by **25 GWh**.

Total project investment costs have been estimated as LVL 106 million. The project benefits are as follows: 1) a growth in electricity output at the expense of a higher efficiency coefficient, 2) ensuring reserve capacity, 3) a reduction in the cost of repairs.

Further efficient operation of the HPPs would be ensured as a result of reconstruction; the electricity capacity of the Daugava HPPs could grow by 42 MW, but average annual electricity output could be increased by **65 GWh**, i.e. from 2725 GWh to 2790 GWh.

2.3.2. RECONSTRUCTION OF RIGA TEC-1

Reconstruction of Riga TEC-1 has been completed (installation of a power unit and two water heating boilers in November 2005, installation of a third 11g MW_{th} water heating boiler in June 2010), with investments totalling EUR 114 million. Physically and morally outdated equipment was replaced during the reconstruction with new, highly efficient and environmentally friendly equipment.

The main equipment at Riga TEC-1 comprises a gas-steam (combined cycle - CC) double power unit with an installed heating capacity of 145 MW_{th} and an electricity capacity of 144 MW_{el}, as well as three water heating boilers with a total heating capacity of 348 MW_{th}. The new power unit is mainly operated in cogeneration mode with the most efficient thermal load.

Following reconstruction it is now possible to generate approximately 3-4 times the volume of electricity in cogeneration mode, and there has been a marked increase (from 74% to 87.7%) in the fuel-use coefficient. The use of less environmentally friendly fuel (heavy fuel oil and peat) was stopped and replaced with natural gas. Diesel is used as an emergency fuel for the water heating boilers. As a result, emissions of harmful substances were reduced considerably: SO₂, V₂O₅ and solid particle emissions have been eliminated, but NO_x emissions are far lower in comparison to approved regulations.

Following reconstruction at Riga TEC-1 there has been a significant change in the relation between electricity and heating capacity in cogeneration, with the use of new efficient CC technologies, which makes it possible to make more efficient use of the generated heat for electricity output. As a result of this optimisation, the capacity of electricity generated (net) has increased almost four-fold, on average from 180 GWh to 700 GWh per year.

Riga TEC-1 is the first combined cycle electricity power plant in the Baltic States.

2.3.3. RECONSTRUCTION OF RIGA TEC-2

Reconstruction of Riga TEC-2, stage 1

Stage one of the reconstruction of Riga TEC-2 was completed in 2008, resulting in the construction of the largest combined cycle (CC) power unit in the Baltic States. One of the largest General Electric has turbine 9FB was installed at the power plant. The installed electricity capacity of the power unit in cogeneration mode is 403 MW, but the heating capacity is 274 MW. When operating in condensation mode, electricity capacity is up to 430 MW. Latvenergo has invested almost EUR 180 million in this project. This was a very successful and

timely investment, because construction costs of similar power plants almost doubled in the period from 2006 to 2008.

With the operation of the new CC 400 MW power unit being launched the energy efficiency of TEC-2 has increased considerably, thereby reducing Latvia's energy dependency. Following the construction of the first replacement power unit, electricity output (net) in cogeneration mode has increased from an average of 700 GWh/year to approximately 1700 GWh/year, and provides Latvia with approximately 1000 GWh additional electricity per year.

With the construction of the new power unit operation of some of the older and less efficient equipment was stopped. Following reconstruction the electricity capacity of Riga TEC-2 has grown from 330 to 662 MW. As with TEC-1, there has been a significant increase in the relation between electricity and heating capacity in cogeneration, that is to say, from 0.5 to 0.98 (together with the remaining old cogeneration section), thereby ensuring more efficient use of the heating capacity. There has also been an improvement in the fuel use coefficient from 80% to 84%, thereby ensuring both fuel economy and fewer emissions.

The new power unit can also be operated in a condensation mode with a very high efficiency coefficient of up to 57-58%.

Reconstruction of Riga TEC-2, stage 2

Stage two of the reconstruction of Riga TEC-2 is ongoing, and is due to be completed in July 2013. With the completion of stage two of the reconstruction of Riga TEC-2, two new CC power units and water heating boilers are due to be put into operation, and operation of all the old power units is due to be stopped. Therefore, following reconstruction the total electricity capacity of the Riga TEC-2 power units in cogeneration mode will be approximately 806 MW, but in condensation mode it will be 860 MW. The heating capacity of Riga TEC-2 will be 1124 MW, of which 544 MW will be the capacity of the power units and 580 MW will be the capacity of five water heating boilers.

Following reconstruction, there will be an even greater improvement in the relation between electricity and heating capacity, that is to say, from 0.98 to 1.50, and the fuel use coefficient will increase from 84% to 89%.

Electricity output in cogeneration mode will increase from 1700 to 2300 GWh. If the new power units are partially operated in a condensation mode it will be possible to generate approximately 5000-5500 GWh electricity.

2.3.4. ASSESSMENT OF PRIMARY ENERGY SAVINGS AT THE RIGA THERMOELECTRIC POWER PLANT

When assessing the operating of the Riga thermoelectric power plant against Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC, it can be concluded that prior to the reconstruction of Riga TEC-1 primary energy savings (PES) were less than the standard 10%, but following reconstruction they reached 26%-27%. After the construction of the first combined cycle (CC) power unit, the PES at Riga TEC-2 will be 23.4%, during the winter months when operating in cogeneration mode, of which 10.7% will be in the existing equipment and 27% in the new power unit. Energy savings will increase once reconstruction of TEC-2 is completed and the existing old and inefficient power units are replaced with new CC capacities. During the summer the power plant will operate in condensation mode.

2.3.5. AID FOR COGENERATION DEVELOPMENT

In 2010 the proportion of electricity generated in Latvia as part of the cogeneration process was 46% of all electricity generated nationally. Cogeneration is efficient from the aspect of primary energy savings, but the efficient use of heat that has been generated is restricted by the seasonal nature of the heating season, and is also adapted for industrial heating capacity losses. Cabinet Regulation No 221 of 10 March 2009 "Regulations on generating electricity and determining prices when generating electricity in cogeneration" contains legislative provisions, which, under Article 28¹ of the Electricity Market Law provides for the acquisition of rights to receive guaranteed payment for electricity capacity installed in a cogeneration power plant. Furthermore, the Regulation contains a provision whereby cogeneration power plants may choose to either sell the electricity generated in the form of a mandatory buy-back of electricity capacity or in the form of a guaranteed payment for capacity. Amendments to Cabinet Regulation No 221 entered into force on 1 November 2010, under which there is no possibility of applying to qualify for the sale of electricity under the mandatory buy-back scheme or to receive a guaranteed payment for electricity capacity installed in cogeneration plants that use fossil fuels or peat to generate power.

2.4. MEASURES TO IMPROVE ENERGY EFFICIENCY IN THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY

AS "Augstsprieguma tīkls" is the independent operator of the transmission system in Latvia, and functions in accordance with Latvian legislation, regulations and the terms of its licence that define the functions, obligations, rights and responsibility of the electricity transmission system operator.

AS "Augstsprieguma tīkls" ensures the safety, stability and quality of electricity transmission according to justified and technically economic requirements. At present losses in the AS "Augstsprieguma tīkls" electricity transmission system comprise 3.8% of the total volume of electricity that is transmitted. In its 10-year development plan AS "Augstsprieguma tīkls" has anticipated that losses in the electricity transmission system will remain at current levels.

Losses in electricity transmission are dictated by the laws of physics, and are an undesirable and unavoidable by-product of the energy system's technical operation directly affected by the flow of the current in power lines and transformers.

The capacity and current transmitted in an energy system depends directly on parameters of the energy system's operating mode, such as:

- summary energy system consumption and neighbouring energy systems consumption,
- load of the energy system's power plants and division of the load between power plants,
- structure of the energy system's network equipment and its technical parameters (lines, TR repairs and emergency outages).

Each of the changing parameters listed has an effect on overall energy system losses. Losses in capacity and their optimisation/reduction is taken into account as one of the selection criteria (but not the decisive criterion) when designing new elements of the electricity transmission network, by selecting the best variant of several line routes and constructions.

The Latvenergo holding company comprises a group of companies, of which decisive influence belongs to the holding company's parent company, i.e. Latvia's largest producer of electricity AS "Latvenergo". The holding company comprises five AS "Latvenergo" subsidiary companies: AS "Latvijas elektriskie tīkli" [*Latvian Electricity Networks*], AS "Sadales tīkls", "Latvenergo Kaubandus" OÜ (Estonia), "Latvenergo Prekyba" UAB (Lithuania) and SIA "Liepājas enerģija" [*Liepāja Energy*].

AS "Latvijas elektriskie tīkli" services the 330 kV and 110 kV electricity transmission lines throughout Latvia, and ensures the operation, maintenance and repair of equipment at the 330 kV and 110 kV sub-stations and distribution points. AS "Augstsprieguma tīkls" will carry out the reconstruction and construction of the transmission network at the request of AS "Sadales tīkls" and according to AS "Augstsprieguma tīkls" requirements.

When carrying out reconstruction and construction works, AS "Latvijas elektriskie tīkli" executes the optimal technical solutions, uses the most modern equipment and materials so that the efficiency of the transmission network is improved as a result, and operating costs are reduced. An example of an energy efficiency improvement measure is the use of 110/20 (10) kV transformers with fewer electricity losses.

When reconstructing sub-stations that are more than 35-40 years old, 330 kV and 110 kV SF6 circuit breakers and other SF6 devices are used, as well as new protection relay and automation units. As a result, maintenance costs are reduced considerably and maintenance teams have to attend sub-stations less frequently, which indirectly increases energy efficiency.

When planning investments for the period up to 2013, AS "Latvijas elektriskie tīkli" plans to reconstruct two or three 110 kV sub-stations each year, to halt the ageing of the equipment and increase operational efficiency.

AS "Sadales tīkls" is responsible for the distribution of electricity throughout Latvia, with the exception of those areas covered by licensed local transmission system operators. The company's objective is to ensure the maintenance of the medium and low-voltage electricity network, as well as regular restoration and planned development. Tariffs for distribution services are regulated and they are approved by the Public Utilities Commission. Low-voltage (0.4 kV) and medium-voltage (6 – 20 kV) equipment is used to provide electricity distribution services, as well as 24.4 thousand transformer sub-stations and 235 distribution points. At the end of 2009 the total length of all voltage electricity lines was 91 466 km, of which:

- medium-voltage overhead lines - 29 319 km, incl. lines with insulated conductors – 1 263 km;
- medium-voltage cables – 5 405 km;
- low-voltage overhead lines – 39 558 km, incl. aerial lines - 7995 km;
- low-voltage cables – 17 184 km.

The electricity distribution network ensures the flow of electricity from the transmission network and small electricity producers to electricity consumers, who are connected to the low-voltage and medium-voltage networks.

At present the level of electricity losses in the AS "Sadales tīkls" electricity distribution network has been reduced to 7% of the volume of electricity transmitted. The level has fallen by more than twice the amount since the end of the 1990s. The largest share of the losses, i.e. approximately 6% of the volume of electricity transmitted, comprises technical electricity losses in lines and transformers, including approximately 3% in the low-voltage networks. The remaining share of the losses is due to errors in commercial record-keeping and

payments, unpaid electricity consumption and the unauthorised use of electricity.

The level of losses can be resolved by focusing on the modernisation of the electricity meter fleet and through investments in the development of the electricity network, including reorganising the electricity record-keeping system, constructing new transformer points, as well as carrying out regular control of payments for electricity that has been consumed. There is some possibility of reducing commercial losses in the future, but the level of technical losses will be determined by the nature of operators' resistance capacity in electrical equipment. In the long term it can be influenced by consumers' capacity management measures, by encouraging that a share of electricity consumption is transferred from large to small systems during capacity. Technical losses can also be minimised by quickly identifying damage and preventing power leakages.

In the period from 2011 to 2020 AS "Sadales tīkls" plans to implement measures to minimise voltage deviations, reconstruct electricity lines and transformer sub-stations, replace 110 kV transformers, improve operator management and install multi-functional electronic meters, and invest up to LVL 527 million in these measures.

In addition, there are plans to restore 689 km of the electricity distribution network in the period from 2011 to 2015 at a cost of LVL 24.5 million. All these planned measures will reduce technical losses of electricity.

In accordance with paragraph 14 of decision No 592 of 12 December 2007 by the board of the Public Utilities Commission entitled "Differentiated tariffs of electricity trade", an electricity trader offers differentiated tariffs to captive customers depending on the time of day. AS Latvenergo has specified these differentiated tariffs and they correspond to tariff type T3. However, only around 2000 customers use differentiated tariffs at present. Such low interest in tariff T3 by electricity consumers is due to the fact that there is a minimal difference in cost between tariffs T1 and T3, and therefore, does not encourage consumers to transfer to a differentiated tariff. The small difference is determined by the fact that cheap electricity that used to be provided by the Ignalina NPP is not available during the night and non-working days.

AS "Latvenergo" has developed a smart network concept (approved on 1 March 2011 by decision of the Latvenergo board of directors). Preparation of the smart network concept forms part of the development of the distribution network. The driving force behind the development of smart networks is green initiatives, the development of renewable energy resources and energy efficiency, as well as the assumption that well-informed consumer will use less energy. Therefore the implementation of smart networks and smart meters is

regarded as being an important instrument in the European 20/20/20 targets as regards reducing energy consumption. Furthermore, the use of smart meters is an important condition for connecting sources of renewable energy and sources of diffused electricity to the network.

The objectives of the smart network concept are as follows:

- To create common understanding of the meaning of smart networks within the Latvenergo holding company;
- To create a basis for discussions on the need to implement smart networks, as well as on the technical possibilities and conditions;
- To create a basis for discussions on variants for ensuring smart record-keeping at the Latvenergo holding company.

The potential benefits of implementing smart networks are as follows:

1. For Latvia and society as a whole (*general*):

- Reduction in CO₂ emissions in Latvia, particularly in urban areas, as a result of efficiency in energy generation and consumption;
- Reduction in maximum peak hours in electricity generation, and in transmission and distribution networks: reduction in investments and losses;
- More extensive use of Latvia's renewable energy resources;
- Alternatives to energy supply for vehicles, cleaner air particularly in urban areas;
- Increase in the use of electricity for vehicles;
- Development of various additional energy businesses (trade of energy and electrical equipment, consultations);
- Development of an alternative electricity market and subsequent regional development: new jobs are created, agriculture, forestry and the processing industry are developed, as well as research relating to renewable energy technologies.

2. For electricity users:

- Improvement in the quality of electricity supply and the level of customer service, possibilities to apply dynamic tariffs, restricting capacity, operation of customers' electrical equipment and information on planned network outages;
- Interactive customer cooperation with the distribution operator and trader of electricity;
- Increased opportunities for consumers to choose between various electricity suppliers, as well as greater awareness of the volume of electricity used and time when electricity is used;

- Better understanding of electricity use, possibility of regulating consumption and reducing energy bills;
- Possibility of storing and selling surplus electricity, and to order the capacity required in an operative manner.

The amount of investments required to implement the concept, the terms of repayment, as well as the support for investments in implementing smart record-keeping that is to be adopted into Latvian legislation, will be clarified by carrying out an economic assessment as provided for in Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, which has to be completed by 3 September 2012.

2.5. MEASURES TO IMPROVE ENERGY EFFICIENCY IN THE TRANSMISSION AND DISTRIBUTION OF NATURAL GAS

At present AS "Latvijas Gāze" is the only company in the natural gas market in Latvia. AS "Latvijas Gāze" has exclusive gas transmission, storage and distribution rights in Latvia until 2017, on the basis of a buy-sell agreement for shares, and it also has a licence to sell natural gas, as well as unrestricted and exclusive rights to use the Inčukalns underground gas storage facility for 20 years. AS "Latvijas Gāze" transmits, distributes, stores and sells natural gas in accordance with licences issued by the Public Utilities Commission.

AS "Latvijas Gāze" forecasts a small rise in gas consumption over the next five years following a fall in 2009 due to economic development problems in Latvia. Natural gas consumption forecasts may change depending on the demand for natural gas and particularly the extent to which it is used in generating electricity. Natural gas consumption trends are affected by general economic development, the thermal insulation of buildings, the use of modern and economic gas incineration facilities, as well as changes in the proportion of alternative types of fuel.

The key principles of AS "Latvijas Gāze" investment policy are as follows:

- Investments for modernising infrastructure due to the stability and safety of the gas supply;
- Investments for developing the quality of the infrastructure and services;
- Profits that allow for investments and the payment of dividends according to practice in the international natural gas industry.

AS "Latvijas Gāze" has prepared a new investment programme for the period from 2011 to 2015.

Given that many of the main gas pipes in Latvia are more than 30, and even 40, years old, attention has been focused on inspecting these gas pipes and

rectifying any defects. The inspection and repairs of all the main gas pipes will be completed by the end of 2013.

In 2009 the company developed the AS "Latvijas Gāze" plan of measures to improve the safety of the gas supply system from 2010 to 2015, in order to provide an uninterrupted supply of natural gas to customers and ensure the safe operation of the gas supply system. The plan was drawn up on the basis of the conclusion regarding the technical condition of equipment and possibilities for modernisation. The plan proposes investments to improve safety for a total of LVL 50.6 million, of which LVL 700 thousand will be invested in the main gas pipes system, and LVL 640 thousand will be invested in the distribution gas pipes system.

The structure AS "Latvijas Gāze" includes the Inčuklans underground gas storage facility (hereinafter "storage facility"), which is the only gas storage facility operating in the Baltic States. The storage facility ensures the stability of the regional gas supply. Modernisation of 15 gas boreholes began in 2010, in accordance with European best practice, and in order to ensure the efficient operation of the gas storage facility. The project is being implemented using co-financing granted by the European Commission. The cost of the borehole modernisation works is LVL 7 million, but total project costs are almost LVL 10 million. The project is due to be completed in full in 2011. In addition, repairs in the second compressor workshop at the storage facility began in 2010. Risks relating to possible damage and down time at the storage facility during repairs will be minimised following major repairs to the unit. Major repairs of the compressor are due to be completed in 2011 and total project costs are approximately LVL 1.3 million. On 10 November 2010 the independent certification body Bureau Veritas Latvia issued an updated certificate regarding the operational conformity of the natural gas storage facility with prescribed requirements, including the efficient use of energy. On the certificate the validity of the ISO 14001:2004 certification which the company received in 2004 has been extended to 22 December 2013.

3. ENERGY SAVINGS ACHIEVED IN THE ENERGY END-USE SECTORS

The first NEEAP proposed the implementation of energy efficiency improvement measures in five energy end-use sectors: residential, transport, industry, the tertiary sector and agriculture, as well as horizontal cross-sectoral measures. A total of 20 measures were included in the plan. A total of 11 measures were implemented during the execution of the plan, and nine measures were partially implemented. Of the measures that were implemented in full, those in the residential sector require a special mention. During the

operational period of the plan implementation of activity 3.4.4.1 "Measures to improve the thermal stability of apartment blocks", under the "Infrastructure and services" operational programme, began with the aim of improving the energy efficiency of homes in apartment blocks, in order to ensure the sustainability of the housing stock and the efficient use of energy resources. The total amount of ERDF financing available under activity 3.4.4.1 to improve the thermal stability of apartment blocks is LVL 44.34 million. Project applications were accepted as from 14 April 2009 and will continue whilst financing is available.

In 2008-2009 projects were implemented under the aid programme "Measures to improve the thermal stability of social housing", with the aim of improving the energy efficiency of the local authority social housing sector, whilst at the same time improving the quality and sustainability, and providing population groups at risk of social exclusion with adequate housing. The aid intensity is up to 75%. The maximum amount of aid for one project is LVL 140 thousand. The total amount of ERDF financing available under activity 3.4.4.2 is LVL 6.92 million and the stage two of the competition was held in 2010. Implementation of stage two projects will continue in 2011-2013.

The target group for the activity is social housing tenants. The activities receiving assistance are as follows: reducing the energy consumption of buildings, renovation or reconstruction of buildings, if a minimum of two priority measures are implemented, as indicated in the building energy audit report, and also for preparing project documentation and monitoring projects.

The beneficiaries are local authorities with social housing, which was granted the status of social housing before 1 July 2007 on the basis of a local authority order.

The Law on the Energy Efficiency of Buildings was adopted (on 13 March 2008) during the execution of the first NEEAP, as well as the relevant Cabinet Regulations: Cabinet Regulation No 26 "Regulations on energy auditors"; Cabinet Regulation No 39 "Method for calculating the energy efficiency of buildings"; Cabinet Regulation No 504 "Regulations on energy performance certificates for buildings" and Cabinet Regulation No 1214 "Regulations on energy efficiency requirements for centralised heating supply systems in the tenure of licensed energy supply economic operators, and verification procedures thereof".

A positive stimulus for promoting efficiency is an increase in the level of energy tax as provided for in the transitional provisions to the Electricity Tax Law (adopted on 19 December 2006), and an increase in the rate of excise duty for oil products as provided for in Article 14 of the Law on Excise Duty (adopted on 30 October 2003, in the updated version of 1 July 2011).

The first NEEAP proposed energy efficiency improvement measures in the tertiary sector and industry in the form of information campaigns on various

product categories and equipment. These types of information campaigns were not carried out during the implementation of the first NEEAP, but interested parties can always receive information on the efficient use of electricity at the AS "Latvenergo" Energy Efficiency Centre, as well as on the website www.latvenergo.lv. One of the indicators chosen to calculate energy savings in the tertiary sector is the electricity consumption of electrical equipment used in the tertiary sector per full-time worker.

The collated results of energy savings show (table 3) that the energy savings target for 2016 was almost achieved in Latvia in 2010. All energy savings were calculated using the top-down methods or the energy consumption indicators.

Table 3

Summary table of energy end-use savings as a result of energy efficiency improvement measures

| | <i>Energy end-use savings target</i> | | <i>Energy end-use savings achieved or planned</i> | |
|---------------------------------|---|--|---|--|
| | <i>Energy end-use savings target GWh (PJ)</i> | <i>In percentage (%) (in comparison to reference year consumption included in the Energy Savings Directive (reference year))</i> | <i>GWh (PJ)</i> | <i>In percentage (%) (in comparison to reference year consumption included in the Energy Savings Directive (reference year))</i> |
| 2010 (interim target) | 67 (0.24) | 1.9 | 3418 (12.30) | 98.0 |
| 2016 (overall period) | 3483 (12.55) | 100 | 3483 | |

3.1. CALCULATION OF ENERGY SAVINGS ACHIEVED

Description of the methodology used

The top-down method is used to calculate energy savings in Latvia. The basis of the method is the methodology recommended by the EC, which is based on an analysis of changes to the energy efficiency indicators selected for the end-use sectors during the period from the selected reference year and the reporting year. 2007 was selected as the reference year for calculating energy savings. Energy savings have been calculated for 2009. The main reason for this is because no approved statistical data for 2010 is available, and given the current fluctuations in economic development Latvia finds it difficult to extrapolate credible energy consumption data for 2010 that could be used to calculate energy savings.

Depending on the level of detail in the statistical data available, a group of minimum indicators or recommended indicators were used to calculate energy savings in the energy end-use sectors. Information on the energy efficiency indicators used has been collated in table 4.

Table 4

Energy efficiency indicators used

| Sector | Energy efficiency indicators used | Notes |
|-------------|--|--|
| Residential | Energy consumption for heating (kgoe/m ²), preparing hot water (toe/person) and electricity consumption for equipment and lighting (kWh/household) | Electricity consumption for equipment and lighting does not include consumption for heating and preparing hot water. Energy consumption for heating is adjusted with the climate correction coefficient. |
| Transport | Energy consumption in road transport (toe/car. ^{equiv.}), energy consumption in rail transport (kgoe/tkm) | The car equivalent system proposed by the EC is used to calculate the total number of cars. |
| Tertiary | Non-electricity consumption (toe/worker) and electricity consumption (kWh/worker) | Energy consumption for heating is adjusted with the climate correction coefficient |
| Industry | Energy consumption by industrial sector per volume index unit of industrial production (toe/index) | The share of energy consumption in industry was corrected in 2007 according to Directive 2006/32/EC. |

The main source of data for calculating energy savings was the Central Statistical Bureau data on energy-end use consumption in the sectors listed, characteristic indicators for industry, and the number of households and residents. Data from the Emissions Trading Registry and the ODYSSEE Latvia database.

The overall end-use savings in Latvia for the period (2008-2009) has been calculated by adding together energy savings in the residential, industrial transport and tertiary sectors.

3.2. DESCRIPTION OF ENERGY SAVINGS ACHIEVED

3.2.1. RESIDENTIAL

The following changes to the energy efficiency indicators were used as the basis for calculating energy savings:

- Energy consumption for heating that has been adjusted with the climate correction coefficient, in households per m²;
- Energy consumption for preparing hot water per resident;
- Electricity consumption for domestic electrical equipment per household.

Energy savings for residential heating are calculated using the following formula:

$$E_{\text{iet.apk}}^{\text{Maj.}} = \left[\left(\frac{E_{2007}^{\text{Maj.apk.}}}{P_{2007}} \times \frac{GDD^{\text{apk.}}}{FGD_{2007}^{\text{apk.}}} \right) - \left(\frac{E_t^{\text{Maj.apk.}}}{P_t} \times \frac{GDD^{\text{apk.}}}{FGD_t^{\text{apk.}}} \right) \right] \times P_t, \text{ where}$$

$E_{2007}^{Maj.apk.}$; $E_t^{Maj.apk.}$ – energy consumption for heating in 2007 and in the reporting year;

P_{2007} ; P_t – total area of inhabited households in 2007 and in the reporting year;

$GDD^{apk.}$ – average number of multi-year heating degree days;

$FGD_{2007}^{apk.}$; $FGD_t^{apk.}$ – actual number of heating degree days in 2007 and in the reporting year.

| Latvian | English |
|--------------------|-----------------------------|
| <i>Maj.iet.apk</i> | Residential heating savings |
| <i>Maj.apk.</i> | Residential heating |
| <i>Apk.</i> | Heating |

Energy savings for preparing hot water in households are calculated using the following formula:

$$E_{iet.silt.ūd}^{maj.} = \left(\frac{E_{2007}^{Maj.silt.ūd.}}{I_{2007}} - \frac{E_t^{Maj.silt.ūd.}}{I_t} \right) \times I_t, \text{ where}$$

$E_{2007}^{maj.silt.ūd.}$; $E_t^{maj.silt.ūd.}$ – energy consumption for preparing hot water in households in 2007 and in the reporting year;

I_{2007} ; I_t – number of residents in 2007 and in the reporting year.

| Latvian | English |
|------------------------|-------------------------------|
| <i>Maj.iet.silt.ūd</i> | Residential hot water savings |
| <i>Maj.silt.ūd.</i> | Residential hot water |

Energy savings for electricity consumption in households are calculated using the following formula:

$$E_{iet.elekt.}^{maj.} = \left(\frac{E_{2007}^{Maj.EL}}{M_{2007}} - \frac{E_t^{Maj.EL}}{M_t} \right) \times M_t, \text{ where}$$

$E_{2007}^{maj.el.}$; $E_t^{maj.el.}$ – electricity consumption for electrical equipment and lighting in households in 2007 and in the reporting year;

M_{2007} ; M_t – number of households in 2007 and in the reporting year.

| Latvian | English |
|-----------------------|---------------------------------|
| <i>Maj.iet.elekt.</i> | Residential electricity savings |
| <i>Maj.el.</i> | Residential electricity |

Residential energy savings in 2009 were calculated on the basis of the residential energy efficiency indicators selected and the formulas, and they comprised **673 GWh**. Residential energy savings can be attributed to energy efficiency improvement and economy measures for heating, whereas energy savings are not evident in the preparation of hot water and use of electrical equipment during this period.

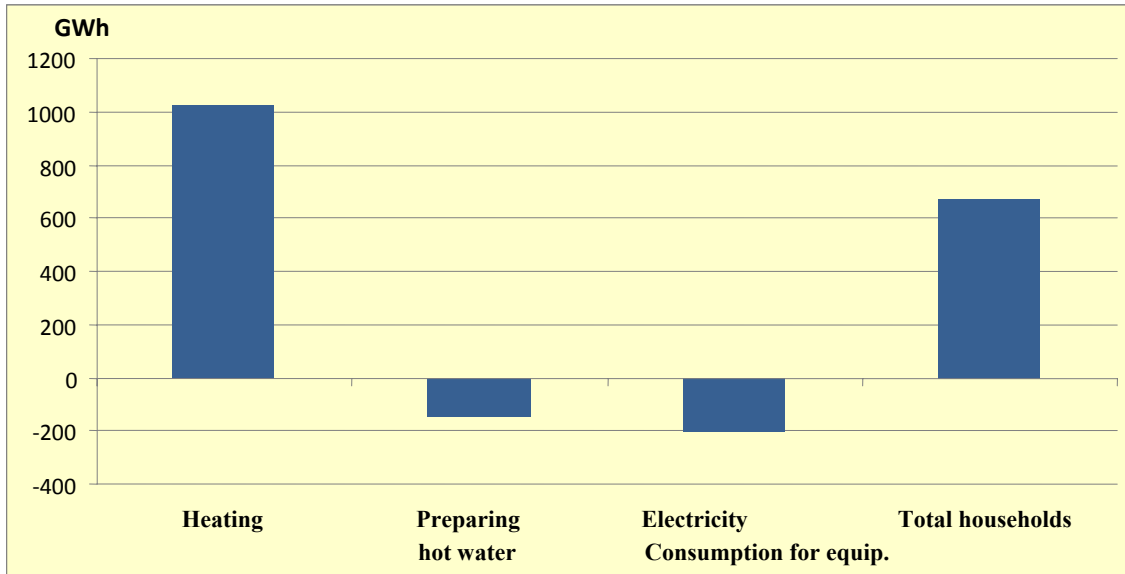


Figure 10. Residential energy savings, 2009, GWh

It can be expected that the transition of electricity consumption analysis to recommended and more detailed efficiency indicators will show energy savings in this type of energy consumption.

3.2.2. TERTIARY SECTOR

The following changes to the energy efficiency indicators were used to calculate energy savings:

- Energy consumption for heating that has been adjusted with the climate correction coefficient, in the tertiary sector per full-time worker;
- Electricity consumption for electrical equipment in the tertiary sector per full-time worker.

Non-electricity savings in the tertiary sector are calculated using the following formula:

$$E_{\text{iet.ne-elekt.}}^{\text{pak.}} = \left[\left(\frac{E_{2007}^{\text{pak.NE-EL}}}{\text{darb}^{\text{pak.}}_{2007}} \times \frac{GDD^{\text{apkure}}}{FGD_{2007}^{\text{apkure}}} \right) - \left(\frac{E_t^{\text{pak.NE-EL}}}{\text{darb}^{\text{pak.}}_t} \times \frac{GDD^{\text{apkure}}}{FGD_t^{\text{apkure}}} \right) \right] \times \text{darb}^{\text{pak.}}_t, \text{ where}$$

$E_{2007}^{\text{pak.NE-EL}}$, $E_t^{\text{pak.NE-EL}}$ – non-electricity consumption in the tertiary sector in 2007 and in the reporting year;

$\text{darb}^{\text{pak.}}_{2007}$; $\text{darb}^{\text{pak.}}_t$ – equivalent of number of full-time workers in the tertiary sector in 2007 and in the reporting year;

GDD^{apkure} – average number of multi-year heating degree days;

FGD_{2007}^{apkure} , FGD_t^{apkure} – actual number of heating degree days in 2007 and in the reporting year.

| Latvian | English |
|--------------------------|--|
| <i>Pak.iet.ne-elekt.</i> | Non-electricity savings in the tertiary sector |
| <i>Pak. ne-el</i> | Non-electricity savings in the tertiary sector |
| <i>Apkure</i> | Heating |
| <i>Darb.</i> | worker |
| <i>Pak.</i> | Tertiary sector |

Electricity savings in the tertiary sector are calculated using the following formula:

$$E_{\text{iet.elekt.}}^{\text{pak.}} = \left(\frac{E_{2007}^{\text{pak.EL}}}{\text{darb}_{2007}^{\text{pak.}}} - \frac{E_t^{\text{pak.EL}}}{\text{darb}_t^{\text{pak.}}} \right) \times \text{darb}_t^{\text{pak.}}, \text{ where}$$

$E_{2007}^{\text{pak.EL}}$, $E_t^{\text{pak.EL}}$ – electricity consumption in the tertiary sector in 2007 and in the reporting year;

$\text{darb}_{2007}^{\text{pak.}}$; $\text{darb}_t^{\text{pak.}}$ – equivalent of number of full-time workers in the tertiary sector in 2007 and in the reporting year.

| Latvian | English |
|-----------------------|--|
| <i>Pak.iet.elekt.</i> | Electricity savings in the tertiary sector |
| <i>Pak. EL</i> | Electricity savings in the tertiary sector |
| <i>Darb.</i> | worker |
| <i>Pak.</i> | Tertiary sector |

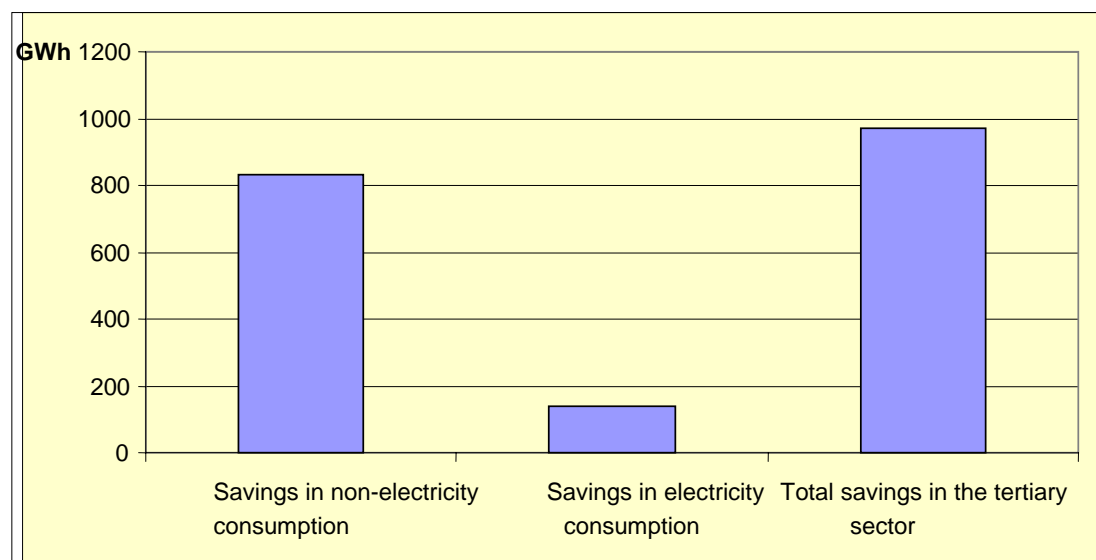


Figure 11. Energy savings in the tertiary sector in 2009, GWh

Energy savings in the tertiary sector in 2009 were calculated on the basis of the energy efficiency indicators selected and by using the calculation formulas, and they comprised **970 GWh**. Energy end-use consumption in the tertiary sector fell by 16% in the period from 2007 to 2009, i.e. from 7961 GWh (28.66 PJ) to

6686 GWh (24.07 PJ). This rapid fall in energy consumption had a significant impact on the value of energy efficiency indicator used (energy consumption per full-time worker), resulting in large energy savings in the tertiary sector in the reporting year. It should be noted that energy savings in the tertiary sector mainly consist of savings for heating, and this is due to energy efficiency measures that were made during renovations of educational, health and local authority buildings.

3.2.3. TRANSPORT

The following energy efficiency indicators were used to calculate energy savings in the transport sector:

- Energy consumption in road transport per one specific road transport equivalent unit (toe/aut.^{ekv.});
- Energy consumption in rail transport per each tkm transported (kgoe/tkm).

Energy savings in road transport are calculated using the following formula:

$$E_{iet}^{aut} = \left(\frac{E_{2007}^{AUT}}{Sk_{2007}^{AUT}} - \frac{E_t^{AUT}}{Sk_t^{AUT}} \right) \times S_t^{AUT}, \text{ where}$$

E_{2007}^{AUT} ; E_t^{AUT} – energy consumption in road transport in 2007 and in the reporting year;

Sk_{2007}^{AUT} ; Sk_t^{AUT} – number of vehicles in car equivalents in 2007 and in the reporting year. One lorry or light freight van = four car equivalents, one bus = 15 car equivalents, one motorcycle = 0.15 car equivalents.

| Latvian | English |
|----------|----------------------|
| Aut.ekv. | car equivalent |
| AUT | Road transport / car |

Energy savings in rail transport are calculated using the following formula:

$$E_{iet}^{dz} = \left(\frac{E_{2007}^{Dz.}}{Kr_{2007}^{Dz.}} - \frac{E_t^{Dz.}}{Kr_t^{Dz.}} \right) \times Kr_t^{Dz.}, \text{ where}$$

$E_{2007}^{Dz.}$; $E_t^{Dz.}$ – energy consumption in rail transport in 2007 and in the reporting year;

$Kr_{2007}^{Dz.}$; $Kr_t^{Dz.}$ – volume of freight transported (tkm) in 2007 and in the reporting year.

| Latvian | English |
|---------|------------------------|
| Dz.iet. | Rail transport savings |
| Dz. | Rail transport |

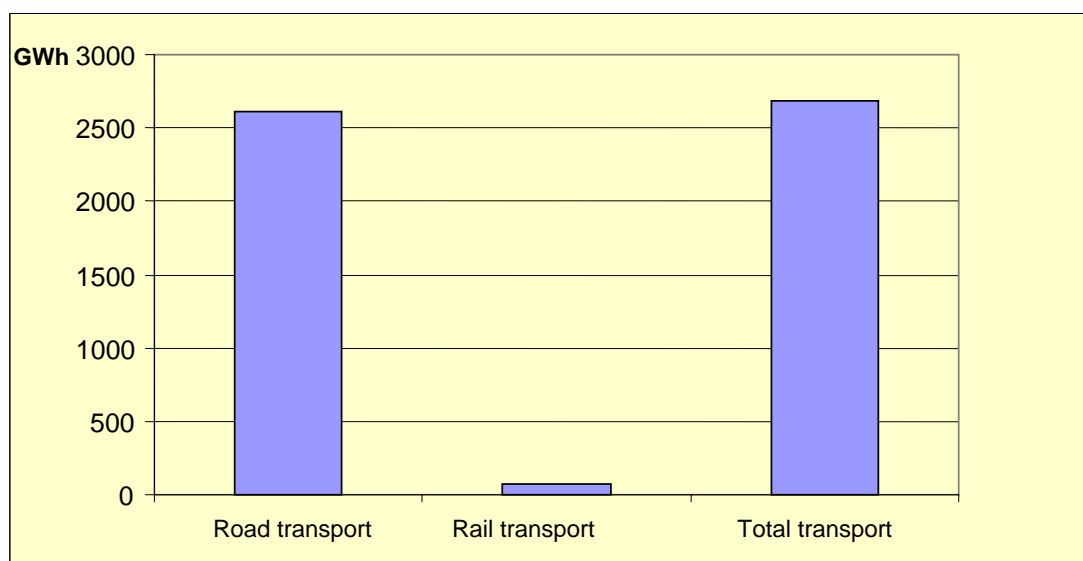


Figure 12. Energy savings in the transport sector in 2009, GWh

Energy savings in the transport sector in 2009 were calculated on the basis of the energy efficiency indicators selected for the transport sector and by using the calculation formulas, and they comprised **2680 GWh**.

CSB data shows that in the three year period from 2007 to 2009 energy end-use consumption in the transport sector fell rapidly from 15508 GWh (55.83 PJ) to 11900 GWh (42.84 PJ) to 2004 levels. Consumption has fallen most rapidly in the road transport sector, due to the effect of the economic crisis and the increase in petrol prices. The rapid fall in petrol consumption was one of the main factors behind energy savings in this sector, and was assessed using the top-down methods. A more detailed examination of the factors affecting changes in energy consumption in the road transport sector was carried out using the ODYSSEE database (the European energy efficiency database: www.odyssee-indicators.org) and the ODEX indicator methodology. It revealed that the main reason for energy savings in the road transport sector is the optimisation of freight transport operations and improvements in the technology used.

Energy savings in 2000-2005 and forecasted economic growth indicators were taken as the basis when preparing the first NEEAP, as well as the planned energy efficiency improvement measures in the transport sector.

3.2.4. INDUSTRY

The following changes to the energy efficiency indicators were used to calculate energy savings in industry:

- Annual energy consumption per volume index unit of industrial production (toe/index).

Total energy savings in industry are calculated by adding together energy savings in individual sectors of industry. Energy savings in individual sectors are adjusted taking into account companies' activities in the emissions trading system.

Energy savings in an individual sector of industry are calculated as follows:

$$E_{iet}^{R.k.} = \left(\frac{E_{2007}^{R.k.}}{In_{2007}^{Raž.k.}} - \frac{E_t^{R.k.}}{In_t^{Raž.k.}} \right) \times In_t^{Raž.k.} \times K_{2007}^k, \text{ where}$$

$E_{2007}^{R.k.}$, $E_t^{R.k.}$ – energy consumption in a specific industrial sector in 2007 and in the reporting year;

$In_{2007}^{Raž.k.}$, $In_t^{Raž.k.}$ – volume index unit of industrial production in a specific industrial sector in 2007 and in the reporting year;

K_{2007}^k – share of energy consumption in a specific industrial sector, which complies with the provisions of Directive 2006/32/EC.

| Latvian | English |
|--------------------|---|
| <i>R.k.iet.</i> | Savings in a specific industrial sector |
| <i>Raž.k. / Rk</i> | specific industrial sector |

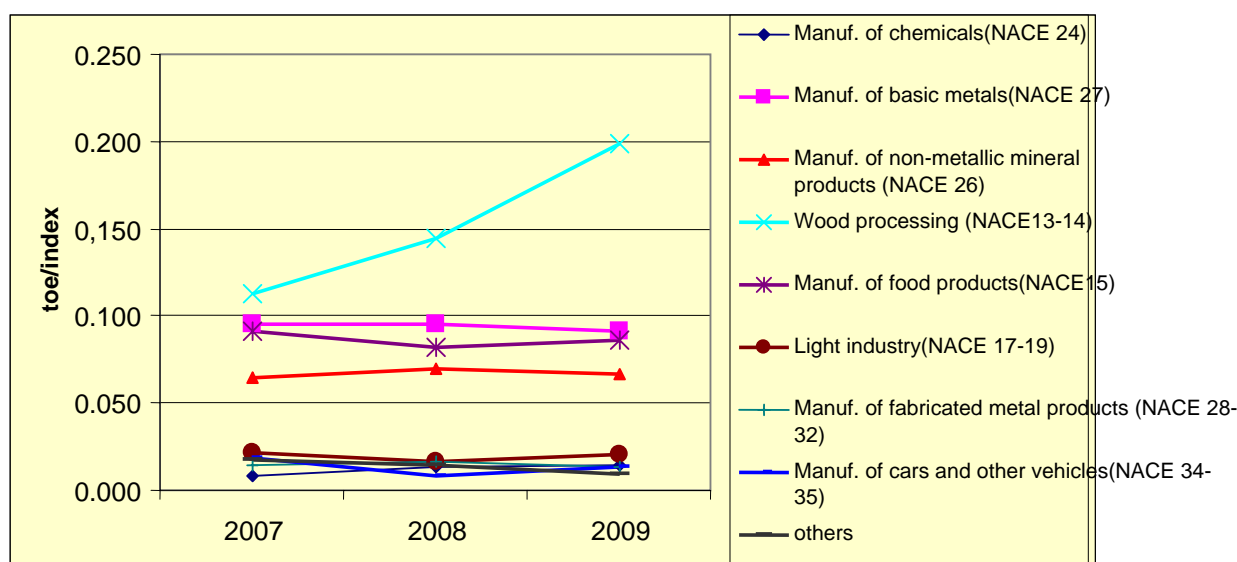


Figure 13. Changes in the energy efficiency indicators for industry, 2007-2009

As evident from figure 13, the economic crisis that affected Latvia has had a mainly negative impact on energy efficiency indicators for industry. The

indicator has deteriorated the most in the wood processing sector. The indicators have remained unchanged or have improved in many sectors, such as the manufacture of food products, the manufacture of cars and other vehicles, the manufacture of basic metals and in light industry.

Given that the wood processing industry constitutes a large proportion of overall energy consumption in industry, energy savings show a negative figure - **889 GWh** when savings in all industrial sectors are added together.

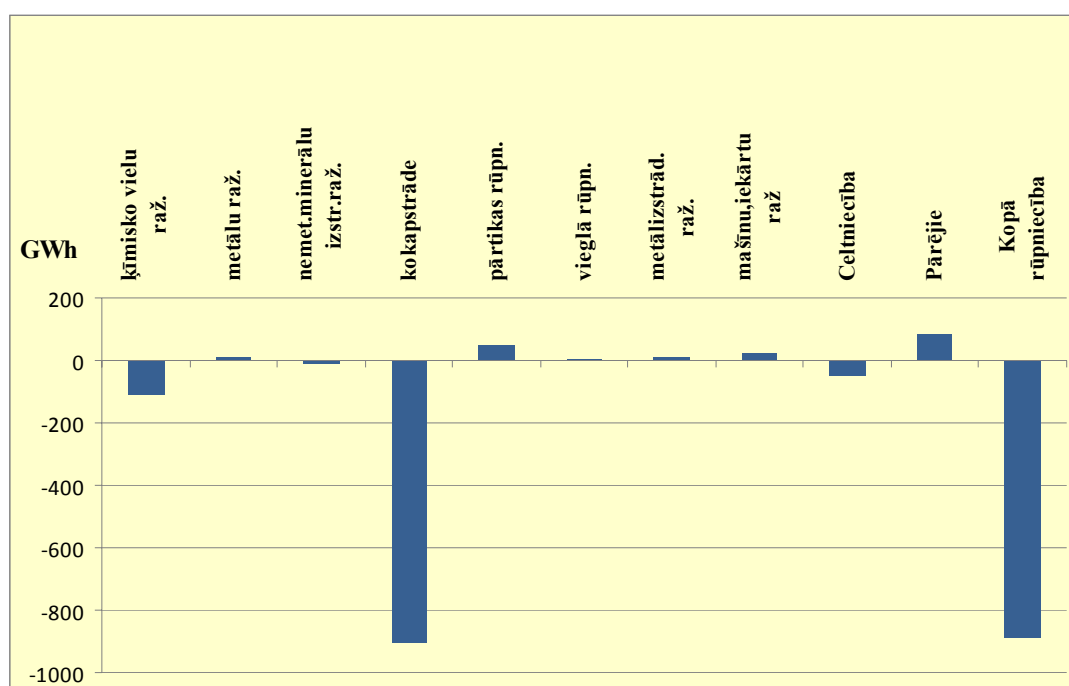


Figure 14. Energy savings in industry, 2009, GWh

| <i>Latvian</i> | English |
|-----------------------------------|--|
| <i>Ķīmisko vielu raž.</i> | Manufacture of chemicals |
| <i>Metālu raž.</i> | Manufacture of basic metals |
| <i>Nemet-minerālu izstr. raž.</i> | Manufacture of non-metallic mineral products |
| <i>kokapstrāde</i> | Wood processing |
| <i>Pārtikas rūpn.</i> | Manufacture of food products |
| <i>Viegļā rūpn.</i> | Light industry |
| <i>Metālizstrād. raž.</i> | Manufacture of fabricated metal products |
| <i>Mašīnu, iekārtu raž.</i> | Manufacture of cars and other vehicles |
| <i>Celtniecība</i> | Construction |
| <i>Pārējie</i> | Others |
| <i>Kopā rūpniecība</i> | Total industry |

3.3. SUMMARY TABLES OF ENERGY SAVINGS ACHIEVED AND PLANNED

The energy end-use savings achieved have been collated in table 5. The calculations show that under Annex I to Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services, where data on the final consumption of energy over a period of

five years from 2000 to 2004 had to be used, the calculated national indicative energy savings target has not been sufficiently ambitious and has been affected significantly by the economic crisis.

Table 5

Summary table of energy end-use savings of the first NEEAP, 2010, 2016 and 2020

| Sector | Calculation method | Energy savings achieved 2010 (GWh)* | Energy savings planned 2016 (GWh)** | Total energy savings planned 2020 (GWh)*** |
|--------------------------|---------------------------|--|--|---|
| Residential | Top-down | 673 | 2701 | 2900 |
| Services | Top-down | 970 | 408 | 657 |
| Industry and agriculture | Top-down | -905 | 170 | 337 |
| Transport | Top-down | 2680 | 204 | 2884 |
| Transformation sector | | | | 1001 |
| TOTAL | | 3418 | 3483 | 7779 |

*energy savings interim target for 2010.

**energy savings target for 2016.

***total energy savings target for 2020 (energy end-use savings and primary energy savings).

No objections were received from the European Commission regarding the calculated national indicative energy savings target. Given that monitoring data on energy efficiency improvement measures in accordance with Cabinet Regulation No 923 of 30 September 2010 "Procedures for recording national energy end-use savings and ensuring the operation of the energy efficiency monitoring system", were not available at the time the second NEEAP was being prepared, the energy savings achieved in 2010 have been calculated using only the top-down method, which provides for the use of energy efficiency indicators. Therefore, in the next national report on energy savings the cumulative period savings calculated could be less than those indicated in this report.

Planned energy savings targets for 2016 are not being changed and will remain in place until 2014 when the Third National Energy Efficiency Action Plan for 2014-2016 is prepared.

4. ENERGY EFFICIENCY MEASURES OF THE SECOND ENERGY EFFICIENCY ACTION PLAN IN END-USE SECTORS

4.1. RESIDENTIAL

The largest energy end-use sector in Latvia is the residential sector, which consumed 35.5% of all energy in 2010. A total of 60-85% of energy consumption in the residential sector is for heat consumption (centralised and individual heating systems) for heating and preparing hot water. In 2009 the housing stock was 61.1 million m², of which 39.7 million m² (65%) was in urban areas and 21.4 million m² (35%) in rural areas. Approximately one third of the population lives in the capital city Riga, where the housing stock comprises 31% of the national housing stock.

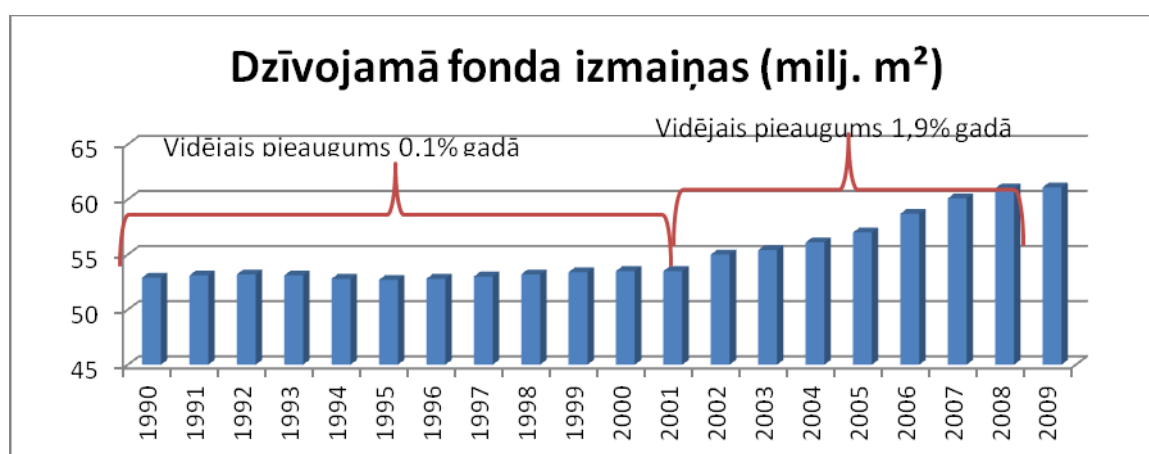


Figure 15. Changes in the housing stock, 1990-2009

| Latvian | English |
|-------------------------------------|---------------------------------|
| <i>Dzīvojamā fonda izmaiņas</i> | Changes in the housing stock |
| <i>Vidējais pieaugums 0.1% gadā</i> | Average growth of 0.1% per year |
| <i>Vidējais pieaugums 1.9% gadā</i> | Average growth of 1.9% per year |

There have been significant changes in the real estate market since the 2008 crisis, with increases in taxes and a fall in the availability of mortgages. Given the market situation and demographic trends, no rapid growth in the housing stock is expected by 2020 (0.1-0.2% per year).

On 5 April 2011 the Cabinet approved the amendments to Cabinet Regulation No 138 of 10 February 2009 "Regulations on activity 3.4.4.1 "measures to improve the thermal stability of apartment blocks", under the programme complement to the "Infrastructure and services" operational programme", and approved a new Cabinet Regulation "Regulations on stage nine of selecting project applications for activity 3.4.4.1 "measures to improve the thermal stability of apartment blocks", under the programme complement to the "Infrastructure and services" operational programme". Approval of this document increases the number of buildings for which applications for co-financing can be submitted, i.e. up to 35 000 buildings.

When approving activity 3.4.4.1 "measures to improve the thermal stability of apartment blocks" it was expected that a total of 120 blocks would be renovated as part of the activity until the end of 2013. Implementation of the activity indicates that the number of blocks will certainly be exceeded.

In order to encourage residents to agree on covering the costs of renovations, which had always been a significant obstacle preventing residents from agreeing on renovations, Article 13 of the Law on Apartment Ownership (which entered into force on 01.01.2011), sets out the procedures for covering the management costs for apartment blocks and obliges residents, on the basis of joint decisions by the apartment owners, to cover certain costs to enable other building management activities to be undertaken that improve and develop the apartment block, promote optimum management costs and concern the replacement of elements, equipment or communications in the common areas of the apartment block, which will result in a reduction of maintenance costs, and also concern measures that will result in a reduction of costs for services relating to the use of an apartment property.

It is expected that activity 3.4.4.1 "measures to improve the thermal stability of apartment blocks", and activity 3.4.4.2 "measures to improve the thermal stability of social housing" under the programme complement to the "Infrastructure and services" operational programme, as well as the information campaign "Let's live warmer" for residents of apartment blocks, will continue until 2013.

As at 1 May 2011 the indicators for implementing activity 3.4.4.1. are as follows:

- 438 project applications have been received for a total of LVL 24.9 million;
- 162 building renovation contracts have been concluded for a total of LVL 8.44 million;
- 52 buildings have been renovated, but co-financing has been paid out in full to 32 buildings;
- The cost of renovating one m² is approximately LVL 30.

Table 6

Summary table of energy efficiency improvement measures in the residential sector

| No | Measure | Target group | Period | Energy savings achieved, 2010 (GWh) | Planned energy savings, 2016 (GWh) |
|---------|---|--|-------------------------|-------------------------------------|------------------------------------|
| MA.1.1. | activity 3.4.4.1 "measures to improve the thermal stability of apartment blocks", under the programme complement to the "Infrastructure and | Owners of apartments in apartment blocks | 11.02.2009 - 31.12.2013 | 673 | 2701 |

| | | | | | |
|---------|--|---|--|-------------------------|--|
| | services" operational programme | | | | |
| MA.1.2. | activity 3.4.4.2 "measures to improve the thermal stability of social housing", under the programme complement to the "Infrastructure and services" operational programme" | Social housing tenants | | 16.01.2008 - 31.12.2013 | |
| MA.1.3. | Information campaign "Let's live warmer" for residents of apartment blocks | Owners of apartments in apartment blocks etc. | | From 2010 | |

Table 7.

Description of measure No MA.1.1. "Measures to improve the thermal stability of apartment blocks"

| | | | | | |
|---|--|--|-------------------|-------------------------------------|--|
| <i>Name of the energy savings measure</i> | | Measures to improve the thermal stability of apartment blocks | | | |
| <i>Measure No</i> | | MA.1.1. | | | |
| <i>Description</i> | <i>Category</i> | Financial instrument (ERDF) | | | |
| | <i>Schedule for implementation</i> | Stage | Start | End | |
| | | 1-8 | 14.04.2009 | 30.05.2010 | |
| | | 9 | 20.04.2011 | Until financing is available | |
| | <i>Objective</i> | To improve the energy efficiency of homes in apartment blocks, in order to ensure the sustainability of the housing stock and the efficient use of energy resources | | | |
| | <i>Energy end-use sector</i> | Buildings | | | |
| <i>Target group</i> | Owners of apartments in apartment blocks | | | | |
| <i>Territory where measure is implemented</i> | Latvia | | | | |
| <i>Information and implementation</i> | <i>Description of measures to achieve energy savings</i> | <p>Building works in the common areas owned by the apartment owners in an apartment block, including the restoration or replacement of windows in the external walls of the boundaries of certain apartment properties, by restoring the structural elements provided for in the technical design or in the simplified renovation documentation, as well as carrying out works relating to the energy efficiency improvement measures referred to in the energy audit report for the building:</p> <ul style="list-style-type: none"> • insulation and replacement of the construction elements of a building's external envelopes, including restoration or replacement of windows in the external walls of the boundaries of certain apartment properties; • insulation of the basement and top floor ceilings; • renovation of the stairwell, if energy efficiency works are carried out in the stairwell without exceeding 5% of the total eligible expenditure for the project; • renovation or reconstruction of the heating supply and hot water distribution system, except for the installation, renovation or reconstruction of sources of heat and hot water production; • installation, renovation or reconstruction of the ventilation system; • renovation of elements that are functionally integral to the operation of the apartment block, as provided for in the technical | | | |

| | | |
|----------------|--|--|
| | | design or the simplified renovation documentation, if it ensures the sustainability of the energy efficiency measures or if heat savings are achieved following the implementation of the measures. |
| | Budget and source of financing | Stages 1-8, LVL 17 million, ERDF financing Stage 9, LVL 27.33 million, ERDF financing |
| | Implementing body | Latvian Investment and Development Agency |
| | Monitoring (control) authority | Ministry of Economics |
| Energy savings | Method for calculating energy savings achieved | Bottom-up and top-down |
| | Planned energy savings in 2016 (GWh) | 240 GWh |
| | Other information | Of the projects that have been implemented, the cost of the calculated energy savings is LVL 0.71 per MWh saved. At the same time, energy savings MWh/year per one LVL invested are 1.41 MWh. |

Table 8

Description of measure No MA.1.2. "Measures to improve the thermal stability of social housing"

| | | | | |
|---|--|---|-------------------|-------------------|
| <i>Name of the energy savings measure</i> | | Measures to improve the thermal stability of social housing | | |
| <i>Measure No</i> | | MA.1.2. | | |
| Description | Category | Financial instrument (ERDF) | | |
| | Schedule for implementation | Stage | Start | End |
| | | 1 | 14.05.2008 | 14.11.2008 |
| | | 2 | 12.02.2010 | 01.04.2010 |
| | Implementation of this project will take place from 2011 to 2016, but new project competitions will not be advertised under this activity | | | |
| | Objective | To improve the energy efficiency of the social housing stock, whilst raising the quality and sustainability and providing vulnerable groups with adequate homes | | |
| Energy end-use sector | Buildings | | | |
| Target group | Local authorities | | | |
| Territory where measure is implemented | Latvia | | | |
| Information and implementation | List of energy saving measures and a description of the measure | <p>Reducing the energy consumption of buildings, by implementing the energy efficiency improvement measures indicated in the energy audit report, undertaking renovations and reconstruction (without altering a building's function), as well as restoring and constructing a building's structural elements and technical installations:</p> <ul style="list-style-type: none"> • insulation and replacement of the construction elements of a building's external envelopes; • insulation of the basement and top floor ceilings; • renovation or reconstruction of the heating supply and hot water distribution system; • renovation of the stairs and entrances and, where necessary, adapting them to suit the needs of people with disabilities; • renovation of internal and external corridors, rooms and groups of rooms, installation or renovation of the lift and adapting them to suit the needs of people with disabilities; • renovation or installation of the ventilation system, electrical wiring, fire safety installation and systems in accordance with Latvian building regulations in the area of fire safety. | | |

| | | |
|----------------|--|--|
| | Budget and source of financing | Stage 1, LVL 2.88 million, ERDF financing Stage 2, LVL 4.04 million, ERDF financing |
| | Implementing body | Latvian Investment and Development Agency |
| | Monitoring (control) authority | Ministry of Economics |
| Energy savings | Method for calculating energy savings achieved | Bottom-up and top-down |
| | Planned energy savings in 2016 (GWh) | 36 GWh |
| | Other information | Of the two projects that have been implemented, the cost of the calculated energy savings is LVL 2.34 per MWh saved. At the same time, energy savings MWh/year per one LVL invested are 0.43 MWh. |

Table 9

Description of measure No MA.1.3. Information campaign "Let's live warmer!"

| | | |
|---|---|---|
| <i>Name of the energy savings measure</i> | | Information campaign "Let's live warmer!" |
| <i>Measure No</i> | | MA.1.3. |
| Description | Category | Information measures |
| | Schedule for implementation | 1) Before the campaign – from April 2009 2) Stage 1 of the information campaign "Let's live warmer!" – from 25 February 2010 to 16 June 2011 3) Stage 2 of the information campaign "Let's live warmer!" – from 17 June 2011 to 31 December 2013 |
| | Objective | The most important aims of the information campaign "Let's live warmer!" are as follows: <ul style="list-style-type: none"> • To encourage owners of apartments in apartment blocks to renovate their building under the ERDF activity "Measures to improve the thermal stability of apartment blocks"; • To inform and consult building managers, apartment property owners' associations and authorised persons of the terms and benefits of the activity; • To encourage building contractors, producers and sellers of building materials to take the initiative in renovating homes; • To increase understanding of energy efficiency and reduce heat consumption. |
| | Energy end-use sector | Buildings |
| | Target group | Building managers, apartment property owners' associations, building contractors and producers and sellers of building materials |
| | Territory where measure is implemented | Latvia |
| Information and implementation | List of energy saving measures and a description of the measure | 1) Before the campaign: From 14 April 2009 to February 2010, two information seminar cycles. A total of 24 seminars. 2) As part of the information campaign "Live warmer!" (stage 1): In 2010: <ul style="list-style-type: none"> • Three regional seminar cycles organised on the activity "Measures to improve the thermal stability of apartment blocks" and the terms of implementation. A total of 36 seminars; • Two conferences organised; • Six information materials prepared (one booklet "Step by step to the renovation of your home" and five fact sheets); • Nine round-table discussions organised between parties involved in the renovation of apartment blocks. The results of the discussions were reported in the media; • Five seminars on organising the housing renovation process |

| | | |
|----------------|--|--|
| | | <p>were held in cooperation with Riga Technical University;</p> <ul style="list-style-type: none"> • 26 publications in the national and regional media. <p>Up until 16 June 2011:</p> <ul style="list-style-type: none"> • Close of the competition "The most energy efficient building in Latvia, 2010"; • Participation by MoE and LIDA at the exhibition "Māja I". Informed interested parties about the ERDF activity "Measures to improve the thermal stability of apartment blocks" • Nine seminars on organising the housing renovation process were held (on both construction and project management aspects); • Latest regional seminar cycle completed. 21 seminars organised. <p>3) As part of the information campaign "Live warmer!" (stage 2):</p> <ul style="list-style-type: none"> • At least six regional seminary cycles on the activity "Measures to improve the thermal stability of apartment blocks" and the terms of implementation. • Five conferences/forums on insulating apartment blocks; • Six discussions on the benefits of renovating housing and organising the renovation process. Exchanging experience; • 10 information materials prepared (two booklets and six fact sheets); • Competitions "The most energy efficient building in Latvia, 2011", "The most energy efficient building in Latvia, 2012" and "The most energy efficient building in Latvia, 2013"; • Participation in exhibitions; <p>Two information campaigns with the aim of encouraging apartment owners to become involved in managing the common areas of apartment blocks, improving the energy efficiency of buildings and promoting positive examples of renovation.</p> |
| | Budget and source of financing | <p>1) Certain measures were financed as part of stage 1 of the information campaign "Let's live warmer!" (publications, one conference and development of the "Let's live warmer" logo);</p> <p>2) LVL 3500 required to implement measures under stage 2 of the campaign.</p> |
| | Implementing body | Ministry of Economics |
| | Monitoring (control) authority | Ministry of Economics |
| Energy savings | Method for calculating energy savings achieved | Top-down |

4.2. TRANSPORT

The transport sector is the second largest energy end-use sector in Latvia. In 2010, energy end-use in the transport sector was 13986 GWh (50.35 PJ) or 28.2% of total energy end-use consumption. Road transport consumed 83.6%, rail transport 5.9% and air transport, pipeline transport and inland shipping consumed the remaining percentage of total energy consumption in the transport sector.

Diesel is the main type of fuel used in the transport sector, and in 2010 diesel comprised 62.2% of energy consumption in the transport sector (including biodiesel), followed by petrol with 25% (including bioethanol).

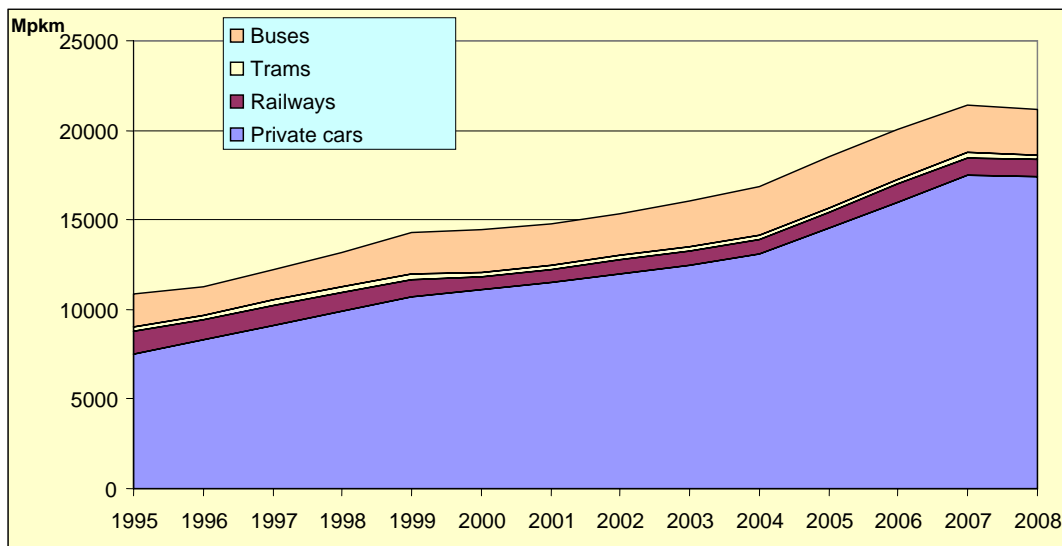


Figure 16. Passenger transport in Latvia by type of transport

In 2009 82% of passenger transport was undertaken by private cars (EU – 76%), but 4.5% by rail (EU – 7%).

Freight transport is undertaken by road and rail. Road freight transport comprises up to 40% of all freight transport in Latvia. Approximately 90% of the total volume of road freight transport consists of inland transport. Therefore, inland consumption fluctuations are the main reason for fluctuations in fuel consumption in road freight transport, but the volume of transit freight affects fuel consumption in rail transport. Trends over the last few years indicate a fall in energy consumption per single car and for freight transport.

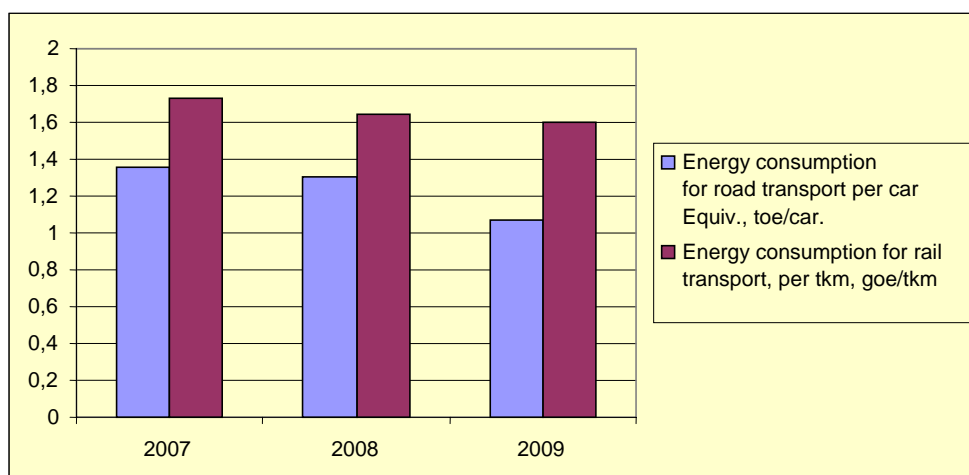


Figure 17. Energy savings in the transport sector – changes in road transport and rail transport indicators, 2007-2009

The value of energy consumption indicators for road transport has fallen mainly due to replacements of lorry parks carried out by freight carriers, in order to maximise a reduction in fuel costs per freight unit carried.

Table 10

Fuel consumption forecasts for road transport, 2010-2020 (taking into account the first NEEAP and additional energy efficiency measures in the transport sector up to 2020)

| | 2010 GWh (PJ) | | 2015 GWh (PJ) | | 2020 GWh (PJ) | |
|---------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|--------------------------------|-----------------------------|
| | Without additional EE measures | With additional EE measures | Without additional EE measures | With additional EE measures | Without additional EE measures | With additional EE measures |
| Petrol (incl. bioethanol) | 3516 (12.7) | 3516 (12.7) | 4114 (14.8) | 4056 (14.6) | 4417 (15.9) | 4306 (15.5) |
| Diesel (incl. biodiesel) | 7834 (28.2) | 7834 (28.2) | 7945 (28.6) | 7667 (27.6) | 8140 (29.3) | 7790 (28.0) |
| Autogas | 275 (0.989) | 275 (0.989) | 276 (0.995) | 274 (0.985) | 304 (1.095) | 270 (0.973) |

The proportion of energy end-use consumption in the transport sector of energy generated from renewable energy resources must increase from 1.3% to 10% during the period from 2005 to 2020, and must be increased gradually in the future.

In order to achieve the overall target in the use of renewable energy resources, the implementation of energy efficiency measures in the transport sector will mean that the national target will be achieved more quickly.

It should also be noted that both energy efficiency improvement measures and the use of renewable energy resources in the transport sector are closely linked with improvements in the quality of the environment (applying differentiated rates of duty to vehicles depending on engine size and age, biofuel that complies with sustainability criteria etc.). Energy efficient improvement in the transport sector is often related to improving people's level of comfort and living conditions, and therefore is particularly important.

In Latvia the number of people who travel to work or a place of learning by bicycle instead of by car or public transport, is continuing to grow.

Almost 6 000 bicycles have been registered in the RTSD register of vehicles as at May 2011, but the number of unregistered bicycles is considerably higher. The leading retail networks have reported on the volume of bicycle sales and an increase in bicycle maintenance services. Contracts were concluded in 2009 for the implementation of the seventh cycle path project under the sub-activity "Development of cycle tourism products of national significance" of the "Infrastructure and services" operational programme. Six projects have already been implemented or are being implemented: in Tukums – 11.3 km, in Sigulda – 11 km, in Dobeles – 8 km, in Liepāja – 7.6 km and two cycle paths in Riga totalling 12.8 km. Cycle paths constructed as part of the project connect tourism sites, recreational sites and car parks. The total length of cycle paths in Riga is currently 49.4 km, and there are plans to put two more cycle paths totalling 22.7 km into operation by 2015. A map is also available showing recommended

cycle routes on pavements and roads with low traffic intensity. In 2010 cycle paths totalling 6.84 km were constructed in the town of Ventspils, and additional cycle paths totalling 10.07 km are due to be constructed in 2011, which means that after the implementation of the project "Development of cycle tourism in the town of Ventspils", the total length of the linked cycle paths on the left bank of Ventspils will be 21.26 km. The first stage of the Ogre-Ikšķile cycle path, totalling 0.3 km, was opened in August 2011.

Latvian Railways has begun a survey on the possibility of electrifying Latvia's network of railway lines. Latvian Railways' proposed electrification of the railway lines is a complex measure and does not only concern reconstruction of the railway lines, but also the acquisition of new electric traction and rolling stock. It is expected that implementation of this project, as well as development of urban areas in the vicinity of railway lines and integration of the railway in the overall passenger transport network (particularly in the city of Riga), will result in passenger transport by rail reaching European levels of 7%. This means that there could be an increase in the proportion of electricity used for passenger transport.

Table 11

Summary table of energy efficiency improvement measurements in the transport sector

| No | Measure | Target group | Period | Energy savings achieved, 2010 (GWh) | Planned energy savings, 2016 (GWh) |
|---------|---|---|------------|-------------------------------------|------------------------------------|
| TR.2.1. | Systematic inspections of the technical condition of vehicles | All vehicle owner groups | 2011 -2016 | 2680 | 204 |
| TR.2.2. | Applying differentiated rates of duty to vehicles depending on engine size and age | All vehicle owner groups | 2011 -2016 | | |
| TR.2.3. | Improving the unified public transport route network, reviewing grants for parallel regional and intercity railway and bus routes, and reorganising these bus routes so that they take passengers to railway stations, harmonising timetables, organising unified transport timetables within the boundaries of the new local authority administrative territories and improving the transport route planning system. | Bodies contracting public transport services – RTD, planning regions and local authorities, as well as service providers: carriers. | 2011 -2016 | | |

Table 12

Description of measure No TR.2.1. "Systematic inspections of the technical condition of vehicles"

| | | |
|---|---|---|
| <i>Name of the energy savings measure</i> | | Systematic inspections of the technical condition of vehicles |
| <i>Measure No</i> | | TR.2.1. |
| Description | Category | Specific measures in the transport sector |
| | Schedule for implementation | Systematically |
| | Objective | To ensure that vehicles are being operated according to the manufacturer's requirements |
| | Energy end-use sector | Transport |
| | Target group | All vehicle owner groups |
| | Territory where measure is implemented | Latvia |
| Information and implementation | Description of measures to achieve energy savings | <p>In order to reduce the consumption of energy resources for vehicles:</p> <ul style="list-style-type: none"> • Every vehicle owner shall ensure periodic maintenance of his vehicle according to the manufacturer's requirements; • Vehicle owners shall ensure that the mandatory technical inspection is carried out in accordance with Article 19 of the Road Traffic Law. |
| | Budget and source of financing | Technical inspection costs are covered by vehicle owners |
| | Implementing body | Road Traffic Safety Directorate |

Table 13

Description of measure No TR.2.2. "Applying differentiated rates of duty to vehicles depending on engine size and age"

| | | |
|---|---|--|
| <i>Name of the energy savings measure</i> | | Applying differentiated rates of duty to vehicles depending on engine size and age |
| <i>Measure No</i> | | TR.2.3. |
| Description | Category | Financial instrument |
| | Schedule for implementation | Starting from 01.01.2011 |
| | Objective | To encourage the use of vehicles that are newer and consume less energy |
| | Energy end-use sector | Transport |
| | Target group | All vehicle owner groups |
| | Territory where measure is implemented | Latvia |
| Information and implementation | List of energy saving measures and a description of the measure | The Law on Duty for Operating a Vehicle and Duty for Light Commercial Vehicles entered into force on 1 January 2011, and provides for the application of a differentiated rate of duty depending on a vehicle's engine size. By applying a higher level of duty to vehicles with a larger engine size vehicle owners are motivated to buy vehicles with a smaller engine size. |

| | | |
|----------------|--|---------------------|
| | Budget and source of financing | Not necessary |
| | Implementing body | Ministry of Finance |
| | Monitoring (control) authority | Ministry of Finance |
| Energy savings | Method for calculating energy savings achieved | Top-down |

Table 14

Description of measure No TR.2.3. "Improving the unified public transport route network"

| | | | | |
|---|---|---|-------------------|------------|
| <i>Name of the energy savings measure</i> | | Improving the unified public transport route network, reviewing grants for parallel regional and intercity railway and bus routes and reorganising these bus routes so that they take passengers to railway stations, harmonising timetables, organising unified transport timetables within the boundaries of the new local authority administrative territories and improving the transport route planning system. | | |
| <i>Measure No</i> | | TR.2.4. | | |
| Description | Category | Specific measures in the transport sector | | |
| | Schedule for implementation | Stage | Start | End |
| | | 1 | 01.01.2010 | - |
| | Objective | To reduce the inappropriate consumption of fuel by improving and optimising the public transport route network | | |
| | Energy end-use sector | Transport | | |
| | Target group | Bodies contracting public transport services – RTD, planning regions and local authorities, as well as service providers: carriers, residents. | | |
| | Territory where measure is implemented | Latvia | | |
| Information and implementation | List of energy saving measures and a description of the measure | <ul style="list-style-type: none"> - review grants for parallel regional railway and bus routes and reorganising these bus routes so that they take passengers to railway stations; - review grants for parallel inter-city railway and bus routes and reorganising these bus routes so that they take passengers to railway stations; - improve the public transport route planning system. | | |
| | Source of financing | State budget | | |
| | Implementing body | Ministry of Transport | | |
| | Monitoring (control) authority | VSIA "Road Transport Directorate" | | |
| Energy savings | Method for calculating energy savings achieved | Top-down | | |

4.3. TERTIARY SECTOR

In 2010, energy consumption in the tertiary sector comprised 14.5% of total energy end-use consumption. The tertiary sector includes public administration, education, healthcare, communications, information and business services.

The second NEEAP contains those measures for which financing from the CCFI is already available. CCFI funds are administered by the Ministry of Environmental Protection and Regional Development. This financing is only available for those activities for which agreement has been reached as part of a separate international agreement. Energy efficiency measures are not always the deciding factor given that a significant reduction in CO₂ emissions must be achieved as a result of these agreements. Nevertheless, it can be expected that CCFI financing will be available in the future in order to implement certain energy efficiency measures, including a reduction in GHG emissions in the lighting infrastructure of local authority public areas.

Table 15

Summary table of energy efficiency improvement measures in the tertiary sector

| No | Measure | Target group | Period | Energy savings achieved 2010 (GWh) |
|---------|---|---|-----------|------------------------------------|
| PA.3.1. | Low-energy buildings | Direct or indirect administrative bodies, town or district councils in Latvia, micro, small and medium-sized economic operators registered in Latvia, and natural persons | 2011-2012 | Measure implemented after 2010 |
| PA.3.2. | Improving energy efficiency in buildings housing higher education institutions | Direct or indirect administrative bodies, town or district councils in Latvia, micro, small and medium-sized economic operators registered in Latvia, and natural persons | 2011 | Measure implemented after 2010 |
| PA.3.3. | Improving energy efficiency in local authority buildings - stage 1; Complex solutions to reduce GHG emissions in local authority buildings – stage 2 | Town or district local authorities | 2009-2011 | Measure implemented after 2010 |
| PA.3.4. | Complex solutions to reduce GHG emissions in Buildings housing State and local authority vocational education institutions | State or local authority vocational education institutions | 2010-2011 | Measure implemented after 2010 |

Table 16

Description of measure No PA.3.1. "Low-energy buildings"

| | | | | |
|---|---|--|--------------------------------|--|
| <i>Name of the energy savings measure</i> | | Low-energy buildings | | |
| <i>Measure No</i> | | PA.3.1. | | |
| Description | Category | Financial instrument (CCFI) | | |
| | Schedule for implementation | Stage | Start | End |
| | | | Competition advertised in 2011 | Beneficiaries to implement activities under the project approved during the competition by 1 November 2012 |
| | Objective | To reduce carbon dioxide emissions by constructing low-energy buildings, as well carrying out the reconstruction of simplified renovation of existing buildings | | |
| | Energy end-use sector | Buildings | | |
| | Target group | Direct or indirect administrative bodies, town or district councils in Latvia, micro, small and medium-sized economic operators registered in Latvia, and natural persons | | |
| | Territory where measure is implemented | Latvia | | |
| Information and implementation | List of energy saving measures and a description of the measure | <p>The following project activities are being supported as part of the competition:</p> <ol style="list-style-type: none"> 1. preparation of energy audit reports and technical inspection reports (for building reconstruction projects), and calculating the energy efficiency of buildings for new builds in accordance with sub-paragraph 6.4 of Annex 3 to this Regulation; 2. preparation and approval of building designs and technical documentation in accordance with procedures set out legislation regulating the energy efficiency and construction of buildings; 3. construction of low-energy buildings; 4. carrying out reconstruction works to improve energy efficiency; 5. replacement of heating supply systems that use fossil fuels to those that use renewable energy resources, including the installation and connection of renewable energy resources (solar collectors, granule or woodchip boilers, heat pumps with a transformation coefficient that complies with table 2 of Annex 1 to this Regulation), if, after the implementation of the project, the heating capacity of the equipment that has been installed does not exceed the calculated capacity required to provide heating and hot water by more than 10% (applies only to building reconstruction projects); 6. inspecting building envelopes during construction (carrying out an air-tightness test and thermal imaging); 7. project publicity measures. | | |
| | Budget and source of financing | Financing available under the competition (CCFI) – LVL 7.26 million | | |
| | Implementing body | The limited liability company (hereinafter "SIA") "Environmental Investment Fund" | | |
| | Monitoring (control) authority | The Ministry of Environmental Protection and Regional Development, SIA "Environmental Investment Fund" | | |
| Energy savings | Method for calculating energy savings achieved | Bottom-up | | |

Description of measure No PA.3.2. "Improving energy efficiency in buildings housing higher education institutions"

| | | | | |
|---|---|--|--------------------------------|--|
| <i>Name of the energy savings measure</i> | | Improving energy efficiency in buildings housing higher education institutions | | |
| <i>Measure No</i> | | PA.3.2. | | |
| Description | Category | Financial instrument (CCFI) | | |
| | Schedule for implementation | Stage | Start | End |
| | | | Competition advertised in 2010 | Beneficiaries to implement activities under the project approved during the competition by 1 December 2011 |
| | Objective | To reduce carbon dioxide emissions, by reducing the consumption of heat and electricity used for lighting in buildings of higher education institutions in Latvia | | |
| | Energy end-use sector | Buildings | | |
| | Target group | Direct or indirect administrative bodies, town or district councils in Latvia, micro, small and medium-sized economic operators registered in Latvia, and natural persons | | |
| | Territory where measure is implemented | Latvia | | |
| Information and implementation | List of energy saving measures and a description of the measure | <p>The following project activities are being supported as part of the competition:</p> <ol style="list-style-type: none"> 1. preparation of energy audit reports and technical inspection reports (for building reconstruction projects), and calculating the energy efficiency of buildings for new builds in accordance with sub-paragraph 6.4 of Annex 3 to this Regulation; 2. preparation and approval of building designs and technical documentation in accordance with procedures set out legislation regulating the energy efficiency and construction of buildings; 3. construction of low-energy buildings; 4. carrying out reconstruction works to improve energy efficiency; 5. replacement of heating supply systems that use fossil fuels to those that use renewable energy resources, including the installation and connection of renewable energy resources (solar collectors, granule or woodchip boilers, heat pumps with a transformation coefficient that complies with table 2 of Annex 1 to this Regulation), if, after the implementation of the project, the heating capacity of the equipment that has been installed does not exceed the calculated capacity required to provide heating and hot water by more than 10% (applies only to building reconstruction projects); 6. inspecting building envelopes during construction (carrying out an air-tightness test and thermal imaging); 7. project publicity measures. | | |
| | Budget and source of financing | CCFI financing – LVL 7.028 million Co-financing from project applicants – LVL 2.3 million | | |
| | Implementing body | SIA "Environmental Investment Fund" | | |
| | Monitoring (control) authority | The Ministry of Environmental Protection and Regional Development, SIA "Environmental Investment Fund" | | |

| | | |
|----------------|--|--|
| Energy savings | Method for calculating energy savings achieved | Bottom-up |
| | 2016 | 60.55 GWh |
| | 2020 | 108.99 GWh |
| | Other information | Anticipated energy savings against CCFI financing 1.72 MWh/ year/one thousand LVL |

Table 18

Description of measure No PA.3.3. " Improving energy efficiency in local authority buildings - stage 1; Complex solutions to reduce GHG emissions in local authority buildings – stage 2"

| | | | | |
|---|---|--|---------------------------------------|---|
| <i>Name of the energy savings measure</i> | | Improving energy efficiency in local authority buildings - stage 1; Complex solutions to reduce GHG emissions in local authority buildings – stage 2 | | |
| <i>Measure No</i> | | PA.3.3. | | |
| Description | Category | Financial instrument (CCFI) | | |
| | Schedule for implementation | Stage | Start | End |
| | | 1. | Competition advertised in 2009 | The activities under the project approved during the competition are to be implemented by 1 December 2010 |
| | | 2. | Competition advertised in 2010 | Beneficiaries to implement activities under the project approved during the competition by 1 December 2011 |
| | Objective | To reduce carbon dioxide emissions, by reducing the consumption of heat in local authority public buildings and buildings that are required in order to ensure that local authority functions are performed. | | |
| | Energy end-use sector | Buildings | | |
| | Target group | Town or district local authorities | | |
| Territory where measure is implemented | Latvia | | | |
| Information and implementation | List of energy saving measures and a description of the measure | <p>The following project activities are being supported during stage 1 of the competition:</p> <p>1.1. preparation of energy audit reports and technical inspection reports for the project;</p> <p>1.2. construction supervision during the implementation of the project;</p> <p>1.3. project supervision;</p> <p>1.4. investments to reduce heat consumption;</p> <p>1.5. informing the public on the results of implementing the project and their socio-economic impact.</p> <p>The following project activities are being supported during stage 2 of the competition:</p> <p>2.1. preparation and approval of energy audit reports, technical inspection reports and technical documentation in accordance with legislation regulating the energy efficiency and construction of buildings;</p> <p>2.2. carrying out reconstruction, renovation or simplified renovation works that improve energy efficiency;</p> | | |

| | | |
|----------------|--|---|
| | | <p>2.3. replacement of heating supply systems that use fossil fuels to those that use renewable energy resources, including the installation and connection of renewable energy resources (solar collectors, air or ground source heat pumps and granule or woodchip boilers);</p> <p>2.4. reconstruction and renovation of utilities that ensure the heat, ventilation, cooling and lighting systems, including simplified reconstruction and renovation works, if they reduce heat or electricity consumption in accordance with the energy audit;</p> <p>2.5. installation of energy efficient lighting;</p> <p>2.6. inspection of the building envelopes during construction, an air-tightness test that is carried out in accordance with legislation regulating air-tightness test measurements, and thermal imaging;</p> <p>2.7. project publicity measures;</p> <p>2.8. additional costs not specified in the energy audit, but provided for in the technical design.</p> |
| | Budget and source of financing | <p>Stage 1 - CCFI financing, LVL 25.15 million Co-financing from project applicants LVL 5.08 million</p> <p>Stage 2 - CCFI financing, LVL 16.1 million Co-financing from project applicants LVL 4.7 million</p> |
| | Implementing body | SIA "Environmental Investment Fund" |
| | Monitoring (control) authority | Ministry of Environmental Protection and Regional Development, SIA "Environmental Investment Fund" |
| Energy savings | Method for calculating energy savings achieved | Bottom-up |
| | 2016 | 428.2 GWh |
| | 2020 | 738.76 GWh |
| | Other information | Anticipated energy savings against CCFI financing 2.33 MWh/year/thousand LVL |

Table 19

Description of measure No PA.3.4. "Complex solutions to reduce GHG emissions in buildings housing State and local authority vocational education institutions"

| | | | | |
|---|-----------------------------|--|--------------------------------|--|
| <i>Name of the energy savings measure</i> | | Complex solutions to reduce GHG emissions in buildings housing State and local authority vocational education institutions | | |
| <i>Measure No</i> | | PA.3.4. | | |
| Description | Category | Financial instrument (CCFI) | | |
| | Schedule for implementation | Stage | Start | End |
| | | | Competition advertised in 2010 | Beneficiaries to implement activities under the project approved during the competition by 1 December 2011 |
| | Objective | To reduce carbon dioxide emissions, by reducing the consumption of heat in buildings housing State and local authority vocational education institutions | | |
| | Energy end-use sector | Buildings | | |
| | Target group | State or local authority vocational education institutions | | |
| Territory where measure is implemented | Latvia | | | |

| | | |
|--------------------------------|---|---|
| Information and implementation | List of energy saving measures and a description of the measure | The following project activities are being supported as part of the competition: 1. preparation and approval of energy audit reports, technical inspection reports, including assessments of alternative solutions, and technical documentation, in accordance with legislation regulating the energy efficiency and construction of buildings; 2. carrying out reconstruction, renovation or simplified renovation works that improve energy efficiency; 3. replacement of heating supply systems that use fossil fuels to those that use renewable energy resources, including the installation and connection of renewable energy resources (solar collectors, air or ground source heat pumps and granule or woodchip boilers); 4. reconstruction and renovation of utilities that ensure the heat, ventilation, cooling and lighting systems, including simplified reconstruction and renovation works, if they reduce heat or electricity consumption in accordance with the energy audit; 5. installation of energy efficient lighting; 6. inspection of the building envelopes during construction, an air-tightness test that is carried out in accordance with legislation regulating air-tightness test measurements, and thermal imaging; 7. project publicity measures. |
| | Budget and source of financing | CCFI financing – LVL 11.94 million Co-financing from project applicants – LVL 2 million |
| | Implementing body | SIA "Environmental Investment Fund" |
| | Monitoring (control) authority | Ministry of Environmental Protection and Regional Development, SIA "Environmental Investment Fund" |
| Energy savings | Method for calculating energy savings achieved | Bottom-up |
| | 2016 | 84.70 GWh |
| | 2020 | 152.46 GWh |
| | Other information | Anticipated energy savings against CCFI financing 1.48 MWh/year/thousand LVL |

4.4. INDUSTRY

Industry and construction (according to NACE rev. 2: extraction industry – B, processing industry – C and construction – F) is the third largest energy end-use sector in Latvia after the residential and transport sectors. Energy consumption in industry constituted 16.6%, 16.4%, 16.7% and 18.2% respectively of total energy-end use consumption in 2007, 2008, 2009 and 2010.

The largest volume of energy is consumed in the manufacture of wood products (except furniture), the manufacture of food products and drinks, the manufacture of metals, as well as the manufacture of non-metallic mineral products.

In industry it is important to achieve the efficient use (recuperation) of heat losses that occur during the manufacturing process, so that they meet the demand for heat for a company's own heating or cooling needs or technical

processes, or to sell the heat to the centralised heating supply systems. In order to promote the implementation of energy efficiency measures in accordance with Article 12(4) of the Law on Energy End-Use Efficiency, there are plans to implement agreements on improving energy efficiency. Sector associations or individual economic operators will be able to conclude these agreements with the Ministry of Economics. Article 12(2)(2) of the Law on Energy End-Use Efficiency provides that the State may specify subsidies for energy audits and certain energy efficiency improvement measures that are implemented under this agreement.

Table 20

Summary table of energy efficiency improvement measures in industry

| No | Measure | Target group | Period | Energy savings achieved, 2010 (GWh) | Planned energy savings in 2016 (GWh) |
|--------|---|--------------------|-----------|-------------------------------------|--------------------------------------|
| R.4.1. | Complex solutions to reduce GHG emissions in manufacturing buildings (CCFI) | Economic operators | 2010-2011 | -905 | 170 |
| R.4.2. | Agreements on improving energy efficiency, by promoting the implementation of industrial energy audits and energy management systems in companies | Economic operators | 2011-2016 | | |

Table 21

Description of measure No R.4.1. "Complex solutions to reduce GHG emissions in manufacturing buildings"

| | | | | |
|---|--|--|---------------------------------------|--|
| <i>Name of the energy savings measure</i> | | Complex solutions to reduce GHG emissions in manufacturing buildings | | |
| <i>Measure No</i> | | R.4.1. | | |
| Description | Category | Financial instrument (CCFI) | | |
| | Schedule for implementation | Stage | Start | End |
| | | | Competition advertised in 2010 | Activities under the project approved during the competition to be implemented by 1 December 2011 |
| | Objective | To reduce GHG emissions by improving the energy efficiency of economic operators' manufacturing buildings (incl. buildings where services are provided), technical equipment used for manufacturing (according to the definition set out in legislation regulating corporate income tax) and manufacturing technologies | | |
| | Energy end-use sector | Manufacturing buildings, technical equipment used for manufacturing and manufacturing technologies | | |
| | Target group | Economic operators | | |
| Territory where measure is implemented | Latvia | | | |
| Information and | List of energy saving measures and a description | The following project activities are being supported as part of the competition: | | |

| | | |
|----------------|--|---|
| implementation | of the measure | <p>1. additional investments in environmental protection which enable economic operators to save energy:</p> <p>1.1. reconstruction or simplified renovation works to improve the energy efficiency of buildings;</p> <p>1.2. additional investments to improve energy efficiency of existing technical equipment used for manufacturing, and which directly ensure the manufacturing process or provision of services in buildings;</p> <p>1.3. installation of energy efficient lighting;</p> <p>1.4. quality control checks of building envelopes carried out in accordance with legislation regulating the control method in question;</p> <p>2. making additional investments in the use of renewable energy sources in accordance with the following conditions:</p> <p>2.1. additional investments for the transition from heating systems in manufacturing buildings that use energy from fossil fuels, to the production of heat using the following renewable resources and heat generation Technologies (except for equipment forming part of a cogeneration power plant or ensure the operation of a cogeneration power plant):</p> <p>2.1.1. biomass – boilers using biomass;</p> <p>2.1.2. biogas – boilers using biogas;</p> <p>2.1.3. solar power – solar collectors;</p> <p>2.1.4. energy efficient sources of energy with heat pumps that have a transformation coefficient of more than 4.0;</p> <p>2.2. assistance is provided for cost of buying, installing and connecting equipment that has a total installed heating capacity of not more than 3 MW;</p> <p>2.3. when changing sources of heating supply, the total heating capacity of the renewable source of energy that is to be installed must not exceed the total heating capacity of the source of fossil fuels that is to be replaced, or the capacity which the project applicant has bought from a heating supplier that uses fossil fuels;</p> <p>2.4. support is provided to change heating systems in buildings where the heating system uses fossil fuels, the heating system has been built into the structure of the building and the building has been put into operation at least five years before the date on which the project application has been submitted;</p> <p>3. consultations for micro, small and medium sized economic operator in preparing energy audit reports, technical inspection reports, building design and technical documentation, specifications and estimates for technical equipment, as well as cost estimates. The costs of installing a new fossil fuel heating system without assistance in the area of the environment, and the costs of transferring to a heating system using renewable energy are compared in a cost estimate.</p> |
| | Budget and source of financing | <p>CCFI financing – LVL 8.12 million</p> <p>Co-financing from project applicants – LVL 8.48 million</p> |
| | Implementing body | SIA "Environmental Investment Fund" |
| | Monitoring (control) authority | Ministry of Environmental Protection and Regional Development, SIA "Environmental Investment Fund" |
| Energy savings | Method for calculating energy savings achieved | Bottom-up |
| | 2016 | 187 GWh |
| | 2020 | 336.6 GWh |
| | Other information | Anticipated energy savings against CCFI financing 4.6 MWh/year/thousand LVL |

Description of measure No R.4.2. "Agreements on improving energy efficiency, by promoting the implementation of industrial energy audits and energy management systems in companies"

| | | | |
|---|---|---|------|
| <i>Name of the energy savings measure</i> | | Agreements on improving energy efficiency, by promoting the implementation of industrial energy audits and energy management systems in companies | |
| <i>Measure No</i> | | R.4.2. | |
| Description | Category | Agreements on improving energy efficiency | |
| | Schedule for implementation | Start | End |
| | | 2011 | 2016 |
| | Objective | To improve energy efficiency in industry | |
| | Energy end-use sector | Manufacturing buildings, technical equipment used for manufacturing, manufacturing technologies | |
| | Target group | Economic operators | |
| Territory where measure is implemented | Latvia | | |
| Information and implementation | List of energy saving measures and a description of the measure | <p>1. In accordance with the Law on Energy End-Use Efficiency the Ministry of Economics has drawn up a Cabinet Regulation entitled "Procedures for concluding and supervising agreements on improving energy efficiency". The objective of the agreement is to achieve energy savings of at least 10% in the sector, company or local authority. Achieving energy savings targets is justified by the energy efficiency action plan.</p> <p>An agreement concluded between the ministry and an economic operator contains the following:</p> <ul style="list-style-type: none"> - the economic operator's energy efficiency action plan; - the economic operator's obligation to carry out energy efficiency improvement measures in his field of activity, if the economic operator offers energy services; - the economic operator's obligation to provide information to the ministry; - other information necessary to execute the agreement. <p>2. In accordance with the Law on Energy End-Use Efficiency the Ministry of Economics must draw up a Cabinet Regulation entitled "Procedures for carrying out industrial energy audits". This Cabinet Regulation will set out the procedures for carrying out industrial energy audits, and will also specify the content and requirements for those carrying out industrial energy audits.</p> | |
| | Budget and source of financing | Economic operators' resources | |
| | Implementing body | MoE | |
| Energy savings | Method for calculating energy savings achieved | Top-down | |
| | Savings achieved in 2010 | Measure implemented as from 2011 | |

4.5. CENTRALISED HEATING SUPPLY

In Latvia's climatic conditions the supply of heat is a vitally important component of the energy sector. Approximately 22% of heat required by users is generated in centralised heating supply systems, whereas 78% of heat is generated in decentralised (local and individual) heating supply systems. In

2010 approximately 70% of centralised heat end-use was consumed by the residential sector.

Table 23

Summary table of energy efficiency improvement measures in the centralised heating supply

| No | Measure | Target group | Period |
|---------|---|---|-------------------------|
| CS.5.1. | Activity 3.5.2.1 "Measures to improve the efficiency of centralised heating supply systems" under the programme complement to the "Infrastructure and services" operational programme | Users of heating, local authorities, economic operators | 12.03.2009 - 31.12.2013 |
| CS.5.2. | Installation of large capacity heat pumps to improve the supply of heat in the city of Riga (REA) | Local authority, heating supply company | 2010 |

Table 24

Description of measure No CS.5.1. "Measures to improve the efficiency of centralised heating supply systems"

| | | | | |
|---|---|--|-------------------|-------------------|
| <i>Name of the energy savings measure</i> | | Measures to improve the efficiency of centralised heating supply systems | | |
| <i>Measure No</i> | | CS.5.1. | | |
| Description | Category | Financial instrument (KF) | | |
| | Schedule for implementation | Stage | Start | End |
| | | 1 | 14.04.2009 | 26.05.2009 |
| | | 2 | 25.10.2010 | 01.12.2010 |
| | Planned changes, improvements: Two sub-activities are to be set up as part of activity 3.5.2.1 "Measures to improve the efficiency of centralised heating supply systems" under the programme complement to the "Infrastructure and services" operational programme; one of the sub-activities will provide support for heating supply companies and the other for independent producers. | | | |
| | Objective | To significantly improve the efficiency of heat production, by reducing heat losses in the transmission and distribution systems, and to encourage the replacement of fossil fuels with renewable sources or other types of fuel | | |
| Energy end-use sector | Sources of heat, transmission and distribution systems | | | |
| Target group | Users of heating, local authorities, economic operators | | | |
| Territory where measure is implemented | Latvia | | | |
| Information and implementation | List of energy saving measures and a description of the measure | The following is to be carried out as part of the measure: - reconstruction and construction of heat sources with the aim of improving their efficiency or reducing their environmental impact, or to replace fossil fuels with renewable sources of fuel; - reconstruction and construction of transmission and distribution systems with the aim of reducing heat or heat carrier losses. | | |
| | Budget and source of financing | Stage 1, LVL 6.7 million, Cohesion Fund financing Stage 2, LVL 35.61 million, Cohesion Fund financing | | |
| | Implementing body | Latvian Investment and Development Agency | | |
| | Monitoring (control) authority | Ministry of Economics | | |

| | | |
|----------------|--|---|
| Energy savings | Method for calculating energy savings achieved | Top-down |
| | Other information | <ul style="list-style-type: none"> • Out of 37 projects the achieved reduction in energy transferred to the system in MWh per year against investments in eligible expenditure, is valued at between LVL 1.04 to 8.48 thousand (21 route projects and one heating supply systems connection project); • The achieved reduction in fuel and electricity in MWh per year against investments in eligible expenditure, is valued at between LVL 1.57 to 23.57 thousand (13 boiler house projects and two heating supply systems connection projects) |

Table 25

Description of measure No CS.5.2. "Installation of large capacity heat pumps to improve the supply of heat in the city of Riga"

| | | | | |
|---|---|--|-------|------|
| <i>Name of the energy savings measure</i> | | Installation of large capacity heat pumps to improve the supply of heat in the city of Riga | | |
| <i>Measure No</i> | | CS.5.2. | | |
| Description | Category | Technical improvements of the processes | | |
| | Schedule for implementation | Stage | Start | End |
| | | 1 | 2010 | 2011 |
| | | 2 | 2011 | 2013 |
| | | 3 | 2012 | 2015 |
| | Objective | Generating additional heat without burning fuel | | |
| | Energy end-use sector | The city's heating supply system | | |
| Target group | Local authorities, heating supply companies | | | |
| Territory where measure is implemented | Latvia, city of Riga | | | |
| Information and implementation | List of energy saving measures and a description of the measure | <p>1. Until now open type evaporators were installed to reduce the temperature of the cooling water for facilities in cogeneration plants (gas turbines, steam turbines, gas compressor elements). At the same time, in order to ensure the normal operation of the boilers at the AS "Rīgas siltums" heating central "Imanta" cogeneration block, approximately 3.5t/h of heightened potential (above 100°C) hot water was drained. A large capacity absorption type heat pump with a capacity of 2 MW was installed in 2010 in order to prevent these pointless losses. The new system was put into operation in 2011. The total additional heat capacity is 5 MW.</p> <p>2. Until now open type evaporators were installed to reduce the temperature of the cooling water for facilities in cogeneration plants (gas turbines, steam turbines, gas compressor elements). A new absorption type heat pump will be installed in order to prevent these pointless losses. The anticipated additional heat capacity is 10 MW.</p> <p>3. Until now waste water (of around 75 billion m3 per year) that had been treated in waste water treatment plants was discharged into the sea at a temperature of around 8-15 °C. Large capacity absorption type heat pumps are to be installed in order to reduce the temperature and obtain heat. The anticipated additional heat capacity is 10 MW.</p> | | |
| | Budget and source of financing | The companies' own funds and loans | | |
| | Implementing body | 1. AS "Rīgas siltums" 2. AS Latvenergo 3. AS "Rīgas siltums" and SIA "Rīgas ūdens" | | |
| | Monitoring (control) authority | The local authority agency "Riga Energy Agency" | | |

| | | |
|----------------|--|--|
| Energy savings | Method for calculating energy savings achieved | Bottom-up |
| | Planned energy savings in 2016 | 1. 8.28 thousand MWh/year 2. 16.5 thousand MWh/year 3. 16.5 thousand MWh/year |

4.6. BUILDINGS SECTOR

Despite the fact that the residential sector is the largest energy end-use sector in Latvia, the activities of other energy end-use consumers also take place or are located in buildings (services, the public sector, industry etc.).

Table 27 shows the energy efficiency improvement measures that have been set out for other energy end-use sectors (the residential, tertiary and public sector), but also apply to the buildings sector and provide an insight into planned measures in the buildings sector.

On the basis of information provided by the State Land Service, a total of 1.34 million buildings were registered in the real estate state cadastre information system (NĪVKIS) as at 1 January 2010, including various types of ancillary buildings (560 000) and non-residential buildings on rural smallholdings (317 000). Estimates show that the number of buildings consuming energy on a continuous basis exceeds 400 000. Table 26 provides a summary of the information.

Table 26
Division of buildings by main type of use (source: NĪVKIS as at 01.01.2010)

| Main type of use | Number of buildings | % |
|---|---------------------|---------------|
| Buildings with one and two apartments | 312 752 | 76.9% |
| Apartment blocks | 38 562 | 9.5% |
| Social housing | 795 | 0.2% |
| Total residential buildings: | 352 109 | 86.6% |
| Industrial manufacturing buildings | 20 987 | 5.2% |
| Wholesale and retail buildings | 11 154 | 2.7% |
| Office buildings | 7 357 | 1.8% |
| Hotels and other short-term accommodation | 4 665 | 1.1% |
| School, university and scientific research buildings | 3 827 | 0.9% |
| Communications buildings, stations, terminals and related buildings | 2 619 | 0.6% |
| Medical and healthcare buildings | 1 283 | 0.3% |
| Buildings for recreational events | 1 179 | 0.3% |
| Sports facilities | 981 | 0.2% |
| Museums and libraries | 441 | 0.1% |
| Total non-residential buildings: | 54 493 | 13.4% |
| Total: | 406 602 | 100.0% |

Until now energy efficiency measures have mostly been carried out in the apartment block sector (see under the section "Residential sector"). However,

different types of energy efficiency measures have also been implemented in other groups of buildings – buildings housing educational institutions, state and local authority buildings and industrial manufacturing buildings.

Table 27

Summary table of energy efficiency improvement measures in the buildings sector

| No | Measure | Target group | Period |
|---------|--|---|--------------------------------|
| MA.1.1. | Activity 3.4.4.1 "Measures to improve the thermal stability of apartment blocks" under the programme complement to the "Infrastructure and services" operational programme | Owners of apartments in apartment blocks | 11.02.2009 - 31.12.2013 |
| MA.1.2. | Activity 3.4.4.1 "Measures to improve the thermal stability of social housing" under the programme complement to the "Infrastructure and services" operational programme | Social housing tenants | 16.01.2008 - 31.12.2013 |
| MA.1.3. | Information campaign "Let's live warmer" for residents of apartment blocks | Owners of apartments in apartment blocks | From 2010 |
| PA.3.1. | Low-energy buildings (CCFI) | Direct or indirect administrative bodies, town or district councils in Latvia, micro, small and medium-sized economic operators registered in Latvia, and natural persons | Competition advertised in 2011 |
| PA.3.2. | Improving energy efficiency in buildings housing higher education institutions | Direct or indirect administrative bodies, town or district councils in Latvia, micro, small and medium-sized economic operators registered in Latvia, and natural persons | From 2010 to 01.12.2011 |
| PA.3.3. | Improving energy efficiency in local authority buildings - stage 1; Complex solutions to reduce GHG emissions in local authority buildings – stage 2 | Town or district local authorities | 01.12.2010 - 01.12.2011 |
| PA.3.4. | Complex solutions to reduce GHG emissions in buildings housing State and local authority vocational education institutions | State or local authority vocational education institutions | From 2010 to 01.12.2011 |

4.7. HORIZONTAL MEASURES

Energy efficiency horizontal measures are those that apply to more than one energy end-use sector (not vertical) and in the long-term these measures can show real energy savings, for example, agreements on improving energy efficiency, green public procurement, tax policy and other initiatives. At present both the state and public authority sector can organise green public procurements in Latvia in accordance with the green public procurement guidelines drawn up by the Ministry of Environmental Protection and Regional Development. There are also plans to gradually implement a system for agreements on improving energy efficiency during 2011, thereby enabling local authorities, economic operators and associations to conclude an agreement with the Ministry of Economics regarding the implementation of specific energy efficiency improvement measures in a local authority enterprise or several enterprises, whose interests are represented by a particular sectoral association.

An additional incentive that promotes the implementation of energy efficiency improvement measures is an increase in the cost of energy resources, for example, by using a tax policy instrument and raising the rate of excise duty on petrol and gas.

As from 1 June 2011 the rate of excise duty for unleaded petrol was increased from LVL 269 per 1000 litres to LVL 289 per 1000 litres, whereas for leaded petrol it was increased from LVL 300 per 1000 litres to LVL 320 per 1000 litres, resulting in a total increase of approximately 2.5 santimes in the cost of a litre of petrol in end-use consumption. Therefore, the implementation of energy efficiency improvement measures is being promoted by means of higher rates of excise duty, and this manifests itself as a change in consumers' everyday behaviour when thinking about energy (petrol) savings measures.

Excise duty on the natural gas delivered to end-users has been in force since 1 July 2011. With the increase in excise duty came a rise in heating costs, and with that, additional incentives to implement energy efficiency improvement measures in residential buildings (particularly apartment blocks), for example, by applying for ERDF financing for insulating buildings.

Table 28

Summary table of horizontal energy efficiency improvement measures

| No | Measure | Target group | Period |
|--------|---|---|--------------------------|
| H.7.1. | Agreements on improving energy efficiency, by promoting the implementation of industrial energy audits and energy management systems in companies, and developing and implementing local authority energy efficiency action plans | Economic operators, local authorities, associations | 2011-2016 |
| H.7.2. | Green public procurement | State authorities, local authorities | 2009-2016 |
| H.7.3. | Improving minimum energy efficiency requirements in new builds and buildings that are to be reconstructed | Owners of buildings, building contractors | Starting from 01.06.2012 |

Table 29

Description of measure No H.7.1. "Agreements on improving energy efficiency"

| | | |
|---|---|---|
| <i>Name of the energy savings measure</i> | | Agreements on improving energy efficiency, by promoting the implementation of industrial energy audits and energy management systems in companies, and developing and implementing local authority energy efficiency action plans |
| <i>Measure No</i> | | H.7.1. |
| Description | Category | Cooperative instrument |
| | Schedule for implementation | 2011 – 2016 |
| | Objective | To improve energy efficiency in industry and the public sector |
| | Energy end-use sector | Industry and the public sector |
| | Target group | Economic operators, local authorities, associations |
| | Territory where measure is implemented | Latvia |
| Information and implementation | List of energy saving measures and a description of the measure | <p>1. In accordance with the Law on Energy End-Use Efficiency the Ministry of Economics has drawn up a Cabinet Regulation entitled "Procedures for concluding and supervising agreements on improving energy efficiency". The objective of the agreement is to achieve energy savings of at least 10% in the sector, company or local authority. Achieving energy savings targets is justified by the energy efficiency action plan.</p> <p>1. An agreement concluded between the ministry and a sectoral association contains the following:</p> <ul style="list-style-type: none"> - the sectoral association's energy efficiency action plan; - the sectoral associations' obligation to inform its members of matters concerning energy efficiency improvement measures; - the sectoral association's obligation to provide information to the ministry; - other information necessary to execute the agreement. <p>2. An agreement concluded between the ministry and an economic operator contains the following:</p> <ul style="list-style-type: none"> - the economic operator's energy efficiency action plan; - the economic operator's obligation to carry out energy efficiency improvement measures in his field of activity, if the economic operator offers energy services; - the economic operator's obligation to provide information to the ministry; - other information necessary to execute the agreement. |

| | | |
|----------------|--|---|
| | | <p>3. An agreement concluded between the ministry and a local authority contains the following:</p> <ul style="list-style-type: none"> - the local authority's energy efficiency action plan, which is a separate document or forms part of the local authority's development plan; - the local authority's obligation to provide information on energy efficiency to those people living in the local authority's administrative territory; - the local authority's obligation to provide information on energy efficiency to the ministry; - other information necessary to execute the agreement. <p>In accordance with the Law on Energy End-Use Efficiency the Ministry of Economics must draw up a Cabinet Regulation entitled "Procedures for carrying out industrial energy audits". This Cabinet Regulation will set out the procedures for carrying out industrial energy audits, and will also specify the content and requirements for those carrying out industrial energy audits.</p> |
| | Budget and source of financing | Funding from economic operators and local authorities |
| | Implementing body | MoE |
| Energy savings | Method for calculating energy savings achieved | Top-down |
| | Planned energy savings 2016 | Measure implemented as from 2011 |

Table 30

Description of measure No H.7.2. "Green public procurement"

| | | |
|---|---|---|
| <i>Name of the energy savings measure</i> | | Green public procurement |
| <i>Measure No</i> | | H.7.2. |
| Description | Category | Financial instrument |
| | Schedule for implementation | 2009 – 2016 |
| | Objective | <p>To reduce the impact on the environment: every product (or service) that is bought leaves an impact on the environment during all stages of its lifetime (manufacture – use – recycling or burial in landfill);</p> <p>To foster social improvements: through the conditions laid down for procurement procedures it will be possible to provide better living standards, for example in construction and ensuring that new buildings can be accessed by the disabled;</p> <p>To achieve budget savings.</p> |
| | Energy end-use sector | Public sector |
| | Target group | State authorities Local authorities |
| | Territory where measure is implemented | Latvia |
| Information and implementation | List of energy saving measures and a description of the measure | In procurements the contracting entity will set out environmental requirements for suppliers' abilities, and include them in the technical specifications for the subject of the procurements, by making use of the relevant standards and eco-labelling, and also by including environmental and energy efficiency factors in the selection criteria for the most economically advantageous tender. |
| | Budget and source of financing | State or local authority budgets, according to the authorities' procurement plans |
| | Implementing body | VARAM |

| | | |
|----------------|--|--|
| Energy savings | Method for calculating energy savings achieved | Top-down |
| | Planned energy savings 2016 | The green public procurement guidelines were adopted in December 2008 and implemented as from 2009. |

Table 31

Description of measure No H.7.3. "Improving minimum energy efficiency requirements in new builds and buildings that are to be reconstructed"

| | | | | |
|---|---|---|-------------------|------------|
| <i>Name of the energy savings measure</i> | | Improving minimum energy efficiency requirements in new builds and buildings that are to be reconstructed | | |
| <i>Measure No</i> | | H.7.3. | | |
| Description | Category | Legislation | | |
| | Schedule for implementation | Stage | Start | End |
| | | 1 | 01/06/2012 | - |
| | Objective | To promote the improvement of energy efficiency, by laying down higher minimum energy efficiency requirements for new builds and reconstructed buildings | | |
| | Energy end-use sector | Buildings | | |
| | Target group | Owners of buildings, building contractors | | |
| Territory where measure is implemented | Latvia | | | |
| Information and implementation | List of energy saving measures and a description of the measure | Laying down minimum energy efficiency requirements for new builds and reconstructed buildings: <ul style="list-style-type: none"> • windows; • building envelopes; • technical systems. | | |
| | Budget and source of financing | As part of the MoE budget | | |
| | Implementing body | MoE | | |
| | Monitoring (control) authority | MoE, local authority building committee | | |
| Energy savings | Method for calculating energy savings achieved | Top-down | | |
| | Planned energy savings 2016 | 150 GWh | | |
| | Impact on energy savings in 2020 (if information is available) | 270 GWh | | |
| | Assumptions | Planned energy savings of 20 kWh/m² per year of new builds and reconstructed buildings. The average area of new builds or reconstructed buildings is 1 500 million m² per year (savings of 30 GWh per year). | | |

4.8. LEADING ROLE OF THE PUBLIC SECTOR (STATE AND LOCAL AUTHORITIES) IN IMPLEMENTING THE REQUIREMENTS OF THE DIRECTIVE ON THE ENERGY PERFORMANCE OF BUILDINGS

The role of the public sector in implementing energy efficiency improvement measures is set out in Article 9 of the Law on Energy End-Use Efficiency, which obliges state and local authority bodies to promote energy efficiency improvement measures. On 21 March 2011 the Cabinet approved the information report prepared by the Ministry of Economics entitled "Report on improving energy efficiency in buildings used by public authorities". The report states that more detailed research has to be carried out into the ways of implementing energy efficiency improvement measures in buildings used by public authorities, taking into account the overall technical condition of the buildings and the possibilities for renovating buildings located in a historical area. The report does not contain a calculation of anticipated energy savings.

Directive 2010/31/EC of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings provides that Member States must ensure that by 31 December 2020, all new buildings are nearly zero-energy buildings.

Given that Latvia has no experience in the construction of nearly zero-energy buildings, research is still being carried out in order to lay down specific objectives. In 2011 the VARAM is implementing a competition "Low-energy buildings" with financing from the CCFI, and the results will be assessed and will enable further plans for the construction of nearly zero-energy buildings to be developed. Legislative provisions, including the role of the public sector in the construction of nearly zero-energy buildings will be developed by 9 July 2012 in accordance with the provisions of the Directive on the Energy Performance of Buildings.

Less than 10% of buildings in Latvia meet current technical requirements for heating, i.e. those buildings that have been constructed or renovated after 2003, when the requirements concerning building envelopes were increased considerably. Energy efficiency improvement measures in the buildings sector are being implemented with financing from the CCFI. Energy efficiency improvement measures have been implemented under the CCFI in buildings housing educational institutions, local authority buildings and manufacturing buildings. More detailed information on the measures is provided in sections 3.4.3 and 3.4.6.

At present legislation does not contain any provisions as to how the recommendations for improving energy efficiency set out in the energy performance certificate for a building should be implemented. Issues relating to the leading role of the public sector in improving the energy efficiency of buildings will be reviewed, by transposing the requirements of the Directive on

the Energy Performance of Buildings (with amendments) into national legislation.

Under Article 17(3) of the Law on Energy End-Use Efficiency, at least of the following public sector energy efficiency improvement measures must be included in the NEEAP:

- 1) the use of financial instruments for energy savings;
- 2) the procurement of equipment and vehicles based on lists of energy-efficient product specifications of different categories of equipment;
- 3) the procurement of energy efficient equipment that has efficient energy consumption in all modes, including in standby mode;
- 4) the replacement or renovation of existing equipment or vehicles with the equipment and vehicles listed in points 2 and 3;
- 5) the use of energy audits and implementation of the resulting cost-effective recommendations;
- 6) the purchase or rent of energy-efficient buildings or parts thereof, or the reconstruction (including simplified reconstruction) or renovation (including simplified renovation) or the purchased or rented buildings or parts thereof.

The measures selected for the second NEEAP as examples of the leading role of the public sector are as follows:

- **the procurement of energy efficient equipment that has efficient energy consumption in all modes, including in standby mode;**
- **the use of energy audits and implementation of the resulting cost-effective recommendations;**

The terms for the procurement of energy efficient equipment are specified in accordance with Article 17 of the Public Procurement Law – "Technical specifications".

The requirement to carry out energy audits is included under the eligible expenditure cost item for all possible financial instruments, including the CCFI, Structural Funds and the Cohesion Fund.

Local authorities must assume a leading role in implementing energy efficiency improvement measures. Local authorities' involvement in the Covenant of Mayors must be supported. "The sustainable energy action plan for the city of Riga, 2010-2020" was developed due to the fact that Riga was the first European capital to sign the Covenant of Mayors, and the development of the action plan complies with the provisions of the Covenant of Mayors. This means that the city of Riga undertakes to reduce CO₂ emissions by at least 20% by 2020, which can be achieved by improving energy efficiency by 20% and using renewable energy resources for 20% of the volume of energy used. The

plan contains measures to reduce energy consumption, improve energy efficiency and use renewable energy resources within the administrative territory of the city of Riga, as well as criteria for evaluating whether the objectives of the action plan have been achieved.

Similar sustainable action plans have also been developed by the town of Jelgava and Jēkabpils, who have also signed the Covenant of Mayors.

4.9. CONSULTATIONS AND INFORMATION

Requirements for energy supply companies

Article 13 of the Law on Energy End-Use Efficiency "Distribution system operators and traders of energy" obliges distribution system operators and traders of energy to provide information on energy efficiency improvement measures that have been implemented. In addition, Article 13(3) of the Law provides that distribution system operators and traders of energy provide final customers with energy services and are entitled to conclude an agreement or a contract with final customers for the implementation of energy efficiency improvement measures.

According to the information available to the Ministry of Economics, no distribution system operators and traders of energy have concluded a contract with final customers for the implementation of energy efficiency improvement measures.

Development of the energy services market

The first energy services companies (ESCO) began operating in Latvia in 2000, by offering professional services for street lighting. However, a number of legal problems appeared during the performance of the contract, which made it difficult to execute the terms of the contract.

Development of the energy services market has been delayed due to legal matters concerning the conclusion of service contracts, a lack of interest by energy supply (centralised heating supply) companies in providing energy services, a low level of consumer awareness regarding the opportunities offered by ESCO and an absence of positive examples. Development of the energy services market has also been delayed by unclear financial matters concerning the implementation of ESCO, as well as by the absence of state guarantees for issuing ESCO loans.

Consultations and information

Different types of information and consultations on matters concerning energy efficiency are available on the external website of the Ministry of Economics www.em.gov.lv/em/2nd/?cat=30173.

The AS "Latvenergo" Energy Efficiency Centre operates successfully and provides customers with information on the rational use of electricity, as well as other matters concerning the improvement of energy efficiency. The centre's activities over the last three years have been collated in table 32.

Table 32

**Resultative indicators of the AS Latvenergo Energy Efficiency Centre
2008-2010**

| Activities | 2008 | 2009 | 2010 |
|---|------|------|------|
| Individual consultations at the EEC and by phone | 1408 | 1523 | 1495 |
| Lectures for school pupils and students (groups) | 73 | 71 | 44 |
| Participation in various events held by other organisations | 12 | 11 | 14 |
| Seminars for individual customers | 6 | 9 | 15 |
| Seminars for customers that are legal entities | - | 3 | 3 |
| Publications in the press on energy efficiency | 6 | 11 | 7 |
| Radio and TV reports | 2 | 18 | 12 |

The future activities of the energy efficiency centre will concern the provision of information to individual on ways of improving energy efficiency. The activities to be undertaken are as follows:

- Resolving customers' individual questions at the energy efficiency centre, by phone and by e-mail, or by providing recommendations after visiting a customer's object;
- Organising seminars and participating in exhibitions. Providing information to users through TV, radio, newspapers and magazines, and by means of the internet;
- Organising lectures for groups at the energy efficiency centre, as well as through visits to schools, children's summer camps and interest groups. Participating in events relating to energy efficiency that are held by other organisations. Training teachers in energy efficiency issues. Developing materials on energy efficiency that can be distributed.

The following activities are to be carried out to provide information to legal entities on ways of improving energy efficiency at their companies:

- Organising seminars on energy efficient technologies and their use within the company;
- Organising seminars for specialists within a particular company;
- Resolving individual energy efficiency related matters and involving specialists from other sector in certain cases.

The four regional energy agencies in Latvia, namely the Riga, Vidzeme, Zemgale and Kurzeme agencies, are an important prerequisite for informing the

public and implementing actual energy efficiency measures. The most active and experience regional energy agency in Latvia is the p/a "Riga Energy Agency", which was established with financing from the "Intelligent Energy Europe" programme; and the activities of the Zemgale regional energy agency are also positive. It is important to note that the local authorities of Riga, Jelgava and Jēkabpils have developed sustainable energy action plans for 2010-2020. These local authority plans play an important role in creating and increasing public awareness of energy related issues in various end-use sectors as a whole, and not just in the residential sector.

4.10. STRATEGY TO INCREASE THE NUMBER OF ZERO-ENERGY BUILDINGS

In 2011 the VARAM is implementing a competition "Low-energy buildings" with financing from the CCFI, and the results will be assessed and will enable further plans for the construction of nearly zero-energy buildings to be developed.

Legislative provisions, including the specific technical requirements and requirements for the use of renewable resources, will be developed by 9 July 2012 in accordance with the provisions of the Directive on the Energy Performance of Buildings.

4.11. ALTERNATIVE MEASURES FOR HEATING AND AIR CONDITIONING SYSTEMS

The regulations for inspecting boilers and air conditioning systems are set out in the Law on the Energy Efficiency of Buildings. An inspection of boilers and air conditioning systems is mandatory when certifying the energy performance of a building, but in other cases the inspection is voluntary.

Where the nominal capacity of a boiler is greater than 20 kW, or where the heating system is more than 15 years old, the boiler is assessed together with heating system, an opinion is provided on the efficiency of the boiler and recommendations are made to replace the boiler or to make other possible changes to the heating system in the building in question, as well as alternative solutions.

The majority of apartment blocks and public buildings in Latvia are heated by means of a centralised heating supply. Centralised heating supply systems provide more than 70% of the heat required for buildings.

Energy efficiency requirements for heating supply systems are set out in Cabinet Regulation No 1214 of 20 October 2009 "Regulations on energy efficiency requirements for centralised heating supply systems in the tenure of

licensed energy supply economic operators, and verification procedures thereof". The Regulation specifies the requirements for efficiency coefficients in the equipment used to generate energy and the permissible values for heat losses in the heating network.

The most popular types of fuel used in buildings with their own heating system, are firewood and natural gas. In 2008 a total of 52 000 customers used natural gas, incl. 46 000 households; the proportion of other fuels that are used (coal and peat) is negligible.

As regards inspections of air conditioning systems, it should be noted that given Latvia's climatic conditions, there are no statutory requirements to provide cooling systems in buildings. Air conditioning systems have not been installed in apartment blocks in Latvia, but the capacity of air conditioning equipment that has been installed in certain premises does not usually exceed 12 kW.

Given the aforesaid, Latvia has not implemented strict requirements for inspecting boilers and air conditioning systems. Article 4(2) of the Law on the Energy Efficiency of Buildings provides that the Ministry of Economics has a duty to implement measures so that users are given recommendations as to how the efficiency of boilers and air conditioning systems can be improved.

The website of the Ministry of Economics provides information on inspections of boilers and air conditioning systems: statutory rules, standards, specialists, other documents and information.

Given that the local authority of the city of Riga is the largest local authority in Latvia and home to almost half the total population of Latvia, reference should also be made to the initiative by the local authority in Riga that has prepared a document entitled "Air quality improvement action programme in the city of Riga, 2011-2015"; the document sets out a requirement for all individual heating equipment with a capacity of more than 20 kW to be registered with the local authority, and provides for an energy inspection service to be established, and for periodic inspections of heating equipment to be carried out. Support for this activity has been given by the Ministry of Environmental Protection and Regional Development, which plans to draw up proposals for the necessary amendments to existing legislation, in order to reduce the amount of pollution generated by equipment used for individual heating systems. The local authority agency "Riga Energy Agency" plans to implement similar activities for air conditioning systems.

4.12. MEASURES TO SUPPORT THE IMPLEMENTATION OF THE EPBD

The most important financial instruments for promoting the energy efficiency of buildings are the Structural Funds (ERDF) and the CCFI. Measures to promote energy efficiency in the building sector have been included in sections 3.4.1, 3.4.3 and 3.4.6 of the plan.

5. ESTABLISHMENT OF COMPETENT BODIES AND ASSIGNED ORGANISATIONS

The Ministry of Economics is the leading public authority in the area of economic policy. The Ministry develops and implements economic structural policy, industrial policy, construction policy, energy policy, tourism policy, external economic policy, domestic market policy (goods and services), business development policy, investment policy, consumer rights protection policy and other policies in the areas specified in legislation.

With respect to the uptake of financing from the ERDF, energy efficiency activities such as "Measures to improve the thermal stability of apartment blocks" and "Measures to improve the thermal stability of social housing" the body responsible for the uptake of financing and for the administration (the implementing body) is the Latvian Investment and Development Agency (LIDA) that is subordinate to the Ministry of Economics. The Latvian Investment and Development Agency is also the body responsible for the uptake of financing from the Cohesion Fund and for the administration (the implementing body). The bodies responsible for the Climate Change Financial Instrument are the Ministry of Environmental Protection and Regional Development (VARAM) and SIA "Environmental Investment Fund".

Table 33 shows the responsible bodies listed by the most important tasks.

Table 33

| Responsible bodies | | |
|--|-----------------------------|---------------|
| Task | Body 1 | Body 2 |
| Uptake of ERDF financing for energy activities | Ministry of Economics (MoE) | LIDA |
| Uptake of CF financing for energy activities | MoE | LIDA |
| Monitoring the objectives of the Energy Services Directive | MoE | - |
| Agreements on improving energy efficiency | MoE | - |
| Promoting energy efficiency of buildings | MoE | - |

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| Uptake of CCFI financing | VARAM | SIA "Environmental Investment Fund" "Environmental Investment Fund" |
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Proposed measures

| Correlation with the policy objectives set out in the guidelines, form of action or tasks (if the plan has been drawn up to implement the guidelines) | Objective of the guidelines – to ensure residents have adequate availability of energy, by improving the energy supply infrastructure and extensively implementing energy efficiency measures in the consumer sector. | | | |
|---|---|--|--------------------------------|--|
| Objective of the plan | To achieve energy savings of 1896 GWh by 2013. | | | |
| Form of action to achieve the objectives | Implementation of energy efficiency improvement measures in households. | | | |
| Measures to achieve the objective set out | Dates for implementation | Responsible body and other bodies involved | Direct results of the activity | Anticipated financing and sources |
| Measure 1: Measures to improve the thermal stability of apartment blocks | -2011 – 2013. Stage 9 of the project application selection process has been advertised and on 27 April 2011 and will continue whilst financing is available for the activity. Projects can be approved until 31 December | MoE LIAA | 200 renovated buildings | LVLV 26 602 311.60 from the ERDF Budget sub-programme 62.06 "ERDF projects (2007-2013)*": - in 2011 LVL 5 011 469 - in 2012 LVL 1 075 109 * Following approval of other projects and conclusion of contracts additional funds will be allocated from the Ministry of Finance's budget programme 80.00.00 "Unallocated financing for the |

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|---|--|---|---|--|
| | 2013. | | | implementation of projects and measures co-financed from EU policy instruments and other foreign financial assistance" |
| Measure 2: Information campaign "Let's live warmer!" | 2011-2013. Implementation of the information campaign is closely linked to the implementation of measure 1 and lasts from 01.07.2011 to 31.12.2013 | MoE | At least 15 000 informed | LVL 3500 from EU Funds technical assistance, budget sub-programme 70.05 "Technical assistance for the uptake of the ERDF, ESF, CF (2007-2013)" |
| Form of action to achieve the objectives | Measures to implement energy efficiency improvement measures in the transport sector | | | |
| Measures to achieve the objective set out | Dates for implementation | Responsible body and other bodies involved | Direct results of the activity | Anticipated financing and sources |
| Measure 1: systematic inspections of the technical condition of vehicles | 2011- 2013, continuously | Road Traffic Safety Directorate (RTSD) | 30% of all owners * and drivers of vehicles (i.e. more than 194 000 vehicles) comply with and follow the principles of good and correct driving | Technical inspection costs are covered by vehicle owners |
| Measure 2: Applying differentiated rates of duty to vehicles depending on engine size and age | Continuously from 1 January 2011 | Ministry of Finance, (MoF), Ministry of Transport (MoT), RTSD | Development of legislation and entry into force | Not required |
| Measure 3: Development of a unified public transport route network (prohibition on | 2011-2013, continuously | MoT, "Road Transport Administration" (RTA) | Energy efficiency improvement of at least 10% | Budget programme 31.00.00 "Public transport" sub-programme 31.05.00 "grant for the Road Transport Administration |

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| grants for parallel routes, harmonized timetables, improved route planning system) | | | | to organize public transport services " |
| | | | | In 2011 LVL 454 910 |
| | | | | In 2012 LVL 454 910 |
| Form of action to achieve the objectives | Measures to implement energy efficiency improvement measures in the tertiary sector | | | |
| Measures to achieve the objective set out | Dates for implementation | Responsible body and other bodies involved | Direct results of the activity | Anticipated financing and sources |
| Measure 1: low-energy buildings (Cabinet Regulation No 1185 of 28.12.2010) | Competition advertised on 19 January 2011, project must be implemented by 1 November 2012 | Ministry of Environmental Protection and Regional Development (VARAM) SIA "Environmental Investment Fund" | A minimum of 20 low-energy buildings constructed | Total financing LVL 7 261 722.00 from the CCFI sub-programme 27.02.00 "Climate change financial instrument projects", In 2011 LVL 726 172 In 2012- 6 535 550 |
| Measure 2: Energy efficiency improvement measures in buildings housing higher education institutions (Cabinet Regulation No 1 of 05.01.2010) | Competition advertised on 27 January 2010, project must be implemented by 1 December 2011 | VARAM SIA "Environmental Investment Fund" | A minimum of 20 buildings housing higher education institutions renovated | Total financing LVL 7 028 040.00 from the CCFI sub-programme 27.02.00 "Climate change financial instrument projects", In 2011 LVL 4 749 723 In 2012 LVL 2 022 112 |
| Measure 3: Energy efficiency improvement measures in local authority buildings (Cabinet Regulation No 645 of 25.06.2009, | Stage 1: competition advertised on 28 July 2009, project must be implemented by 1 December 2010. Stage 2: competition advertised on 6 | VARAM SIA "Environmental Investment Fund" | A minimum of 200 local authority buildings renovated | Total financing for stages 1 and 2, LVL 41 268 693.00 from the CCFI sub-programme 27.02.00 "Climate change financial instrument projects", In 2011 LVL 13 484 396; In 2012 LVL 6 782 692 |

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|---|---|---|---|---|
| amendment 1288) (Cabinet Regulation No 542 of 21.06.2010) | July 2010, project must be implemented by 1 December 2011 | | | |
| Measure 4: Complex solutions to reduce GHG emissions in buildings State and local authority vocational education institutions (Cabinet Regulation No 417 of 05.05.2010) | Competition advertised on 20 June 2010, project must be implemented by 1 December 2011 | VARAM SIA "Environmental Investment Fund" | A minimum of 60 buildings housing State and local authority vocational education institutions renovated | Total financing LVL 11 939 811.66 from the CCFI sub-programme 27.02.00 "Climate change financial instrument projects", In 2011 LVL 7847489 In 2012 LVL 3880278 |
| Form of action to achieve the objectives | Energy efficiency improvement measures in industry | | | |
| Measures to achieve the objective set out | Dates for implementation | Responsible body and other bodies involved | Direct results of the activity | Anticipated financing and sources |
| Measure 1: complex solutions to reduce GHG emissions in manufacturing buildings (Cabinet Regulation No 521 of 08.06.2010) | Competition advertised on 20 July 2010, the project must be implemented by 1 December 2011 | VARAM SIA "Environmental Investment Fund" | Solutions implemented in a minimum of 40 manufacturing buildings | Total financing LVL 8 125 242.34 from the CCFI sub-programme 27.02.00 "Climate change financial instrument projects", In 2011 LVL 4250870; In 2012 LVL 3874372 |
| Measure 2: Agreements on improving energy efficiency, by promoting the implementation of industrial energy audits and energy management systems in companies | From July 2011 to 2013, continuously | MoE | A minimum of 15 agreements implemented | Financing from economic operators |

| Form of action to achieve the objectives | Energy efficiency improvement measures in centralised heating supply systems | | | |
|---|--|--|---|---|
| Measures to achieve the objective set out | Dates for implementation | Responsible body and other bodies involved | Direct results of the activity | Anticipated financing and sources |
| Measure 1: energy efficiency improvement measures in centralized heating supply systems | From 2011 – 2013, stage 3 of the project application selection process is planned for the 4 th quarter of 2011. Projects can be implemented within two years after a contract to implement the project is concluded, but no later than 1 July 2015. | MoE, LIAA | Measures implemented in at least 20 boiler houses | Total financing LVL 42 322 857.00 from the Cohesion Fund, budget sub-programme 61.06 "Cohesion Fund projects (2007-2013)"*: - In 2011 LVL 3 704 331; - In 2012 LVL 1 387 246. * Following approval of other projects and conclusion of contracts additional funds will be allocated from the Ministry of Finance's budget programme 80.00.00 "Unallocated financing for the implementation of projects and measures co-financed from EU policy instruments and other foreign financial assistance" |
| Measure 2: Installation large capacity heat pumps to improve the heating supply in the city of Riga | 2011-2013, according to the plans of those implementing the measures | AS "Rīgas siltums", AS "Latvenergo", AS "Rīgas ūdens", Rīga p/a "Riga Energy Agency" | Technical improvements of at least three processes achieved | The companies' own funds and loans |
| Form of action to achieve the objectives | Implementation of horizontal energy efficiency improvement measures | | | |
| Measures to achieve the objective set out | Dates for implementation | Responsible body and other bodies involved | Direct results of the activity | Anticipated financing and sources |
| Measure 1: Agreements on improving energy efficiency, by | From July 2011 to 2013, continuously | MoE | A minimum of 15 agreements implemented | Financing from economic operators and local authorities |

| | | | | |
|---|------------------------------|-------|---|---|
| promoting the implementation of industrial energy audits and energy management systems in companies, and developing and implementing local authority energy efficiency action plans | | | | |
| Measure 2: green public procurement | 2011-2013, continuously | VARAM | The number of green public procurements grows by at least 20% | State or local authority budgets, according to the authorities' procurement plans |
| Measure 3: improving minimum energy efficiency requirements in new builds and buildings that are to be reconstructed | From July 2012, continuously | MoE | Heat consumption in buildings reduced | Budget programme 31.00.00 "Development and management of sector policy" |

*Note. The number has been calculated on the basis of the number of vehicles in Latvia in 2010 that have a valid technical inspection certificate, i.e. 649 863 vehicles in six different categories of vehicle, taking into account the statistical information provided in RTSD letter ref. No 11.11-8/1076 of 23.05.2011.

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Categories and examples of end-use energy efficiency measures

| Category | Examples |
|---------------------|---|
| 1 Regulation | Standards and norms: 1.1 Building standards and other statutory requirements |

| Category | Examples |
|---|--|
| | 1.2 Minimum requirements for energy efficiency of buildings |
| 2 Information measures | 2.1 Information campaigns 2.2 Energy labelling (mandatory or voluntary) 2.3 Information centres 2.4 Energy audits 2.5 Training and education 2.6 Demonstration measures 2.7 Exemplary role of the public sector 2.8 Informative billing |
| 3 Financial instruments | 3.1 Subsidies (grants) 3.2 Tax rebates and other taxes (also tax increase) that stimulate reduction of end-use energy consumption 3.3 Loans (soft and/or State subsidised) |
| 4 Voluntary agreements and cooperative instruments | 4.1 Voluntary agreements in industry 4.2 Voluntary agreements in private sector and public sector organizations 4.3 Energy efficiency public procurement 4.4 Bulk purchasing 4.5 Technology procurement |
| 5 Energy services for energy savings | 5.1 Guarantee through energy efficiency service contracts 5.2 Third-party financing 5.3 Energy efficiency service contract 5.4 Attracting outsourcers to resolve energy matters |
| 6. Transport specific measures | 6.1. Change in mode of transport 6.2. Pricing (e.g. congestion charges) |
| 7 Energy saving | 7.1 Obligation for energy companies to provide energy services that create energy savings, |

| Category | Examples |
|-------------------|--|
| mechanisms | including "White certificates" 7.2 Voluntary agreements with energy production, transmission and distribution companies 7.3 Energy efficiency funds and trusts |

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