



MINISTRY OF NATIONAL
DEVELOPMENT

Second National Energy Efficiency Action Plan of Hungary until 2016 with an outlook to 2020

Document for the European Commission on the national objectives and measures on promoting final energy savings for the period between 2008-2016 according to the strategic basic principles of improving energy efficiency, the review of the First National Energy Efficiency Action Plan and the Guide of the European Commission

(Reporting requirement stipulated by Article 14(2) of Directive 2006/32/EC of the European Parliament and of the Council)

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INTRODUCTION

“We must find those breakthrough points, those industries of the future which are capable of invigorating the economy as a whole. We must find the means through which breakthrough points can be linked, and weave a web from those which are the most important drivers of economic latitude: health care industry, tourism, green economy, renewable energy, water-based economic development, automotive industry, knowledge industry, transit economy, food industry, business services, and R&D, all of which are built on local attributes and labour-intensive enterprises.”

“We must achieve energy independence by tackling energy dependency and by utilising alternative sources of energy.”

“Implementation of the ‘European energy-efficient buildings’ initiative must be promoted in Hungary to support green technologies and the development of energy-efficient systems and materials in new and renovated buildings. A national energy efficiency program would jump-start the construction industry; renovating 10% of flats a year would create 80,000 construction industry jobs, and the investment would pay off in less than 10 years. Furthermore, our environmental commitments would also be solved.”

Excerpts from the Programme of National Cooperation, May 2010

NECESSITY OF PREPARING A SECOND NEEAP

Directive 2006/32/EC of the European Parliament and of the Council on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC (ESD) requires Member States to prepare and periodically review a National Energy Efficiency Action Plan (NEEAP). **With the submission of this document Hungary fulfils its reporting requirement stipulated by Article 10(2) of Directive 2010/31/EU of the European Parliament and of the Council as well.** (Article 14(2), Reports, under Chapter IV, Final Provisions). **The review of the first NEEAP of Hungary, i.e. the second National Energy Efficiency Action Plan of Hungary (second NEEAP)** has been prepared in accordance with the abovementioned European Union expectations and the following relevant strategies and plans:

- New Széchenyi Plan (time frame: 2020);
- National Energy Strategy (time frame: 2030, with an outlook to 2050);
- Hungary’s Renewable Energy Utilisation Action Plan (time frame: 2020);
- EU 2020 objectives in Hungary’s National Reform Programme (time frame: 2020); and
- Energy Efficiency Plan 2011 of the European Union (Communication from the Commission) (time frame: 2020).

We consider the commitments undertaken in the EU 2020 objectives in Hungary’s National Reform Programme and in Hungary’s Renewable Energy Utilisation Action Plan as governing in order to keep the coherence in undertaking target numbers: **The commitment of Hungary for 2020 is 10% total energy savings. Within the framework of restructuring the development of green economy in accordance with the New Széchenyi Plan is one of the possibilities for the economy of an “energy-efficient Hungary” to achieve a breakthrough.**

The second NEEAP of Hungary was consulted with relevant professional organisations within the framework of a forum, and we took their opinions and professional materials into account and incorporated them in the Plan whenever appropriate. We chose this more time-consuming path that requires more consultation, because we believe that only an action plan in the preparation of which the whole sector is involved and which ensures long-term planning can be able to enhance professional and investors' confidence, which is the key to successful implementation.

The second National Energy Efficiency Action Plan of Hungary (hereinafter referred to as: second NEEAP) has been prepared in the format specified in, and by using the relevant elements of, the "Guide and template for the preparation of the second national energy efficiency action plans" provided for the Member States by the Joint Research Centre of the European Commission (JRC). The template for the second NEEAP helps to prepare the second NEEAPs of Member States and ensures that the prepared material is comprehensive and covers all necessary and important information. This is in accordance with the obligations set out in Directive 2006/32/EC on energy end-use efficiency and energy services (Energy Services Directive; hereinafter referred to as: ESD); at the same time, it facilitates the preparation of a comprehensive strategic document on total energy savings and relevant measures.

In consideration of the business-as-usual scenario, the European Union (hereinafter referred to as: EU) aims at 20% savings in primary energy consumption, which is a difficult task full of challenges. It will take the efforts of all Member States to ensure adequate planning and implementation of coherent measures on energy savings potential in all sectors of their national economies.

One of the cardinal points of efforts made to fulfil the EU 2020 objectives is the ESD. In accordance with this, the NEEAP provides for a framework (for establishing strategies on a Member State level that enhance energy efficiency) in the energy end-use of sectors set out in the ESD. Based on the platform of the NEEAP Member States can assess the energy savings that arise from the implementation of strategies.

NEEAPs can become useful policy means not only in the field of implemented and planned end-use energy efficiency measures and energy savings, but may also play a key role in **making energy efficiency a priority issue of national energy policies**. In summary, NEEAPs are significant policy means for the Member States and the European Commission, because they aid the establishment of integrated energy policy both at national and Community level. The ESD aims at cost-effective development of the end-use energy efficiency of the Member States through compliance with the following requirements:

- the ESD calls on the Member States to assess and present their measures on national objectives for 2016 promoting final energy savings;
- the setting of goals achievable through energy saving measures and programmes that put an end to current market limitations and differences in opinions impeding efficient energy end-use; and
- the establishment of conditions aimed at developing and promoting markets that deliver measures aimed at energy services and other energy efficiency improvements to end-users.

The main objective of the ESD is to promote in a cost-effective manner the improvement of energy efficiency in Member States, to terminate institutional, financial and legal hindrances impeding energy efficiency, and to ensure sustainable development for energy efficiency and energy services.

NEEAPs must include a description of measures through which the Member State concerned wishes to achieve the target number it has set. Apart from the direct objectives of the planned measures, an indirect objective is to initiate a change in the way energy is viewed by

society as a result of the example set by the relevant measures and thus develop awareness of the real value of energy. This change of approach has an effect on the treatment of national resources, and therefore it also supports aspirations concerning environmental protection, climate protection and sustainability.

The primary objective of the second NEEAP is to achieve the highest possible savings in final energy use by 2016 by using available resources efficiently.

The ESD includes that Member States **must prepare a National Energy Efficiency Action Plan for the period of 9 years between 2008-2016** in accordance with the substantial and formal requirements set out by the European Commission. **During this period Member States must endeavour to achieve altogether 9% of energy savings in energy end-use.** Accordingly, **Hungary's second NEEAP** outlines ongoing and planned energy efficiency measures which will make it possible to reduce Hungary's energy use in sectors set out in the ESD by 1% per annum on average in the 9 years of the period between 2008 and 2016.

FINDINGS – ACTION PLAN ON TACKLING SHORTCOMINGS

We deem the description of the problems and shortcomings identified during the preparation of the second NEEAP necessary in order to indicate to the Hungarian government what measures and decisions have to be taken in order to supply the European Commission with even more accurate information for the subsequent third review of the NEEAP (30 June 2014).

1. There is no national forecast of demand concerning primary energy based on a reliable forecast of final fuel, thermal energy and electricity demand (up to 2020).

The determination of the results achieved in energy efficiency improvement and energy savings is based on reliable statistical data collection. The determination of possibilities and aims regarding the future requires the preparation of forecasts that are based on well-founded and sufficiently detailed analyses and calculations as regards the expected future development of energy demand. The development of energy demand is determined by economic and social processes in the long term, which may be influenced by weather and other random factors in the short term. Where a well-founded forecast of economic and social processes is available, the future development of energy demand may be calculated with high accuracy, taking into account the fluctuations caused by random factors. In order to determine future energy demand, to adjust energy saving targets and to improve the monitoring of the achievement of targets, a calculation methodology based on parameter modelling by sectors, consumer groups, main energy use targets and main energy sources must be elaborated and applied at least every two years. Where necessary, the energy statistics system must be further developed so that data necessary for analyses on which the forecasts are founded are reliably available.

2. Currently the effects of NEEAP measures are not being monitored; detailed and statistically well-founded energy savings data on final energy use are missing in certain sectors.

The basis of monitoring the effects of NEEAP measures is the methodology recommended by the European Commission¹. BU indicators are the most suitable indicators for quantifying the unique effects of specific measures; however, in Hungary only the determination of the TD indicators of the methodology is possible apart from a few exceptions. It would be necessary to develop a customised BU indicator system that suits NEEAP measures, to establish the method of relevant data collection, to regularly perform data collection and to elaborate uniform monitoring forms. It would be necessary to appoint the persons responsible for the measures, and their responsibilities should extend to the system monitoring the effects as well. In addition, the energy savings results of specific NEEAP measures should be fed back to annual national and sectoral energy use data.

Currently there is no feedback on which existing measures serve the achievement of objectives and which have proven to be futile either. Therefore, a list of the effects of measures serving energy savings (regulation in various sectors, the efficiency of tenders and non-refundable and preferentially refundable assistance schemes, and efforts made to raise awareness) should be prepared. Cost-benefit analyses at measure level are also necessary.

¹ Recommendations on Measurement and Verification Methods in the Framework of Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services

3. We have no reliable information on the possibilities of the industry and services to improve their energy efficiency.

Data collection concerning energy statistics covers data on energy use, but does not allow for the quantification of energy efficiency improvement and energy savings potential. The analysis, based on representative sampling, of the energy use of productive sectors is fundamental to allow for monitoring the implementation of the measures of the second NEEAP.

4. No building energy statistical database has been prepared so far for residential buildings.

The energy use of buildings is a key element of national final energy use. During the preparation of Hungarian energy statistics, similar to most Member States, no data collection based on direct data recording is performed regarding the energy use of residential buildings; data on residential energy use mainly demonstrate fuel sales.

Although there has been some in-depth research carried out on the subject in recent years (Energiaklub², 3CSEP-CEU studies³), there is still no uniform and representative data system available on residential buildings that would contain the energy characteristics and energy use of buildings. The analysis, based on representative sampling, of the energy use of residential buildings is fundamental for reliable data to be available on the current situation of energy savings and its potential, as well as the real effects of relevant NEEAP measures as regards different types of buildings and heating and hot water supply methods, while taking into account other important influencing factors as well.

5. No reliable information is available on the energy consumption of public buildings.

Currently there is no reliable information available that would allow, in respect of different types of public buildings and industrial facilities, for the analysis of current energy use, the production of estimated forecasts and the determination of energy savings potential per building type. Having regard to the significant lack of data, the objective to establish a data supply and data processing system for measuring the energy consumption and energy state of buildings owned by the state or municipalities is included among the EU 2020 objectives in Hungary's National Reform Programme. The data supply system would serve to measure the energy consumption and energy state of buildings owned by the state or municipalities once a year. As a first step to data supply, a surveying system must be elaborated, which would cover the fundamental issues on the energy consumption and energy state of buildings or blocks of buildings. As a second step, a full electronic system for measuring annual energy consumption, the state of buildings and energy savings potential would be developed. The necessary data would allow the identification of priority areas among buildings and the selection of buildings where projects with the highest possible cost-effectiveness and short payback periods could be realised. This would allow for the development of a coordinated and well-monitorable public building modernisation programme that takes into account the principle of lowest possible cost. The first steps have already been taken concerning the development of the data supply system.

² NEGAJoule 2020: Energy efficiency potential in Hungarian residential buildings

³ 3CSEP-CEU: [Employment Impacts of a Large-Scale Deep Building Energy Retrofit Programme in Hungary](#)

6. Multiannual concepts on the energy saving renovation of buildings and the construction of new energy saving buildings would be necessary to be elaborated.

In order to fulfil the building energy objectives of the EU, Hungary, too, must make significant efforts. One of its most important steps is to draw up a coordinated and well-founded National Strategy for the Energy Performance of Buildings for the energy saving renovation of buildings and the establishment and application of energy saving requirements for new buildings. Full compliance with relevant EU Directives (e.g. Directive 2010/31/EU or Directive 2009/28/EC) must be ensured during the establishment of this strategy. The drawing up of the National Strategy for the Energy Performance of Buildings will be commenced in the second half of 2011.

7. No reliable information is available on the energy saving possibilities of the transportation sector and their cost-benefit relations.

The future development of the energy use of Hungary is influenced significantly by the development of the energy demand of the transportation sector. Nevertheless, transportation strategy documents do not emphasise sufficiently the enforcement of energy management aspects. Therefore, it would be necessary to draw up a Transport Energy Efficiency Improvement Action Plan within the framework of the New National Transportation Strategy (NTS), which would – based on the detailed analysis of cost/benefit relations of the sector's energy saving possibilities – determine the special energy efficiency improvement tasks of the transportation and shipping sector and their scheduling, persons responsible, financing possibilities and resources, as well as the way to check achieved results.

Action plan for the reform of the planning, monitoring and organisational process of the second NEEAP

Problem	Proposed action	Responsible entity:	Recommended deadline
There is no national forecast of primary energy demand that would be based on a reliable forecast of final fuel, thermal energy and electricity demand (until 2020)	A calculation methodology based on parameter modelling by sectors, consumer groups, main energy use targets and main energy sources must be elaborated and applied at least every two years	EK NKft	30 June 2012
The effects of NEEAP measures are not being monitored; detailed and statistically well-founded energy savings data on final energy use are missing in certain sectors	<ul style="list-style-type: none"> •Appointment of persons responsible for measures •Application of BU methods to individual measures •Elaboration of uniform monitoring forms •Integration of results achieved by measures into the data on annual energy use 	EK NKft	30 June 2012
No reliable information is available on the possibilities of the industry and services to improve their energy efficiency	Analysis based on representative sampling must be prepared (recording of the baseline)	EK NKft	30 June 2012

Problem	Proposed action	Responsible entity:	Recommended deadline
No building energy statistical database is available for residential buildings	Analysis based on representative sampling must be prepared (recording of the baseline)	Ministry of National Development ⁴	30 June 2012
No reliable information is available on the energy consumption of public buildings	Data supply system to monitor the energy consumption and energy state of buildings owned by the state or municipalities	Ministry of National Development ⁵	31 December 2012
No multiannual concept on the energy saving renovation of buildings and the construction of new energy saving buildings is available	Drawing up of a National Strategy for the Energy Performance of Buildings	Ministry of National Development	30 July 2012
No reliable information is available on the energy saving possibilities of the transportation sector and their cost-benefit relations	Drawing up of a Transport Energy Efficiency Improvement Action Plan within the framework of the National Transportation Strategy	Ministry of National Development	31 December 2012

⁴ with the professional cooperation of the Ministry of Interior

⁵ with the professional cooperation of the Ministry of Interior

1. OVERALL INTRODUCTION OF THE SECOND NEEAP

The primary objective of the second NEEAP is to achieve the highest possible savings in final energy use by using available resources efficiently. Apart from the direct objectives of the planned measures, an **indirect objective** is to initiate a change in the way energy is viewed by demonstrating the results of measures, presenting good solutions and setting an example in the public sector, so as to develop awareness of the real value of energy. This change of view will have a feedback effect on the treatment of natural resources and will thus aid the achievement of environmental and climate protection goals, as well as the transition towards sustainability.

The aim of the measures under the second NEEAP is to mobilise the public, state decision-makers, as well as market participants in order for them to prefer energy-efficient, environmentally friendly and resource-efficient buildings, equipment, technologies and means of transportation. It contains those ongoing or planned energy efficiency measures through which it will be possible for Hungary to reduce the final energy use of sectors and industries not falling under the scope of the EU Emissions Trading Scheme by at least 1% per annum in the period between 2008–2016 (57.4 PJ/year – 15,955 GWh/year to be reached until 2016). This energy savings goal must be realised by the country by 2016 – similarly to the other Member States – by a freely chosen scheduling scheme. Measurement of the achievement of target values – apart from intermediate assessments set forth in the ESD – must be performed after the ninth year of introduction of the Directive, according to a methodology specified in Annex IV of the Directive.

Target values of the second NEEAP per sectors

Sector	National target value
Population	21.00 PJ/year
Public institutions	14.75 PJ/year
Industry, productive sectors	13.05 PJ/year
Transportation	4.60 PJ/year
Horizontal and cross-sectoral (other)	4.00 PJ/year
Total to be reached by 2016	57.40 PJ/year

(Target values are described in detail in Chapter 3.2.)

The estimated total value of investments to be realised is HUF 1395.8 billion, out of which the resources originating from the European Union, allowance trading and auction incomes are HUF 617.4 billion. (This amount is in accordance with the amount of approximately HUF 910–980 billion envisaged during the adoption of Hungary's Renewable Energy Utilisation Action Plan by the Government in January 2011.) Having regard to this, resources necessary for the implementation of the second NEEAP are ensured and target values planned for 2016 will become viable and achievable if the programmes of the New Széchenyi Plan announced by the Hungarian Government are realised.

1.1. National context of energy savings – strategies, plans and programmes describing commitment to energy savings

The second NEEAP of Hungary has been drawn up in accordance with the following strategies and plans, thereby ensuring coherence with previously set up Hungarian energy efficiency and energy saving targets and aims:

- New Széchenyi Plan;
- National Energy Strategy;
- Hungary's Renewable Energy Utilisation Action Plan;
- EU 2020 objectives in Hungary's National Reform Programme; and
- Energy Efficiency Plan 2011 of the European Union (Communication from the Commission).

(Extracts from the documents listed below are content quotations, the aim of which is to demonstrate coherence with this document.)

NEW SZÉCHENYI PLAN (ÚSZT)

Legal status: *Government Decision No 1163/2010 (VIII.04.) ordered the preparation of the New Széchenyi Plan, i.e. the economic development programme of the Hungarian government and relevant tasks thereof (the programme was launched on 14 January 2011 by the official announcement of the Prime Minister).*

The most important strategic aspects of the New Széchenyi Plan are: the dynamic expansion of employment, the maintenance of financial stability, the establishment of conditions for economic growth, and the improvement of competitiveness. The New Széchenyi Plan determines seven programmes based on the breakthrough points of the Hungarian economy:

1. Healing in Hungary – Health industry
- 2. Renewal of Hungary – Development of green economy**
3. Home projects and Residential property programme
4. Business development – Development of business environment
5. Science – Innovation – Growth
6. Breakthrough in employment
7. Transport – Transit Economy

The development of green economy is in line with the most important strategic goals of the energy and climate policy of Hungary and the EU in order to optimise the joint realisation of security of supply, competitiveness and sustainability as primary goals while also taking into account long-term aspects. The global financial and economic crisis of 2008 has fundamentally affected the energy sector, and it had an effect on the whole supply chain. Future energy policies and relating development strategies definitely have to take into account these altered factors.

The development of green economy can only be successful if it is in accordance with the development of other national economic sectors, in particular of agriculture and industry. Green industry, having significant growth potential, may be one of the important new industrial sectors and breakthrough points for agriculture, rural areas and the national economy in the broad sense via the increasing use of renewable energy sources.

The priority areas of the green economy development programme set governmental measures in relation to various climate- and energy-related objectives. Energy efficiency

measures play a key role in ensuring that goals set in the field of climate change and energy policy may be fulfilled with the lowest possible costs, in particular as regards the energy use of buildings and transportation. To this end, several measures have to be taken in the residential sector, state and local governmental sector, industrial sector, enterprise sector and in the field of transportation. The highest savings can be made in the field of residential buildings, households, local governments and public institutions. Accordingly, building energy measures extending to several sectors, including the energy survey of buildings owned by the state or municipalities and residential buildings and the energy-efficient renovation of residential buildings constructed with either industrialised or traditional technology and residential buildings owned by the state or municipalities will be taken in order to decrease energy consumption. In the first package of the New Széchenyi Plan promulgated in January 2011 tenders in a value of HUF 1100 billion were announced.

Regarding its weight, green economy development is the third most important chapter of the New Széchenyi Plan.

In the wording of the New Széchenyi Plan green economy development is interpreted in a broad sense. Apart from renewable energy and energy efficiency, it includes the field of environmental technologies and environmental industry. Accordingly, it contains sub-programmes concerning green energy, energy efficiency, green education, green employment, environmental industry, green research and development and innovation.

The most important objectives of the green economy development programme within the New Széchenyi Plan are the facilitation of establishing a more liveable, more energy- and cost-efficient institutional and economic structure by diversifying energy supply and developing the environmental industry; this structure could – on the basis of Hungarian conditions – create new jobs and contribute to a well-balanced and sustainable development of rural areas.

NATIONAL ENERGY STRATEGY

Legal status: *The Parliament of Hungary adopted the Strategy on 3 October 2011.*

The most important strategic challenges of the 21st century are healthy food, clear drinking water and a sustainable supply of energy. The next period will be an era of structural and paradigm changes in energy both in supply and demand. The aim of the government with the Energy Strategy is to establish harmony between energy- and climate policy while taking into account economic development and environmental sustainability, to determine future directions of acceptable energy demands and energy developments, as well as to shape the future perspective of Hungarian energy with the involvement of energy market participants.

Energy savings, the guaranteeing of national security of supply and the sustainable increase of economic competitiveness are at the centre of the Energy Strategy. This guarantees that energy sector services will remain available at a competitive price for economic participants, as well as the population even if environmental provisions are becoming stricter and hydrocarbon resources are shrinking on the long term.

The following must be realised during the energy structure change:

- energy efficiency measures covering the whole supply and consumption chain;
- the increase of electricity production with a low CO₂ intensity;
- spread of renewable and alternative heat production; and
- increase in the use of low-carbon means of transportation.

By realising these four points significant progress could be made towards establishing sustainable and secure energy systems, which at the same time could contribute

substantially to the enhancement of economic competitiveness. **The most important theses of the Energy Strategy for competitive, sustainable and secure supply:**

(a) Energy saving. The most effective and efficient way to improve supply security, one that can also be realised on the short term, is to reduce consumption by improving energy saving and efficiency. Significant energy-saving measures covering the whole use and consumption value chain are necessary to keep primary energy use at the target value; these measures must affect both the producers and the consumers. Building energy developments comprise a priority field of energy efficiency improvement. 40% of total energy used in Hungary today is used in our buildings, and about two-thirds of this energy is used for heating and cooling. 70% of the approximately 4.3 million homes do not comply with modern functional technical or thermoprocessing requirements; the ratio is similar to this in the case of public buildings. Therefore, the renovation of the existing buildings – with special regard to public buildings – is a high-priority task. The aim of the Energy Strategy is to decrease the heating energy demand of buildings by 30% by 2030 with the aid of building energy programmes that are in accordance with EU Directives. Furthermore, the development of electricity production and distribution, as well as the mitigation of the energy demand of industrial processes and transport, play an important role in improving energy efficiency.

(b) Increase of renewable and low-carbon energy production. For sustainable supply the ratio of renewable energy in primary energy use is expected to rise from the current 7% to 20% by 2030. The growth path to be realised by 2020 (the target to be achieved is a 14.65% share) is described in detail in Hungary's Renewable Energy Utilisation Action Plan.

(c) Modernisation of community district heating and individual thermal energy production. The coverage of district heating will be extended from the current 15% to 22–25% by increasing technical service standards (establishing decentralised district heating islands that can gradually be connected, and transitioning to low temperature district heating) and involving renewable energy sources. Based on the analysed scenario the ratio of renewable thermal energy production within heat use will rise from the current 10% to 25% by 2030, including individual thermal energy production capacities (biomass, solar and geothermal energy) as well.

(d) Energy efficiency improvement in transport and the decrease of its CO₂ intensity. The increase by 2030 of the ratio of electrical (road or railway) and hydrogen-propelled (road) vehicles to 14% and the use of biofuels to 15% serves the decrease of the oil dependency of transport. To achieve this goal, it is indispensable to construct the necessary infrastructure, mainly in big cities, which may put Hungary on the European map of electrical and hydrogen-propelled vehicles. The enhancement of the role of railway passenger and goods transport and the use of modern towing technologies increase the energy efficiency of transport. The transition of public transport to locally produced fuels that meet sustainability requirements (second-generation biofuel technologies, biogas, hydrogen and electricity) also contribute to achieving the goals of the Energy Strategy.

(e) Green industry, renewable agriculture. Energy efficiency improvement and the mitigation of greenhouse gas emissions are primary cost-efficiency issues both in industry and agriculture. Instead of adopting solutions that focus on pollution treatment, the aim is to support the development and spread of preventive low-carbon technologies applied throughout the whole life-cycle. Biomass and waste are not only renewable energy sources, but also potential industrial raw materials that could be used in various fields of the rapidly developing bio-based economy. Therefore, medicines and materials of the fine chemical industry could be produced using biotechnological processes through the application of which greenhouse gas emissions of industrial manufacturing processes and products could be decreased significantly. Traditional agricultural techniques are responsible for 13% to 15% of all greenhouse gas emissions. Greenhouse gas emissions may be mitigated with adequate agricultural techniques and organic farming, for example through minimal agro-

chemical and high labour demand; therefore, support to such techniques is a priority both for improving energy efficiency and for mitigating greenhouse gas emissions. Agricultural energy efficiency improvement may also be increased through plant growing in greenhouses that is based on a sustainable use of geothermal energy. Currently thermal energy production based on fossil fuels dominates within the sector. The utilisation of agricultural by-products according to local needs greatly facilitates the formulation of the vision of a renewable economy.

(f) Strengthening the role of the state. Public presence in the energy economy, which is marketised, liberalised, and privatised to a great extent, is rather limited. Today the state can mainly assert its priorities by regulatory means while adapting to the provisions of the European Union. The ensuring of coherence between legal and economic conditions is not enough in itself to efficiently provide public well-being and enforce national interests. The modernisation of the Hungarian energy infrastructure (power plants, grids, and smart meters) requires a great deal of investment; therefore, an institutional network ensuring the predictability of the investment environment and quick administration must be established. Failing to do so may lead to a lack of investments that are indispensable for long-term security of supply. We are initiating the introduction of an infrastructure platform on regional and European Union level for the purpose of diversifying natural gas import sources, enhancing the regulatory capacity of the electricity grid and promoting market competition. The revival of high-quality vocational training in the field of energy is necessary, with particular regard to the earliest possible initiation of multi-level training for experts, *inter alia*, engineers of renewable energy, energy consultants, and solar panel or heat pump mechanics, having expertise in mapping and utilising renewable energy sources. The strengthening of tertiary energy training is necessary for enterprises and local governments to be able to perform their tasks concerning energy on a high level.

HUNGARY'S RENEWABLE ENERGY UTILISATION ACTION PLAN (HEREINAFTER REFERRED TO AS: NATIONAL ACTION PLAN)

Legal status: *Government Decision No 1002/2011 (I.14.) on certain tasks relating to Hungary's Renewable Energy Utilisation Action Plan*

Established common legislation and long-term strategic objectives set out and order several tasks to be performed by Hungary as member of the EU in the field of renewable energy use. The third climate and energy package of the European Union aims at mitigating greenhouse gas emissions by 20%, increasing energy efficiency by 20%, as well as increasing the use of energy originating from renewable energy sources to 20% within the gross final consumption of energy, and within this, its increase to 10% concerning transport, as set out in Directive 2009/28/EC of the European Parliament and of the Council by 2020 on European Union level. The drawing up of national action plans necessary for achieving the Union targets is within the competence of Member States. The planned future utilisation of renewable energy sources made it necessary to draw up the National Action Plan. The National Action Plan was drawn up in a form in accordance with the format set out in the Directive of the European Parliament and of the Council⁶ (hereinafter referred to as: RED) and the Commission Decision on the relevant uniform template.⁷

The RED set a legally binding target of a minimum of 13%⁸ for the share of energy from renewable sources in gross final energy consumption for Hungary by 2020. Taking into

⁶ Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC

⁷ 2009/548/EC: Commission Decision of 30 June 2009 establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC of the European Parliament and of the Council

⁸ Besides the achievement of the 2020 target the RED also sets out the minimum schedule of progress in two-year cycles

account the significance of green economy development to national economy, its effect on employment (the creation of at least 150 000 to 200 000 jobs, including 70 000 jobs in the renewable energy sector) and its role in domestic value creation, the NEEAP sets an objective of 14.65% by 2020, which exceeds the obligatory minimum target number, as a realistic objective in accordance with national interests. The government's intention with this objective is to once again emphasise its position – in accordance with the above – that it considers the production and utilisation of renewable energy sources as one of the breakthrough points of economic development.

The key areas of Hungarian renewable energy policy are the following: security of supply; environmental sustainability, climate protection; agricultural and rural development; development of green economy; contribution to Community targets. Renewable energy sources contribute widely to the achievement of national economic targets (job creation, GDP increase, security of supply, etc.); therefore the increase of their use to the full potential constitutes a strategic aim. Therefore, the national objective does not use the obligatory EU target number as a starting point, but rather aims at reaching the maximum enabled by possibilities and restrictive factors. Consequently, if improvements achieved in a field that represents a restrictive factor (e.g. more resources are available than planned) or technological advances make it possible, the use of renewable energy sources will probably exceed the planned targets.

The overall national objective has been set out on the basis of the total maximum share that can be reached realistically in respect of individual types of renewable energy sources. Having regard to the currently known parameters of restrictive factors, an increase of gross consumption of renewable energy sources to at least 120.56 PJ by 2020 seems realistic; which is 14.65% of gross final energy consumption.

Apart from the provisions of Directive 2009/548/EC, the National Action Plan includes a vision and measures and guidance for the following ten years, which may mean a breakthrough for Hungary and development and recovery for society and the economy. The established measures mainly serve job creation, reduction of fossil fuel import, establishment of a green economic sector, and via this, the economic development of Hungary.

HUNGARY'S NATIONAL REFORM PROGRAMME, WHICH CONTAINS THE NATIONAL COMMITMENTS RELATING TO THE EUROPE 2020 TARGETS

Legal status: *Hungary's National Reform Programme has been drawn up in accordance with the Convergence Programme; the Hungarian government has approved it and the document has been submitted to the European Commission.*

Within the framework of the Europe 2020 Strategy, Hungary contributes to the achievement of the five quantified headline targets set out at a European Union level by fulfilling national commitments that also reflect Hungary's own characteristics and priorities.

Hungary intends to increase the share of renewable energy sources to 14.6% by 2020, achieve total energy savings of 10% as well as limit the increase of greenhouse gas emissions at 10 per cent (relative to the level of 2005) outside the EU Emissions Trading Scheme.

Hungary can only respond adequately to the impact global climate change has on economic and social development, to energy demand that has been increasing globally and to the unpredictable changes of fossil fuel prices if it can create an economic model in which energy savings, energy efficiency, intensive renewable energy utilisation and a focus on the exploitation of own resources play a crucial role. In order to reach these targets, the government will launch energy efficiency programmes, support the development of green economy, endeavour to improve environmental safety and promote the efficient utilisation of natural energy resources – based on the methods defined by the government's programme and the New Széchenyi Plan.

Considering the funds available for the period of the current Reform Programme (2011–12) subject to public finance sustainability and fiscal rigour, the primary results of the measures introduced in this chapter during 2011–12 will be an appropriate regulatory framework, planning methodology and an adequate data base that allow for targeted and efficient use of the funds expected to become available as a result of economic growth in subsequent years.

Energy efficiency measures in Hungary's National Reform Programme:

- **Developing a data collection and processing system designed to measure the energy consumption and energy efficiency of buildings owned by the state or municipalities.** The aim is to develop a data supply system that would serve to measure and monitor the energy consumption and energy state of buildings owned by the state or municipalities. Based on the data obtained the complex energy-efficient renovation of buildings concerned can be properly planned and implemented in line with the priorities and principles.
- **The complex renovation of residential buildings built by industrial technology to increase their energy efficiency, and an incentive system for energy-efficient construction.** The direct objective of this measure is to improve energy efficiency through the modernisation of the energy systems in buildings. Within the framework of the measure support programmes encourage complex energy-efficiency renovations of industrial-technology-based residential buildings and the construction of new energy efficient ones. In addition, the long-term objective is to create sustainable and liveable environments and to improve the quality of life of residents through the modernisation of residential buildings.
- **Supporting the complex energy-efficient renovation activities of industrial actors (especially SMEs) and buildings that fulfil public functions but are not publicly owned.** The objectives of this measure are to make industrial energy efficiency measurable, to standardise the audit and monitoring systems aimed at the more efficient use of energy by industrial players, to enter into agreements aimed at long-term, voluntary commitments guided by international examples, and to establish a motivating regulatory environment and a system of acknowledgement.
- **Defining further possible ways and means of saving energy in sectors other than buildings.** The objective of this measure is to reduce energy consumption as a way to supplement measures aimed at reducing the heating demand of buildings in the following areas: municipalities, residential consumption, services, industry, transportation, shipping and agriculture.
- **Developing a National Strategy for the Energy Performance of Buildings.** The National Strategy for the Energy Performance of Buildings sets out the targets of the Complex Programme on the Energy Performance of Buildings and defines the measures necessary for achieving the targets (in the field of support, R&D, quality assurance, education and training, information services and regulation).
- **Sustainable lifestyle and consumption – information and awareness raising.** Programmes to influence consumers' behaviour and raise their awareness; developing vocational training and further training in areas linked to the establishment of a green economy; creating a comprehensive database that contains the technological, financing and supportive industry information of the sector all in one place.

Legal status: The European Commission adopted the Communication on the Energy Efficiency Plan 2011 on 8 March 2011. Concrete legislative proposals (probably the amendment of Directive 2004/8/EC and 2006/32/EC, the latter having ordered annual final energy savings of 1% by 2016) were submitted by the Commission in June 2011.

Hungary achieved its objective during the Hungarian Presidency of the European Council, i.e. the conclusions of the European Council on the Energy Efficiency Plan were adopted on 10 June 2011 at the Energy Council.

The European Commission adopted the Communication on the Energy Efficiency Plan 2011 on 8 March 2011. The two fundamental elements of the energy policy of the European Union that represent prerequisites of sustainable development are energy efficiency (primarily via energy savings) and the increase of the use of renewable energy.

Hungary supports the general objectives of the EU's Energy Efficiency Plan 2011, especially as regards the following:

- **the exemplary role of the public sector in energy efficiency improvement;**
- **the inclusion of new energy consumption and production areas, since this would result in a coverage of the whole supply chain;**
- **the assistance and means to be provided for by the European Commission for the development of national energy efficiency programmes; and**
- **the high priority of small and medium enterprises.**

Member States refused to define national targets on obligatory energy efficiency, and thus, the Communication proposes “sectoral” targets and measures affecting the whole EU. At the same time, **in light of the current voluntary action plans of the Member States only a 10% improvement of energy efficiency can be predicted by 2020 regarding primary energy consumption instead of the 20% undertaken on a pan-European level.** The Commission plans to review in 2013 how efficient voluntary action plans drafted for achieving the 20% improvement of energy efficiency undertaken on a pan-European level 2020 are, and if the results are unsatisfactory, “it will consider proposing obligatory national targets.”

Hungary has included in the second NEEAP the breakdown and calculation of objectives regarding energy savings according to the abovementioned proposed sectoral targets and measures. Furthermore, we will provide an outlook for primary energy savings objectives in the report of the second NEEAP in line with EU expectations.

1.2. Expected primary energy consumption up to 2020 and primary energy savings projections

In Hungary primary energy demand, i.e. primary energy demand relative to the nominal total value of gross domestic product (GDP), was about 2.4 times higher than the EU average in 2007; this ratio is 1.22 when converted to purchasing power parity. Electricity demand – also converted to purchasing power parity – is in fact lower in Hungary (97%) than the EU average.

Forecasts prepared by different research centres show different values when determining the use of primary energy due to differing methodical and computing approaches. It can be assumed as a basic version that Hungary is primarily planning to realise economic development in less energy-intensive areas over the next decade; however, parallel to the improvement of living standards energy use is expected to rise without energy saving measures. Regarding the value of the BAU path a 0.3% increase in total fuel consumption

can be forecast at a 1% GDP increase in the following 10 years. The year 2008 before the economic crisis struck can be considered as the reference year. Assuming an annual average of 3% of economic development for the period between 2008 and 2020 (based on the stability report of the Hungarian Central Bank) the BAU path would be 1255 PJ of primary energy use (29.98 million toe) in 2020 (within this, gross electricity use would be 53 TWh) if calculating with the 1126 PJ primary energy use (26.9 million toe) of 2008. This value is close to the primary energy use of 1263 PJ (30.17 million toe) of 2020 calculated by applying the PRIMES model.

Final energy use falling under the scope of the ESD is 638.2 PJ (as the five-year average of the period between 2002 and 2006), which does not include the losses of energy transformation processes, feedstock and non-energy fuel use, and the energy use of consumers falling under the scope of Directive 2003/87/EC (emissions trading). Taking this value as a basis the first NEEAP aimed at achieving 57.4 PJ/year of energy savings by 2016. **Assuming that the pace of energy efficiency improvement will be in line with that of this objective in the period between 2016 and 2020, energy savings may reach approximately 70–90 PJ/year by 2020 in the sectors specified in the ESD.**

For energy use not falling under the scope of the ESD the following considerations may be taken. Feedstock-based fuel use depends on the development of the market position of produced chemical products, which does not fall under the scope of energy performance; therefore, no planned savings can be expected in this field.

By contrast, values close to the pace of savings expected for the consumers falling under the scope of the ESD can be expected both for consumers falling under emissions trading and losses in energy transformation. Taking this into account, primary energy use could be reduced by approximately 135–145 PJ/year by 2020 compared to the BAU value. Furthermore, considering the future uncertainty of factors influencing the development of energy demand it may influence the extreme values of the interval if, on the one hand, economic growth differs from the average value of 3% per year significantly, and as a result energy demands relating to production increase more moderately or more significantly, and on the other hand, energy efficiency improvement lags behind the expected value or, on the contrary, exceeds the value by large. Taking into account the joint effects of these factors, primary energy use can be expected to reach 1050 to 1200 PJ for the year 2020. The mean value of this interval practically coincides with the consumption of 2008 (1126 PJ). This shows that with adequate energy saving and energy efficiency improvement programmes and green energy-intelligent economic policy economic development and the improvement of living standards can be realised along a low-carbon path without increasing primary energy use, or even while actually decreasing it.

2. NATIONAL OVERALL ENERGY SAVINGS TARGETS AND MEASURES IN ENERGY END-USE

SAVINGS EXPECTED IN THE LIGHT OF TOTAL ENERGY END-USE OBJECTIVES OF 2016

Target value to be achieved by 2016: 57.40 PJ/year (15 955 GWh/year)

By sectors/measures:

Sector	National target value
Population	21.00 PJ/year
Public institutions	14.75 PJ/year
Industry, productive sectors	13.05 PJ/year
Transportation	4.60 PJ/year
Horizontal and cross-sectoral (other)	4.00 PJ/year
Total to be reached by 2016	57.40 PJ/year

INTERIM RESULTS OF ENERGY END-USE FOR 2010:

Value achieved by 2010: 12.25 PJ/year (3403 GWh/year)*

*Source: Energiaközpont Nonprofit Kft

In contrast to the achieved saving of 12.25 PJ/year, the interim target value undertaken in the first NEEAP for the year 2010 was 9.4 PJ/year. It can be established based on this that progress is adequate as regards the realisation of our national target value commitment for the year 2016.

In order to achieve energy savings of 57.4 PJ/year safely **the estimated total value of investments to be realised is HUF 1395.8 billion, out of which the resources originating from the European Union, allowance trading and auction incomes are HUF 617.4 billion.** (This amount is in accordance with the amount of approximately HUF 910–980 billion envisaged during the adoption of Hungary's Renewable Energy Utilisation Action Plan by the Government in January 2011.) Having regard to this, resources necessary for the implementation of the second NEEAP are ensured and target values planned for 2016 will become viable and achievable if the programmes of the New Széchenyi Plan announced by the Hungarian government are realised.

3. DETAILED INTRODUCTION OF THE SECOND NEEAP – ENERGY SAVING MEASURES IN INDIVIDUAL SECTORS

3.1. Calculation methodology for the assessment of energy savings

The basis for the calculation of energy savings is the calculation methodology recommended by the European Commission⁹. The methodology recommends a consolidated calculation method, describing in detail the calculation method of indicators recommended for measuring the development of energy efficiency. Recommended indicators are mostly top-down (hereinafter referred to as: TD); no uniform methodology exists for bottom-up (hereinafter referred to as: BU) indicators. The practical applicability of indicators is determined by available statistical data.

The data of the following entities are available for determining Hungarian energy efficiency programme results:

- data of EUROSTAT;
- Hungarian Central Statistical Office (hereinafter referred to as: KSH);
- national energy statistics database operated by Energia Központ Nonprofit Kft (hereinafter referred to as: EK);
- database of Émi Non-profit Limited Liability Company for Quality Control and Innovation in Building (hereinafter referred to as: ÉMI); and
- database created within the framework of the ODYSSEE project supported by the European Commission.

During the preparation of this document final statistical data were available for the years 2008 and 2009, whereas the data available for the year 2010 were mainly preliminary. The measurement of the effects of individual energy saving measures was carried out using the previously mentioned statistical databases. The method is based on BU indicators, the definition of which was performed using calculations and occasionally using estimates by an expert. The methodology applied for measuring the effects of measures was the following in the case of indicators determined by calculation:

PANEL – GIS PANEL BUILDING RENOVATION PROGRAMME

- The number of flats included in building renovation programmes was taken from the official documents of ÉMI and EK.
- The average annual consumption for heating was taken from the household estimation model of the ODYSSEE energy efficiency database.
- The floor areas of panel and average dwellings were taken from the KSH annual microcensus for the year 2005. The average consumption of panel dwellings was calculated on the basis of the floor areas of panel and average dwellings.
- The presumed savings rate gives an estimate of the average savings of domestic building renovations.

By multiplying the abovementioned factors we can obtain the total savings for all panel dwellings included in the building renovation programme after performing the necessary conversions.

⁹ Recommendations on Measurement and Verification Methods in the Framework of Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services

NEP BUILDING RENOVATION PROGRAMME FOR TRADITIONAL BUILDINGS

- The number of flats included in building renovation programmes was taken from the official documents of EK.
- The average annual consumption for heating was taken from the household estimation model of the ODYSSEE energy efficiency database.
- The floor areas of average family houses and average dwellings were taken from the annual microcensus of KSH for the year 2005.
- The average consumption of family houses was calculated on the basis of the floor areas of family houses and average dwellings.
- The presumed savings rate gives an estimation of the average savings of domestic building renovations.

By multiplying the abovementioned factors we can get the total savings for all family houses included in the building renovation programme after performing the necessary conversions.

GRADUAL TIGHTENING OF PROVISIONS ON THE ENERGY PERFORMANCE OF BUILDINGS

- The number of newly built dwellings was taken from the annual dwelling statistics collected by KSH.
- The average annual consumption for heating was taken from the household estimation model of the ODYSSEE energy efficiency database.
- The presumed savings rate is calculated on the basis of the fact that provisions on the energy performance of buildings have become stricter and buildings can therefore be heated at less heating costs.

By multiplying the abovementioned factors we can get the savings for newly built dwellings after performing the necessary conversions.

THE DETERMINATION OF MINIMUM ENERGY EFFICIENCY REQUIREMENTS FOR HOUSEHOLD BOILERS AND THE OBLIGATORY PERIODICAL REVIEW THEREOF

- We assume that boiler efficiency per fuel type will increase by 1% per annum as a result of periodical boiler reviews.
- The number of dwellings per fuel type are taken from the annual microcensus of KSH for the year 2005.

National boiler efficiency was calculated by weighting boiler efficiency per fuel type with the number of dwellings using the given fuel.

SPREAD OF COMPACT LIGHT TUBES IN HOUSEHOLD LIGHTING TECHNOLOGY

- The energy use of energy-consuming household appliances and household lighting was taken from the household estimation model of the ODYSSEE energy efficiency database.
- In the absence of domestic statistics, we used Central European average values for estimating the share of household lighting.

The energy use of household lighting is the product of the two factors.

MAINTENANCE AND EXTENSION OF ROAD TOLL PAYABLE BY HEAVY ROAD VEHICLES:

- The energy consumption of trucks was taken from the ODYSSEE energy efficiency database.
- The share of trucks with more than 12 t load capacity was also taken from the ODYSSEE energy efficiency database.

The energy consumption of trucks with more than 12 t load capacity is the product of the two abovementioned factors.

The measurement of sectoral energy savings was carried out using TD indicators calculated according to the recommended methodology. As regards domestic TD indicators the preferred indicators can be calculated on the basis of available statistical data in the industrial, transportation and household sector, whereas in the tertiary sector only minimum indicators can be calculated due to a lack of sub-sectoral breakdowns. In the household sector the household energy input database only covers two years; therefore, we applied the decomposition model of ENERDATA on household end-use purposes. The determination of sectoral savings by TD indicators cannot be added to the results obtained with BU indicators; its purpose is to control the joint effects of individual measures. Available final statistical data allowed for the definition of TD indicators for the years 2008 and 2009, and preliminary data for the definition of those for the year 2010.

3.2. Energy saving measures in individual sectors

Based on the Guide of the European Commission issued for the ESD we describe below the specific measures and their purpose and the means necessary to achieve these purposes. We must note that we restructured the measures of the first NEEAP and we defined a new system of targets, measures and means. This was necessary mainly because:

- (a) in the course of drawing up the measures of the first NEEAP, **on some occasions energy savings were overestimated and costs were highly underestimated**; and
- (b) the connection points (New Széchenyi Plan, EU 2020, Renewable NEEAP and Energy Strategy) described in Chapter 1.1 made it necessary to draw up a new structure of measures in order to establish consistency.

We intend to implement all measures with the sufficient combination of **means of investment and horizontal means** (e.g. means to raise awareness, incentives, legislation, etc.); thus, we indicate these separately in the following tables.

3.2.1 Energy saving measures in the residential sector

Energy saving measure		Liveable Panel Dwellings Renovation Sub-Programme: mitigation of district heating demand in residential buildings built by industrialised technologies
Index of the measure		1.1.
	Aim/brief description	Complex investments in existing buildings (mainly built by industrialised technologies) supplied with district heating: insulation, replacement of doors and windows, metering-based billing, enabling the regulation of heating in every flat (room), operation of ventilation systems by solar panels, modernisation of heat centres, and heat pump and solar panel applications.
	Target end-use	Energy use of residential buildings built by industrialised technologies
	Target group	population
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Means of investment</u></p> <ul style="list-style-type: none"> - <u>Continuation of the GIS Climate-friendly Home Panel Sub-Programme</u> (tender mechanism, state ESCO) The primary objective of the Sub-Programme is climate protection achievable through energy savings, including the renovation of residential buildings constructed by industrialised technologies in a way so as to result in quantifiable emissions mitigation and energy savings, as well as the modernisation of their engineering systems and equipment. For the purposes of application the following can be regarded as industrialised residential buildings: residential buildings constructed through the use of panel, block, tunnel-mould, cast wall, reinforced concrete skeleton and other prefabricated technologies. - <u>Application of individual measurements and miniature heat centres in district heat supply</u> (tender mechanism, state ESCO) Act XVIII of 2005 on District Heat Supply allows for the measurement of the amount of heat at the heat reception station apart from measurements at the heat centre. The quantity of used district heat can be measured for each flat as well. The planned improvement of the heat centre measurement system, which can currently be regarded as commonly applied, involves the elaboration of the regulation of heating systems per flat and the measurement of heat quantity received per flat. Apart from possibly resulting in significant energy savings, this system will introduce consumer costs proportional to the amount of service. <p>Monitoring method: processing of tender databases and preparation of annual reports by ministerial order</p> <p><u>Horizontal means</u></p> <ul style="list-style-type: none"> - <u>Application and tightening of requirements of the energy performance of buildings</u>

Energy saving measure	Liveable Panel Dwellings Renovation Sub-Programme: mitigation of district heating demand in residential buildings built by industrialised technologies
Index of the measure	1.1.
	<p>According to TNM Decree No 7/2006 (V.24.) new requirements on the energy performance of buildings will be enforced regarding new buildings and the significant renovation of existing buildings with a total useful floor area over 1000 m² during the official authorisation procedure relating to construction. Besides the minimum requirements on the thermal transmittance of building envelopes there is a requirement on the total energy consumption of buildings, taking into account used energy sources. Provisions are around 30% stricter compared to previous heat requirements. In order to realise achievable savings, fulfilment of requirements must be monitored closely.</p> <p>The European Union has published the recast of Directive 2002/91/EC. Directive 2010/31/EU includes further restrictions, which must be transposed into the Hungarian legislation in the period between 2012 and 2013.</p> <ul style="list-style-type: none"> - <u>Spread of the practice of issuing energy performance certificates for buildings</u> Implementation of the provisions set forth in Directive 2002/91/EC of the European Parliament and of the Council, as a first part of which TNM Decree No 7/2006 on the specification of the energy-related characteristics of buildings, and Gov. Decree No 176/2008 (VI.30.) were created. The provisions of the latter apply as of 1 January 2009. As a result of the measure, energy-related certificates will be prepared for buildings or flats, which will also give a summary of the energy and energy efficiency characteristics of the building. This data sheet will make it possible for the owner of the building, or the buyer in the event of a change in ownership, to gain information quickly and efficiently about the energy efficiency characteristics of the building, which may influence their decision favourably. The application of Directive 2010/31/EU is expected to lead to further savings in this field. - <u>Operation of an energy efficiency consultancy network</u> The Government plans to perform the following activities via the network: <ul style="list-style-type: none"> • Information supply, consultancy and awareness-raising for the population, the local governments and the economic sector on the subject of investments in energy performance. • Information supply on investments realised from non-budgetary assistance and their capacity and volume to the Energy Statistics System via the green database. • Realisation of control and classification relating to investments in energy performance.

Energy saving measure	Liveable Panel Dwellings Renovation Sub-Programme: mitigation of district heating demand in residential buildings built by industrialised technologies
Index of the measure	1.1.
	<ul style="list-style-type: none"> • Practising of more efficient and more comprehensive tender coordination in this field. • Approval of the energy strategies of counties in accordance with the national strategy. • Optimisation of energy strategies and investments of counties according to the needs emerging in the country or in the macro-region and the available resources. • Supporting of county tender consultancy in the light of national and county energy strategies, regional energy demand and takeover potential. • Supplying of county offices with information and data. • Coordination of the establishment of the education and training system of the green economy. The organisation of training would be reasonable on regional level (in the Carpathian Basin), which would obviously facilitate regional market penetration as well. • Establishment of a knowledge base via awareness-raising and campaigns for the population, the local governments and economic participants, which would bring green technologies and economic rationalities directly affecting them closer to the population. • Organisation of online and offline awareness-raising campaigns in the course of which the population is familiarised with energy saving and renewable energy solutions and possibilities and adaptation methods to the consequences of climate change. • Organisation of national “road shows” and the editing of publications, through which we familiarise the population with green solutions, including technologies, innovations, processes and tender opportunities. • Coordination of the establishment and operation of a national energy efficiency auditing and monitoring system for the purpose of controlling the efficient utilisation of KEOP sources allocated for energy rationalisation. The system will show and certify CO₂ emission mitigation originating from energy efficiency investments, thus helping the sales of allowances in the Emissions Trading Scheme. <p>– <u>Drawing up of energy efficiency education and training materials</u></p>

Energy saving measure		Liveable Panel Dwellings Renovation Sub-Programme: mitigation of district heating demand in residential buildings built by industrialised technologies
Index of the measure		1.1.
		<p>The education and training system relating to energy performance will also be extended and reformed. Within the framework of the measure the establishment of a short-, medium- and long-term training system elaborated on the basis of a uniform green training syllabus and course material should be supported, which would be realised under an area-based consortium cooperation of training and traineeship facilities. Higher education and training facilities should be supported in organising the further training of specialised teachers and establishing the training requirements of traineeship facilities. Working out energy efficiency-related training materials for application in primary and secondary education. Education is the most efficient instrument in developing awareness. The appearance of energy efficiency in primary and secondary education will reflect the societal recognition of the role of energy efficiency. Government Decree No 243/2003 (XII. 17.) on the Issuing, Introduction and Application of National Core Curriculum and OM Decree No 17/2004 (V.20.) on the Issuing and Application of the Educational Plan includes the elements necessary for acquiring energy awareness. The curricula cover knowledge on intelligent energy use for all grades (grades 1–12). Elements concerning intelligent energy use have been incorporated into subjects on the knowledge of environment, knowledge of nature, physics, chemistry, geography, do-it-yourself and home economics. These educational forms have an effect on the energy use habits of the future generation and energy saving results will appear already in 2016.</p> <p>Monitoring method: Representative sampling surveys</p> <p>Target value of the measure for 2016: 9.82 PJ</p>
	Budget and financial source	Estimated cost: HUF 295.2 billion (for the period between 2008–2016) out of which resources originating from the European Union, allowance trading and auction incomes: HUF 100.2 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p><u>Connection between investment-type interventions:</u> 2.1. Mitigation of district heat demand in public institutions 2.2. Mitigation of the heat demand of public institutions with individual or central heating</p> <p><u>Connection between horizontal measures:</u> 1.2. Mitigation of the heat demand of residential buildings (family homes and multi-occupied</p>

Energy saving measure	Liveable Panel Dwellings Renovation Sub-Programme: mitigation of district heating demand in residential buildings built by industrialised technologies
Index of the measure	1.1.
	residential buildings) with individual or central heating 1.3. Mitigation of household electricity demand <u>Connection:</u> harmonised awareness-raising campaigns for the wide public; joint regulation; incentives

Energy saving measure	“Our Home” Renovation Sub-Programme: Mitigation of heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating	
Index of the measure	1.2.	
	Aim/brief description	Complex investments in existing buildings (mainly constructed by traditional technologies) with individual or central heating: insulation, replacement of doors and windows, modernisation of heat production (boilers), application of renewable energy production (heat pumps or solar panels)
	Target end-use	residential buildings not built by industrialised technologies, multi-occupied residential buildings and family homes with individual or central heating
	Target group	population
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Means of investment</u></p> <p>– <u>NEP programme of 2009 and the continuation of other energy efficiency improvement programmes for buildings, including assistance provided for within the framework of the Climate Friendly Home Panel Sub-Programme of the Green Investment Scheme.</u> The aim of the Climate Friendly Home Panel Sub-Programme initiated on 15 December 2009 from the resources of the Green Investment Scheme (GIS) is climate protection and the quantitative mitigation of CO₂ emissions by improving the energy use of residential buildings, through which the burdens of the population concerning energy would be reduced. The applicants for the GIS Climate Friendly Home Panel Sub-Programme are almost the same as the applicants for the previous NEP 2009 tender scheme. The GIS Climate Friendly Home Panel Sub-Programme supports wider modernisation activity with higher aid intensity (e.g. the construction of new energy-efficient houses). It is an essential requirement in the GIS Climate Friendly Home Panel</p>

Energy saving measure	“Our Home” Renovation Sub-Programme: Mitigation of heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating
Index of the measure	1.2.
	<p>Sub-Programme that after the investment buildings have substantially lower CO₂ emissions and higher energy efficiency than before.</p> <ul style="list-style-type: none"> - <u>Construction of new energy-efficient residential buildings:</u> Pursuant to Directive 2010/31/EU, Hungary has the obligation to take measures for constructing “nearly zero-energy buildings” when constructing new residential buildings and public buildings (Hungarian legal framework: TNM Decree No 7/2006 (V.24.) and amendment of Gov. Decree No 176/2008 (VI.30)). In order to achieve this purpose, it is necessary to support energy-efficient residential buildings (family homes and multi-occupied residential buildings), regarding which criteria on buildings are drawn up in order to comply with EU directives (in respect of both design and construction requirements and energy performance (energy efficiency and energy savings)). - <u>Complex energy-efficient renovation of residential buildings constructed by traditional technologies</u> These are investments with the purpose of energy efficiency improvement that also allow for utilising renewable energy sources, within the framework of which comprehensive intervention covering several simultaneous energy efficiency improvement activities can be carried out (e.g. insulation, replacement of doors and windows, technical building system renovation, modernisation of heat production, boiler replacement, etc.). These means also cover the replacement of boilers for improving energy efficiency. - <u>The determination of energy efficiency requirements for household boilers and the periodical review thereof</u> Pursuant to Directive 2010/31/EU Hungary has an obligation relating to the modernisation of heat production (heating-cooling) and air conditioning (climatising) equipment (Hungarian legal framework: amendment of Gov. Decree No 264/2008 (IX.06.)). In order to achieve this purpose, it is necessary to install highly efficient heaters (condensing boilers) with the intention to replace aged traditional boilers with an age of more than 15–20 years operating with low efficiency and having harmful environmental effects. <p>Monitoring method: processing of tender databases and preparation of annual reports by ministerial order</p>

Energy saving measure	<p>“Our Home” Renovation Sub-Programme: Mitigation of heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating</p>
Index of the measure	1.2.
<p><u>Horizontal means</u></p> <ul style="list-style-type: none"> - <u>The consistent application and control of provisions on the requirements of the energy performance of buildings, the gradual tightening of provisions on the energy performance of buildings and the spread of the practice of issuing energy performance certificates for buildings</u> According to TNM Decree No 7/2006 (V.24.) new requirements on the energy performance of buildings will be enforced regarding new buildings and the significant renovation of existing buildings with a total useful floor area over 1000 m² during the official authorisation procedure relating to construction. Besides the minimum requirements on the thermal transmittance of building envelopes there is a requirement on the total energy consumption of buildings, taking into account used energy sources, . Provisions are around 30% stricter compared to previous heat requirements. In order to realise achievable savings fulfilment of requirements must be monitored closely. The European Union has published the recast of Directive 2002/91/EC. Directive 2010/31/EU includes further restrictions, which must be transposed into the Hungarian legislation in the period between 2012 and 2013. - <u>Operation of an energy efficiency consultancy network</u> The Government plans to perform the following activities via the network: <ul style="list-style-type: none"> • Information supply, consultancy and awareness-raising for the population, the local governments and the economic sector on the subject of investments in energy performance. • Information supply on investments realised from non-budgetary assistance and their capacity and volume to the Energy Statistics System via the green database. • Realisation of control and classification relating to investments in energy performance. • Practising of more efficient and more comprehensive tender coordination in this field. • Approval of the energy strategies of counties in accordance with the national strategy. • Optimisation of energy strategies and investments of counties according to the needs emerging in the country or in the macro-region and the available resources. 	

Energy saving measure	“Our Home” Renovation Sub-Programme: Mitigation of heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating
Index of the measure	1.2.
	<ul style="list-style-type: none"> • Supporting of county tender consultancy in the light of national and county energy strategies, regional energy demand and takeover potential. • Supplying of county offices with information and data. • Coordination of the establishment of the education and training system of the green economy. The organisation of training would be reasonable on regional level (in the Carpathian Basin), which would obviously facilitate regional market penetration as well. • Establishment of a knowledge base via awareness-raising and campaigns for the population, the local governments and economic participants, which would bring green technologies and economic rationalities directly affecting them closer to the population. • Organisation of online and offline awareness-raising campaigns in the course of which the population is familiarised with energy saving and renewable energy solutions and possibilities and adaptation methods to the consequences of climate change. • Organisation of national road shows and the editing of publications, through which we familiarise the population with green solutions, including technologies, innovations, processes and tender opportunities. • Coordination of the establishment and operation of a national energy efficiency auditing and monitoring system for the purpose of controlling the efficient utilisation of KEOP sources allocated for energy rationalisation. The system will show and certify CO₂ emission mitigation originating from energy efficiency investments, thus helping the sales of allowances in the Emissions Trading Scheme. <p>– <u>Energy efficiency education and training materials</u> The education and training system relating to energy performance will also be extended and reformed. Within the framework of the measure the establishment of a short-, medium- and long-term training system elaborated on the basis of a uniform green training syllabus and course material should be supported, which would be realised under an area-based consortium cooperation of training and traineeship facilities. Higher education and training facilities should be supported in organising the further training of specialised</p>

Energy saving measure		“Our Home” Renovation Sub-Programme: Mitigation of heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating
Index of the measure		1.2.
		<p>teachers and establishing the training requirements of traineeship facilities. Working out energy efficiency-related training materials for application in primary and secondary education. Education is the most efficient instrument in developing awareness. The appearance of energy efficiency in primary and secondary education will reflect the societal recognition of the role of energy efficiency. Government Decree No 243/2003 (XII. 17.) on the Issuing, Introduction and Application of National Core Curriculum and OM Decree No 17/2004 (V.20.) on the Issuing and Application of the Educational Plan includes the elements necessary for acquiring energy awareness. The curricula cover knowledge on intelligent energy use for all grades (grades 1–12). Elements concerning intelligent energy use have been incorporated into subjects on the knowledge of environment, knowledge of nature, physics, chemistry, geography, do-it-yourself and home economics. These educational forms have an effect on the energy use habits of the future generation and energy saving results will appear already in 2016.</p> <p>– <u>Eco labelling of household boilers, gas boilers and air conditioners</u> The major part of household fuel use is accounted for by energy demand for space and water heating purposes, and within electricity demand the energy use of air conditioners is on the increase. The introduction of labels provides great help for consumers, enabling them to choose energy-saving appliances when purchasing new ones or replacing existing ones. The drafting of relevant legislation is a requirement for the introduction of labelling.</p> <p>Monitoring method: Representative sampling survey</p> <p><u>Target value of the measure for 2016: 8.21 PJ</u></p>
	Budget and financial source	Estimated cost: HUF 233.6 billion (for the period between 2008–2016) out of which resources originating from the European Union, allowance trading and auction incomes: HUF 61.3 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.
	Monitoring authority	Ministry of National Development

Energy saving measure	“Our Home” Renovation Sub-Programme: Mitigation of heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating
Index of the measure	1.2.
Overlaps, multiplication effect, synergy	<p><u>Connection between investment-type interventions:</u> 2.2. Mitigation of the heat demand of public institutions with individual or central heating</p> <p><u>Connection between horizontal measures:</u> 1.3. Mitigation of household electricity demand</p> <p><u>Connection:</u> harmonised awareness-raising campaigns for the wide public; joint regulation; incentives</p>

Energy saving measure		Electricity-Efficient Households Programme: Mitigation of household appliance electricity demand.
Index of the measure		1.3.
	Aim/brief description	Lighting, household appliances, stand-by consumption, smart metering – smart grid systems,
	Target end-use	electricity use of residential buildings
	Target group	population
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p>Means of investment</p> <ul style="list-style-type: none"> – <u>Spread of energy-efficient lighting equipment and light sources</u> Energy consumption for lighting constitutes less than 10% of household electricity use; however, its importance is far higher from the point of view of electric power management. Currently Hungarian households use energy-saving compact light tubes and other energy-saving lighting devices (LED, halogen) only in a very low proportion. Since the distribution of traditional light bulbs will be terminated as of the end of 2012, it is necessary to accelerate the spread of energy-saving lighting devices and relevant information. <p>Monitoring method: processing of tender databases and preparation of annual reports by ministerial order</p> <p>Horizontal means</p> <ul style="list-style-type: none"> – <u>Energy efficiency labelling of household electric boilers</u> Most Hungarian households use electric or gas boilers for hot water supply. The energy efficiency labelling of such appliances allows for the orientation of consumers towards purchasing and using energy-saving models. The introduction of labelling makes it necessary to draft the relevant legislation. – <u>Preparation of energy efficiency-related training materials for application in primary and secondary education. Operation and development of an energy efficiency consultancy network</u> Education plays an important role in forming the energy awareness of society. The integration of the topic of energy efficiency into education is necessary for primary and secondary school students; however, this topic has to appear in all forms of training where aspects of energy efficiency have to be enforced during the performance of work.

Energy saving measure		Electricity-Efficient Households Programme: Mitigation of household appliance electricity demand.
Index of the measure		1.3.
		<p>It is a frequent problem during the preparation of energy-saving tenders that applicants do not have the necessary professional and tendering skills regarding energy performance. It also poses a problem that energy-saving possibilities, technical solutions, support programmes and relevant information do not reach energy consumers and potential applicants regularly. Therefore, it is necessary to establish and operate an energy efficiency consultancy network, which is suitable for the successful information and aiding of energy consumers and the creation and preparation of projects.</p> <p>Monitoring method: Representative sampling surveys</p> <p>Target value of the measure for 2016: 2.97 PJ</p>
	Budget and financial source	Estimated cost: HUF 7.1 billion (for the period between 2008–2016) out of which resources originating from the European Union, allowance trading and auction incomes: HUF 3.81 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p>Connection between investment-type interventions:</p> <p>1.1. Mitigation of the district heating demand of residential buildings built by industrialised technologies</p> <p>1.2. Mitigation of the heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating</p> <p>Connection between horizontal measures:</p> <p>1.1. Mitigation of the district heating demand of residential buildings built by industrialised technologies</p> <p>1.2. Mitigation of the heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating</p> <p>2.3. Mitigation of the electricity demand of public buildings</p> <p>Connection: harmonised awareness-raising campaigns for the wide public and public institutions; joint regulation; incentives</p>

3.2.2 Energy saving measures in the public institutions sector

Energy saving measure		Renewable Public Institutions Sub-Programme: mitigation of the heat demand of public buildings through complex energy-efficient investments
Index of the measure		2.1.
	Aim/brief description	Complex investments in buildings supplied with district heating (mainly built by industrialised technologies) and buildings with individual or central heating: insulation, replacement of doors and windows, metering-based billing, modernisation of heat centres, and heat pump and solar panel applications
	Target end-use	Energy use of public institutions (e.g. schools, kindergartens, cultural facilities)
	Target group	state and municipal public institutions
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Means of investment</u></p> <ul style="list-style-type: none"> - <u>Energy-saving renovation of public institutions (New Széchenyi Plan tender mechanism)</u> The energy-efficiency development of public institutions is a priority within the framework of the New Széchenyi Plan (in accordance with EU directives). SMEs and local governments can conduct developments of the energy performance of buildings combined with renewable energy sources via the New Széchenyi Plan and KEOP schemes. <p>Monitoring method: processing of tender databases and preparation of annual reports by ministerial order</p> <p><u>Horizontal means</u></p> <ul style="list-style-type: none"> - <u>Promotion of ESCO-type investments by regulatory means</u> In the ESCO scheme the achievable energy savings cover the debt service of the bank loan taken up for the investment. ESCO investments are investments in the modernisation of the energy performance of buildings realised within the enterprise and financed by long-term energy service (10 to 15 years) combined with energy cost savings guaranteed within the framework of operation. - <u>Local government training, awareness-raising and consultancy.</u> Establishment of a consultancy network operating within the framework of an energy-agency system and long-term energy performance training scheme based on the experience of the local government energy efficiency programme under Sub-Programme 6 of the New Széchenyi Plan. Energy-awareness can be realised in the public sector with the help of the network.

Energy saving measure		Renewable Public Institutions Sub-Programme: mitigation of the heat demand of public buildings through complex energy-efficient investments
Index of the measure		2.1.
		<p>Monitoring method: Representative sampling surveys</p> <p><u>Target value of the measure for 2016: 13.55 PJ</u></p>
	Budget and financial source	Estimated cost: HUF 570.8 billion (for the period between 2008–2016), out of which resources originating from the European Union, allowance trading and auction incomes: HUF 370.08 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p><u>Connection between investment-type interventions:</u></p> <p>1.1. Mitigation of the district heating demand of residential buildings built by industrialised technologies</p> <p>1.2. Mitigation of the heat demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating</p> <p>2.2. Mitigation of the heat demand of public institutions with individual or central heating</p> <p><u>Connection between horizontal measures:</u></p> <p>1.3. Mitigation of household electricity demand</p> <p>2.3. Mitigation of the electricity demand of public institutions</p> <p><u>Connection:</u> harmonised awareness-raising campaigns for the public and the wide public institutional network; joint regulation; incentives</p>

Energy saving measure		Mitigation of the electricity demand of public institutions
Index of the measure		2.2.
	Aim/brief description	Lighting, office equipment, stand-by consumption, smart metering – smart grid systems,
	Target end-use	Electricity use of public institutions (e.g. schools, kindergartens, cultural facilities)

	Target group	state and municipal public institutions
Information on implementation, Energy savings	List and description of means realising the purpose of investment and the control/measurement of resulted savings	<p><u>Investment measures</u></p> <ul style="list-style-type: none"> - <u>Energy-saving renovation of public institutions (New Széchenyi Plan tender mechanism)</u> The Renewable Public Institution Sub-Programme operating within the framework of the Development of Green Economy Programme of the New Széchenyi Plan covers central budgetary and local governmental public institutions as well. Several EU Directives in effect stipulate the exemplary role of the public sector's frequented buildings in the field of energy efficiency (Directives 2002/91/EC, 2006/32/EC, 2009/28/EC); therefore, it is important that complex buildings renovations initiated within the framework of the Sub-Programme also cover the mitigation of electricity use. - <u>Encouragement of the reduction of energy use in Regional Operational Programmes</u> ROP assistance target groups are primarily represented by local municipalities, institutions, churches and civil organisations; moreover, in the case of social-type town rehabilitation, they include residential energy-saving investment projects that can be financed in the joint ownership sections of panel buildings. Activities eligible for support include the reduction of the energy consumption of institutions and public buildings, modernisation of outdoor and indoor lighting systems, improvement of the heating capabilities of buildings through subsequent heat insulation and the replacement of external doors and windows, modernisation of secondary energy supply systems and reduction of the amount of energy used for street lighting. Thus, these programmes contribute to the reduction of the electricity use of public institutions. <p>Monitoring method: processing of tender databases and preparation of annual reports by ministerial order</p> <p><u>Horizontal means</u></p> <ul style="list-style-type: none"> - <u>Municipality-level training, awareness raising and consulting on the basis of experiences from the UNDP/GEF municipal energy efficiency programme</u>

		<p>During its operation the UNDP/GEF project supported the energy-saving examination of more than one thousand public institutions and the drawing up of feasibility studies in some cases via 235 tenders, which was followed by the initiation of investment projects. The financial framework of the programme was USD 1.2 million. By using the experience and the relationship network gained via the realisation of the programme it will be possible to initiate an energy efficiency awareness-raising and training programme covering a wide range of local governments.</p> <p>– <u>Elaboration of minimum energy efficiency requirements concerning office equipment</u> The energy use of office equipment constitutes a significant amount of the electricity use of public institutions. The total power of equipment used in an average office (desk lamp, computer, monitor, printer, telephone, fax, copy machine) for older machines is 400W; approximately 60% of this energy could be saved with modern equipment. This justifies that the determination of energy efficiency requirements must be extended to office equipment as well.</p> <p>Monitoring method: Representative sampling surveys</p> <p><u>Target value of the measure for 2016: 1.20 PJ</u></p>
	Budget and financial source	Estimated cost: HUF 10 billion (for the period between 2008–2016), out of which resources originating from the European Union, allowance trading and auction incomes: HUF 10 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p><u>Connection between investment-type interventions:</u> 2.1. Mitigation of the district heat demand in public institutions 2.2. Mitigation of the heat demand of public institutions with individual or central heating</p> <p><u>Connection between horizontal measures:</u> 1.3. Mitigation of household electricity demand</p> <p><u>Connection:</u> harmonised awareness-raising campaigns for a wide range of the public and public institutions; joint regulation; incentives</p>

3.2.3 Energy saving measures in the productive (industrial, agricultural and SMEs) sector

Energy saving measure		District Heating Efficiency Sub-Programme: Improvement of the efficiency of energy transmission and distribution
Index of the measure		3.1.
	Aim/brief description	Development of primary-side interventions in district heating systems
	Target end-use	Network and distribution losses of district heat supply systems
	Target group	District heating sector
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Investment interventions:</u></p> <ul style="list-style-type: none"> – <u>Renovation of district heat supply systems and increasing the competitiveness of district heat supply.</u> The realisation of primary-side transformation is of primary concern, and will involve the modernisation of heat supply pipe systems and primary heat reception and heat distribution centres and the establishment of modern measurement, data collection and regulatory processes for the sake of energy efficiency. <p>Monitoring method: Representative sampling surveys</p> <p><u>Target value of the measure for 2016: 2.0 PJ</u></p>
	Budget and financial source	Estimated cost: HUF 107.2 billion (for the period between 2008–2016), out of which resources originating from the European Union, allowance trading and auction incomes: HUF 37.52 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p>1.1. Mitigation of the district heating demand of residential buildings built by industrialised technologies</p> <p>2.1. Mitigation of district heat demand in public institutions</p> <p><u>Connection between horizontal measures:</u></p> <p>1.3. Mitigation of household electricity demand</p> <p>2.3. Mitigation of the electricity demand of public institutions</p> <p><u>Connection:</u> harmonised awareness-raising campaigns; joint regulation;</p>

Energy saving measure		Mitigation of the energy use of enterprises
Index of the measure		3.2.
	Aim/brief description	The mitigation of the energy use of enterprises, the minimisation of energy losses and the improvement of energy efficiency and competitiveness.
	Target end-use	Energy use of enterprises for technical and non-technical purposes (space heating, hot water supply, etc.).
	Target group	Industry (including SMEs in particular), and food industry, automobile industry and IT industry have priority
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Means of investment</u></p> <ul style="list-style-type: none"> – <u>Technological modernisation of SMEs</u> (e.g. waste heat utilisation, improvement of electric engine efficiency, New Széchenyi Plan grant and credit with a favourable interest) Reduction of the losses of energy use for technical purposes (industrial furnaces, other industrial heat utilising equipment, ventilators, pumps, materials handling, etc.) and the realisation of energy-efficient heat utilisation (exhaust gas, flash steam, condensed water, etc.). Enterprises can conduct developments for the energy performance of buildings combined with traditional and renewable energy sources via the New Széchenyi Plan and KEOP schemes. – <u>Energy-saving renovation of industrial buildings</u> – <u>Energy-saving renovation of agricultural buildings</u> – Production of agricultural energy from renewable energy sources (biomass furnaces) (within the framework of the New Hungary Rural Development Programme) – <u>Energy-saving renovation of other buildings used for economic purposes (services, trade)</u> (New Széchenyi Plan grant, credit with a favourable interest) <p>Monitoring method: processing of tender databases and preparation of annual reports by ministerial order</p> <p><u>Horizontal means</u></p> <ul style="list-style-type: none"> – <u>Employment of energy experts at large energy consumers:</u> At large energy consumers, improvement of the standard of energy management usually results in significant energy savings. However, employing an energy expert having the necessary qualifications is an essential requirement.

Energy saving measure		Mitigation of the energy use of enterprises
Index of the measure		3.2.
		<ul style="list-style-type: none"> – <u>Mandatory energy consumption reports of large consumers:</u> Most companies with high energy consumption prepare a mandatory report on their energy use (energy balance of the industrial sector) for statistical purposes on a yearly basis within the framework of the National Statistical Data Collection Programme (KSH) regulated by Gov. Decree No 257/2010 (XI.9.). Efforts should be made for the correction and expansion of information relating to energy savings and energy efficiency during the development of the data collection system. – <u>Voluntary agreements (performance of audits, energy conservation)</u> According to the programmes of the New Széchenyi Plan the monitoring system must be established with the conclusion of voluntarily undertaken agreements and audits periodically monitoring implementation processes in order to achieve energy-saving targets. The objectives are to make industrial energy efficiency measurable, to standardise the audit and monitoring systems which are aimed at the more efficient use of energy by industrial participants, to establish a motivating regulatory framework and acknowledgement system and to conclude agreements aimed at long-term voluntary commitments guided by international examples. <p>Monitoring method: preparation of reports and data processing, tendering databases</p> <p><u>Target value of the measure for 2016: 11.05 PJ</u></p>
	Budget and financial source	Estimated cost: HUF 171.6 billion (for the period between 2008–2016), out of which resources originating from the European Union, allowance trading and auction incomes: HUF 34.32 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p><u>Connection between investment-type interventions:</u> 2.1. Mitigation of district heat demand in public institutions</p> <p><u>Connection between horizontal measures:</u> 2.2. Mitigation of the electricity demand of public institutions</p> <p><u>Connection:</u> harmonised awareness-raising campaigns in a wide range of industry; joint</p>

Energy saving measure	Mitigation of the energy use of enterprises
Index of the measure	3.2.
	regulation; incentives

3.2.4 Energy saving measures in the transportation and shipping sector¹⁰

Energy saving measure		Reduction and containment of energy consumption in the transportation and shipping sector by mitigating demand
Index of the measure		4.1.
	Aim/brief description	Alteration of transport habits, mitigation of energy consumption
	Target end-use	Energy use for transportation and shipping purposes
	Target group	Transportation sector
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p>Means of investment:</p> <ul style="list-style-type: none"> – <u>Development of cycle lanes</u> The promotion of regional development and the improvement of living standards of the regions' and settlements' population are among the objectives of the Transport Operational Programme 2007–2013. A means of this development could be the development of bicycle facilities, which would also enhance transport safety and would allow for the spread of bicycle use for commuting. The aim of the tender scheme entitled "Development of the cycle lane network" is to construct interurban cycle lanes, lanes for commuting and bicycle facilities, to establish and extend the regional cycle transport infrastructure, to ensure connection with national and international cycle lane networks as well as to organise existing elements into a network. – <u>Establishment of low-traffic zones:</u> The establishment of such zones may give rise to an environmentally friendly and energy-aware behaviour in which "Green aspects" would be preferred. Highly air pollutant "heavy vehicles" will be excluded gradually from zones that ensure liveable surroundings. – <u>Maintenance and extension of road toll payable by heavy road vehicles</u> With the change of the tariff system the State will grant less support from general tax revenues to the operation and maintenance of the road infrastructure compared to current rates, and users will make an (increasingly) larger contribution proportional to their road use. A future objective is for road infrastructure maintenance to be financed completely

¹⁰ In order to determine the measure-level energy saving target values and cost estimation of the transportation and shipping sector a Transport Energy Efficiency Improvement Action Plan will be drawn up within the framework of the New National Transportation Strategy by 31 December 2012. All information in this table must be regarded as **preliminary information**, and will be specified in more detail in the Transport Energy Efficiency Improvement Action Plan.

Energy saving measure		Reduction and containment of energy consumption in the transportation and shipping sector by mitigating demand
Index of the measure		4.1.
		<p>from the tariffs collected directly from road users. Consultations are still being held within the EU on the subject of turning externalities into tariffs, and the future application of this system – if it is extended to congestions – may result in significant energy efficiency improvement.</p> <p><u>Horizontal means</u></p> <p>– <u>Environmentally friendly transport campaigns (e.g. European Mobility Week, European Car Free Day, Bam! - Cycle To Work! campaigns):</u> Events designed to strengthen the environmental awareness of society that strive to draw the attention of residents and the city management to environmental, accident and city planning problems caused by increased car traffic, encourage a responsible choice of means of transport; demonstrate the advantages of sustainable, environmentally friendly and philanthropic city transportation and highlight the necessity to develop public, cycle and pedestrian transport. One of the long-term objectives of the campaigns is to persuade citizens usually travelling to work, school or to spend free-time activities by car to use alternative, sustainable means of transport for travelling, thereby contributing to the gradual reduction of air pollutant emissions.</p> <p><u>Target value of the measure for 2016: 1.80 PJ</u></p>
	Budget and financial source	Estimated cost: n.a. out of which resources originating from the European Union, allowance trading and auction incomes: n.a. (see point 6 of the Chapter on Findings)
	Implementing body	n.a.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p><u>Connection between investment-type interventions:</u> 4.3 Development of public transport systems</p> <p><u>Connection between horizontal measures:</u> 4.4 Fuel efficiency improvement of the existing vehicle fleet</p> <p><u>Connection:</u> harmonised awareness-raising campaigns for a wide range of the transportation sector; joint regulation; incentives</p>

Energy saving measure		Railway development
Index of the measure		4.2.
	Aim/brief description	The mitigation of energy consumption for transport purposes with the aid of diverting shipping and transportation activities from roads to the railway
	Target end-use	Energy use for transportation purposes
	Target group	Transportation sector
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Investment interventions</u></p> <ul style="list-style-type: none"> – <u>Railway electrification, modernisation of the railway infrastructure</u> According to the Transport Operational Programme 2007–2013 approx. 500 km of railway line could be modernised (including suburban lines) as a result of EU developments together with the relevant information technology, security and management tools. We expect that the competitiveness and market position of railway transport, whose energy efficiency is higher than that of road transport, will improve as a result of such developments. Our other aim is to achieve further energy savings based on the fact that railway infrastructures with a higher axle load allow for the transport of larger units of cargo. Currently two projects are planned that relate to energy savings directly: Budapest–Esztergom line and Győr – Pápa – Celldömök line. – <u>Procurement of new energy-efficient locomotives:</u> Within the framework of the Transport Operational Programme and Green public procurement the plan is to purchase mainly electric energy-efficient and energy-saving locomotives, which will replace polluting diesel locomotives and energy-wasting electric locomotives. <p><u>Horizontal means</u></p> <ul style="list-style-type: none"> – <u>Campaign for the publicity of railway transport:</u> In order to popularise and utilise energy-efficient (environmentally friendly and reliable) electric locomotives, publicity campaigns and programmes will be organised to achieve that people prefer railway transport to passenger cars and trucks (e.g. the organisation of car free days in passenger transport). <p><u>Target value of the measure for 2016: 0.90 PJ</u></p>

Energy saving measure		Railway development
Index of the measure		4.2.
	Budget and financial source	Estimated cost: n.a. out of which resources originating from the European Union, allowance trading and auction incomes: n.a. (see point 6 of the Chapter on Findings)
	Implementing body	n.a.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<u>Connection between investment-type interventions:</u> 4.3 Development of public transport systems <u>Connection between horizontal measures:</u> 4.4 Fuel efficiency improvement of the existing vehicle fleet Connection: harmonised awareness-raising campaigns for a wide range of the transportation sector; joint regulation; incentives

Energy saving measure		Development of public transport systems
Index of the measure		4.3.
	Aim/brief description	The diversion of transport activities to public transport with the aid of public transport system development, thereby mitigating energy consumption for transport purposes
	Target end-use	Energy use for transportation purposes
	Target group	Transportation sector (public transportation sector)
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<u>Investment interventions</u> <ul style="list-style-type: none"> – <u>P+R system for energy-efficient personal transportation</u> Thanks to the measure, safe car parks and parking lots will be established near the public transport system on boundary points of the inner city at the main parts of the country. The parking facilities can be used free of charge or at a significant discount if the driver utilises them in a P+R system. In order to monitor this, an integrated electronic ticket and pass system should be introduced, which can be used to check whether the driver indeed uses public transportation after parking. – <u>Bus replacement programme</u> <i>BKV bus replacement programme:</i> Budapest Transport Company plans to purchase approx. 1000 new buses, and also plans to modernise its IK412 and IK415 buses within the framework of the Domestic Bus Reconstruction Programme. This decision would

Energy saving measure		Development of public transport systems
Index of the measure		4.3.
		<p>influence annual emissions significantly, because engines falling under the Euro 5 norm would be built in these buses under the programme.</p> <p><i>Volán bus replacement programme:</i> Compared to 15–20-year-old buses, bus types commissioned in the past 6 to 8 years have approx. 10% to 20% lower consumption levels depending on the category based on the fuel consumption data of buses operated by Volán companies. Around HUF 2 billion in energy savings could be achieved annually with the replacement of approx. 1700 buses above the age of 15, which have the highest consumption levels.</p> <p>According to legal provisions, all public procurement tenders will include the provisions laid down in Gov. Decree No 48/2011 (III.30.) on the Promotion of the Purchase of Environmentally Friendly and Energy-Efficient Road Vehicles.</p> <p><u>Horizontal means</u></p> <ul style="list-style-type: none"> – <u>Publicity of public transportation</u> In order to popularise and utilise energy-efficient (environmentally friendly and reliable) means of transport, publicity campaigns and programmes will be organised to achieve that people prefer public transport to passenger cars (e.g. the organisation of car free days in passenger transport). <p><u>Target value of the measure for 2016: 0.6 PJ</u></p>
	Budget and financial source	Estimated cost: n.a. out of which resources originating from the European Union, allowance trading and auction incomes: n.a. (see point 6 of the Chapter on Findings)
	Implementing body	n.a.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p><u>Connection between investment-type interventions:</u></p> <p>4.1 Reduction and containment of energy consumption in the transportation and shipping sector by mitigating demand</p> <p>4.2 Railway development</p> <p><u>Connection between horizontal measures:</u></p> <p>4.4 Fuel efficiency improvement of the existing vehicle fleet</p> <p><u>Connection:</u> harmonised awareness-raising campaigns; transportation incentives</p>

Energy saving measure		Development of public transport systems
Index of the measure		4.3.
Energy saving measure		Fuel efficiency improvement of the existing vehicle fleet
Index of the measure		4.4.
	Aim/brief description	The mitigation of the fuel use of road vehicles and the improvement of the efficiency thereof, the increase of the share of biofuels in fuel use
	Target end-use	Energy use for transportation purposes
	Target group	Transportation sector
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Investment interventions</u></p> <p>– <u>Development of car plants, “product development incentive” (without state aid):</u> Putting manufacturers and suppliers of cars propelled by renewable fuel in a competitive position in the interest of environmental impact and job creation.</p> <p><u>Target value of the measure for 2016: 1.30 PJ</u></p>
	Budget and financial source	Estimated cost: n.a. out of which resources originating from the European Union, allowance trading and auction incomes: n.a. (see point 6 of the Chapter on Findings)
	Implementing body	n.a.
	Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy		<p><u>Connection between investment-type interventions:</u> 4.1 Reduction and containment of energy consumption in the transportation and shipping sector by mitigating demand</p> <p><u>Connection between horizontal measures:</u> 4.3 Development of public transport systems</p> <p><u>Connection:</u> harmonised awareness-raising campaigns for a wide range of the transportation sector; joint regulation; incentives</p>

3.2.5 Horizontal and other energy saving measures

Energy saving measure		5. Cross-sectoral and other horizontal means
Index of the measure		5.
	Aim/brief description	Energy efficiency improvement through green public procurement and through the establishment of an informational system presenting good practices
	Target end-use	Building energy use, technological energy use, transport energy use, electricity use
	Target group	Residential, industrial, institutional and transportation sector
Information on implementation, Energy savings	List and description of energy saving actions substantiating the measure and the method for monitoring/measuring the resulting savings	<p><u>Horizontal means</u></p> <ul style="list-style-type: none"> – <u>Green public procurement: energy efficiency information, criteria in public procurement procedures</u> Act CXXIX of 2003 on Public Procurement, harmonised with Directive 2004/17/EC of the European Parliament and of the Council, describes the legal regulation of public procurements in Hungary, including green public procurements. “Green” public procurement is governed by Article 58 of this Act, according to which the issuer may define environmental requirements in the public procurement technical specification. Member States have the obligation to prepare a National Action Plan, taking into account the guidelines of the European Commission, for the promotion of green public procurement. The draft Hungarian action plan is about to be approved; it is planned to be introduced by 2011. <p>Guidelines should be elaborated to facilitate that public procurement procedures include an objectively measurable set of energy efficiency and environmental aspects and a related economic assessment. Investments in state and municipal buildings must be handled with priority and special attention must be paid to meeting the minimum energy requirements regarding buildings in this field.</p> <p>Issuers must take into account the aspects of resource and energy efficiency, dematerialisation and the mitigation of greenhouse gas emissions in all phases of the public procurement procedure. The purpose of this is to ensure that the public procurement system encourages the spread of environmentally friendly technologies and the manufacturing of eco-friendly products by searching for and preferring solutions with the least possible environmental impact during the life-cycle of the given product/service. Sustainability aspects interpreted under the principle of sustainability presume that the bidder is able to identify sustainability aspects applied during evaluation based on clear and unambiguous criteria.</p>

Energy saving measure		5. Cross-sectoral and other horizontal means
Index of the measure		5.
		<p>Sustainability aspects must be taken into account:</p> <ul style="list-style-type: none"> – when determining the subject of procurement; – in the technical specifications; – in the scope of technical and professional eligibility criteria; and – among assessment aspects. <ul style="list-style-type: none"> – <u>Information exchange, platform on good practices in energy saving</u> The creation of an open database under the industrial energy efficiency programme, from which energy-consultants, investors, local governments, SMEs, large companies, etc. can obtain structured and thematic information on the planning, organisation and economic-financial relations of energy saving projects as well as the experience of realised projects (“good practices”) – <u>Strengthening and harmonisation of R+D+I activities relating to sustainable energy management</u> The harmonisation of EU or state-funded R+D and basic and applied research tenders in order to strengthen the R+D+I activity of domestic research institutes, higher education institutions and SMEs – <u>Formulation of cooperation mechanisms with energy service providers to strengthen their DSM activity</u> Energy service providers must dispose of several means to facilitate the mitigation of final energy consumption. One of these means is the operation of consumer consultancy offices, where energy consumers can receive practical advice on the possibilities to reduce their energy use. Other means include the presentation and publicity of energy-saving products and technologies, etc. The requirements for concluding a service contract with energy consumers must be set in a way that they encourage consumers to achieve energy savings and the mitigation of used power. <p>Monitoring method: Public procurement databases, representative sampling surveys</p> <p>Target value of the measure for 2016: 4.00 PJ</p>
	Budget and financial source	Estimated cost: HUF 0.20 billion (for the period between 2008–2016), out of which resources originating from the European Union, allowance trading and auction incomes: HUF 0.20 billion
	Implementing body	EK Nkft. and/or ÉMI Nkft.

Energy saving measure	5. Cross-sectoral and other horizontal means
Index of the measure	5.
Monitoring authority	Ministry of National Development
Overlaps, multiplication effect, synergy	<p><u>Connection between investment-type interventions:</u> 1. Residential sector, 2. Public sector, 3. Industrial Sector, 4. Transportation and shipping</p> <p><u>Connection:</u> harmonised awareness-raising campaigns in a wide range of residential, public institution, industrial and transportation sectors</p>

3.3. Summary of overall final energy savings

	Sector/measure	means	Achieved energy savings until 2010 ¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
TOTAL:			12.25	57.4	617.4	1395.8
1. Residential			4.09	21.00	165.29	535.97

¹¹ Source: Energiaközpont Nonprofit Kft

	Sector/measure	means	Achieved energy savings until 2010¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
1.1.	Liveable Panel Dwellings Renovation Sub-Programme: mitigation of district heating demand through energy-efficient investments in residential buildings built by industrialised technologies	<p><i>Means of investment:</i></p> <ul style="list-style-type: none"> – Continuation of the GIS Climate-Friendly Home Panel Sub-Programme (tender mechanism, state ESCO) – Application of individual measurements and miniature heat centres in district heat supply (tender mechanism, state ESCO) <p><i>Horizontal means:</i></p> <ul style="list-style-type: none"> – Application and tightening of requirements of the energy performance of buildings – Spread of the practice of issuing energy performance certificates for buildings – Operation of an energy efficiency consultancy network – Drawing up of energy efficiency education and training materials 		9.82	100.2	295.2

	Sector/measure	means	Achieved energy savings until 2010¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
1.2.	<p>“Our Home” Renovation Sub-Programme: mitigation of the heating demand of residential buildings (family homes and multi-occupied residential buildings) with individual or central heating through complex energy-efficient investment, Building New Green Homes Sub-Programme: Construction of new energy-efficient houses (categories A, A+, A++)</p>	<p><i>Means of investment:</i></p> <ul style="list-style-type: none"> – Continuation of GIS Climate-Friendly Home Energy Efficiency Sub-Programme (tender mechanism for building renovation, boiler replacement and new construction in the form of complex energy rationalisation investments) <p><i>Horizontal means:</i></p> <ul style="list-style-type: none"> – Application and tightening of requirements of the energy performance of buildings – Setting and review of minimum energy requirements of household boilers – Spread of the practice of issuing energy performance certificates for buildings – Operation of an energy efficiency consultancy network – Drawing up of energy efficiency education and training materials – Eco labelling of household boilers, gas boilers and air conditioners 		8.21	61.3	233.6

	Sector/measure	means	Achieved energy savings until 2010¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
1.3.	Electricity-Efficient Households Programme: Mitigation of household electricity demand	<p><i>Means of investment:</i></p> <ul style="list-style-type: none"> – Spread of energy-efficient lighting equipment and light sources <p><i>Horizontal means:</i></p> <ul style="list-style-type: none"> – Energy-efficiency labelling of household electric boilers – Drawing up of energy efficiency education and training materials – Operation and development of an energy efficiency consultancy network 		2.97	3.81	7.1
2. Public institutions			3.16	14.75	380.08	580.8

	Sector/measure	means	Achieved energy savings until 2010¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
2.1.	Renewable Public Institutions Sub-Programme: mitigation of the heat demand of public buildings through complex energy-efficient investments	<p><i>Means of investment:</i></p> <ul style="list-style-type: none"> – Complex renovation of public institutions and constructing new public buildings (New Széchenyi Plan tender mechanism, ESCO constructions) <p>Horizontal means:</p> <ul style="list-style-type: none"> – Regulation of ESCO-type investments – Municipality-level training, awareness raising, consultancy 		13.55	370.08	570.8
2.2.	Mitigation of the electricity demand of public institutions	<p><i>Means of investment:</i></p> <ul style="list-style-type: none"> – Modernisation of office equipment – Modernisation of lighting <p>Horizontal means:</p> <ul style="list-style-type: none"> – Municipality-level training, awareness-raising and consultancy – Minimum energy requirements of office equipment 		1.20	10.00	10.00
3. Industrial			3.61	13.05	71.84	278.81

	Sector/measure	means	Achieved energy savings until 2010¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
3.1.	District Heating Efficiency Sub-Programme: improvement of the efficiency of the transportation and distribution of thermal energy	<i>Means of investment:</i> – Renovation of district heat supply systems (primary-side)		2.00	37.52	107.2
3.2.	Mitigation of the energy use of enterprises	<i>Means of investment:</i> – Technological modernisation of SMEs (New Széchenyi Plan grant and credit with a favourable interest) – Energy-efficient renovation of industrial buildings – Energy-efficient renovation of agricultural buildings – Energy-efficient renovation of other buildings used for economic purposes (services, trade) (New Széchenyi Plan grant, credit with a favourable interest) <i>Horizontal means:</i> – Employment of energy experts (at large energy consumers) – The Mandatory energy consumption reports of large consumers must be supplemented by information on energy savings and energy efficiency – Voluntary agreements (e.g. performance of audits,		11.05	34.32	171.6

	Sector/measure	means	Achieved energy savings until 2010 ¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
		energy saving)				
4. Transportation and shipping			0.79	4.60	NA¹²	NA
4.1.	Reduction of energy consumption in the transportation and shipping sector by mitigating demand	<i>Means of investment:</i> – Extension of the road toll of heavy motor vehicles (introduction of e-toll) – Establishment of low-traffic zones – Development of cycle lanes		1.80	NA	NA

¹² NA: not applicable

	Sector/measure	means	Achieved energy savings	National target value	Sources originating from the European Union, allowance trading and auction incomes	Total investment costs
			until 2010¹¹ (PJ)	until 2016 (PJ)	(HUF billion)	(HUF billion)
		<i>Horizontal means:</i> – Environmentally friendly transport campaigns				
4.2.	Railway development	<i>Means of investment:</i> – Railway electrification, modernisation of the railway infrastructure – Procurement of new energy-efficient locomotives <i>Horizontal means:</i> – Campaign for the publicity of railway transport		0.90	NA	NA
4.3.	Development of public transport systems	<i>Means of investment:</i> – Bus replacement programme – Establishment of P+R parking lots <i>Horizontal means:</i> – Publicity of public transportation		0.60	NA	NA
4.4.	Fuel-efficiency improvement of existing vehicle fleet	<i>Means of investment:</i> – Development of car plants, “product development incentive” (without state aid):		1.30	NA	NA
5. Cross-sectoral and other horizontal means		– Information exchange platform on good practices in energy saving under the industrial energy efficiency programme – Green public procurement: energy efficiency criteria	0.6	4.00	0.20	0.20

	Sector/measure	means	Achieved energy savings until 2010 ¹¹ (PJ)	National target value until 2016 (PJ)	Sources originating from the European Union, allowance trading and auction incomes (HUF billion)	Total investment costs (HUF billion)
		in public procurement procedures – Strengthening and harmonisation of R+D+I activities relating to sustainable energy management – Formulation of cooperation mechanisms with energy service providers to strengthen their DSM (demand-side management) activity				

3.4. National targets for nearly zero energy buildings

The following section provides preliminary information about the basic principles of the spread of nearly zero energy buildings in Hungary. The detailed mechanisms will be included in the National Strategy for the Energy Performance of Buildings that will be finalised by 31 December 2011 and the law transposing Directive 2010/31/EU (EPBD – Energy Performance of Buildings Directive) into Hungarian legislation and including the prescribed requirements in line with the time limit set out in the Directive.

PROVISIONS:

The obligation to prepare a national action plan is set out in Article 9 of Directive 2010/31/EU of 19 May 2010 of the European Parliament and of the Council on the energy performance of buildings¹³ (hereinafter referred to as: Directive).

“Article 9 Nearly zero-energy buildings

(1.) Member States shall ensure that:

(a) by 31 December 2020, all new buildings are nearly zero-energy buildings; and

(b) after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.

The energy performance of buildings is one of the priority fields of EU policy. The Energy Performance of Buildings Directive provides, *inter alia*, that only nearly zero-energy buildings may be constructed as of 2020 – and in the case of public institutions as of 2018. It is also a mandatory requirement that from 2012 no construction or renovation that does not meet the minimum requirements set by the European Commission may be supported. Furthermore, the European Economic Recovery Plan of March 2009, too, orders Member States to renovate their buildings and to invigorate the labour market with regard to these constructions for the establishment of a low-carbon economy and society.¹⁴

OBJECTIVE:

Currently we have no exact information on the number of nearly zero-energy buildings and buildings with low energy demand; however, there are typically very few such buildings in Hungary (approx. a few hundred at most). Taking into account the usual rate of constructions, the construction of approx. 30 000 to 60 000 new buildings can be expected annually following 31 December 2020; four-fifths of this amount will be residential buildings. The need to construct buildings with low energy demand is expected to rise significantly between 2015 and 2020.

The setting of substantial growth targets by 2015 for the construction of buildings with low energy demand will be appropriate mainly in the case of new public buildings and new buildings that are originally designed for lease. The New Széchenyi Plan also includes allusions thereto: *“The financial projects promoting home ownership must be linked to the number of children in the family, to income tax, to energy efficiency, to legal and high-quality construction.”*¹⁵

The annual number of new buildings with low energy demand could be approx. 100 to 1000 at the middle of the decade.

¹³ OJ L 153, 18/6/2010, p. 0013–0035

¹⁴ The economic development programme of the Hungarian government: New Széchenyi Plan, page 136

¹⁵ New Széchenyi Plan Home Projects, page 33

Quantified policy target values are set out in Chapter 2.2 of the New Széchenyi Plan on Energy Efficiency:

Several scenarios were prepared under energy efficiency developments on the basis of which energy economic, macro-economic and climate protection impact assessments have been prepared. Taking into account these assessments the following policy target values are recommended for the period between 2011 and 2020:

- the average energy savings of investments should be at least 60%;
- the aim of the grant for newly built buildings is to encourage more efficient construction as regards energy performance with a target value of 25 kWh/m²/year.

The mitigation of the energy consumption of buildings is important as regards national strategy, because it simultaneously reduces the dependency of Hungary on import energy sources, mitigates the foreign trade balance deficit, improves competitiveness and moderates the energy bills of families and public institutions, thereby relieving the budget, creating jobs, facilitating the strengthening of the domestic building construction SME sector and contributing to the fulfilment of international obligations undertaken in the field of climate protection.

INCENTIVES SERVING THE FULFILMENT OF TARGETS:

The New Széchenyi Plan establishes the main directions of incentives:

- **BUILDING NEW GREEN HOMES SUB-PROGRAMME.** The aim of the grants for newly built homes is to encourage a level of efficiency in construction as regards energy performance that exceeds requirements. The current Hungarian requirement is category C, which is mandatory when constructing new buildings. Since category B is better than category C by only 5% to 25% in terms of energy efficiency, the promotion of category A (better than the minimum requirement by 25% to 50%), A+ (better than the minimum requirement by more than 50%) and A++ is appropriate. The measure promotes the construction of energy-efficient residential buildings constructed by traditional and energy-intelligent technologies.
- **LIVEABLE PANEL DWELLINGS RENOVATION SUB-PROGRAMME.** The aim of the sub-programme is to modernise the energy performance of panel dwellings together with the renovation of constructed surroundings; this partly covers the panel dwellings built by energy-wasting technology before 1992 (mostly with district heating that does not comply with current heat provisions). The aim for these buildings would be to encourage complex renovations permitting energy savings of at least 60%, and thereby to reduce the energy use of residential buildings. The measure facilitates the complex energy-efficient renovation of panel buildings. The beneficiaries of the tender are the owners and communities through the targeted support of the population.
- **DISTRICT HEATING EFFICIENCY SUB-PROGRAMME.** The aim of the measure is to ensure that district heating systems are renovated in the most complex way in terms of energy efficiency. Low-efficiency district heating systems have a huge effect on the energy performance classification of supplied buildings; therefore, the energy performance auditing and the determination of the renovation efficiency of district heating systems are of utmost importance. The sub-programme supports energy performance audits, the possibility to involve renewable energy sources and the more efficient operation of existing systems.
- **“OUR HOME” RENOVATION SUB-PROGRAMME.** The programme covers traditionally built family houses and multi-occupied residential buildings built by obsolete technology before 1992 and not complying with current heat provisions. Therefore, the aim is to modernise the energy performance of traditionally built real estates and to encourage complex renovations permitting energy savings of at least 60%, thereby reducing the energy use of residential buildings. The measure facilitates the complex energy-efficient

renovation of residential buildings (family houses, terraced houses, multi-occupied residential buildings, etc.) constructed by traditional technologies. The beneficiaries of the tender are the owners and communities through the targeted support of the population.

- **RENEWABLE PUBLIC INSTITUTIONS SUB-PROGRAMME.** (Green central budgetary institutions, public institutions of green local governments.) The programme covers energy-wasting, traditionally built and panel buildings that do not comply with current heat provisions, are owned by the state or local governments and perform public functions (health care institutions and facilities, sports facilities, spas and spa facilities, educational-pedagogical institutions, social institutions, agencies, cultural and recreational institutions, etc.). Public institutions owned by the State of Hungary are among the largest energy consumers of the building sector; therefore, it is a priority aim to reduce their energy use significantly on the short and medium term and to improve energy savings, while taking into account the principles of rationality and economy to the greatest possible extent.

Similarly, energy savings of at least 60% must be achieved in case of these buildings by promoting complex renovations (energy performance modernisation of building envelopes, energy systems and engineering systems, establishment of capacities for the production of thermal energy and electricity from renewable energy sources); thus the energy use of public institutions could be reduced. If we achieve these aims, we can also expect a significant decrease in national expenditures. A further aim of complex energy-efficient modernisation is that the renovation of buildings be connected with climate protection objectives and especially with the applicability of renewable energy technology. The institutions of the target group are frequently visited by the public; thus, their renovation could have a serious awareness-raising and demonstrative effect on the public. Several EU Directives in effect require an exemplary role to be set by the public sector's frequented buildings in the field of energy efficiency (Directives 2002/91/EC, 2006/32/EC, 2009/28/EC).¹⁶

3.5. Exemplary role of the state and public sector, access to information

Implemented and planned measures under Article 5 and Annex 6 of the ESD:

Pursuant to the Directive, the public sector in Hungary sets an example by **drafting legislation**:

Gov. Decree No 176/2008 (VI.30.) on the on certification of the energy-related characteristics of buildings, which had been drawn up to transpose Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings to national legislation, has been revised.

The revision has pointed out that more detailed and stricter regulation is necessary than the current regulation, which Hungary will introduce in its legislation until June 2012.

Directive 2002/91/EC of the European Parliament and of the Council on the energy performance of buildings

To comply with Article 7(3) of this Directive ("Member States shall take measures to ensure that for buildings with a total useful floor area over 1000 m² occupied by public authorities and by institutions providing public services to a large number of persons and therefore frequently visited by these persons an energy certificate, not older than 10 years, is placed in a prominent place clearly visible to the public") Article 3(5) and (6) of Gov. Decree No 176/2008 (VI.30.) on the on certification of the energy-related characteristics of buildings comply with the referred provision, i.e. it orders the mandatory placement of an energy certificate in a clearly visible place. The government provides institutions operated by the

¹⁶ New Széchenyi Plan, pages 144 and 145

state and local governments with free software for the certification. Furthermore, the competent ministry helped in the use of the software and the preparation of the certificate through education.

Foreseen measures:

ENERGY EFFICIENCY NETWORK

From the foreseen measures the information of target groups about the initiatives of energy produced from renewable energy sources in the field of electricity supply, heating, cooling and transport will be founded on several pillars. One of the most important among these is the establishment of an energy efficiency consultancy network, which will consist of a national energy agency with extended duties, county energy experts directed by the agency, and later a network of urban and regional energy experts. The government will direct, help and organise the following via the network:

- information supply, consultancy and awareness-raising for the population, the local governments and the economic sector on the subject of investments in energy performance;
- information supply on investments realised from non-budgetary assistance and their capacity and volume to the Energy Statistics System via the green database;
- realisation of control and classification relating to investments in energy performance; and
- practice of more efficient and more comprehensive tender coordination in this field.

Thus, the government ensures the possibility of consultancy and access to information.

Furthermore, it is a priority target of the government that energy efficiency and renewable energy programmes initiated in 2011 are realised by taking into account the principle of “lowest costs, highest savings”. Public institutions owned by the State of Hungary are among the largest energy consumers of the building sector; therefore, it is a priority to **reduce their energy use significantly on the short and medium term and to improve energy savings**, while taking into account the principles of rationality and economy to the greatest possible extent.

10:10 CAMPAIGN

(It is a civil initiative promoted by the government of Great Britain. EU countries are free to join.) The Ministry of National Development (hereinafter referred to as: NFM), responsible for energy policy, plans to join the initiative, and will most probably do so following the ministerial decision in the second half of 2011 according to plans. We deem it important that the whole governmental institutional system join the programme following the NFM decision, which would set an example in the field of energy efficiency, thereby **significantly contributing to the reduction of governmental expenditures**.

The aim of the 10:10 Campaign is to reach a **10% CO₂ emission reduction** on an annual basis. The global movement, initiated in April 2010, strives to make more and more private persons, companies, education institutions and other organisations join the campaign. 10:10 measures results in four main areas: **electricity consumption, on-site fuel use, vehicle fuel use and aviation**. The most important milestones are the following:

- adoption and adaptation of the methodology as regards ministerial and/or governmental institutions;

- extension of commitment towards the 10:10 programme to the institutions of the Ministry of National Development in the first place, followed by the extension of the programme to other governmental institutions;
- an approach to the short-term challenge set out by the programme bearing in mind further long-term energy use mitigation;
- supplementation of the four main areas of the original 10:10 campaign (electricity consumption, on-site fuel use, vehicle fuel use and aviation costs) by material use in offices (printing, paper use, etc.);
- 12 measures in 12 months; steps necessary to achieve the goals set out in the programme and energy greening – cost reduction by green governance;
- the internal information campaign to be developed for adapting the programme will support the achievement of the 10% planned goal for employees working in administration.

CEP 5.

(Decision on the tender can be expected in May 2011; it is likely to be a positive decision for Hungary.) Under the Central Europe Programme the Deputy State Secretariat of the NFM responsible for the development of green economy and climate policy submitted a tender within the framework of an international consortium in the Programme's 5th priority, which is aimed at demonstrating energy efficiency and the use of renewable energy sources in public buildings. The evaluation of the tender is expected to be concluded in the middle of May 2011. The project provides for a professional base and background for the creation of green, environmentally friendly and energy-efficient public buildings in Budapest. Functions: a model building housing exhibitions and serving as a demonstration, information centre, conference centre as regards renewable energy sources and energy efficiency.

COUNTY AWARENESS-RAISING CAMPAIGNS

The realisation of a county awareness-raising campaign is among the plans of the Deputy State Secretariat of the NFM responsible for the development of green economy and climate policy. The main objective of the campaign is to draw attention to the importance of energy efficiency and alternative and renewable energy sources by, on the one hand, outlining the importance of energy diversification, and on the other hand, showing possible alternatives through the presentation of sample projects to the target group. The target group is the population between the ages of 25 to 45; those young decision-makers, who may be in a decision-making position as residents or in local governments or SMEs, and who are open to new possibilities in green economy. The campaign will mainly present sample projects applying energy-saving and energy-efficient technologies and complex energy-efficient alternative and renewable technologies jointly.

INTELLIGENT ENERGY EUROPE – BUILDING WORKFORCE INITIATIVE

The Intelligent Energy Europe programme, initiated by DG Energy, is a tender programme of the European Union for 2007–2013 encouraging energy efficiency and the use of renewable energy, supporting non-technological activities and contributing to the achievement of the EU 2020 targets. The Building Workforce Initiative has been published under the programme as well, and its aim is to identify on a national level the workforce demand arising in connection with the achievement of the EU 2020 targets and related to energy efficiency and alternative and renewable energy sources, and to create corresponding green education and training systems in Member States.

The Building Workforce Initiative encourages professional and state organisations and institutions to engage in wide national cooperation in order to form a platform that allows for the establishment of a sustainable green training system.

In each Member State one consortium can receive a grant in an amount of approx. EUR 300 000 under the programme. Deadline for the submission of tenders is 15 June 2011. The Deputy State Secretariat of the NFM responsible for the development of green economy and climate policy plans to participate in the tender within the framework of a national consortium.

“GREEN PUBLIC PROCUREMENT”

Act CXXIX of 2003 on Public Procurement, harmonised with Directive 2004/17/EC of the European Parliament and of the Council, describes the legal regulation of public procurements in Hungary, including green public procurements. “Green” public procurement is governed by Article 58 of this Act, according to which the issuer may define environmental requirements in the public procurement technical specification. Member States have the obligation to prepare a National Action Plan, taking into account the guidelines of the European Commission, for the promotion of green public procurement. The draft Hungarian action plan is about to be approved; it is planned to be introduced by 2011.

Guidelines should be elaborated to facilitate that public procurement procedures include an objectively measurable set of energy efficiency and environmental aspects and a related economic assessment. Investments in state and municipal buildings must be handled with priority and special attention must be paid to meeting the minimum energy requirements regarding buildings in this field.

Issuers must take into account the aspects of resource and energy efficiency, dematerialisation and the mitigation of greenhouse gas emissions in all phases of the public procurement procedure. The purpose of this is to ensure that the public procurement system encourages the spread of environmentally friendly technologies and the manufacturing of eco-friendly products by searching for and preferring solutions with the least possible environmental impact during the life-cycle of the given product/service. Sustainability aspects interpreted under the principle of sustainability presume that the bidder is able to identify sustainability aspects applied during evaluation based on clear and unambiguous criteria.

Sustainability aspects must be taken into account:

- when determining the subject of procurement;
- in the technical specifications;
- in technical and professional eligibility criteria; and
- among assessment aspects.

Objective:

- The aim is to determine the object of the procurement and to define what an environmentally friendly product is.
- Environmentally friendly aspects must be enforced in the technical requirements, aspects of eligibility and evaluation and the performance of contracts.

Furthermore, the environmentally friendly provisions set out in the New Széchenyi Plan must be enforced during procedures (procurement, services, etc.).

A striking domestic example for the conduct of green public procurement procedures is the procedure applied in public procurement published for the purchase of road vehicles and vehicle purchases of public bus service providers, according to which it is mandatory to take

into consideration energy performance and environmental impacts in public procurements as of the middle of April 2011. The new decree of the government – Gov. Decree No 48/2011 (III.30.) on the Promotion of the Purchase of Environmentally Friendly and Energy-Efficient Road Vehicles – facilitates the spread of environmentally friendly and energy-efficient technologies, the increase of social awareness and the strengthening of the exemplary role of the state.

Pursuant to the relevant communication, the provisions of the decree apply to procurements published after its entry into force on 14 April.

The new regulation promotes that vehicles recently put into circulation have more favourable energy consumption and pollutant emission levels. The market price of less polluting vehicles may be a little higher than that of less modern vehicles. However, the possible increase of the purchase price will not exceed 5% to 10% according to NFM. Subsequent use may be more economical for enterprises depending on operational circumstances, and the burdens of vehicle use differentiated by external effects may contribute to this; thus, the higher purchase price is recovered from the more moderate maintenance costs along the whole life-cycle of the vehicle. The purchase of more modern vehicles results in energy savings and the reduction of external costs of transport (e.g. environmental, social and health care costs) on the long term. More favourable environmental and air quality can be achieved by improving the environmental performance of the vehicle fleet performing state and public services.

The consistent enforcement of green aspects in public procurement procedures can only be realised on a wider scale when applying these (vehicle purchase) guidelines (demonstrated via a practical example) in practice.

4. INSTITUTIONAL FRAMEWORK OF IMPLEMENTATION, MONITORING OF MEASURES

4.1. Governmental representative and coordinator of implementation

Pursuant to Article 4(4) of the ESD, Member States must designate in the NEEAP those existing or new authorities or agencies which are responsible for overseeing compliance with the energy saving objective set forth in the Action Plan and reporting regarding the results.

NFM intends to charge, on the one hand, Energia Központ Nonprofit Kft (EK Nkft.) as Hungarian energy agency, and on the other hand, Émi Non-profit Limited Liability Company for Quality Control and Innovation in Building (ÉMI Nkft.) and Épület és Lakásgazdálkodási Fenntartási Innovációs K+F Nkft (K+F Nkft.) with the fulfilment of the duties set out in Articles 4 and 5 of the ESD. NFM, as owner and professional supervisor of EK Nkft. and ÉMI Nkft., can ensure the operation of the abovementioned organisations in accordance with governmental objectives.

4.2. Presentation of responsibilities and tasks of the parties involved in implementation

The major governmental and professional parties involved in implementation are as follows:

Abbreviation	Name	Responsibility
KIM	Ministry of Public Administration and Justice	Harmonisation of governmental activities
NFM	Ministry of National Development	Energy policy, development policy and transportation issues, Issues relating to emission trading and environmental protection, Implementation of KEOP and GIS, management of developmental target values concerning energy performance and housing, Issues relating to education and awareness raising in the field of energy performance, Supervisions of the implementation of the second NEEAP, planning of the third NEEAP
BM	Ministry of Interior	Issues relating to local governments, settlement development, settlement planning and construction
NGM	Ministry of National Economy	Issues relating to construction economy, home creation, industry, consumer protection and training
NFM, NGM	Ministry of National Development Ministry of National Economy	Issues relating to financial regulation and allocation of support, the supervision of support programmes

Abbreviation	Name	Responsibility
NGM, BM, NEFMI	Ministry of National Economy Ministry of Interior Ministry of National Resources	Employment policy, training, tertiary education
EK Nkft	Energia Központ Nonprofit Kft;	Coordination of implementation of the action plan and monitoring of the progress of implementation, Participation in the conduct of tender systems, Management of energy performance trainings and consultancy networks, Establishment and operation of the registration, monitoring, assessment and reporting system of the second NEEAP
MKEH	Hungarian Trade Licensing Office	Issues relating to trade and authorisation
MFB	Hungarian Development Bank Zrt.	Issues relating to favourable development credit schemes
NFM-NFÜ	Ministry of National Development – National Development Agency	Issues relating to the elaboration and review of the New Széchenyi Plan
ÉMI Nkft.	Émi Non-profit Limited Liability Company for Quality Control and Innovation in Building	Cooperation in the conduct of tender systems <ul style="list-style-type: none"> - Quality assurance and monitoring of tenders concerning the energy performance of buildings - Participation in governmental and local governmental programmes concerning the energy performance of buildings
K+F Nkft.	Épület és Lakásgazdálkodási Fenntartási Innovációs K+F Nkft	<ul style="list-style-type: none"> - Participation in research aimed at energy efficiency, energy savings and energy rationalisation; - Participation in domestic and EU co-financed R&D programmes
VITUKI	Environmental Protection and Water Management Research Institute	<ul style="list-style-type: none"> - Participation in research aimed at energy efficiency, energy savings and energy rationalisation affecting surface and underground water

4.3. System of monitoring implementation

The date of review of the second NEEAP, i.e. the date of submission of the corrected second NEEAP to the Commission is 30 June 2011 and that of the third Action Plan is 30 June 2014, as set out in the ESD.

Prior to the correction of the action plans and the submission of amended versions, the evaluation of the preceding action plan is a task of special importance. Experience gained through the implementation of measures included in the action plans must be evaluated and the relevant summary of monitoring reports must be prepared. Adequate amendments may and must be included on the basis of the above in order to achieve the objectives as rapidly and as efficiently as possible.

Continuous monitoring of individual programmes by Energy Centre Nonprofit Kft. – a body in charge of monitoring the performance and coordination of various measures – is desirable in order to facilitate the potentially necessary transformation or fine-tuning of individual measures.

According to our plans it will be the obligation of Energia Központ Nkft. to establish and operate the registration, monitoring, assessment and reporting system of the second NEEAP. Annual reports will be prepared on progress and will be adopted by NFM.

This report will fulfil the reporting requirement stipulated by Article 10(2) of Directive 2010/31/EU of the European Parliament and of the Council.

LIST OF ABBREVIATIONS

BM	Ministry of Interior
BU	Bottom-Up mathematical method
CEP	Central Europe Programme
EK NKft.	Energia Központ Nonprofit Kft
ÉMI Nkft.	Émi Non-profit Limited Liability Company for Quality Control and Innovation in Building
EPBD	Energy Performance of Buildings Directive
ESCO	Energy Service Company
ESD	Energy Services Directive – Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services
EU	European Union
GDP	Gross Domestic Product
JRC	European Commission Joint Research Centre
KEOP	Environmental and Energy Operational Programme, operational programme of the New Hungary Development Plan supporting energy investments
K+F NKft.	Épület- és Lakásgazdálkodási Fenntartási Innovációs Kft.
SME	Small and medium enterprises
KSH	Hungarian Central Statistical Office
MKEH	Hungarian Commercial Licensing Office
National Action Plan	Hungary's Renewable Energy Utilisation Action Plan
NFM	Ministry of National Development
NGM	Ministry of National Economy
NEFMI	Ministry of National Resources
NEEAP	National Energy Efficiency Action Plan
NEP	National Energy Savings Programme

NFÜ	National Development Agency
NKS	National Transportation Strategy
OM	Ministry of Education
OSAP	National Statistical Data Collection Programme
PRIMES model	A modelling system, which simulates the equilibrium of demand and supply on the energy market as regards the Member States of the EU. The model does so by finding the price of each form of energy at which producers wish to offer exactly the same amount that consumers wish to consume. PRIMES is a general-purpose model for forecasting, scenario preparation and policy impact assessment. It serves to model medium and long-term processes.
RED	Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC
ROP	Regional Operational Programmes
TD	Top-Down mathematical method
TNM	Minister without portfolio
ÚSZT	New Széchenyi Plan
GIS	Green Investment Scheme, climate protection tendering system based on allowance trading incomes

Units of measurement:

J	joule SI unit of measurement of energy 1 GJ = 0.2778 MWh = 0.0239 toe
toe	tonne of oil equivalent standard, unit of measurement based on the caloric value of 1 tonne of crude oil 1 toe = 41.868 GJ = 11 630 kWh
VA	volt-ampere unit of measurement of apparent power $S^2=P^2+Q^2$ where S is apparent power, P is true power, Q is reactive power
W	watt unit of measurement of power derived from SI 1 W = 1 J/s
Wh	watt hour unit of measurement of energy widely used outside SI 1 GWh = 3 600 GJ = 85.9845 toe

SI prefixes used in units of measurement

k	kilo = $\times 10^3$
M	mega = $\times 10^6$
G	giga = $\times 10^9$
T	tera = $\times 10^{12}$
P	peta = $\times 10^{15}$