

CEE Energy Efficiency Report - Slovakia

1. Summary

A review of future trends of energy consumption shows that, in the absence of an active energy policy which promotes energy efficiency, energy consumption will increase as a whole by approximately 6.8% by 2012 continuing to raise after this period.. This result hides large differences between the different sources of energy (mainly heat, fuels and electricity) and between the different sectors - transport, industry, buildings etc.

It is therefore clear that a strong energy policy is needed to counterbalance the expected increase in energy consumption in all sectors, with emphasis on measures in the building sector (both residential and tertiary) and in the transport sector. Furthermore improvements in the district heating sector are also essential to prevent further disconnection from district heating and a shift to other means of heating.

A review of the main barriers to energy efficiency leads to the conclusion that while significant changes are needed in the regulatory framework, the lack of access to finance and the general lack of awareness about existing technologies and best practice represent the greatest barriers.

In order to evaluate the success of energy. In a few studies available from past 2-3 years the calculation of low and high targets for energy policy was elaborated. The low targets would represent about 11% - 12% reduction in overall energy consumption. The high targets would represent a 13% - 15% reduction in overall energy consumption.

Policy instruments have been identified which can turn energy efficiency into one of the driving forces of the overall economic and development strategy of the country. Some of these instruments deal with general issues such as general policy issues, regulatory and legal aspects, the institutional framework and fiscal, taxation and pricing policy. They are designed to improve the present conditions and would use only a limited part of the available public budget.

The state budget dedicated to energy issues will need to be increased significantly if the proposed targets are to be realised. This increase in budget allocation would enable the implementation of programmes to significantly reduce energy imports and therefore lead to an improvement in the balance of payments.

The adoption of these instruments will be beneficial for the entire economy. The most obvious impact is related to the level of energy imports, and therefore the balance of payments. The reduction in energy imports is estimated between 8% (low targets) and 12% (high targets) for natural gas, and between 8% (low targets) and 14% (high targets) for petroleum products. Furthermore it is estimated that the implementation of the proposed energy efficiency could create approximately 10,000 new jobs. The annual reduction in CO₂ emissions has been estimated between 9 million tonnes (low targets) and 16 million tonnes (high targets).

2. Trends in energy consumption

The evaluation of past trends in energy consumption enables the identification of two scenarios for future trends in energy consumption for the main economic sectors of final energy consumption. The forecasts for sectors which represent the energy supply side such as the public energy sector, district heating supply etc. are not taken into account in these demand scenarios. District heating consumed by end-users has been integrated into their heat consumption.

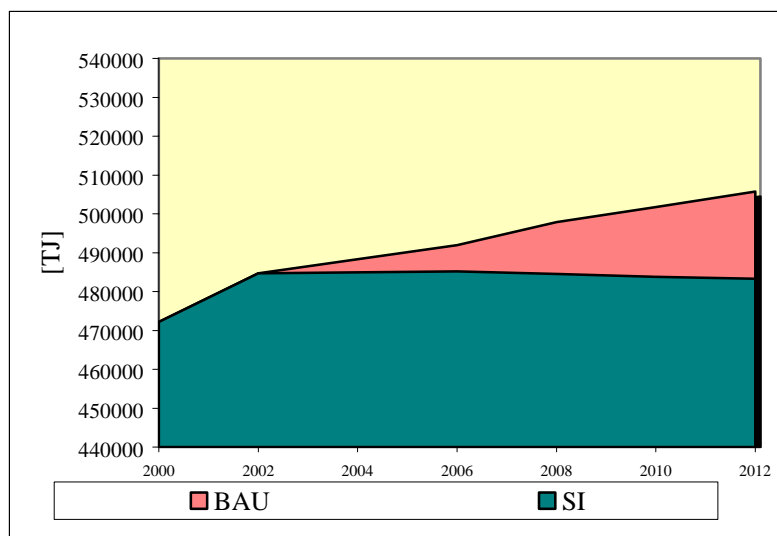
The future trends are presented in two scenarios:

- **BAU (business as usual) scenario** corresponds to the trend of energy consumption with no additional energy policy, but with an autonomous development of energy intensity and energy consumption.
- **SI (strong improvement of energy efficiency) scenario** corresponds to special efforts being made to improve energy efficiency by introducing a strong energy policy.

The two scenarios calculate a different penetration of energy efficiency options and energy saving technologies implemented, that influences the energy use of space heating (control systems, thermal insulation, efficient boilers, fuel switch), process heat (heat recovery, energy management and good housekeeping) and the energy savings of electricity (efficient lights, drives and control systems).

The SI scenario considers the impact of an energy policy, which stimulates a strong improvement of energy efficiency by the implementation of energy conservation measures. The energy conservation policy will help to realise a decrease of 4.8% in final energy consumption in the target year.

Figure 1. Projection of final energy consumption, 2000 – 2012



The heat and fuel consumption increases in both scenarios especially in the sectors of transport, manufacturing (machinery, construction) and the tertiary sector. Electricity consumption is estimated to rise slightly under the BAU scenario but decreases under the SI scenario, since energy policy and improved public awareness will support the market penetration of efficient technology and replacement of obsolete energy intensive devices and appliances. The increase under the BAU scenario can be explained by the higher consumption assumed for the tertiary sector – due to the economic development

of the service sector – as well as for the residential sector (taking an increase in the use of domestic appliances in households into account).

The difference between the BAU and SI scenario in terms of energy consumption in the target year 2012 can be estimated as follows:

- Heat and technology fuel 4.3%
- Electricity 7.1%

3. Potential for energy savings

In order to elaborate an appropriate policy framework it is necessary to assess the potential for energy savings. This potential can be seen in terms of economic potential, meaning the level of savings or energy substitution which can be achieved under ideal conditions, and of market potential, meaning the barriers faced by the market actors.

The following table provides a summary of energy consumption expected for 2012 and the potential for all sectors up to 2012. Data for the district heating sector correspond to the transformation and distribution losses in district heating systems, including losses in eventual power generation.

Table 1. Energy consumption and potential to 2012, in TJ

	total	residential sector	tertiary sector	industry	transport	district heating
Expected consumption 2012	537,138	122,400	77,706	204,116	98,071	34,848
fuel and DH	471,636	101,916	52,704	173,570	95,184	48,258
Electricity in GWh (TJ)	18,195 (65,502)	5,690 (20,484)	6,945 (25,002)	8,484 (30,542)	802 (2,887)	-3,726 (-13,414)
Technical potential	234,165	59,382	30,294	99,355	23,926	21,208
Economic potential	105,380	21,208	18,202	42,179	16,693	6,588
Market potential	57,179	9,551	9,338	25,258	7,621	5,411

Note: in the case of district heating, electricity is generated through CHP, not consumed, therefore the corresponding figure is negative.

Assuming an expected GDP growth of 61% in real prices over the period 2000-2012, the calculated potential corresponds to the following decrease in the energy intensity of GDP:

- Decrease in energy intensity under realisation of technical potential 62%
- Decrease in energy intensity under realisation of economic potential 50%
- Decrease in energy intensity under realisation of market potential 44%

In terms of total consumption by sector, the gap between economic and market potential in the tertiary sector is extremely high, indicating an urgent need for policy measures. In absolute terms, the industrial, residential and transport sectors represent the largest share of the total gap, therefore policy should concentrate on these sectors.

4. Current policy objectives

Due to the structure of economic production in the Slovak Republic, the energy intensity (energy use per unit of GDP) is 1,8 times higher than in developed industrial countries, after calculation of the purchasing power parity.

The current Energy Policy approved by the government in 2000 concentrated on the supply side, while energy efficiency was paid only limited attention. Slovak energy policy has lately relied on freeing market forces by reducing energy price distortions.

Apart from legislative amendments, relevant to energy efficiency, the main direct instruments of the Slovak energy efficiency consist of three support programmes managed by the Ministry of Economy (Programme Supporting Energy Conservation and Use of Alternative Energy), the Ministry of Agriculture (Programme of Energy Intensity Reduction and Use of Alternative Fuel and Energy Sources) and the State Fund for Housing Development.

The Slovak Republic has endorsed a series of recommendations, which emphasise the need to allocate relevant budgets for energy efficiency measures and to define the basic elements of energy efficiency and renewable energy policy in the following areas:

- promotion of CHP, need for an ad hoc pricing policy for electricity from CHP
- introduction of energy audits, dissemination of best practices
- promotion of third party financing, especially in the public sector
- promotion of energy efficiency in the public buildings sector
- improvement of metering in individual households

The Slovak Republic has signed the Kyoto Protocol to the UN Framework Convention on Climate Change, therefore committing itself to reduce its greenhouse gases (GHG) emissions in 2012 by 8% as compared with the 1990 value.

To support this commitment, a number of strategies have been approved, including:

- Strategy, principles and priorities of the State Environmental Policy,
- National Environmental Action Plan Programme SAR II
- Strategy and plan for forestry development
- Waste management Programme, 2000-2005
- Plan for the reduction of greenhouse gas emissions in the construction and public sector until 2005
- Proposals for long-term measures regarding the adaptation of the Slovak Republic to climate change
- Energy policy

Scenarios have been elaborated to assess the country's ability to reach the targets set in the Climate Change Convention. Even in its worst case scenario the Slovak Republic expects to reach its targets. In the best case, emissions reduction will be 28% below the target.

5. Barriers to energy saving

A series of barriers prevent market actors from realising more potential for energy-savings. These barriers need to be removed if the targets indicated in the previous chapter are to be realised. The principal barriers to energy conservation are listed below, while the detailed barriers are presented in the Energy Efficiency.

- Lack of strategy and overall framework for energy efficiency Slovakia already has a general framework for energy policy focusing mainly on the supply side: security of supply and market liberalisation to meet the requirements of accession to the European Union. This policy lacks emphasis on energy efficiency and renewable energy. Although quantitative targets have been set,

the lack of an energy efficiency strategy prevents market actors from developing a clear understanding of the policy objectives.

Inadequate legal framework. Slovakia has successfully negotiated its Energy Chapter and has harmonised most of the energy legislation with the *acquis communautaire*. Despite this progress the legal framework still needs to be improved mainly by adopting laws which specify the conditions for the production, distribution and conversion of energy and the role of the different stakeholders.

Inappropriate institutional framework. Various administrations are involved, either directly or indirectly, in energy policy. The lack of co-ordination between the different public authorities results in an overlap between programmes offering assistance to stakeholders in some cases, while in other cases some areas are not covered at all by public support. The criteria for allocating funds or for granting permits or licenses vary according to the institution in charge of the programme. Monitoring and evaluation of programmes and policy are not sufficiently developed. This in turn limits the scope for reviewing the effectiveness of policy instruments.

- Lack of finance or access to finance. In addition to the lack of in-house capital in all sectors of the economy, investments in renewable energy are limited by the difficulty of access to external finance. Efficient energy technologies are often viewed as insufficiently mature, making loans for such projects difficult to obtain and increasing the level of guarantees requested by commercial banks. Foreign operators also perceive high risks in investing in Slovakia, because of legal and administrative barriers. Some progress has however been made in the last few years, for example in the field of energy contracting, due to the regulatory framework and access to loans from banks for the ESCOs themselves.
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- Lack of incentives
- Low energy prices and heterogeneous levels of taxation tend to favour a conventional use of energy and neglect of renewable energy.

Lack of awareness and information. The lack of awareness about energy conservation in general is related to the general public's perception that the related technologies can affect their level of comfort, and lack both efficiency and reliability.

6. Conclusions and Recommendations

The following actions can and should be taken.

6.1 Proposed policy framework

The Ministry of Economy prepares a Strategy Paper on energy efficiency, including targets, instruments, an implementation plan and the definition of responsibilities for the relevant authorities. The Ministry of Economy presents the Strategy Paper to the other state bodies concerned

6.2 Proposed legal and regulatory framework

The Ministry of Economy prepares amendments to the Energy Law, in accordance with the European legislation. Adoption of the amendments to the Energy Law by the National Parliament. The Ministry of Economy prepares a list of relevant legal and regulatory texts, and discusses the necessary modifications with corresponding authorities.

6.3 Proposed institutional framework

Establishment of the Inter-ministerial Committee, grouping the relevant ministries under the supervision of the Ministry of Economy. Preparation by the Ministry of Economy of the Committee proposed for the first year of operation, indicating the priorities for action. Preparation of a business plan by SEA, including detailed activities and budget for the following 5 years. Review of the various options for the appointment of the national energy agency by the Ministry of Economy and decision on the status, yearly budget and profile of the agency.

6.4 Proposed pricing, fiscal and taxation policy

The Regulatory Office for Network Industries (RONI) prepares a methodology for the calculation of heat prices, including information about the release of prices. The Ministry of Labour, Social Affairs and Family examines the various options for supporting low-income households in paying the energy bills, and decides upon the best option(s) to be adopted. Starting in 2003, it implements the programme gradually and secures the contribution of the state budget from the Ministry of Finance. The Ministry of Labour, Social Affairs and Family launches the social support programme in parallel to the introduction of the energy price increases. It does this in collaboration with RONI, who prepares an information leaflet. The information dissemination is undertaken jointly with utilities and district heating companies. The Ministry of Finance, supported by the Ministry of Economy and the Ministry of Environment, commissions a study to provide the background for the implementation of an energy tax. The Ministry of Finance examines the possibilities of introducing accelerated depreciation for environmental investments. The energy tax is implemented on a gradual basis by the Ministry of Finance. The tax should be fully implemented by the end of the period.