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ENERGY EFFICIENCY POLICY IN SLOVENIA

Summary

When Slovenia gained its independence in 1991, its energy sector was characterised by largely centralised state planning and artificially low prices maintained by widespread subsidies. Supply side considerations tended to dominate the energy policy and sectoral planning. As a result the final energy intensity in Slovenia was (still albeit declining) considerably higher than the EU average.

In order to support economic growth and transition to a modern market economy, integrated and competitive in the European and world market structures, the National Assembly of the Republic of Slovenia adopted a resolution on the *Strategy of Energy Use and Supply of Slovenia* in early 1996. In the field of energy use, the long-term strategic orientation is to increase energy efficiency in all sectors of energy consumption. The main objective can be summarised as to secure the provision of reliable and environmentally friendly energy services at least costs.

In quantitative terms the Strategy attaches a high priority to energy efficiency and environmental protection and sets the target of improving the overall energy efficiency by 2% p.a. over the next 10 to 15 years. To achieve the target mentioned above the sectoral approach and a number of policy instruments have been foreseen. Besides market based energy prices which will, according to the European Energy Charter, gradually incorporate the cost of environment and social impacts, the following policy instruments will be intensified and budget-supported: education and awareness building, energy consultation, regulations and agreements, financial incentives, innovation and technology development. The ambitious energy conservation objectives represent a great challenge to the whole society.

ENERGETSKA EFIKASNOST U SLOVENIJI

Sažetak

Kada je Slovenija 1991. godine postigla neovisnost, obilježje energetskeg sektora bilo je većinom centralizirano planiranje na državnoj razini i umjetno niske cijene koje su se održavale pomoću široko rasprostranjenih subvencija. Energetskom politikom i sektorskim planiranjem dominirala su promišljanja o opskrbi. Kao rezultat toga, konačni energetske intenzitet u Sloveniji bio je (još uvijek ima tendenciju pada) znatno viši od europskog prosjeka.

Kako bi se potakao ekonomski rast i prijelaz na modernu tržišnu ekonomiju koja je uključena i konkurentna u strukturi europskog i svjetskog tržišta, Nacionalno vijeće Republike Slovenije prihvatilo je rezoluciju o *Strategiji korištenja energije i opskrbi Slovenije* početkom 1996. godine. U području korištenja energije, dugoročna strateška orijentacija je povećati energetske efikasnost u svim sektorima energetske potrošnje. Glavni se cilj može sažeti kao osiguravanje pouzdanih i za okoliš povoljnih energetskeg usluga s najmanjim troškovima. U

kvantitativnom smislu strategija posebnu važnost pridaje energetskej efikasnosti i zaštiti okoliša, te postavlja cilj poboljšanja ukupne energetske efikasnosti od 2 posto godišnje tijekom sljedećih 10 do 15 godina.

U svrhu postizanja navedenog cilja predviđa se sektorski pristup i određeni broj instrumenata politike. Osim tržišno postavljenih cijena energije koje će, prema Europskoj energetskej povelji, postepeno uključivati i troškove djelovanja na okoliš i društvo, sljedeći instrumenti politike će se pojačati i potpomagati kroz proračun: izgradnja obrazovanja i svijesti, konzultacije na području energije, propisi i ugovori, financijski poticaji, razvitak inovacija i tehnologije.

Ambiciozni ciljevi konzerviranja energije predstavljaju veliki izazov za cijelo društvo.

POLICY OBJECTIVES

According to the Strategy, the energy efficiency policy in Slovenia is in harmony with the European Commission's policy as presented in the Council Decision concerning the promotion of energy efficiency in the Community - 91/565/EEC, in the EC Green Paper - For a European Union Energy Policy and in the White Paper - An Energy Policy for the European Union.

The energy efficiency policy is also in line with the Act on Ratification of the Energy Charter Treaty and Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects, and with the Act on Ratification of the European Agreement establishing an association between the European Community and its member countries, acting within the framework of the European Union, on one hand, and the Republic of Slovenia, on the other.

The Strategy defines that the Ministry of Economic Affairs will carry out all activities related the preparation and execution of a national programme for efficient use of energy and environmentally acceptable, efficient and stable energy supply. Within the Ministry implementation of all energy efficiency related issues falls under the responsibility of the Agency for the Efficient Use of Energy which has been established in 1995 and became operational in 1996.

SAVING POTENTIAL

Although the energy intensity per unit of GDP is approximately 2 times higher than in Western European countries, this is not an indicator for a high energy saving potential. It should be noted, however, that this is in part due to the industrial structure characterised by a large share of energy intensive industries such as steel, aluminium, and fertilisers. The *Study on the Energy Conservation Strategy for Slovenia* financed from PHARE estimates the cost-effective potential of energy savings through energy efficiency investments at some 20% of the actual consumption in industry for the measures with a payback period shorter than 5 years and 30% in the building sector, respectively for the measures with a payback period under 10 years, even at the present price level. The technically achievable potential is some 30% in the industry and some 60% in the buildings, respectively. To illustrate the problem of the pay back periods of energy saving measures on the building envelope it should be stressed that the buildings where the energy demand should be reduced are relatively old and therefore need to be refurbished

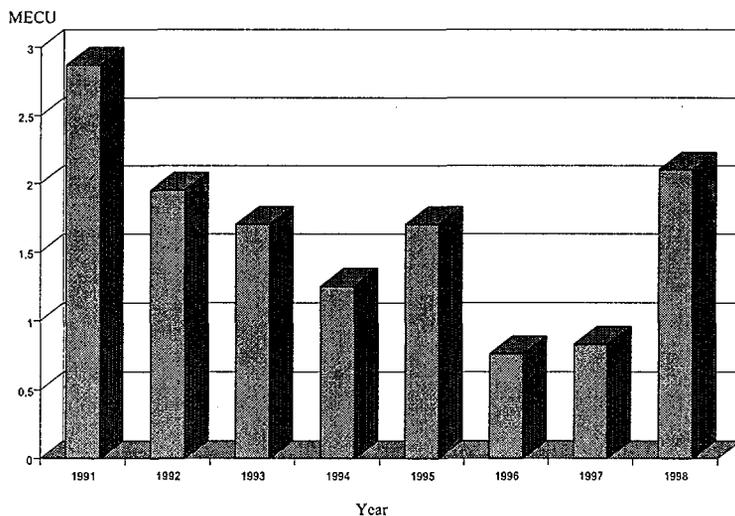
anyway. The majority of these buildings have already reached the phase in their life cycles when restoration or exchange of elements are required. Therefore, considerable investments are needed and planned.

Taking into account the above mentioned potential of 20% in the industry and 30% in the buildings, the great importance of energy efficiency becomes obvious. This importance has several aspects. On one hand, we are dealing with a contribution towards the zero growth of the primary energy consumption, which promises an increase of the reliability of energy supply, decreased national energy dependence, decreased loads to the environment and increased competitiveness of the national economy. On the other hand, the goal “minus 20%” in the industry and “minus 30%” in the construction, also implies an amount close to 200 million ECU of investments in the industrial sector and 800 million ECU of investment in the building sector, related to a series of various activities, also new ones, which will create new jobs. In connection to this, entirely new prospects are opened to our energy service companies, to penetrate into new markets, especially those of the Central and Eastern Europe.

GOVERNMENT PROGRAMMES

After the gaining of independence in 1991, the former Ministry for Energy started introducing programmes for efficient energy use. These included studies, programmes and investment project for efficient energy use, renewable energy sources, combined heat and power production (co-generation), demonstration and pilot projects. Since then support has been granted to different schemes having in common that all proposed projects had to be submitted to a general tendering procedure for the funds allocated each year from the national budget.

Figure : National budget expenditure for the years from 1991 to 1998



Altogether, the Ministry of Economic Affairs spent some 13 MECU until now through public tendering for direct support of rational use of energy and renewables, of which 75% were related to investment projects, and the rest to studies and programmes. The majority of the investment projects involved joint financing of investments in energy efficiency in industry and the construction of small hydro power plants. The studies and programme components encompassed projects such as the setting up of an energy advisory service for households, energy consultations for companies and institutions (energy audits), energy consulting for local communities (energy concepts of towns and settlements), and information, promotion and exhibition programmes. Several of these projects have been supported by Phare financing.

Below, the main programmes for promotion of energy efficiency are presented:

Information and awareness building

Information, education and promotion activities are carried out by means of publications, seminars, workshops, exhibitions and similar events. These activities are significant for the lifting of the level of information, awareness and qualification, both of energy consumers and those cooperating with them.

The Energy Efficiency Newsletter plays an important role. It is a central information and promotion periodical published by the Agency for Efficient Use of Energy. It is aimed at improving the level of information and coordination of activities of numerous organisations and individuals, which may potentially contribute to the realisation of the set goals of the energy strategy.

In the domain of the general public some 35 leaflets have been issued related to the energy efficiency in the buildings and household appliances.

In the domain of industry, a number of seminars, workshops and training courses have been organised in the past five years dealing with: energy auditing, energy management, energy efficiency in SMEs, safe and economic boiler operation, efficient compressed air systems, and financing of energy efficiency and cogeneration projects.

The implementation of this programme was particularly intensive in the past two years, when 123 participants from 85 industrial companies attended 5 one-week training seminars for energy managers, and 89 consultants from 52 companies participated in 3 one-week seminars for the execution of short and extended energy audits.

In addition to the above, a booklet on the efficient use and production of compressed air should be mentioned. It is the first publication from a series for the promotion of energy efficient technologies. A booklet on efficient electric motor drives will be published in next months.

Energy advisory network ENSVET for the households

The ENSVET programme started in 1991 with the background activities for establishing the Energy Advisory Network (ENSVET) with support of the bilateral Slovenian-Austrian (Styrian) initiative.

Within this initiative the general organisational scheme of the Energy Advisory Network in Slovenia (ENSVET) was developed and the first generation of energy advisers was educated. In 1993 the first group of 6 energy advisory offices have been established.

During seven years of the ENSVET project, 25 energy advisory offices and 5 subsidiaries have been established following the municipal initiative and support. The Energy Advisory Network is now uniformly dispersed all over Slovenia, with average distance from the customer to the office not exceeding 20 km. The energy advisor can be easily approached, during the working hours of the office following a telephone announcement. Advice is free of charge for the customer.

Energy advisers have part-time engagement in the project. 114 energy advisers were educated in 4 courses and most of them continue active work in the project. They offer advice to households with the aim to raise EE awareness, to promote and stimulate implementation of energy efficient measures and the use of renewable energy sources. Also they take part in education of new advisers, contribute to the promotion of the ENSVET and energy efficiency, improving their knowledge and transferring new approaches in the operational scheme of the project.

Energy advising to larger industrial energy consumers

A pilot project of energy advising to larger industrial energy consumers started in 1997. The project focuses on industrial enterprises with a yearly energy bill between 0.5 and 5 million ECU. The aim of the project is to increase information and awareness and to activate internal potentials for energy efficiency actions.

The advising includes a walk-through-audit of a company, a senior management event and an awareness event for employees. One of the project outputs is also an analysis of energy consumption and costs, suggestions for immediate actions and proposals for further activities. When appropriate, an energy audit is recommended. Under the pilot project, 12 enterprises accounting for approximately 6% of total energy costs in industry, have been advised.

Despite the fact that the basic purpose of the pilot project was the increase of information and awareness on how to implement energy management in an organisation, the project has brought concrete effects as well. An analysis of the project results so far has shown that the yearly savings achieved within a few months after the project completion exceed the project cost by more than fifteen times. Very positive comments from general managers have confirmed the project approach.

Because of the attractive results further 14 industrial companies and 4 public institutions were advised in the year 1998 and 8 new companies are planned for the next year.

Local energy concepts

The elaboration of local energy concepts focuses on different options on the energy supply side such as: district heating, introduction of gas supply, combined heat and power production, biomass, solar energy for hot water preparation and other sources as well as different options of energy efficiency on the demand side. The Ministry provides 50 % grants to the project costs. To date, apart from two pilot concepts, 17 other local energy concepts have been prepared.

Energy auditing programme

The energy auditing programme is aimed at introducing energy management and promoting energy efficiency investment in the industrial, commercial and public sector, and in the apartment block buildings. An energy audit results in a list of proposals of organisational measures and investment proposals. It presents a basis for the development of a strategy to reduce energy consumption and increase energy efficiency. The audits have to be performed according to the common methodology. The audits are subsidised by up to 50% of the total costs.

To date, the Ministry and the Agency respectively, have supported 110 energy audits in several industrial branches and in the construction sector. Among them, 15 energy audits were performed in 1997 under the auspices of the PHARE programme.

The evaluation of the energy auditing programme shows, that the energy costs of audited companies account to 9 % of the total energy bill of industry. The measures proposed enable an average reduction of energy bill by 15 %. The energy costs were reduced by 2 % in the first year after performing the energy audit.

Demonstration programme of energy efficient technologies

The demonstration programme is significant for the promotion of new and advanced technologies. The purpose of the programme is to demonstrate the technical, economic, environmental and organisational adequacy of such technologies. Demonstration projects upgrade the technology level of the energy user, and offer new business opportunities to the equipment suppliers.

In selecting technologies and processes, an important aspect is their respective contribution to the utilisation of the national energy efficiency potential. In this respect, particularly suitable are horizontal technologies, which may find their way into several industrial branches. Promotion of the successfully completed demonstration projects is of extreme importance.

In conceiving the programme of demonstration projects, we shall apply the results and experience gained from the PHARE project "Demonstration projects for energy efficiency investments in the construction and industrial sectors" completed in 1997. Six demonstration projects were carried out, half of them in industry, and the rest in a hotel, in a school, and in a hospital.

Financial incentives for small energy saving measures in households

Loft insulation

In the frame of the "Loft insulation" project a number of 355 financial incentives for the existing loft and attic insulation have been paid out including 17 households in apartment blocks and 338 households in family houses. The highest subsidy of 28,000,00 SIT covered the cost of 8 m³ (80 m², 10 cm thick) thermal insulation that in the simplest cases should cover the total investment in loft insulation. The total subsidised insulated loft area was 25.741 m² but the total insulated loft area registered within the project was 30 830 m² which corresponds to 3 867 m³ of built-in thermal insulation with an average thickness of 12,5 cm. The payback period of the state

investment in energy efficiency is less than one year, but for the whole investment considering different technical solutions in the realisation of loft/attic insulation the pay back period varies from 1 to 5 years.

Draught proofing

In the frame of the “Draught proofing project” a number of 945 financial incentives have been paid out. The subsidy of 10 000 SIT covered approximately 25 metres of window sealing. Subsidised length of the window sealing was 23,905 metres with a total built-in length of 46,555 metres (6-10 mm). Energy savings are estimated up to 10%. The pay back period is less than 1 year.

Oil burner adjustment

In the frame of the “Oil burner adjustment project” a total of 1,480 oil burners have been adjusted with an average energy saving of 2.5% and the pay back period of less than 2 years. The subsidy of 5,500,00 SIT covered the adjustment of oil burners entirety.

Tax incentives for energy efficient household appliances

Although labelling has not yet been implemented to influence energy efficient equipment, in February 1996 the Slovenian Government adopted the “Regulation on Energy Efficiency Criteria, Low Drinking Water Consumption and Lower Environmental Pollution for some Appliances”, where the costs for such equipment can be partially exempted from income tax of an individual consumer. When setting the criteria the EU Commission Directives EU94/2/EC, EU 95/C155/07, EU 95/12/EC, EU 95/13/EC and other existing European and international standards were taken into consideration. This regulation includes refrigerators, freezers and their combinations, washing machines, dryers and vacuum cleaners and windows, for which criteria are defined according to Slovenian standards. Such regulations represent good indirect incentives for increasing the purchase of energy efficient appliances.

Financial incentives for energy efficiency investments

To overcome one of the principal barriers to the energy efficiency investment, i.e. poor accessibility and high cost of the investment capital, the Ministry and the Agency respectively, promoted a number of projects in the period from 1990 to 1995, both in the industrial and in the commercial and public sectors. A variety of financial instruments were applied: soft loans, subsidised interest rates, and subsidies. In all, 53 investment projects were supported, of which, 30 in the industrial sector.

In the industrial sector, the granted funds were spent predominantly for the improvement of the technological processes, waste heat recovery, variable speed drives, combustion control, energy management systems, and fuel switching.

The main criteria for the project selection were the following: completeness of the project proposal, anticipated energy savings relative to the necessary investment, investment economic viability and its impacts to the environment.

In the period from 1990 to 1995, the energy efficient investments in the industrial sector in the amount of 16 million ECU were realised within the programme. The investments were supported by the Governmental budget through soft loan and subsidies in the amount of 4.5 million ECU. The average payback period of the investments was estimated to 2.3 years.

In the field of the development of energy efficient investment, feasibility studies are also supported.

Revolving fund for energy efficiency investments

The financial sources, available for the energy efficiency investments out of the national budget, are not sufficient for the realisation of the goals of the national energy strategy. Therefore, an energy efficiency investment fund was established in January 1998. The fund goal is to provide industrial enterprises, institutions and building managers with financial resources under attractive interest rates, and thereby, to decrease energy costs in the long term.

The fund is managed by the Bank Austria, which was selected in a public competition. In this manner, a rational granting of loans will be secured.

The fund is supplied from a mixture of financial sources. The commercial part of the fund is provided by the fund manager. An attractive all-in interest rate on the level of 60% of the commercial interest rate is achieved by a grant from the national budget of the Republic of Slovenia in the value of 300 mio SIT for interest rate subsidy and by a zero-interest loan granted by the European Union PHARE Programme in the value of 2 million ECU. The initial fund balance is 12 million ECU. The fund operates on a revolving principle. The planned term of fund operation is ten years.

CONCLUSION

A considerable economically viable potential exists for the improvement of energy efficiency in the Slovenian industry and the construction sector, and, thereby, the decrease of energy bills and positive impacts on the environment. Due to a number of barriers, the activities of realisation of this potential may not be left merely to market mechanisms.

To overcome individual barriers, a series of programmes are under way, for the promotion of energy efficiency, conceived so as to stimulate the companies towards small and low-cost measures, and later on, towards major investment projects. These programmes also support the development of the market of energy services, supply of energy efficient equipment, and financial engineering.

By establishing the energy efficiency fund, the programme bundle has been rounded up into a whole supporting an active realisation of the goals of energy efficiency in industry set by the energy strategy.