

# The Finnish Energy Conservation Programme - the First Experiences

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## Abstract

Promotion of energy efficiency has been one of the key areas of Finnish energy policy for about twenty years. In continuing its efforts, the Government launched a new energy conservation programme in December 1995.

The new energy efficiency programme is based on the current energy economic situation and the forecasted energy prices. The programme takes account of the developments in the EU energy policy. One basic assumption is that the promotion of energy efficiency cannot be based on increased state subsidies. On the other hand, increased attention and efforts will have to focus on energy efficiency throughout the authorities. The programme also takes account of the benefits by combining energy efficiency with an active employment policy. Public finance shall focus on developing and marketing new technologies. This means that research, product development and demonstration projects need to be subsidized.

The energy efficiency programme should achieve a reduction in consumption by the year 2010 about 10 to 15 % lower compared to a base case without an active energy efficiency policy change. More accurate targets have been set individually for each area of measures.

The main measures include energy taxation, grants for repairs on buildings, grants for energy conservation related RD&D, third-party financing, technology procurement, revision of the building code, energy auditing of industrial and commercial premises, building certificates, energy efficiency standards and voluntary agreements on energy saving.

## 1. Starting points and objectives

Promotion of energy efficiency has been one of the key areas of Finnish energy policy for about twenty years. Energy efficiency contributes to the achievement of environmental goals, competitiveness of the economy, employment and the security of energy supply.

These objectives have been put forth by several governments in their programmes and their statements to Parliament. Conservation measures have achieved results. The overall Finnish energy supply as well as energy production represent a high standard of efficiency. By international standards Finland ranks above the average as to its energy efficiency.

A new energy efficiency program is justifiable particularly on environmental grounds. Energy efficiency may play a significant role e.g. in reducing the increase in CO<sub>2</sub> emissions, an objective which meets the requirements of the Climate Convention which Finland has signed. Energy efficiency is also a key for enhancing competitiveness not only of Finnish industry but for the whole economy, and Finland should maintain the international lead that the country has gained in this domain.

## 2. Economic instruments

Energy taxation is one important energy policy instrument which will, in the long run, be used increasingly for

the promotion of energy savings with due regard to the competitiveness of export industries and the whole economy. Energy taxation must provide an adequate incentive for energy consumers to save energy. Introduction of various promotive measures offered by fiscal systems to encourage energy efficiency will be investigated.

The Finnish Parliament decided to raise the energy tax level so that the revenues from taxes in 1997 will exceed the 1996 level by FIM 1100 million. The higher energy price will have an impact on energy consumption. In order to maintain the competitiveness of the national economy the excise tax on electricity was reduced so that the tax levied on industry is substantially lower than the tax levied on other consumer groups. At present, however, the Government doesn't have any detailed information about the reform's impact on energy consumption. The use of conservation incentives will be studied by a working group set up by the Ministry of Trade and Industry and the Ministry of Finance. Results are expected in the beginning of 1998.

As far as the tax on automobiles is concerned the Ministry of Finance has said that further studies are required to assess the issue thoroughly enough so that fuel consumption could be taken into account as a criteria when determining the rate of the tax. The investigation of this could be done together with some projects which the European Union is about to launch or in connection with the preparatory work needed before the project starts. Economic instruments will be investigated in the European Commission's Auto-Oil II Programme and which also could conclude a country-study for Finland.

The Ministry of Transport and Communications considers that the present value-based tax on automobiles has a positive effect to the import price of large cars with high fuel consumption usually is high and consequently also the tax. Linking the tax on automobiles, at least to some extent, to fuel consumption would influence the decision purchase.

In dismantling the subsidization of economic activities, special attention will be focused on aid forms which support unnecessary energy consumption.

The dismantling of subsidies for economic activities is well under way. The Ministry of Trade and Industry will ensure that any subsidies inappropriate from the energy efficiency's point of view will not be introduced.

Support for repairs on buildings will continue. The Ministry of the Environment will put increased emphasis on energy efficiency aspects in its aid scheme for the renovation of buildings. The Ministry of Labour will allocate employment appropriations on similar grounds.

As recommended by the Ministry of the Environment some measures supporting the energy conservation programme were included in the Council of State Decision on subsidies for the renovation of residential buildings and apartments in 1996. A raised 20 per cent subsidy for repairs (normally 10%) can be granted for the following measures: lining up of the temperature of radiators and investments therein, the trimming of ventilation systems and the cleaning of ventilation ducts. In 1997 the recovery of heat in air conditioning was included on the list.

In the proposed budget for 1997 a special grant for the renovation of buildings was appropriated for the Ministry of Labour. On the basis of this appropriation, subsidies can be granted to municipalities for renovation of properties for which no other government grant can be obtained.

The financing of energy-efficient technology and product development as well as the support granted toward the commercialization of energy technology, development of devices and equipment and creation of pilot projects will be maintained at least at today's level.

The objective for research and product development that promotes energy efficiency was for the first time inserted in the performance targets of the Technology Development Centre TEKES for 1997. The co-operation between the Energy Department of the Ministry of Trade and Industry and the energy technology division of TEKES in issues relating to energy-efficient technologies will be intensified in 1997.

The subsidies for commercialization projects, equipment campaigns and demonstration projects will be financed

through annual budgets and on grant basis. The co-operation with the Information Center for Energy Efficiency, Motiva, will continue, especially in the projects for commercialization of new energy technologies. Opportunities to obtain international finance, in first instance from the EU, will actively be utilized. According statistics it seems that the Finnish initiatives have been very successful among the projects financed through the THERMIE and SAVE programme.

The introduction of new energy-efficient technology will be promoted by continuing the research on consumers' consumption habits and energy conservation in the form of a new 5-year programme named LINKKI II. The first application round in this research programme was arranged in February 1997.

The Ministry of Trade and Industry will be responsible for the preparation of a third-party financing scheme in accordance with the EU guidelines. The intention is to create a network of commercially operating specialized firms, to provide services for energy efficiency investments and financing.

Motiva investigates models and conditions for third-party financing and service undertakings in the energy conservation sector on the basis of foreign experience. As a result of these investigations a first pilot project has been launched. The goal is to launch several new projects in 1997.

### 3. Laws and regulations

According the Government the State and local authorities must promote energy efficiency in all their planning and decision-making. An assessment of energy implications must be included in all decisions and programmes of significance for the use of energy, including investments in the transport sector. In the field of public procurement, requirements concerning energy efficiency will be set within the limits of the EU rules relating to the internal market. The guidelines and recommendations needed for the purpose will be drawn up by the Ministry of Trade and Industry.

Preparations for issuing essential instructions and recommendations have been started by the Ministry of Trade and Industry in co-operation with the Ministry of Finance, the Ministry of the Environment and the Ministry of Transport and Communications, the Federation of Finnish Local Authorities and the State Real Property Authority. Work shall be completed in spring 1997.

The Ministry of the Environment will modify reform the legislation on land-use planning and construction. Energy conservation aspect will be taken into account in the total revision of the Building Act.

Better instruments for the development of the urban structure, especially towns, and for the management of supramunicipal projects, are needed. Problems relating to the urban structure are caused by the location of services outside centres and residential areas, as well as off-center building especially in larger urban areas. The renewal of built areas shall be considered regionally so that functional entities are formed.

Community planning will focus on rehabilitation of existing built areas, as well as on searching new uses for areas totally out of use or only in partial use instead of building up new areas and communities.

Pilot projects will be used to assess energy implications which could be taken into account in drafting legislation. In the light of the experience obtained, it will be considered if there is need for a more general obligation to make assessments.

The Ministry of Justice considers that the further discussion concerning this issue should be carried on under the development programme for drafting legislation approved by the Council of State in 1996. Even if guidelines for drafting government proposals not directly call for an examination of the energy implications of proposed bills these implications can be taken into account either in the investigation of economic or environmental impact or both. It is also clear that impacts on energy shall always be assessed in connection with proposals concerning energy policy.

On the basis of its own development plan the Ministry of Finance has set up a working group commissioned to develop the evaluation of the economic impact of bills in November 1996. At the same time, the Ministry of the Environment is setting up a working party in order to develop the evaluation of environmental impact. When the Ministry of Trade and Industry launch pilot projects in 1997 the conclusions drawn by the working groups mentioned above will be taken into account.

The Building Code will be revised by the Ministry of the Environment with a view to reducing energy consumption in new buildings. The measures to be taken shall be scheduled and dimensioned so as not to create obstacles through increased costs to a revival of the construction sector, bearing in mind the special characteristics of wood construction. Energy efficiency will be taken into account in subsidizing renovation of buildings. In new buildings, each apartment will be equipped with a system permitting the metering of and charging for hot water. For heat, metering will be required if warranted by the pilot projects and technological progress.

The Ministry of the Environment is preparing a reform of building regulations on new buildings in accordance with the energy conservation programme. The reform will result in an approx. 10 per cent reduction in the energy consumption in new buildings compared to the present consumption level.

The reformed building regulations will be formulated so that they enable also an integrated view of the energy efficiency in buildings.

The implementation of the first stage in the reformation of building regulations has been delayed due to a recovery in the building and construction sector of the society and the investigation of the provisos concerning wood construction. The Ministry of the Environment intends to bring the new regulations on energy consumption in buildings into force as from the beginning of 1998. The technical and economic preconditions for the measurement of the energy used for heating per apartment will be investigated and further measures considered when sufficient results from ongoing pilot projects become available.

Energy auditing of industrial and commercial premises as well as public and residential buildings will be developed and the continuity of auditing will be ensured. The Ministry of Trade and Industry and the Ministry of the Environment will carry out the preparations for actual measures. The Information Center for Energy Efficiency, Motiva, will be in charge of the training, authorization and monitoring needed for energy auditing.

The Ministry of Trade and Industry set up a working group commissioned to investigate ways of ensuring the continuity of energy auditing. The primary proposals laid down by the working group in March 1996 comprised energy conservation agreements, the introduction of energy certificates for buildings, as well as, in the case of new buildings, final inspections before delivery and regulatory audits. In the comments received a further public subsidy was recommended until other measures can be implemented. The majority was in favour of the use of promoting measures based on voluntary action.

The promotion of auditing as a part of energy conservation agreements is being prepared separately. A system for energy certificates for residential and office buildings is being prepared under the direction of the Technical Research Centre of Finland (VTT) within a project carried out under the SAVE programme. The development of inspections and regulatory audits, and energy certificates for small and medium-sized industries shall be promoted with the help of finance granted under the SAVE programme.

A project aimed at developing the system of energy audits and certificates for single-family houses will be launched in the spring in co-operation with Motiva, the Ministry of the Environment, energy suppliers, Suomen Omakotiliitto ry (an association of Finnish house owners) and the Central Association of Chimney Sweeps.

The methods for the assessment of the condition of commercial and public service buildings will be developed by a project carried out under the guidance of the Ministry of the Environment.

Energy audits of residential buildings will be linked to the assessments administrated by the Ministry of the Envi-

ronment to check the condition of buildings. For this purpose, a specific certificate will be prepared for assessing the condition of properties. Such a certificate shall be added to the certificate traditionally given by the manager in charge of the property to prospective buyers or renters of apartments and other premises. The new certificate will also show the energy classification data for buildings, based on the directive by the EC. The preparations will be jointly carried out by three ministries: the Ministry of the Environment, the Ministry of Trade and Industry, and the Ministry of Justice.

In accordance with a proposal of the Ministry of the Environment the obligation to assess the condition of buildings (also the energy consumption) has been specified by a Council of State Decision on the basis of the instructions drawn up.

The Ministry of the Environment has launched a development project concerning the assessment of the condition of public buildings, offices and commercial buildings ("Kuntoarviot kunnossapitosuunnittelun ja korjausohjelmoinnin perustietona"). The aim of the project is to systematize the path from condition check-ups to maintenance plans and renovation programmes. An additional goal is to define the regulatory contents of, the tasks and the outlines for the assessments.

The assessment of the condition of buildings comprises construction technique, heating and ventilation engineering, electrical engineering and information systems, courtyards and land use, as well as an energy analysis. The aim is to draw up clear instructions for the whole procedure. These instructions will also be published.

In order to develop and test the system of energy certifying a two-year project was launched in the beginning of 1996 by the Technical Research Centre of Finland VTT, the Finnish Real Estate Federation, Suomen Talokeskus Oy and the city of Helsinki. The project is financed by the Ministry of Trade and Industry, the Ministry of the Environment and the EU's SAVE programme. The goal of the project is to create a mechanism through which the information about the energy efficiency of single buildings can be transferred from the experts in the construction sector to the users and those in charge of the decisions on procurement.

Energy efficiency standards for domestic appliances and for vehicles will be implemented in accordance with the principles to be agreed upon within the EU. The ministries of Trade and Industry, of the Environment and of Transport and Communications shall seek to contribute to a rapid national introduction of the standards and to a high level of requirements.

In April 1996 the Ministry of Trade and Industry set up a working group for drafting a bill to assess energy efficiency requirements for domestic appliances (and possibly even for other appliances). The proposal for a bill was completed in December 1996 and a government bill will be submitted to Parliament in Spring.

The Ministry of the Environment has participated in preparations for submitting a proposal of the EU member states to other parties for introducing globally approved and harmonized energy efficiency standards for domestic and office appliances. This proposal forms a part of the concrete measures to be taken in order to reduce CO<sub>2</sub> emissions in industrialized countries.

An assessment of the energy implications of any major decisions on land use and construction will be made compulsory. The laws and regulations concerning land use shall involve the obligation to promote integrated community structures in the territory and to improve the conditions in which collective transports and light traffic are to be carried on. The necessary amendments to land-use laws and regulations will be drafted by the Ministry of the Environment.

The matter will be brought up for discussion in the aforementioned working group on the reformation of the Building Act.

The Ministry of Trade and Industry and the Ministry of the Environment shall contribute to improvement of the relative significance of energy efficiency within environmental management and control. Within licensing, aspects involving environmental protection, health or safety will be carefully noted.

The matter will be brought up for discussion in the working group commissioned to investigate the application of the EMAS system.

The Ministry of Transport and Communications shall take measures for the inclusion of energy-saving driver's skills among the criteria to be applied in issuing driving licences.

The Ministry of Transport and Communications has commissioned the authority supervising the operation of driving schools to handle this matter. The aim is to include the principles for energy-efficient driving in the written driving test.

The instruction of energy-efficient driving is included in the theoretical part of the driving lessons and it forms an important part of the instruction concerning the condition, service and, above all, the right use of a car. Energy-efficient driving is also being taught in connection with subjects concerning flexible and safe driving. Motiva has produced material on energy-efficient driving for driving schools.

The Ministry of Trade and Industry shall draft an amendment to the Consumer Protection Act to provide for the stating of the nominal consumption of fuel in marketing vehicles.

A new standard for the measurement of the fuel consumption of cars will be introduced in EU. The old ECE system with three values will be abandoned. A system with only one figure, the so called Euromix consumption defined in Directive 93/116/EC, will be implemented instead. This new Euromix system will be applied to new cars as from January 1, 1997.

The Government has decided that, for the time being, further activity will be based on voluntary action in co-operation with an association of Finnish car importers. The Consumer Ombudsman will monitor advertising and marketing activities in the sector. Making amendments to the Consumer Protection Act has not been considered necessary at this stage.

## 4. Voluntary agreements on energy saving

The government practice of concluding energy conservation agreements with producers, distributors and consumers of energy will be developed, with added emphasis on the goal-seeking and binding aspects of the agreements. Agreements with industry will be extended to involve individual industrial sectors.

The agreements will serve, in particular, the monitoring of energy efficiency, the preparing of conservation plans, energy auditing, the carrying out of energy efficiency investments, introduction of new technologies and providing the consumer with feedback data and guidance on their energy consumption. Efforts will be made to combine conservation agreements e.g. with fiscal incentives.

In carrying out preparations for the introduction and expansion of the energy conservation agreements system the Ministry of Trade and Industry shall cooperate with manufacturers, energy producers, distributors and sellers, local authorities and the organisations of transporters and hauliers.

Conservation agreements shall lay down the general objectives to be achieved and the measures to be taken by each party for the promotion of energy efficiency as well as the methods to be used in monitoring and reporting. Motiva's role in the administration of the agreements procedure will be investigated.

Voluntary agreements are hoped to develop into an energy efficiency tool comparable as to its effect to the various norms and standards.

Energy conservation agreements will be developed in order to be applicable to all consumption sectors. The work for the creation of a uniform framework for the general principles and objectives to be set for the agreement system has been started. The development of the conservation agreement system has been negotiated with the

Confederation of Finnish Industry and Employers, Finnish District Heating Association and the Association of Finnish Local Authorities.

Negotiations needed for the drafting of an agreement has been started in the industrial sector. The goal is that an agreement with sector organizations concerned could be concluded in March 1997. Energy producers could join after a short delay. Also the municipal sector will enter into negotiations on an agreement in the course this year.

## 5. Other measures

Motiva will be made a permanent body. Preparations for this shall be carried out by the Ministry of Trade and Industry. Central areas in Motiva's activities will be communication, consumer information, commercialization of new energy-efficient technologies and development of energy auditing.

Alternative solutions for organizing Motiva's activities in order to make Motiva a permanent body were presented. Finally, a decision on continued co-operation with Finntec, VTT's company for commercialization of technology, was made. Motiva will be made a profit centre within Finntec. At the same time, the system of results by management will be implemented and Motiva's administration will be developed. The new organization and operation model will be introduced in 1997. In addition, the continuation of financing will be ensured by the government's policy decision.

The Ministry of Education shall include the economic use of energy in syllabuses at all levels of education and training.

The National Board of Education has drawn up a programme for the promotion of sustainable development for the years 1996-2000. Energy economy and energy conservation issues are a part of the activities in accordance with the principles of sustainable development and environmental skills important to all sectors and levels of training and education.

Measures promoting occupational practices in accordance with the principles of sustainable development are being emphasized within vocational training. In planning and developing environmental skills, curricula and the didactics of sustainable development in vocational training it is important to identify common aspects with an impact on attitudes and values on the one hand and sector-specific special features on the other hand. Therefore, regarding vocational training the development of environmental skills in different fields and the immediate application of them in training and education as a part of the strategy for the promotion of sustainable development will be emphasized.

Training and education is also one of Motiva's main area of activities. The work has been more complicated due to a changed situation: schools are quite independent when deciding upon their curricula and the teaching material to be used - education authorities have the role of consultants. In October 1996 a energy saving week was arranged in schools.

## 6. Timetable and monitoring

For all the aforementioned measures, preparations have been put under way in 1996. It should become possible for the Government to submit the necessary bills to Parliament, and for the various other bodies to make their proposals, in the course of 1997 at the latest.

Many of the suggested measures are in an early stage of preparation. The proposals for actual measures to be made as a result of the preparatory work will be discussed separately.

The Ministry of Trade and Industry shall follow the implementation of this programme and report on its progress. To that end, each ministry and every party to an energy conservation agreement shall keep the Ministry

of Trade and Industry informed of the progress of the measures and the results obtained in its own sector.

The implementation of the energy conservation programme is being monitored through reviews published twice a year by the Ministry of Trade and Industry. For the first year, the Ministry of Trade and Industry asked the concerned ministries, Motiva and other relevant organizations to report on the progress of preparations for the measures agreed upon by the end of November 1996. On the basis of these reports an annual report on the implementation of the conservation programme will be drawn up.

For the evaluation of results sector- and measure-specific plans for the quantities to be used within the monitoring and the organization of the collection of data will be drawn up. The monitoring system shall be completed by the end of the year 1997.

The evaluation of the energy conservation programme will be carried out as part of the government's long-term energy strategy in 1997.

## 7. Conclusions

After the first year of implementation it can be said that nearly all the measures mentioned in the energy conservation programme are put under way and that the rest of them will be implemented during 1997. In most cases, however, the progress could have been faster.

The impact of energy conservation measures cannot be measured until after many years, which means that any actual conservation results, apart from some exceptional cases such as energy auditing, cannot be reported yet.

For the evaluation and monitoring of the impact of the energy conservation programme it is important that a functioning monitoring system, which is both sector-specific and countrywide, is created. Special attention shall be paid to the development of that system in the course of 1997.