

Ministry of Employment and the Economy
The report of the Energy Efficiency Committee:

Proposal for energy saving and energy efficiency measures

9 June 2009

Extract from the report

1. Composition of the committee

On 22 April 2008, the Ministry of Employment and the Economy set up a broad-based committee to prepare new measures concerning energy saving and energy efficiency in accordance with the *Long-Term Climate and Energy Strategy* the Government submitted to Parliament in November 2008.

Industrial counsellor *Sirkka Vilkamo* from the Ministry of Employment and the Economy was appointed Chair of the committee and the following 31 persons as members, providing a broad representation of various sectors of society: *Karoliina Auvinen* (WWF, representative of environmental organisations), *Jyrki Etelämäki* (Detached Housing Association of Finland) until 31 December 2008, *Tiina Haapasalo* (Confederation of Finnish Industries EK), *Ilkka Heikkilä* (Pöyry Energy Oy, representative of the Finnish Association of Consulting Firms SKOL), *Riitta Jalkanen* (National Consumer Agency), *Saara Jääskeläinen* (Ministry of Transport and Communications) as of 1 January 2009, *Irma Karjalainen* (Helsinki Metropolitan Area Council YTV), *Helena Kinnunen* (RAKLI - The Finnish Association of Building Owners and Construction Clients), *Seija Kivinen* (Ministry of Finance), *Ville Kopra* (Central Organisation of Finnish Trade Unions SAK), *Mirja Kosonen* (Ministry of Employment and the Economy) until 30 June 2008, *Leila Kurki* (Finnish Confederation of Salaried Employees STTK), *Martti Kätkä* (The Federation of Finnish Technology Industries), *Teija Lahti-Nuutila* (Finnish Funding Agency for Technology and Innovation Tekes), *Erkki Laitinen* (Ministry of the Environment), *Markku Leinos* (Confederation of Finnish Construction Industries RT), *Kalevi Luoma* (Association of Finnish Local and Regional Authorities), *Mauri Marttila* (Finnish Real Estate Federation), *Ilpo Mattila* (Central Union of Agricultural Producers and Forest Owners MTK), *Pasi Moisio* (Finnish Transport and Logistics SKAL), *Lauri Myllyvirta* (Greenpeace, representative of environmental organisations), *Juhani Nenonen* (Detached Housing Association of Finland) as of 1 January 2009, *Jukka Noponen* (Finnish Innovation Fund Sitra), *Jarmo Nupponen* (Finnish Oil and Gas Federation), *Mats Nyman* (Confederation of Unions for Professional and Managerial Staff in Finland AKAVA), *Pentti Puhakka* (Ministry of Employment and the Economy) as of 1 July 2008, *Pekka Puputti* (Association of Automobile Importers in Finland), *Matti Räisänen* (Federation of Finnish Commerce), *Risto Saari* (Ministry of Transport and Communications) until 31 December 2008, *Mari Siivola* (Finnish Association of Architects SAFA), *Risto Suominen* (Federation of Finnish Enterprises), *Mirja Tiitinen* (Finnish Energy Industries ET), *Birgitta Vainio-Mattila* (Ministry of Agriculture and Forestry), and *Heimo Valtonen* (Senate Properties). *Päivi Laitila* from Motiva Oy acted as expert secretary of the committee.

130 persons have participated in the work of the committee and its subcommittees, in addition to whom experts from outside the committee and the subcommittees were heard.

2. The objectives and tasks of the Energy Efficiency Committee

On 6 November 2008, the Government approved the Long-Term Climate and Energy Strategy and submitted it to Parliament in the form of a report. The strategy outlines the definitions, objectives and measures of the Finnish climate and energy policy.

The strategic objective set by the Government for Finland entails halting and reversing the growth of energy end use. This means that energy end use efficiency must be enhanced by approximately 37 TWh by 2020 as compared to the projected position if no new measures for improved efficiency are taken. Correspondingly, the efficiency of electricity consumption must be enhanced by some 5 TWh. The longer-term vision entails a further decrease in final energy consumption by 2050 of at least one third from the level of 2020.

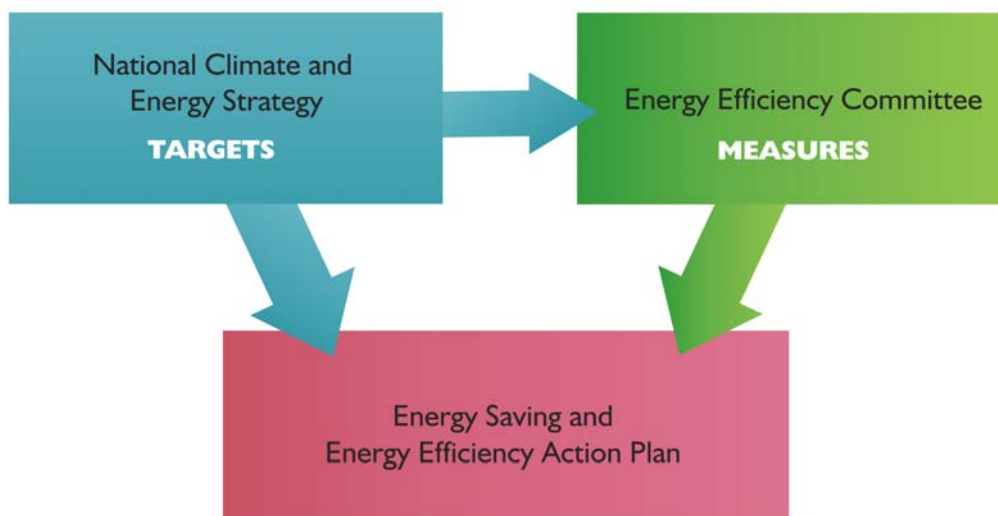
The committee set up by the Ministry of Employment and the Economy was tasked with:

- Assessing and proposing energy saving and energy efficiency measures needed for various sectors in order to attain the objectives set. The measures are categorised into those influencing the consumption of electricity, heat and fuel.
- Suggesting by which means of steering to implement the measures.

- Assessing the impact of measures on energy saving and costs, and their other impacts; and
- Assessing potential obstacles to implementation of the measures.

Another task given to the Energy Efficiency Committee was to present their view of the organisation of State-implemented energy saving and energy efficiency measures in Finland.

The deadline for the committee's report was 31 May 2009.



The intention was that, combined with the targets for enhanced energy end use and policy lines defined in the climate and energy strategy, the proposals for measures by this committee would constitute an overall action plan for energy saving and energy efficiency.

In accordance with the strategy, after having received the proposals of the Energy Efficiency Committee, the Government will make decisions on the energy efficiency measures to be launched urgently, organisation of activities and the targeting of financing no later than autumn 2009.

3. The work of the Energy Efficiency Committee

The committee prepared new energy saving and energy efficiency measures for the attainment of national objectives. They scrutinised every aspect of society, from trade and industry to private consumption. The main focus of the committee's work was in sectors not covered by the emissions trading scheme.

The committee set up five subcommittees reporting to it. Four sector-specific subcommittees made concrete and well-justified proposals for measures in their own area of operation in order to fulfil the tasks set for the committee. The subcommittees were for the sectors of buildings, transport, households, and industry and service sector. The fifth subcommittee operating under the committee was the organisation subcommittee that prepared the view on the organisation of State-implemented energy saving and energy efficiency measures in Finland. In its work, the subcommittee examined enhancement measures of energy sector in a broader sense than strictly from the perspective of energy efficiency.

Table 1. Subcommittees set up by the committee and their key areas of operation.

Subcommittee	Chair	Area of operation
J1: Buildings	Erkki Laitinen, Ministry of the Environment	Buildings, renovation construction, new building projects, property use and maintenance, community structure, and land use
J2: Transport	Risto Saari/Saara Jääskeläinen, Ministry of Transport and Communications	Traffic and transport, including work machinery, community structure, and land use
J3: Households	Pentti Puhakka, Ministry of Employment and the Economy	Households, including household equipment, services and leisure activities associated with households, agriculture and forestry
J4: Industry and Service Sector	Mikko Ylhäisi, Tekes	Industry, energy industry, machinery and equipment, private and public service sectors, including public procurement
J5: Organisation subcommittee	Sirkka Vilkamo and Erkki Eskola, Ministry of Employment and the Economy	The organisation of State-implemented promotion measures for energy saving and energy efficiency and the energy industry in Finland

The committee worked in close co-operation with the energy programme that Sitra is implementing between 2008 and 2012.

Both the committee and the subcommittees heard experts from outside the committee and subcommittees during their work. In all, 130 people took an active part in the work.



MEE, Ministry of Employment and the Economy
MINTC, Ministry of Transport and Communications
MOE, Ministry of the Environment
Sitra, The Finnish Innovation Fund
Tekes, Finnish Funding Agency for Technology and Innovation

4. Conclusions and recommendations of the committee

In accordance with the Long-Term Climate and Energy Strategy, the committee's task was to assess and propose measures by which to attain the saving objective of 37 TWh in final consumption of energy and save 5 TWh in electricity consumption by 2020. By 2050, the objective is to reduce energy consumption further by at least one third.

The committee's report describes almost 125 new or significantly expanded energy saving and energy efficiency measures. The set objectives can only be attained by a combination of the proposed measures. And all the measures are necessary in order to reach the targets.

Most measures will require further preparation before they are ready for implementation. The most appropriate methods of implementation will be assessed in the course of further preparation. At the same time, alongside energy saving and efficiency aspects, also other impacts – including health-related impacts – will also be taken into account. Cost-efficiency is the key factor in the planning and implementation of measures.

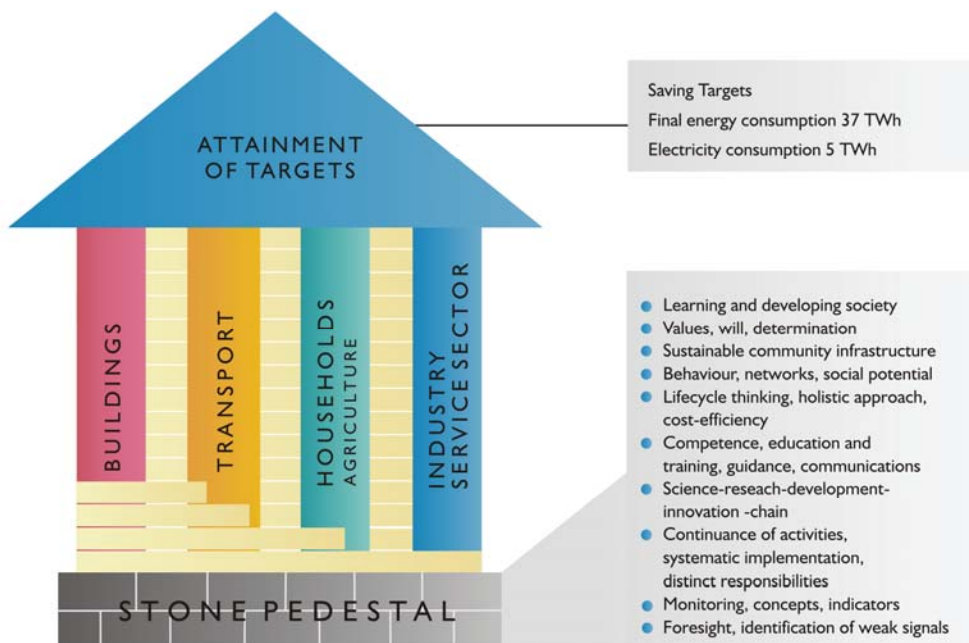
From the perspective of the national economy, the assessment has shown the proposed energy efficiency measures to be more profitable than previously estimated.

4.1. Resting on a stone pedestal

Challenging objectives cannot be attained by implementing individual measures alone, but society as a whole must undergo fundamental change.

The committee strongly believes that a range of conditions must be in place for the objectives to be attained. The committee called these the stone pedestal of measures: they are the broad-based and far-reaching foundation for all activities.

Even though the benefits of these stone pedestal measures are slow-acting and can be hard to detect in the short term, we still need to make immediate and continuous efforts to promote them. In fact, we always need to ensure that the basic prerequisites for energy efficiency are in place. Measures related to these matters are being launched in every sector of administration.



The stone pedestal consists of the following clusters of issues:

- At its base, a **learning and developing society**, underpinned by **values and strong will**, making **determined** progress towards the targets.
- **The basic social structures** create a **sustainable** foundation for future wellbeing.
- **Behaviour** and **networks** affecting it are of great importance with a view to the actions taken – **social potential** for energy efficiency is established.
- **Lifecycle thinking and holistic approach** become a natural part of energy efficiency activity, where **cost-efficiency** is of special importance.
- Maintaining **expertise** and developing it continuously by means of **education, counselling and communication** is an essential part of any activity.
- The operability of the **science-research-development-innovation chain** holds a key position in generating valuable new solutions.
- The attainment of results calls for determined and **continued activity, systematic implementation and clear division of responsibilities**.
- Generally accepted **concepts** and **benchmarks** are needed in the systematic **monitoring** of measures.

Foresight and identification of weak signals will help in staying on the path leading to success.

In practice, the stone pedestal is built and maintained through individual measures. These matters will be taken into account in any decision-making, programmes and activities related to energy efficiency.

In order to confirm the firmness of the stone pedestal, every four years an independent expert will conduct an evaluation of the situation from the perspective of energy saving and energy efficiency.

4.2. The most effective measures in 2020

It is not possible to assess the quantitative impact on energy saving for every measure presented in this report, even though each one of them will make a significant contribution towards final success. Essential measures of this kind include measures related to the change of the community structure, education, research and development, counselling and communication.

The measures that are projected to yield the biggest annual energy savings in 2020 on the basis of impact assessments made by the committee are presented below.

- 8.5 TWh of energy can be saved by 2020 by introducing new private vehicle technology and speeding up the renewal of the existing car stock. Electric cars are included in the figure. In order to make this a reality, several measures are needed, including staggering of vehicle taxation, monitoring of the impact of staggered car taxes, and energy efficiency classifications for cars.
- Energy consumption will be reduced by 4.9 TWh by 2020 by means of stricter energy regulations for new building projects, to be implemented in two phases over the next few years, and requirements to be extended to renovation construction.
- A total of 2.8 TWh of energy can be saved in 2020 within sectors not covered by the emissions trading scheme by means of substantially more challenging and broad-based energy efficiency agreements combined with research and innovation activity.
- At least 2.1 TWh of energy can be saved by means of energy efficiency requirements for equipment, with household equipment accounting for more than half of the total. These energy savings, like any energy saving generated by means of a directive, must not be treated as a matter of course, but require rapid action from various parties both when the directives are drafted and when they are implemented.

Implementation of the four clusters of measures described above, mostly not covered by the emissions trading scheme, will generate savings amounting to approximately 18.3 TWh, i.e. half of the saving objective. Some of the overall savings can be attained within the emissions trading sectors, which are influenced by, besides emissions trading, also by energy efficiency agreements and a range of other measures. In energy intensive industry, it has been estimated that emissions trading and other measures will enhance energy consumption by some 8 TWh in 2020.

In order to attain all the objectives, substantial investment in the maintenance of the stone pedestal is necessary.

4.3. Other necessary measures

When planning and implementing any measures, they must always be reflected against the stone pedestal, since any individual measures are built upon it. Successful attainment of the objectives requires that the measure chains are identified and implemented without any breaks.

In addition to the points mentioned above, a large number of other measures are needed in order to achieve the goals. These measures are necessary not merely in attaining the objectives for 2020, but also the challenging targets for 2050. Many of the measures described in the following paragraphs are practical applications of the stone pedestal measures, and they often form a critical link in the implementation of a measure chain.

Community structure

- Increasing the effectiveness of the steering of the community structure in accordance with national area utilisation targets. Developing the necessary legislation and instruments for planning and implementation.
- Drawing up regional climate and energy strategies and genuinely linking them to the steering of land use and the development of transport systems. Improving the coordination of land use and transport in urban regions and taking all levels of zoning into account.
- Developing planning and assessment methods suited to the assessment of community structure based on common concepts and indicators to support decision-making, by which to evaluate the sustainability of the community structure.

Buildings

- Speeding up renovation construction by means of well-targeted financial incentives.
- Extensive introduction of a range of tools and their development as part of the acquisition processes for building planning, use and maintenance. Developing concepts for planning and supporting customer-oriented implementation of renovation construction.
- Putting public buildings to more efficient use (e.g. using them in alternate turns) and effectively employing appropriate guidance according to existing needs.
- Providing guidance on energy consumption in an appropriate way to support the activity and decision making.
- Introducing the best solutions to the markets by taking advantage of the demand mechanisms for new solutions.

Transport

- Revising tax practices to favour sustainable forms of transport, and introducing new road traffic pricing practices, when necessary.
- Raising the standard of public transport and developing feeder traffic. Drawing up a programme for increasing the popularity of light traffic and introducing service centres for transport.

- Optimizing transport logistics, for instance, as part of energy efficiency agreements.
- Encouraging various operators to make energy efficient vehicle and service purchases and adopt economical driving habits.

Households and agriculture

- Developing and introducing methods for metering and monitoring apartment-specific energy consumption. Providing feedback to consumers on their energy consumption.
- Distributing information to households and offering them targeted guidance.
- Increasing energy saving expertise among teachers and pupils by means of basic and further education.
- Ensuring active implementation of energy programmes on farms.

Industry and service sector

- The public sector serves as a strong example in the promotion of energy efficiency.
- Allowing speeded up amortisation of energy efficiency investments and supporting small businesses in energy saving, for instance, with help of service vouchers.
- Creating a co-operation network promoting innovation in energy efficiency, consisting of various operators, that would seek out, screen and promote potential innovations related to energy efficiency.
- Increasing the energy saving competence of service providers by means of further and additional education.

4.4. Activity up to 2050

There are two essential conditions that need to be met before the objectives for 2050 can be attained: good maintenance of the stone pedestal, and effective implementation of the 2020 measures, not forgetting that the measures need to be observed as entities and measure chains. The essential point is that the measures taken for the attainment of the 2020 objectives create a solid foundation for the activities over the next decades.

Attending continuously to the measures required by the stone pedestal is absolutely the most important part of the energy efficiency work done for the attainment of the objectives of 2050 over the next few years.

Multi-sectoral national and international research is required to produce basic information about the structures, operation and creation of wellbeing for people in a society needing considerably less energy than the current one.

5. Impacts

On the basis of impact assessments of the measures, the proposed measures would help save approximately 30 TWh of heat and fuels and, additionally, approximately 6.4 TWh of electricity consumption in 2020. The combined effect would be 36.4 TWh. In addition, there are a number of measures for which no saving figures can be calculated. Using average emission coefficients for calculations, the energy saved is equivalent to approximately 9.3 million tons of carbon dioxide.

According to national economic estimates, energy saving measures will entail costs at the beginning of the next decade, but once the impact of these measures starts to materialise, the costs will drop dramatically. In other words, the key result of the analysis based on the committee's work is that the positive effects of energy efficiency measures will become apparent in the national economy much sooner than previously estimated.