ETC/SCP

European Environment Agency

2011 Survey of resource efficiency policies in EEA member and cooperating countries

COUNTRY PROFILE:

Finland

Country information on resource efficiency policies, instruments, objectives, targets and indicators, institutional setup and information needs

May 2011

This country profile is based on the information provided by Tapani Säynätkari from the Data and Information Centre, Finnish Environment Institute SYKE. The information is current as of February 2011.

This country profile was prepared as part of the EEA-ETC/SCP 2011 survey of resource efficiency policies, which aims to collect, analyze and disseminate information about national experience in the development and implementation of resource efficiency policies in EEA member and collaborating countries. The work resulted in the following outcomes:

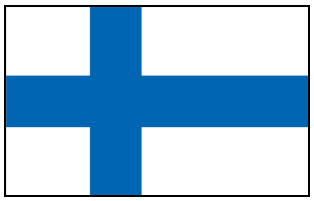
- **Short 'country profiles' (this document)** - self assessments prepared by countries, describing the current status of resource efficiency policies, including key strategies and action plans, policy objectives, instruments, targets and indicators used, institutional setup and information needs.
- **Summary report** - prepared by the EEA and ETC/SCP, the report reflects on trends, similarities and differences in policy responses, showcases selected policy initiatives from member countries and identifies information needs and knowledge gaps.
- A session on resource efficiency policies during the 2011 EIONET workshop to discuss further needs and to facilitate information sharing and experience exchange among EIONET members.

More information about resource efficiency policies, including an analytical report "Resource efficiency in Europe" and thirty one country profiles, can be found at:

http://www.eea.europa.eu/resource-efficiency

1. Resource use in Finland – facts and figures

1.1 General Facts and figures about the country



Source: https://www.cia.gov/library/publications/the-world-factbook/index.html

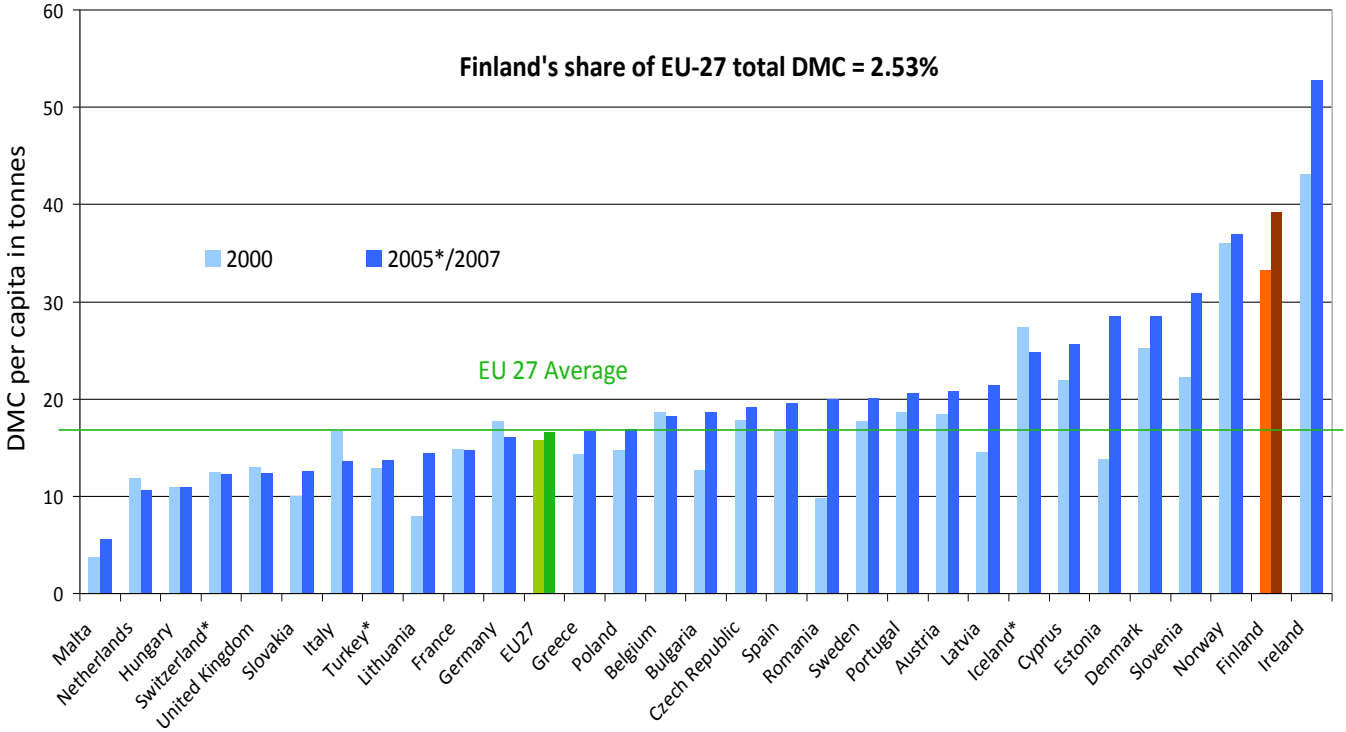
Population (projected inhabitants for 2010) [1]	5,351,427
➢ Percent of total EEA-32	0.91%
Surface area (km^2) [2]	338,145
➢ Percent of total EEA-32	5.96%
GDP at market prices – Purchasing Power Standard – Current Prices (Million Euro, 2009) [3]	141,761
➢ Percent of total EEA-32 (minus Liechtenstein)	1.1%
GDP per capita in Purchasing Power Standards (PPS) [4] EU27=100 (2009)	113
Urban population (rate of pop., 2009) [5]	63.6%
Main economic sectors and their share in total GDP (2009 est.) [2]	
Agriculture	2.6%
Industry	29.1%
Services	68.2%
EU accession date [6]	1.1.1995

Additional relevant background information on Finland (and on 37 other EEA member and cooperating countries) can be found at the SOER2010 website: http://www.eea.europa.eu/soer/countries/fi

Factsheet on national waste policies for Finland is available at: http://scp.eionet.europa.eu/facts/factsheets_waste/2009_edition/factsheet?country=FI

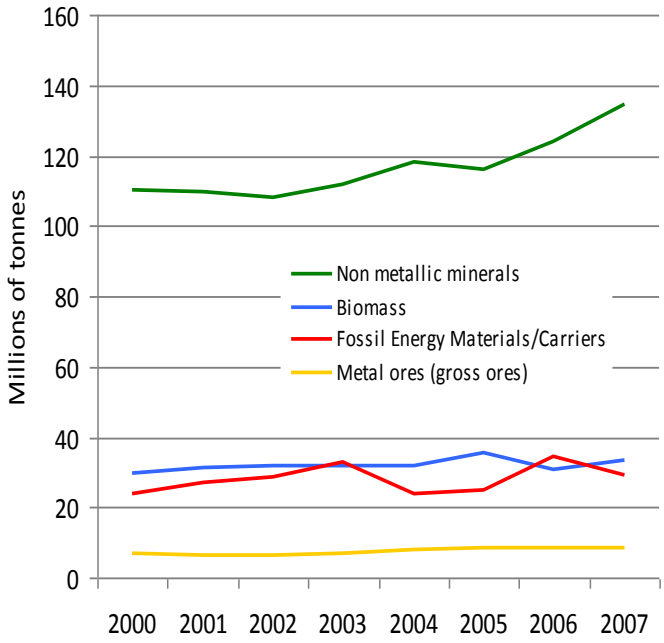
1.2 Facts and figures on resource efficiency for Finland

Use of resources per capita 2000 and 2007 [tonnes DMC/capita]



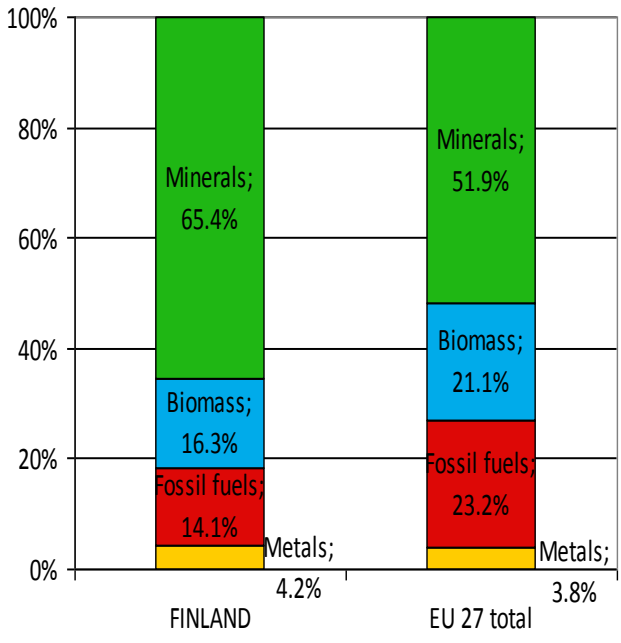
Source: Eurostat, OECD and Total Economy Database [7] * = For these countries data is for 2000 and 2005.

Domestic Material Consumption by category over time, Finland



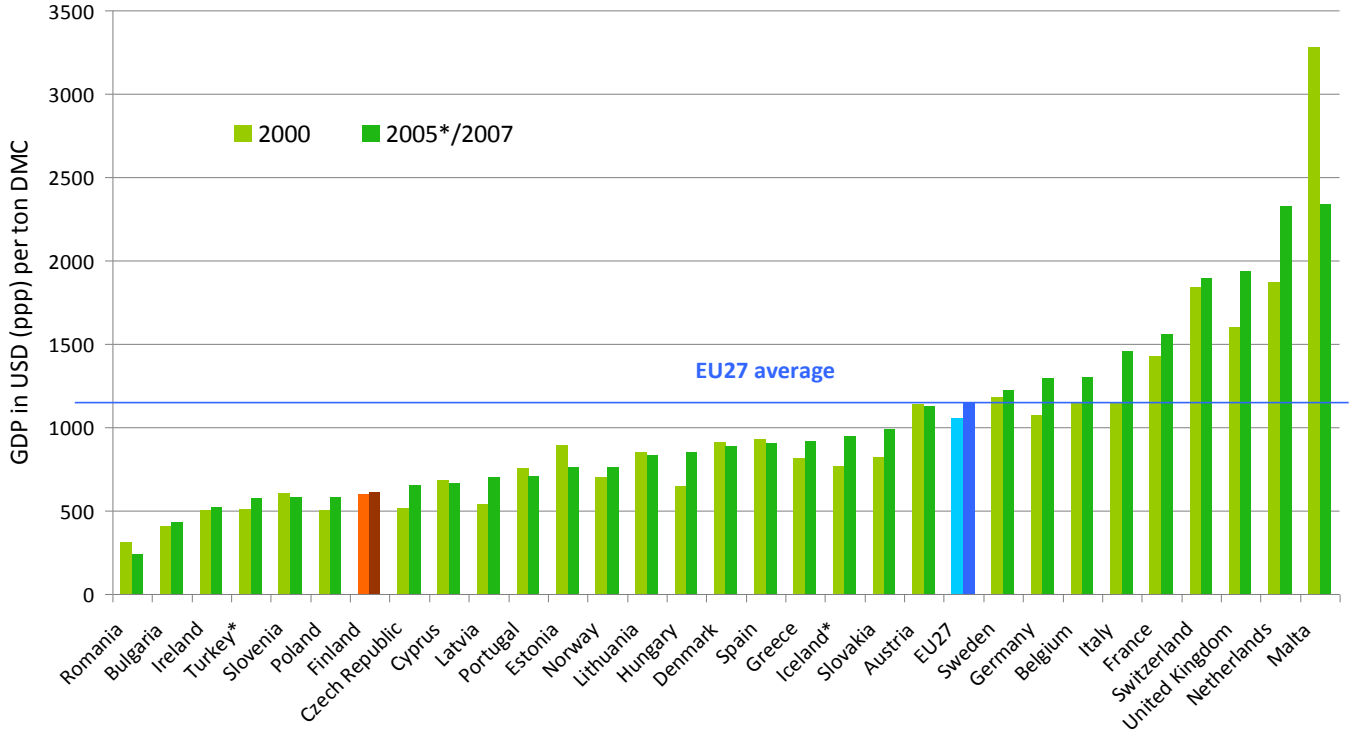
Source: Eurostat [8]

Breakdown of DMC by type of materials (2007)



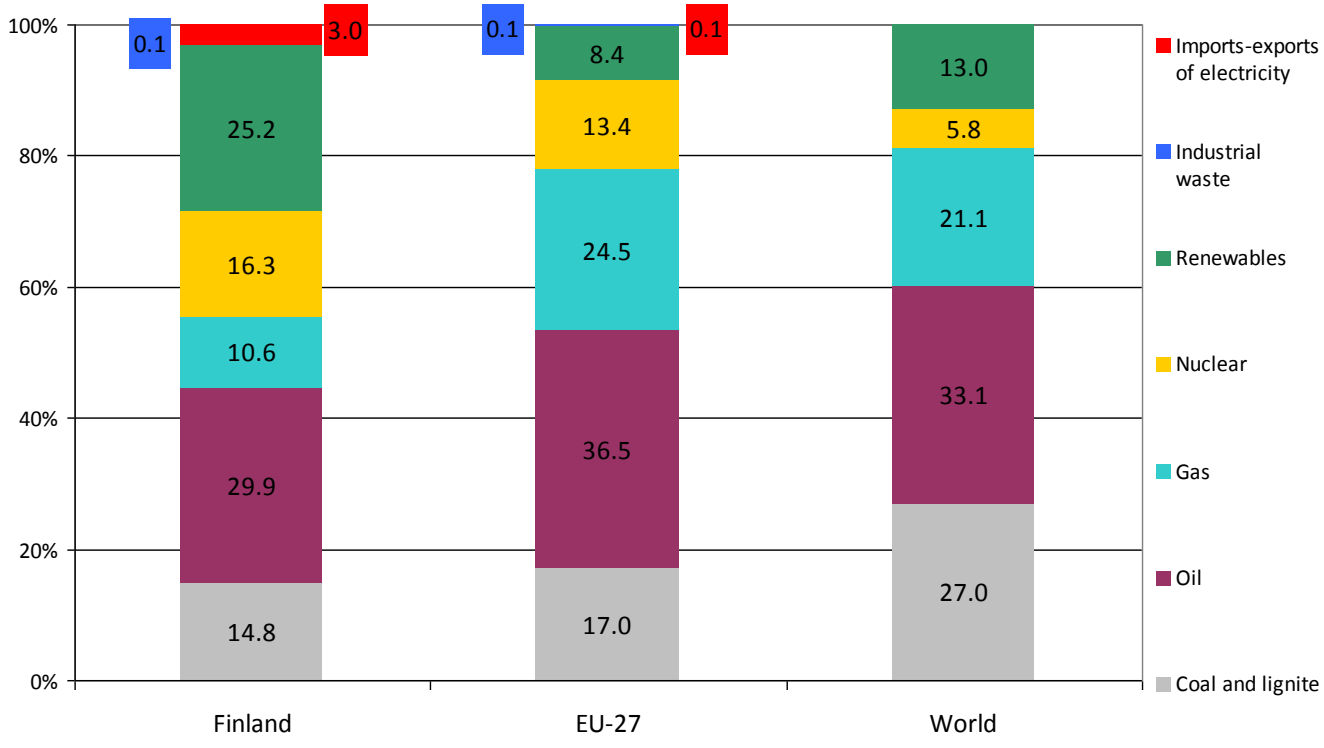
Source: Eurostat [8]

Material productivity 2000 and 2007 [USD ppp/ton DMC]



Source: The Conference Board, Total Economy Database, Eurostat [9]
* = For these countries data is for 2000 and 2005.

Primary energy consumption



Source: Eurostat [10]

2. Evolution and main drivers for the development of resource efficiency policies

Main drivers for the development of resource efficiency policies in Finland include: Curbing climate change and other harmful environmental impacts; adapting to the scarcity, depletion, availability, and accessibility of natural resources; EU policies and legislation; promoting innovative technologies for export on a global market.

3. Overall Policy Approach for Resource Efficiency

Finland has no specific resource efficiency strategy. The Natural Resource Strategy for Finland, Finland's Mineral Strategy, Finland's national programme to promote sustainable consumption and production, and the National strategy for sustainable development, along with several other strategies, plans, and programmes addressing the resource efficiency are presented below.

Getting more and better from less: Proposals for Finland's national programme to promote sustainable consumption and production (2005)
Available in English: Getting more and better from less and in Finnish: Vähemmästä enemmän ja paremmin

The proposals for the programme have been drafted for the Government by the "KULTU Committee" - a widely based team including the representatives of various stakeholder organisations, appointed by the Ministry of the Environment and the Ministry of Trade and Industry in November 2003. The proposals were published and approved in June 2005. The aim of the committee was to increase the efficiency of the use of materials and energy in all stages of product life cycles. Part of the programme will also promote environmental education and the development and adoption of environmental production technologies. The main challenges of Finland were identified to be linked to sustainability, particularly concerning the need to reduce carbon dioxide emissions, the consumption of natural resources, and the amounts of waste generated. The high material affluence of Finnish society is also increasingly affecting the environment outside Finland's boundaries, since the globalisation of production chains means that the environmental impacts of the production of consumer goods are increasingly being felt outside Finland and the EU. The KULTU Committee has therefore decided to create a vision for the future and set the related goals with a timeframe of about twenty years with wide-ranging measures affecting various social and economic sectors. The goals are defined qualitatively and the number of measures listed to reach the goals is 73.

A Natural Resource Strategy for Finland: Using natural resources intelligently (2009)
Available in Finnish, Swedish and English:
http://www.sitra.fi/fi/Innovaatiotoiminta/kansallinen_luonnonvarastrategia/materiaaleja/materiaaleja.htm

The strategy was drawn up in broad collaboration with political, administrative, business, research and media organisations. Sitra (The Finnish Innovation Fund) was responsible for planning, coordinating and reporting in the strategy work.

The strategy was submitted to the Prime Minister and published on April 8, 2009.

In the strategy, a vision for 2030 was set: By using natural resources intelligently, Finland thrives and leads the way. The concept of using resources intelligently relates to innovativeness, sustainability and responsibility, which will all be vital for future success. Natural resources can be utilised as a source of well-being and a basis for sustainable economic activities that also safeguard the environment and its biodiversity: Leading the way relates to taking an exploratory and pioneering role in international policy-making and business contexts.

Finland's Mineral Strategy (2010)
Available in Finnish, Swedish and English: http://www.mineraalistrategia.fi/

In addition to EU policy measures, national strategies are required to secure resources and to promote the minerals sector. Accordingly, the ministerial working group on climate and energy policy has commissioned the preparation of a Minerals Strategy for Finland which was published on 7 November 2010. The key terms of reference have been to anticipate international and domestic development trends in the minerals sector over the next few decades, and to make recommendations concerning the formulation of a sustainable minerals policy and the development of the minerals sector in a way that satisfies the needs of both society and business.

The minerals sector covers the mining industry, which produces metallic ores and industrial minerals, as well as other extractive industries that refine rock material and natural stones. The minerals sector also includes companies who produce the machinery, equipment, technology and services required for extraction and mining.

The vision for 2050 has been defined as "Finland is a global leader in the sustainable utilisation of mineral resources and the minerals sector is one of the key foundations of the Finnish national economy."

The strategy does not propose any specific policy instruments. The themes of the action proposals are:

- Strengthening minerals policy
- Securing the supply of raw materials
- Reducing the environmental impact of the minerals sector and increasing its productivity
- Strengthening R&D capabilities and expertise

Towards a Smart Resource Economy – Government Report to Parliament on Natural Resources (December 2010)
Available only in Finnish: http://www.tem.fi/files/28516/TEM_69_2010_netti.pdf

For an industrialised nation, the Finnish economy is based exceptionally strongly on added value obtained from natural resources. Our forest resources per capita are plentiful. We have significant reserves of aggregate, minerals and peat. Our other important natural resources include clean water, arable and undeveloped land and a variety of natural products. The cultural and recreational values of ecosystem services also offer sustainable opportunities for utilisation in the tourism and wellbeing service sectors.

Against the backdrop of intensifying global competition, natural resources are a great opportunity for Finland. We must, however, generate wellbeing and wealth in more sustainable ways. Our natural resources policy must be based on an understanding of which operational models for the use and protection of natural resources will generate success in the future. The report is based on Finland's Bioeconomy Strategy and Minerals Strategy, but it also brings together several other perspectives (including water economy, ecosystem services as well as material and energy efficiency) to form a coherent whole.

4. Strategies or action plans to improve resource efficiency for individual economic sectors, products or product groups

Government Decision on Energy Efficiency Measures (2010)

Available in English: Government Decision on Energy Efficiency Measures, in Finnish: Valtioneuvoston periaatepäätös energiatehokkuustoimenpiteistä and in Swedish: Statsrådets principbeslut om energieffektivitetsåtgärder

The Government Decision was taken on 4 February 2010. The promotion of energy efficiency in Finland and the measures this requires are increasingly based on the common objectives set within the European Union. Efforts to achieve the EU's energy efficiency objectives are being made through, for example, regulations promoting energy services and the energy efficiency of equipment, buildings and vehicles.

Trading in carbon dioxide emissions also provides incentives for improving energy efficiency. Furthermore, obligatory renewable energy targets and the target for reducing greenhouse gases outside emissions trading require substantial efficiency improvements in final energy consumption.

Towards a recycling society — National waste plan until 2016 (2008)

Available in English: Towards a recycling society. The National Waste Plan for 2016, in Finnish: Kohti kierrätysyhteiskuntaa - Valtakunnallinen jätesuunnitelma vuoteen 2016 and in Swedish: Mot ett återvinningssamhälle

The Government approved on 10 April 2008 the new national waste plan until 2016. This nationwide strategic plan is aimed at developing the Finnish waste management system and promoting waste prevention.

The national waste plan emphasises the relationship between waste issues and other sectors of environmental policy such as chemical policy, sustainable resource use, climate policy, environmental health, soil protection, and technology policy. For the first time, the national waste plan also includes a separate national waste prevention programme.

This plan is the second National waste plan in Finland. In addition, the 15 Centres for Economic Development, Transport and the Environment administer regional waste plans.

Promoting waste prevention by increasing materials efficiency
The waste prevention programme will promote waste prevention by the use of new steering methods to increase materials efficiency in production processes, construction and consumption, and by making the enforcement of current legislation more effective.

Product eco-efficiency will be enhanced by promoting the use of materials efficiency and eco-efficiency criteria in product standards, in eco-labels and in the tendering for public procurement. Activities of the service centre for materials efficiency will be promoted to further materials efficiency in corporations, public administration and households.

To further materials efficiency in industrial production, economic steering methods and possible subsidies that currently hinder the sustainable use of natural resources will be examined. At the same time, materials efficiency for specific sectors will be intensified via agreements (such as the energy conservation agreement between the State and industries). In the construction field, the renovation and maintenance of buildings will be improved.

Advice on waste prevention will be strengthened. Support services will be provided, for example, by the service centre for materials efficiency and the Finnish Environment Institute. To encourage households to use repair services, ways and means of expanding tax deductions to more services, and whether there is a need to do so, will be examined.

Long-term Climate and Energy Strategy Government Report to Parliament (2008)

Summary in English: Climate_Change_and_Energy_Strategy_2008_summary
Report in Finnish: Pitkän aikavälin ilmasto- ja energiastrategia Valtioneuvoston selonteko eduskunnalle.

The aim of the strategy report, published 6 November 2008, is to present a long-term climate and energy strategy, and to define the principal objectives and means of Finland's climate and energy policy for the next few decades, within the context of the European Union and its objectives. The report consists of an outline and strategy texts, including background information, and four appendices. On the other hand, the strategy proper describes the changes that have taken place in the international operating environment, and presents the Government's outlines for energy and climate policy in the forthcoming years, alongside proposals for key measures for the attainment of the EU's objectives regarding the promotion of renewable energy, the enhancement of efficiency in energy consumption, and decreasing greenhouse gas emissions.

According to the trend outlined in the strategy, the share of indigenous energy, and that of renewable energy in particular, will increase markedly over current levels. The share of renewable energy will increase to 38 per cent of total final energy consumption, the efficiency of the energy system will improve, and greenhouse gas emissions will begin to fall on a permanent basis. Furthermore, the share of coal and oil on our energy balance sheet will decrease, and the diversity of our energy system will further improve, while the risk to our energy supply posed by crises originating outside our country will diminish. To an extent, our energy system would be based on greater use of electricity than before.

Enclosed with the strategy are assessments of the impacts and costs of frameworks of measures from the perspectives of energy consumers and the general factors governing public finances and the national economy, such as gross national product and employment.

The ERA17 programme for an energy-smart built environment 2017 (2010)

Report in Finnish with a Summary in English: Kirsi Martinkauppi (ed.): ERA 17 Energiaviisaan rakennetun ympäristön aika 2017

The programme ERA17 was drawn up in 2010 by the Ministry of the Environment, the Finnish Innovation Fund Sitra, and the Finnish Funding Agency for Technology and Innovation Tekes. It seeks to provide answers to the challenges posed to the built environment by climate change mitigation. Without the impact of traffic, the energy consumption and use required for construction amounts to over 40% of final energy consumption and nearly 40% of greenhouse gas emissions. Improvements in the built environment thus play a key role in mitigating climate change and creating a competitive and sustainable society. ERA17 provides a comprehensive action plan to improve the energy efficiency of the built environment, reduce emissions, and promote the use of renewable energy.

Carbon Neutral Municipalities (CANEMU) (2008)

Available in English: Carbon Neutral Municipalities and in Finnish: Kohti hiilineutraalia kunta (HINKU)

In 2008 five Finnish municipalities committed themselves to act as laboratories by striving to curb their carbon dioxide emissions ahead of schedule. This CANEMU project aims at greenhouse gas emission reductions both in the near future (2-5 years) and in the longer term (6-20 years). Since then, the municipalities have taken more than 70 measures to enhance energy efficiency, energy saving, the use of renewable energy sources, and pro-environmental investments. A further 60+ measures are being planned. Researchers, experts, businesses, politicians and local residents will together devise and tailor solutions that can reduce emissions, especially related to housing, transportation and foodstuffs.

Bioeconomy (2010)

Available in Finnish: Biotalous Suomessa – arvio kansallisen strategian tarpeesta. Biotaloustyöryhmän loppuraportti 30.9.2010. [Bioeconomy in Finland – an estimate of the need for a national bioeconomy strategy.]

To support national resource strategy, the Ministry of Employment and the Economy set a working group (WG) on bioeconomy. The WG released its final report in September 2010. The WG proposed 15 action points with several sub-points in each action to promote bioeconomy in Finland. One action point is that a National Biostrategy is to be prepared to concretise how bioeconomy can be utilised to promote new economic development and welfare.

Bioeconomy is a response to the challenges which the depletion of natural resources and climate change pose. It is a new way of action, a new material economy. The non-renewable natural resources are replaced by renewable resources, natural resources are used in a sustainable way, and the material cycle is closed.

Resolution on Sustainable public procurement (2009)

Available in English: Sustainable public procurement, in Finnish: Kestävät julkiset hankinnat, and in Swedish: Hållbara offentliga upphandlingar

The value of public procurement in Finland is EUR 27 billion per year. This means that public actors have 27 billion reasons to make procurements that will help to mitigate climate change, reduce the amount of waste and prevent the chemicalisation of the environment. The Finnish Government passed in 2009 a resolution that encourages all public actors to adopt sustainable procurement – the central government, regional governments and the municipal sector.

Transport

The strategies and programmes within the transport sector address the resource efficiency for example through energy efficiency, material efficiency in the transport infrastructure, and the improvements in the functioning of the society.

Available documents are:
Transport policy guidelines and transport network investment and financing programme until 2020 Government transport policy report to Parliament, available also in Finnish: Valtioneuvoston liikennepoliittinen selonteko eduskunnalle
Liikenne- ja viestintäministeriön hallinnonalan ilmastopoliittinen ohjelma 2009—2020, in Finnish (Climate Policy Programme for the Ministry of Transport and Communications' administrative sector for 2009–2020)

5. Individual types of resources identified as priority for national or sector-specific resource efficiency policies

- Natural resources: water, forest, arable and undeveloped land, minerals, other natural products, cultural and recreational values.
- Energy, renewable energy, indigenous energy sources.
- Resources used in construction and the built environment.
- Waste (prevention, recycling, reuse).

6. Strategic objectives, targets and indicators on resource efficiency

Getting more and better from less. Proposals for Finland's national programme to promote sustainable consumption and production.

Available in English: Getting more and better from less and in Finnish: Vähemmästä enemmän ja paremmin

The proposal contains 73 proposed measures, 57 objectives, and 12 visions. In the future, the use of Finland's own natural resources and diverse domestic markets will become increasingly important with regard to employment and the production of well-being, since economic globalisation imposes serious pressures on Finnish society. Where levels of know-how, training and policies affecting businesses in Finland are concerned, the following factors will be particularly important:

- community structures that facilitate the provision of services and reduce the need for transportation;
- increased self-sufficiency in food production; local and organic production; more businesses based on nature tourism;
- the flexible long-term use of the existing building stock; increased use of timber in construction;
- increased use of renewable and low-emission energy sources;
- environmental technologies, eco-efficiency improvements and social innovations designed to improve the quality of life and create new sustainable jobs;
- responsibility for environmental impacts throughout product chains taken by both the public and private sector;
- policies including financial incentives and voluntary initiatives;
- intensified co-operation between different stakeholders.

Finland's Mineral Strategy

Available in Finnish, Swedish and English: http://www.mineraalistrategia.fi/

Three strategic objectives and 12 action proposals related to four distinct themes have been defined to facilitate implementation of the minerals strategic vision. Strategic objectives are

1) Promoting domestic growth and prosperity,
2) Solutions for global mineral chain challenges, and
3) Mitigating environmental impact.

Action proposals

Strengthening minerals policy

1. The significance, growth potential and risks pertaining to the minerals sector should be recognised by the Finnish government and actively included within government policy

programmes and parliamentary policy agenda. Minerals policy objectives are to be clearly defined and a stable, competitive operating environment is to be secured for the sector. The Ministry of Employment and the Economy strengthens its role as a key facilitator for the minerals sector. An expert working group is appointed to develop policy alternatives and to monitor implementation of the objectives. (TEM)

2. Finland assumes a visible role in implementing the objectives of the EU's Raw Material Initiative and in establishing a minerals policy in cooperation with Sweden and other mining countries in the EU area. Priority is placed on the utilisation of mineral resources within the EU area. An additional focus is on promoting good governance and infrastructure related to the utilisation of the mineral resources of developing countries. (TEM, UM, YM, GTK)

3. Improve the minerals sector's financing opportunities and increase Finnish ownership. Institutional investors and the government have a key role in this area through continuing public support for infrastructure investments and through lending and loan guarantees for mine investments. (TEM, Finnvera plc, Finnish Industry Investment Ltd, investors, financing institutions)

4. Investigate the potential of using tax incentives to promote exploration for natural resources and for efficient use of resources. Establish whether state ownership is appropriate and beneficial with respect to sustainable and efficient utilisation of mineral resources. (VNK, VM, TEM)

Securing the supply of raw materials

5. Compilation, interpretation and distribution of diverse geoscientific and environmental data are further enhanced, in order to promote sustainable utilisation of mineral resources and maintain their supply security. (TEM, YM, GTK)

6. Permit processing times are significantly reduced and permitting procedures are refined. This is to be achieved in part by improved cooperation between different authorities and by arranging joint hearings in the event of appeals being lodged against applications. (TEM, YM, Tukes, AVI, municipalities, businesses)

7. The supply and sustainable utilisation of mineral resources are regarded as integral to land use planning. Ensuring the adequate supply of aggregates to expanding urban centres should be a priority area in regional and local government land use planning processes. Impediments to the recycling of aggregates are eliminated by developing incentives for recycling and re-use, and through logistic solutions relating to management of stockpiles, rates of consumption data and designation of intermediate storage sites serving multiple municipalities. (YM, regional councils, ELY, GTK, VTT, Syke)

Reducing the environment impact of the minerals sector and increasing its productivity

8. The material and energy efficiency of machinery, equipment and processing technologies within the minerals sector are further improved. Incentives are created for the recycling and re-use of stockpiled waste materials, tailings, mineral products and earth materials associated with construction industries. Encourage the presentation of an annual award for excellence and achievement in resource efficiency. (YM, TEM, Tekes, companies, VTT, GTK, Motiva Oy)

9. Green economy business is promoted through cooperation between the SME sector and research institutes by combining expertise from throughout the entire minerals sector, with skills in risk management, land use planning and good governance. (TEM, YM, companies, universities, Tekes, VTT, GTK, Syke, Motiva Oy)

10. Establish mechanisms that promote cooperation between local residents, companies and the regulatory authorities to ensure the sustainable well-being of individuals and communities throughout the entire life-cycle of mining activity. (TEM, YM, companies, ELY, AVI, municipalities, civic organisations)

Strengthening R&D operations and expertise

11. Establish a research programme under the Finnish Funding Agency for Technology and Innovation (Tekes), aimed at developing innovative solutions, products and services in all areas of the mineral utilisation chain. (TEM, YM, Tekes, Finnish Minerals Cluster, GTK, VTT, universities)

12. Account for the minerals sector in the education administration's long-term planning, and the significance of metals, minerals and rock materials in everyday life is emphasised as part of environmental education at different educational levels. Teaching resources are reinforced in university training and research funding is ensured for leading research at the international level in selected fields. Specialized training programmes at universities of applied sciences, and technical trade schools are structured to meet future needs. (OKM, SA, universities, research institutes, schools, companies)

A Natural Resource Strategy for Finland: Using natural resources intelligently

Available in Finnish, Swedish and English:
http://www.sitra.fi/fi/Innovaatiotoiminta/kansallinen_luonnonvarastrategia/materiaaleja/materiaaleja.htm

The strategy has four key strategic goals:

- Finland has a thriving bioeconomy generating high added value.
- Finland utilises and recycles material flows effectively.
- Regional resources generate both national added value and local wellbeing.
- Finland takes initiatives and leads the way on natural resource issues.

First steps towards change will be:

1. Bio-expertise and business activities,
2. Biorefineries,
3. Enhancing controls over the material cycle,
4. Product-centred resource efficiency,
5. Restoring and closing cycles,
6. Businesses' resource efficiency,
7. Services based on non-material natural resources,
8. Dispersed production models,

9. Interaction between rural areas and growth centres,
10. Regional strategies,
11. Exports of expertise on environmental and natural resource issues,
12. International measures and rules,
13. International natural resource policies,
14. Strategies for specific natural resources,
15. Administrative work-sharing, co-operation and regulations,
16. Natural resource accounting and economic incentives,
17. Forecasting and integrated expertise,
18. Training for decision-makers.

Government Decision on Energy Efficiency Measures
Available in English: Government Decision on Energy Efficiency Measures, in Finnish: Valtioneuvoston periaatepäätös energiatehokkuustoimenpiteistä and in Swedish: Statsrådets principbeslut om energieffektivitetsåtgärder

The Government decided, on the basis of the committee's proposals, the following policy lines and measures to achieve climate and energy strategy's objectives in pursuit of greater efficiency in energy use.

Challenging objectives cannot be attained by implementing individual measures alone, but society as a whole must undergo fundamental change. A range of conditions and measures must be in place for the achievement of such goals. These conditions form the broad-based and far-reaching basis of all activities.

Although the impact of basic measures will be gradual, continuous effort must be invested in their implementation. Measures in support of such effort must be launched in every administrative sector. This is the only way to ensure that the basic prerequisites for energy efficiency are in place. The basis for activities consists of the following cluster of issues:

- A learning and developing society, underpinned by values and strong will, making determined progress towards the targets.
- Basic structures of the society are creating a solid foundation for future wellbeing.
- Behaviour and the networks affecting it are of huge importance with a view to the action taken – establishing the social potential for energy efficiency.
- Lifecycle thinking and the avoidance of partial optimisation become a natural part of energy efficiency activity, in which cost-efficiency has a special emphasis.
- Maintaining expertise and developing it continuously by means of education, advice and communication, as an essential part of any such activity.
- The functioning 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 a clear division of responsibilities.
- Generally, accepted concepts and benchmarks are needed in the systematic monitoring of measures.
- Foresight and identifying weak signals will assist in remaining on the path to success.

In practice, this basis will be built and maintained through individual measures. These issues must be taken into account in any decision-making, programmes and activities related to energy efficiency. In order to ensure systematic implementation and a clear division of responsibilities, the organisation of activities must also be developed on the basis of the committee's proposals.

Towards a recycling society — National waste plan until 2016

Available in English: Towards a recycling society. The National Waste Plan for 2016, in Finnish: Kohti kierrätysyhteiskuntaa - Valtakunnallinen jätesuunnitelma vuoteen 2016 and in Swedish: Mot ett återvinningssamhälle

The goals of waste management are described by seven main themes.

- Improving the materials efficiency of production and consumption,
- Promoting recycling,
- Decreasing hazardous chemicals in waste,
- Reducing harmful effects on the climate from waste management,
- Reducing risks for health and the environment from waste management,
- Developing and clarifying the organization of waste management,
- Improving waste management know-how.

One additional goal is related to waste shipments. For each theme, long-term goals and required policy instruments have been proposed, and the government body responsible for implementation has been identified.

Increasing recycling by promoting demand for recycled materials
The use of recycled materials in public civil engineering works will be increased. The use of applicable waste materials as fertilizer will be promoted.

Reducing GHG emissions from wastes
Landfilling of biodegradable waste will be restricted. The recovery of methane gas from landfills will be strengthened. The energy recovery of waste that is not suitable for materials recycling will be increased.

Target for waste prevention
The volume of municipal waste will be stabilised and then reduced to the level at the beginning of 2000 until the year 2016.

Recovery target for municipal waste is 80%
The target is that 50% of municipal solid waste will be recycled, energy will be recovered from 30% and a maximum of 20% will be landfilled until the year 2016.

Long-term Climate and Energy Strategy Government Report to Parliament

Summary in English: Climate Change and Energy Strategy 2008 summary

Report in Finnish: Pitkän aikavälin ilmasto- ja energiastrategia Valtioneuvoston selonteko eduskunnalle.

The objective set for Finland in the Climate and Energy Strategy of the Government entails halting and reversing growth in energy end use. Compared to the projected position that would arise if no new measures to improve energy efficiency were taken, the goal is to enhance final energy consumption by approximately 37 TWh, i.e. around 11%, by 2020. Correspondingly, the efficiency of electricity consumption must be enhanced by some 5 TWh, representing approximately 5%. The longer-term vision entails a further decrease in final energy consumption by 2050 of at least one third of the 2020 level.

ERA17 for an energy-smart built environment 2017

Report in Finnish with a Summary in English: Kirsi Martinkauppi (ed.): ERA 17 Energiaviisaan rakennetun ympäristön aika 2017

The target is to be a pioneer in energy-smartness by 2017, the national jubilee year, and, by 2050, to make the Finnish built environment the best in the world. There are now 31 proposals for actions and measures, and according to the first impact estimates they will reduce the energy consumption of the built environment by approximately 20–30 % and greenhouse gas emissions by 10–35 % in 2010–2050.

Carbon Neutral Municipalities (CANEMU)

Available in English: Carbon Neutral Municipalities and in Finnish: Kohti hiilineutraalia kunta (HINKU)

The municipalities participating in the Carbon Neutral Municipalities (CANEMU) project, i.e. Kuhmoinen, Mynämäki, Padasjoki, Parikkala and Uusikaupunki, aim to achieve carbon neutrality, i.e. to decrease their greenhouse gas emissions by a minimum of 80 per cent from the 2007 level, by 2030. Uusikaupunki has adopted an even more ambitious objective: a 30 per cent reduction on the 2007 emissions level by 2012.

The project proves that, with the help of modern technology, such a target is attainable at current energy prices. Based on a rough estimate, approximately one third of the target would be reachable by enhancing energy efficiency. The remaining part would be feasible by replacing fossil fuels with renewable energy.

The system for the Real time carbon dioxide emission monitoring presents the national and regional emission information. The five CANEMU municipalities are special cases and information on them is presented separately in the system.

Bioeconomy

Available in Finnish: Biotalous Suomessa – arvio kansallisen strategian tarpeesta. Biotaloustyöryhmän loppuraportti 30.9.2010.

The Working Group on Bioeconomy presents in the final report several initiatives and measures to establish, organise, and implement the bioeconomy strategy in the next few years.

Sustainable public procurement

Available in English: Sustainable public procurement, in Finnish: Kestävät julkiset hankinnat, and in Swedish: Hållbara offentliga upphandlingar

Electricity from renewable sources

- The Government supports the use of renewable forms of energy through its resolution. The central government will switch to green electricity. At least 30% of purchased electricity will be produced from renewable energy sources by 2010 and at least 60% by 2015.

Low energy and passive buildings

- New government buildings or new, leased properties must meet the requirements of energy efficiency class A and existing buildings under renovation must meet the requirements of at least energy efficiency class C by 2010. All buildings that are new, under renovation or leased must be passive by 2015.

Transport on rails

- The need for transport and mobility will be reduced by 10% by 2015. State officials will take into consideration the fuel consumption and emissions of vehicles purchased for mass transport. In 2020, at least half of all new purchased or leased passenger cars will have carbon dioxide emissions of less than 120 g/km and at least 25% will be under 110 g/km.

Sustainable eating

- The amount of organic, vegetable-based or seasonal food will be increased in foodstuff procurement for food services. These foods will be available in Government kitchens and provided by food services at least once a week in 2010 and at least twice a week by 2015.

Criteria for energy- and eco-labels

Criteria equivalent to the requirements for energy- and eco-labels will be used as comparative principles in the procurement and leasing of energy-using equipment. Furthermore, public actors will switch to energy-efficient lighting. Life-cycle environmental impacts will be reduced in service procurement by, for example, taking the criteria set for Nordic or EU eco-labels into consideration.

Indicators

Finland has no dedicated resource efficiency indicators but a number of indicators reflect also the situation and changes of resource efficiency:

- Domestic extraction (DE), Domestic Material Input (DMI), Domestic Material Consumption (DMC), Total Material Requirement (TMR), Components of DMC/DMI, Hidden Flows (HF) 2002, 2005
    - Suomen kansantalouden materiaalivirtojen ympäristövaikutusten arviointi ENVIMAT-mallilla [Assessment of the environmental impacts of material flows caused by the Finnish economy with the ENVIMAT model} (in Finnish). The Finnish Environment 20/2009. Finnish Environment Institute (SYKE). http://www.ymparisto.fi/download.asp?contentid=108589&lan=fi

- Energy efficiency indicators.
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- Total Energy Consumption by Energy Source and CO2-emissions 1990 – 2007.
  - Official Statistics of Finland (OSF): Energy consumption [e-publication].ISSN=1798-6869. Helsinki: Statistics Finland. Access method: http://www.stat.fi/til/ekul/tau_en.html
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- Share of renewable energy in fuel consumption of transport.
  - Eurostat http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdcc340&plugin=1
- Annual water abstraction by source and by sector 1998 – 2009
  - Eurostat http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/data/database
- Use of freshwater resources.
  - EEA http://www.eea.europa.eu/data-and-maps/indicators/use-of-freshwater-resources/use-of-freshwater-resources-assessment-2
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- Eco-efficiency in Finland.

  - Suomen ympäristön mittarit 2011. Avainindikaattorit ympäristönsuojeluun (in Finnish) (p 13). Finnish Environment Institute 2011. http://www.ymparisto.fi/download.asp?contentid=128257&lan=fi
- Household consumption expenditure 1985 – 2006 by type, socio-economic status, region, age, household size and structure, income.
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7. The institutional setup for the development and implementation of resource efficiency policies

The sectoral and thematic resource efficiency processes are managed by the relevant ministries, mainly by Ministry of Employment and the Economy, Ministry of the Environment, Ministry of Agriculture and Forestry, and Ministry of Finance. The Government as a whole as well as the Parliament have an important role, too.

A number of organisations are involved in the different resource efficiency processes. Many of these are members of **LYNET**, the Finnish Partnership for Research on Natural Resources and the Environment:

- Evira - Finnish Food Safety Authority
- GL - Finnish Geodetic Institute
- MTT - Agrifood Research Finland
- Metla - Finnish Forest Research Institute
- RKTL - Finnish Game and Fisheries Research Institute
- SYKE - Finnish Environment Institute

LYNET is integrating the efforts of the different organisations when addressing the global problems connected to natural resources, food, energy, climate change, biodiversity, and ecosystem services. LYNET has a number of joint programmes: Climate change adaptation and mitigation, Baltic Sea, Bioresources, and Sustainable Land Use.

Also Geological Survey of Finland and Finnish Meteorological Institute, for example, are involved in the work.

As part of Finland's national programme to promote sustainable consumption and production, the Ministry of the Environment and the Ministry of Employment and the Economy established a **Material Efficiency Centre** as a unit in **Motiva** in spring 2008. The Centre aims at being a well-known and independent national coordinator, information source and networker in the field of material efficiency. The Centre initiates and coordinates interactive networks among material efficiency professionals and acts as a data and knowledge centre. The Centre promotes material efficiency by emphasising the importance of pro-activity and early adaptation. Best results in material efficiency are achieved by influencing early on through planning and promoting Design for Environment. In an optimal situation, the whole value chain will benefit from life cycle considerations in product development.

Activities of the Centre include:

- Material Efficiency Audit tools for companies
- Help for Environmental Technology Procurement
- International activities
- Development of the Material Flow Cost Accounting Standard (ISO 14051)

Motiva itself is an expert company promoting efficient and sustainable use of energy and materials. Its services are utilised by the public administration, businesses, communities, and consumers. Motiva operates as an affiliated Government agency, and the company's entire share stock is in Finnish state ownership. Motiva is also the competent body of ecolabelling (Nordic Swan and EU Flower) since 1.1.2011.

The Energy Efficiency Committee was set up in 2008 by the Ministry of Employment and the Economy. The broad-based Committee had over 30 members representing a broad range of public and private organisations and NGOs. The Committee was given the task 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. The Committee published the proposals in June 2009: Ehdotus energiansäästön ja energiatehokkuuden toimenpiteiksi (in Finnish), Proposal for energy saving and energy efficiency measures (extract from the report in English).

Finnish National Commission on Sustainable Development (FNCSD) was established by the Government in 1993 to promote sustainable development in Finland, and the Commission has operated continuously since that time. The present term of the Commission will last until end of 2012.

The FNCSD acts as a forum where different stakeholders can present their ideas, goals and programmes and engage in a broad debate about sustainability. The Commission is chaired and co-chaired by ministres and it has 43 members representing the Government, Parliament, administration, businesses and trade unions, local administration, education, NGOs, science and research, art, and churches

The Commission has introduced and debated many highly topical themes, acted as an interpreter between national and international sustainable development trends and supported the work carried out by various actors. The Commission has played an active role in the preparation, endorsement and approval of different strategies, programmes and processes for sustainable development, including the National Strategy for Sustainable Development of June 2006. A discussion forum open for different groups of actors has also been seen as a valuable factor building up national integrity. The composition of the FNCSD is broad. In order to give political impetus to the work, the Government has taken the lead in the Commission.

8. Selected policy instruments or initiatives on resource efficiency presented in more detail

Government Decision on Energy Efficiency Measures
Available in English: Government Decision on Energy Efficiency Measures, in Finnish: Valtioneuvoston periaatepäätös energiatehokkuustoimenpiteistä and in Swedish: Statsrådets principbeslut om energieffektivitetsåtgärder

The Government Decision contains a rather detailed implementation plan for 2010–2020. The measures will be launched in stages, with the aim of launching most of them by the end of 2011.

Generally speaking, the planned measures require cooperation between various administrative sectors. EU cooperation will form an integral part of the implementation of many measures. Finland will actively participate in such cooperation, while promoting the development of rational and resource-efficient Community legislation and its efficient implementation. In addition, other forms of international cooperation will underpin the planning of national measures and the adoption of good practices developed in other countries.

In the following section, the measures have been grouped by area of activity, with those listed in bold font likely to be implemented by the end of 2011. Measures not marked in bold are either continuing measures or ones that will be implemented after 2011, but whose preparation and maintenance will be attended to over the next few years. The ministry responsible for the measure is given in brackets. In addition to the Government's outlines and responsibilities, other actors in the sector have significant responsibility for the implementation of most measures.

The Ministerial Working Group on Climate and Energy Policy will monitor the realisation of the implementation programme and its impacts. The first progress report on the programme's realisation will be drawn up in the spring of 2011.

A. Cross-cutting areas of activity

Basis for activities

- **In 2011, an independent expert will evaluate the current status of this basis from the perspective of energy conservation and energy efficiency. (Ministry of Employment and the Economy)**
- **The organisation of energy efficiency promotion will be developed. (Ministry of Employment and the Economy)**
- Including energy efficiency in the education programmes of educational institutions at all levels, as part of education on climate change and the promotion of sustainable development. (Ministry of Education)
- Ensuring the operability of the science-research-development-innovation chain, in order to generate and commercialise new solutions. (Ministry of Employment and the Economy, Ministry of Education).
- Reinforcing multidisciplinary research in such a way that different fields of scientific research develop their capabilities and produce basic information on structures, activities,

consumer behaviour and creation of well-being in a society with significantly lower energy requirements. (Ministry of Education, Ministry of Employment and the Economy)
- Developing indicators that measure the development of energy efficiency in various sectors. (Ministry of Employment and the Economy)
- Enhancing cooperation between various authorities in order to increase cohesion in community structures. (Ministry of the Environment, Ministry of Transport and Communications)

Development of research and innovations

- **Launching a network of various actors promoting energy efficiency innovation that seeks, screens and advances development ideas on energy efficiency. (Ministry of Employment and the Economy)**
- **Launching a research programme or project entity with a strong focus on energy efficiency. Behavioural research will be tied to research on energy efficient technology and innovations. (Ministry of Employment and the Economy)**

Communication, advisory services and education

- **A system for providing consumers with advice on energy-related matters will be introduced and a national coordination centre will be designated for it. (Ministry of Employment and the Economy)**
- **The advisory network for renovation construction, as well as overall communications related to renovation construction, will be developed, taking account of the perspective of energy efficiency in buildings. (Ministry of the Environment)**
- **Energy efficiency classifications for cars will be introduced in car retailing. (Ministry of Transport and Communications)**
- **Energy companies will be required to provide consumers with feedback information on their energy consumption. (Ministry of Employment and the Economy)**
- Ensuring the integration of energy efficiency and energy conservation skills in vocational additional and supplementary training in various fields. (Ministry of Employment and the Economy, Ministry of Education).
- Energy efficiency practices and model solutions from various fields will be gathered and distributed for implementation elsewhere. (Ministry of Employment and the Economy)

Public sector

- **The public sector will serve as a strong example to others in the promotion of energy efficiency. (Ministry of Employment and the Economy) - A framework act and decrees on the energy efficiency of public sector will be enacted and implemented in a timely manner. (Ministry of Employment and the Economy)**
- **By the end of 2010, the Ministry of Employment and the Economy will devise a plan for energy efficiency, which will serve as a model for other state organisations and municipalities.** Plans for other administrative sectors will be completed during 2012. (Ministry of Employment and the Economy)
- In public procurements, energy efficiency will be introduced as a central criterion in accordance with the Government's decision on promoting sustainability in public procurements. (Ministry of Employment and the Economy)

B. Sectoral activities

Community structure

- **Alternative energy and community technology solutions will be promoted. (Ministry of the Environment)**
- **Drawing up regional climate and energy strategies and genuinely linking them to the steering of land use and the development of transport systems will be promoted. (Ministry of the Environment)**
- Assessment methods for evaluating the sustainability of the community structure, based on common concepts and indicators, will be developed to support decision making. (Ministry of the Environment)
- Steering of the community structure will be made more effective. The necessary legislation and instruments for planning and implementation will be developed. (Ministry of the Environment)
- The steering of the community structure of large urban regions and the preconditions for the coordination of land use and transport will be improved through legislation, taking all zoning levels into account. (Ministry of the Environment)

Buildings

- **Stricter energy regulations for new building projects will be implemented in phases. (Ministry of the Environment)**
- **Renovation construction and, as part of this, the improvement of energy efficiency will be supported and encouraged through targeted economic steering and support measures. (Ministry of the Environment)**
- **Statutes will be used to steer the installation of apartment-specific water meters in new buildings. (Ministry of the Environment)**
- Requirements will extended to renovation construction on the basis of the directive under renewal on the energy performance of buildings. (Ministry of the Environment)
- Adoption of life-cycle based tools for building planning, use and maintenance will be promoted. (Ministry of the Environment)
- The development and implementation of operating models for the planning and customer-oriented realisation of renovation construction will be promoted, in cooperation with actors in the construction and real estate sector. (Ministry of the Environment)

Transport

- **Speeding up the renewal of existing car stock and promoting the adoption of new energy-efficient vehicle technology (incl. electric cars) introduced on the market. Central measures include developing taxation on cars, vehicles and fuel (Ministry of Finance), and introducing energy efficiency classifications for passenger cars (Ministry of Transport and Communications). These measures will be dimensioned so as not to stimulate an increase in the car stock.**
- Public transport will be promoted on the basis of the Public Transport Act that entered into effect in December 2009 and the public transport development programme for 2009-2015. Public transport structures, its scope and quality, and feeder traffic will be developed and road investments that support public transportation realised. (Ministry of Transport and Communications)

- Preconditions will be created for improving the energy efficiency of goods traffic. Trouble-free traffic connections to central logistics hubs will be developed by taking advantage of e.g. the opportunities offered by an intelligent transport system. (Ministry of Transport and Communications)
- Drawing up an action and financing programme for increasing the popularity of light traffic and introducing service centres for transportation. (Ministry of Transport and Communications)
- The need and impacts of road pricing will be studied. (Ministry of Transport and Communications, Ministry of Finance)

Households and agriculture

- **Regulations concerning energy-efficiency standards for equipment will be implemented. Efficient implementation will be ensured by sufficient communication. (Ministry of Employment and the Economy)**
- **An emphasis will be placed on promoting energy efficiency in outlining agricultural support systems. (Ministry of Agriculture and Forestry)**
- Promoting the introduction of energy efficient equipment in the market and investigating the adoption of even stronger economic incentives in order to increase energy efficiency measures. (Ministry of Employment and the Economy)
- Ensuring that households have access to reliable, up-to-date, unbiased information on energy conservation measures which are genuinely advisable and cost effective in the context of our overall energy system. (Ministry of Employment and the Economy)
- Developing and introducing methods for metering and monitoring apartment-specific energy consumption. Consumers will be provided with comparable data on their energy consumption and on measures for improving its efficiency. (Ministry of Employment and the Economy)
- Ensuring the systematic implementation of energy programme on farms. (Ministry of Agriculture and Forestry)
- Energy efficiency requirements will be considered in regulations and stipulations concerning supported farm and rural building. (Ministry of Agriculture and Forestry)

Industry and services

- **Extensive implementation of the legislation concerning companies in the energy sector, which entered into force at the beginning of 2010 and ensuring energy efficiency services for energy users. (Ministry of Employment and the Economy)**
- **The scope of application of energy efficiency subsidies for companies and organisations will be extended and financing models and business concepts will be developed. (Ministry of Employment and the Economy)**
- Energy efficiency agreements will be made substantially more ambitious and extensive than before, and will be linked to research and innovation activities. Energy auditing procedures in support of the agreements will be further developed. (Ministry of Employment and the Economy)
- Devising models for including energy efficiency in various procurement processes and contracts. (Ministry of Employment and the Economy)
- Launching a survey on the cost-effectiveness criteria that might be used for the more effective comparison of new investments in energy production and investments in end use. (Ministry of Employment and the Economy)

9. Topics of interest and information needs for follow up work

The presentation of the resource efficiency policies of the different countries has certain value per se. However, it would be also important to learn about the practical implementation of the policies; how it is organised and what have been the main obstacles or best practices. Similarly, information on the monitoring and assessment of the policy effectiveness would be very valuable.

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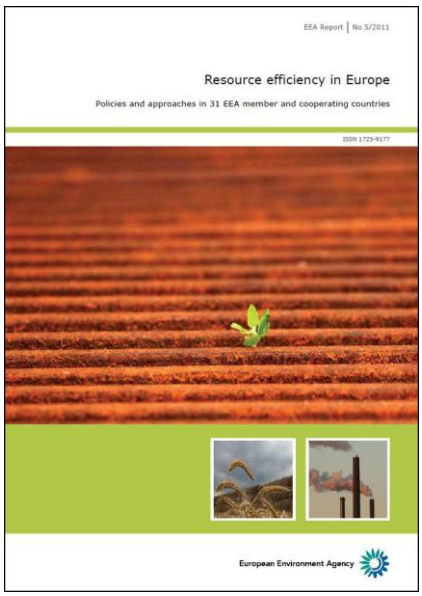

Resource efficiency in Europe

Policies and approaches in 31 EEA member and cooperating countries

Further information about resource efficiency policies, including the analytical report and thirty-one detailed country profiles, are available on the EEA website:

http://www.eea.europa.eu/resource-efficiency

Selected examples of resource efficiency policies, instruments or targets presented in the thirty one detailed country profiles