

REPORT IN COMPLIANCE WITH THE RES-E-DIRECTIVE ON THE NATIONAL OBJECTIVES
CONCERNING ELECTRICITY PRODUCED FROM RENEWABLE ENERGY SOURCES AND
THE IMPLEMENTED AS WELL AS THE PLANNED MEASURES IN FINLAND WHICH WILL
ACHIEVE THESE OBJECTIVES

Summary

In accordance with paragraph 2 of Article 3 of the Directive (2001/77/EC) of the European Parliament and Council, concerning the promotion of electricity produced from renewable energy sources in internal markets, Finland has prepared the attached report which presents the Finnish national objectives with regard to the future use of renewable energy sources generally, with particular emphasis on electricity generated from renewable energy sources. Furthermore, the report presents the already implemented as well as the planned measures which will be launched in order to achieve the objectives.

In Finland, the programmes that have been drafted for the promotion of renewable energy sources aim to promote renewable energy in all energy generation and usage. The measures that are undertaken for the generation of electricity and those that focus on the generation and use of other forms of energy cannot always be differentiated. For this reason, this report addresses renewable energy sources as a whole, however, with special emphasis on all the objectives and action which particularly refer to the generation of electricity.

The objectives concerning renewable energy are incorporated into an Action Plan to promote renewable energy sources which dates from 1999. This particular Action Plan was adopted in its entirety and incorporated into the National Climate Strategy. The objective of the Action Plan for electricity generation from renewable sources is 31 % of the total electricity consumption in 2010.

In connection with the policy decision on nuclear energy, which was passed by Parliament after the approval of the Climate Strategy, Parliament made the provision that renewable energy sources must be promoted in part more extensively than the Action Plan requires. Consequently, the Ministry of Trade and Industry appointed a working group to prepare a proposal concerning a new, intensified Action Plan for the period 2003-2006 to promote renewables. The working group finalised its proposal on 16.12.2002.

Because the new Action Plan has not yet been processed or approved at government level, this report presents both the objectives and action contained in the 1999 Action Plan and the objectives of the new Action Plan, as well as the additional measures it proposes. However, in its own activities, the Ministry

of Trade and Industry takes the view that renewables should be promoted in line with the new Action Plan. The objective set in the new Action Plan for renewable electricity corresponds with the objective set for Finland in the Directive; in other words, renewable electricity should account for 31 % of the total electricity consumption in 2010.

1. National Climate Strategy

As part of the European Union, Finland's objective is to limit the greenhouse emissions which cause climate change, aiming to produce average annual emissions in the first contractual period (2008-2012) of the Kyoto Protocol that do not exceed the 1990 level, which is the equivalent of about 77 million tonnes of carbon dioxide. The great majority of the emissions, about 70 %, consist of carbon dioxide emissions created by the combustion of fossil fuels and peat.

On 15th of March 2001, the Council of State approved a National Climate Strategy which was provided as a report to Parliament on 27.3.2001. The National Climate Strategy includes the policies, objectives and measures which the government feels are required in order to achieve the national objective.

The Climate Strategy estimates that greenhouse gas emissions must be reduced by the equivalent of 14 million tonnes of carbon dioxide by 2010. The emissions reduction requirement amounts to about 15 % of the total amount which the emissions are expected to reach without any measures.

Of this emissions reduction, 3-4 million tonnes can be achieved by conserving energy, 4-5 tonnes by promoting renewable energy, more than one million tonnes by other measures concerning greenhouse gases and 6-10 million tonnes of carbon dioxide equivalent by action targeting the acquisition of electricity.

According to the conclusions reached in the report, an energy conservation programme as well as a programme to promote renewable sources of energy must be implemented, if the set objectives of the Climate Strategy are to be achieved. The above action would achieve about one half of the desired emissions reduction. The required reduction in emissions and the impact of the various measures are illustrated in Figure 1.

Mt CO₂-ekv.

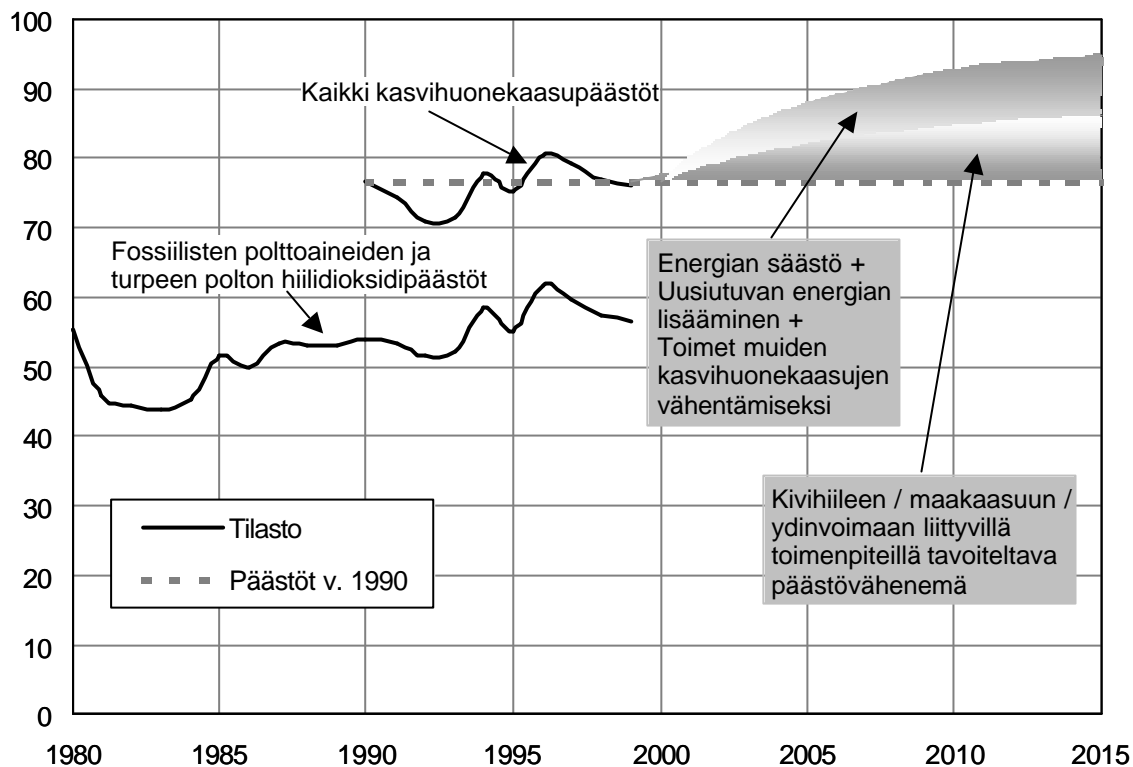


Figure 1. Greenhouse gas reduction requirement in Finland.

Key:

Mt CO₂-ekv. = Mt CO₂ equiv.

Kaikki kasvihuonekaasupäästöt = Total greenhouse gas emissions

Fossiilisten polttoaineiden ja turpeen polton hiilidioksidipäästöt = Carbon dioxide emissions from the use of peat and fossil fuels

Energian säästö + ... = Energy conservation + increase in renewable energy + measures concerning the reduction of other greenhouse gases

Kivihiileen / maakaasuun / ... = Emission reduction target for measures concerning the use of coal / natural gas / nuclear power

Tilasto = Statistic

Päästöt v. 1990 = Emissions in 1990

The basis for the government's Climate Strategy is that the increase in the production and use of renewable energy sources is boosted in line with the 1999 Action Plan to promote renewable energy sources, and the measures under the programme are implemented regardless of whether other measures are deemed appropriate at some later date, for example concerning the generation of electricity.

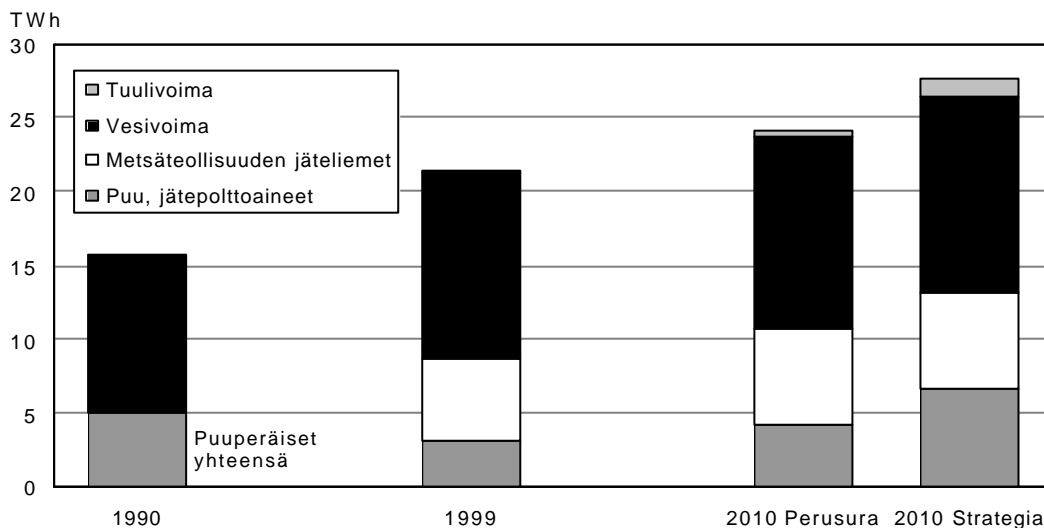
2. The 1999 Action Plan to promote renewable energy sources

Objectives

The benchmark year for the current promotion programme is 1995. The overall objective that was set for the Action Plan was to double the use of renewable energy sources by the year 2025. More detailed objectives were set with regard to the situation in 2010, by which time the overall use of renewable energy sources would increase by 50 %, or 3 Mtoe. The projected increase in the generation of electricity using renewable energy sources in the same period was just over 8 TWh. The share of electricity generated using renewables in 2010 would be 31 % of the estimated total usage.

The objectives of the Action Plan place the increased use of biofuels in a commanding position. They will account for about 90 % of the overall objective. The increase of 2.8 Mtoe in the use of biofuels is divided into wood-based industrial fuels (50 %), forest fuels (30 %) and recycled fuels produced from graded waste (20 %). In this instance, peat is not included as a biofuel. Another restriction in the Action Plan relates to hydropower, as only plants of under 10 MW are included.

The objectives of the Action Plan were adopted as such into the scenarios of the Climate Change Strategy. However, this time the benchmark year was 1999. Figure 2 illustrates the objectives of the promotion programme in relation to the basic course.



Key:

Tuulivoima = Wind energy

Vesivoima = Hydropower

Metsäteollisuuden jäteliemet = Spent liquors in forest industry

Puu, jätepolttaineet = Wood, waste fuels

Puuperäiset yhteensä = Total wood-based

Perusura = basic course

Strategia = Strategy

Figure 2. Electricity generated from renewable energy sources in 1990 and 1999 and in accordance with the basic course and the National Climate Strategy in 2010, TWh.

2.2 Measures

The key areas for action in the promotion of renewable energy sources consist of the technological development and adoption of renewable energy sources as well as economic methods, in particular energy taxes, investment aid and aid for the forest chips production chain. Other significant targets for action are the elimination of administrative obstacles as well as those incorporated into current standards, the development of voluntary action and contractual systems, training and the dissemination and exchange of information as well as the use of influence and cooperation within the EU.

The central objective with regard to almost all of the generation methods is to render them competitive in the open energy markets. Currently, only medium and high volume hydropower, spent industrial liquors and wood residues, and in some applications ground heat, are competitive methods of generation. Other types of generation require extensive technological development, financial aid by fiscal means or by grants as well as the removal of administrative obstacles.

The measures require that in the long-term energy taxation is developed in line with the background assumptions of the Climate Strategy. Government funding to promote renewable energy sources will primarily be allocated for the development and commercialisation of new technology. However, for the time being it is also being used for investments based on standard technologies as well as for the spreading of information in support of the use of renewables. Measures which aim to increase the use of renewable energy sources will also be incorporated into the current system of energy conservation agreements.

The following chapters constitute a short review of the action implemented in the different areas. Since most of the measures target the promotion of renewable energy in general, it is not possible to distinguish from the whole picture the promotion of renewable electricity in particular.

Development and commercial application of technology

Tekes, the National Technology Agency, is the main financing body in the development of technology. In recent years, the key technological programmes in terms of renewable energy have been the Technology and Climate Change Programme (Climtech) in 1999-2002, Wood Energy in 1999-2003, Waste as Energy in 1998-2001, the Modelling of Combustion Processes CODE in 1999-2002 and Exploitation of Materials by Energy Technologies KESTO in 1997-2001. The Wood Energy Programme was supplemented with a further emphasis target for the period 2002-2004, consisting of the small-scale production and use of wood fuels. A technological programme for random energy systems has also been launched.

Tekes has applied selective project funding to participate in wind, solar and heat pump projects. Tekes also funds technology projects which are linked to renewable energy sources, without being restricted to them, such as energy storage technologies, fuel cells, gasification and combustion technology.

Annually Tekes has provided about Euro 10 million in funding for development projects relating to renewable energy sources. The table below shows the distribution of the funding.

Table 1. The allocation of the Tekes funding to the different renewable energy sources in 1999-2001, Euro millions.

	1999 million €	2000 million €	2001 million €
Hydropower	0.1	0.3	0.7
Bioenergy	5.9	7.3	6.9
Waste energy	2.1	2.4	1.5
Solar energy	1.6	0.2	0.2
Wind energy	0.5	0.3	0.6
Total	10.2	10.5	9.9

* For statistical reasons the figures do not include the financing of heat pump, fuel cell, energy storage or gasification or combustion projects, most of which concern renewable energy sources.

Economic inducements

Taxation

Electricity generation that is based on renewable energy sources is promoted by granting tax reliefs within the system of energy taxation. Relief granted to wind power and small-scale hydropower has been further continued from the beginning of 2002 until further notice. Originally, it had been prescribed that the relief would be discontinued at the end of 2001. In line with the Climate Strategy, the energy taxation for 2003 has been amended, so that tax relief is payable for electricity generated from recycled fuels and biogases, while electricity generated from forest chips is eligible for a higher rate of relief than electricity generated other wood fuels. The other tax reliefs for electricity generation that are currently in force will be maintained unchanged. The relief levels in 2003 were 0.69 c/kWh for wind power and forest chip, 0.25 c/kWh for recycled fuels and 0.42 c/kWh for other renewables. The Commission was notified of the energy tax relief at the end of 2001, but by January 2003 the Commission's approval had still not been obtained.

Investment aid and other financing

By granting energy aid to companies and corporations the Ministry of Trade and Industry hopes to promote the use of renewable energy as well as the conservation of energy and the related commercialisation of the new technology. Since 2000, the mandate to grant energy aid has been increased. From Euro 19.5 million in 2000 it increased to Euro 31.2 million in 2002. The level will be maintained in 2003. The Climate Strategy also proposes that aid amounting to about Euro 25 million be granted to large exemplary new technology sites. The plan is to grant the aid about once every three years.

Table 2 illustrates the investment and research aid that the Ministry of Trade and Industry granted in 1999-2002 to plants using renewable energy. The figures include appropriations of the European Regional Development Fund (ERDF).

Table 2. Distribution of the MTI energy aid to renewable energy sources in 1999-2001, Euro millions.

	1999 million €	2000 million €	2001 million €	2002 million €
Plants using wood fuels	15.7	14.1	12.1	18.3
Production of wood fuels (chippers, pellets, bricks)	1.0	1.9	1.6	2.6
Wind plants	2.4	1.4	1.8	7.3
Small-scale hydropower	0.3	0.3	-	0.1
Exploitation of biogas	0.1	0.8	0.3	-
Solar heat and electricity	-	0.1	0.02	0.02
Heat pumps	-	0.02	0.1	0.02
Production of recycled fuels	0.4	-	1.2	0.7
Studies concerning renewables	0.2	0.1	0.1	0.06
Total	20.1	18.7	17.2	29.1

Other promotion measures

Motiva Oy has launched a project entitled "Integrating renewable energy sources with the inspection procedure". Preliminary studies indicate that in the first phase the methodology of the energy inspection procedure will be supplemented with studies into the feasibility of increasing the use of wood fuel and heat pumps. The aim is to complete the new inspection guidelines by 2003.

As action that follows from the evaluation of the energy conservation agreements in industry and the energy sector, renewable energy sources will be included in annual reporting in more detail than previously. Furthermore, suitable targets will be identified in which pilot trials could be run into incorporating renewable energy sources into the energy analysis.

As the second contractual period is launched in 2002 in the municipal sector, the new contracts will include the use of renewable energy sources in the operation of each municipality.

A working group appointed by the Ministry of the Environment has studied the feasibility of constructing wind power plants, from the point of view of environmental legislation. In its memorandum the working group presents proposals concerning the way in which environmental aspects should be taken into account in the planning and decision-making concerning the construction of wind power plants. The most significant Act in terms of evaluating the projects is the Land Use and Building Act, while the key provisions of the Nature Conservation Act are the ones which concern the Natura 2000 territories. In certain cases, the provisions of the Environmental Protection Act and the Water Act may also be applicable.

In connection with the review of the National Waste Plan, several other measures were also decided in principle. Once these measures are implemented they will have an impact on the use of waste for energy. The measures include restrictions on the right to leave organic waste at tips and extra requirements concerning the collection and exploitation of landfill site gas. The Ministry of the

Environment has appointed a working group to draft the National Biowaste Strategy that is required by the EC Landfill Site Directive. It is intended that the strategy defines in more detail the objectives and guidance methods which are set out in the National Waste Plan. All the waste that is detailed in the Biowaste Strategy represents potential sources of energy.

Publicity and training

The majority of the financing from the Ministry of Trade and Industry which is intended for publicity is allocated to Motiva Oy. The financing for Motiva was increased to about Euro 2.4 million in 2002. About one quarter of it is used for the promotion of renewable sources of energy. In addition, about Euro 165,000 was allocated by the Ministry of Trade and Industry in 2001 and 2002 to two separate measures which were coordinated by Motiva. The measures concerned the publicity relating to bioenergy in connection with the Action Plan to promote renewable energy sources.

The Ministry of Trade and Industry is providing financing to Motiva for a two year (2002-2003) project concerning networks of energy offices. A network of energy offices promotes the use of renewable energy sources both at the local and regional level. In the bioenergy sector, the action is concentrated on the beneficial exploitation of wood chips, entrepreneurship in the field of heat as well as pellet heating. The offices are also actively involved in the charting of wind power within their territories as well as the promotion of solar energy. Any good practices that are identified will be disseminated to the territories of the other offices.

Wood energy advisors have been trained, and they work in all the forestry centres, using project financing. In the 2003 performance agreements of the forestry centres, the Ministry of Trade and Industry will require that the work of the energy advisors be continued. Theme days and an Internet service package have been produced in order to promote the operation of the network.

The Tekes Climtech programme invests in the dissemination of the technological information relating to the prevention of climate change. The programme has produced several studies concerning renewable sources of energy, and the results are published in the form of brochures.

The OPET Finland consortium (Tekes, Motiva and VTT (Technical Research Centre of Finland)), which is part of the network to promote the energy technology of the EU's research framework programme OPET (Organisations for the Promotion of Energy Technologies) is concentrating its 1999-2002 action on wood energy. The project has published descriptions of examples of successful implementations as well as reports concerning, for example, the market players and technologies. The reports are available in both Finnish and English. Several seminars have also been organised in Finland, for instance concerning pellets and the small-scale use of wood. Groups of experts have travelled in Finland and abroad. Most of the information material has been published, mainly on the Internet.

The Ministry of Education has appointed a training committee for the period 1.2.2001 – 31.1.2004. The committee will act as an expert body in the field of energy in the development of the vocational basic and continuation training of young people and adults as well as the development of vocationally-oriented studies in polytechnics and universities. The committee has launched a project which will

chart the need for training in the field of energy and develop the training. The aim is to integrate the concepts of renewable energy sources and the conservation of energy into the educational programmes.

2.3 The implemented development of renewable energy

The overall use of renewable energy sources increased steadily up to the year 2000. In 2001, however, the development was halted. This was mainly due to the trade cycle affecting forest industry, and forest industry accounts for such a large proportion of the total usage of timber. By 2001, the total use of renewable energy sources had increased by 1.5 Mtoe. This corresponds to almost 50 % of the set objective. In 2001, renewables accounted for 23.3 % of total consumption. In the benchmark year of 1995 the corresponding percentage was 21.5 %.

The quantity of electricity that is generated from renewable energy sources has also increased, but its share of total consumption remains at about the same level. The fluctuation in the quantity of hydropower has a great impact on both the quantity and share of renewable electricity. This was clearly apparent in 1998 and 2000, both good years in terms of water. The increase in production, 3.1 TWh from 1995 to 2001, accounts for 37 % of the projected increase. Figure 3 illustrates the development trend in renewable electricity generation as well as the objective set for 2010.

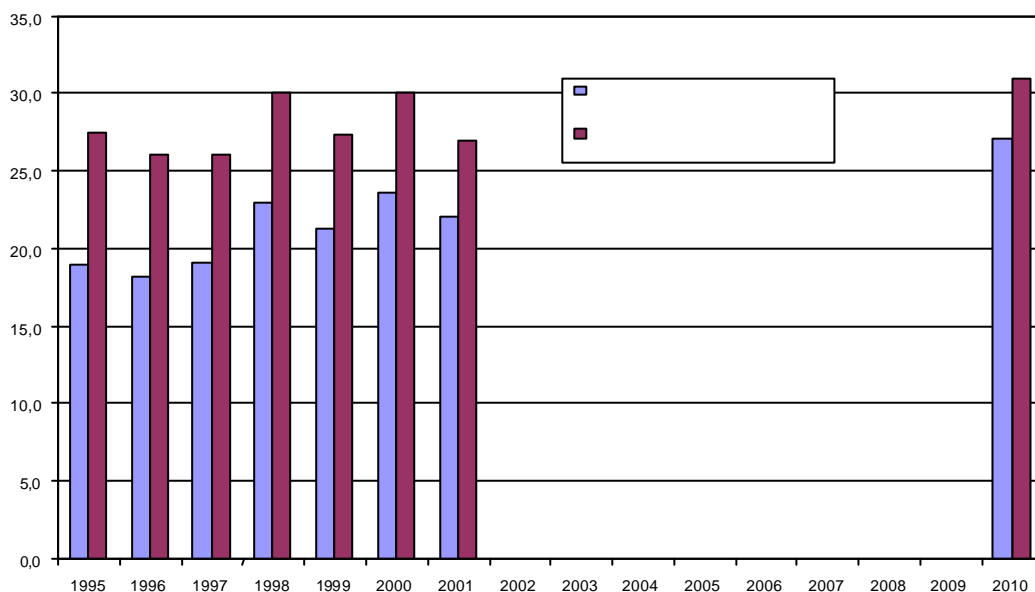


Figure 3. Electricity generated from renewable energy sources in 1995-2001 and the objective for 2010

3. Action Plan for the promotion of renewable energy sources, 2003-2006; working group proposal

On 5.9.2002, the Ministry of Trade and Industry appointed a working group to prepare the reform of the Action Plan to promote renewable sources of energy. The working group's mandate was to evaluate the implementation of the current promotion programme, which was drafted in 1999, as well as the

need for improving the measures under it. It is also expected to propose new action. The working group submitted its report on 16.12.2002. For the time being, the Finnish Government has not yet discussed the new programme proposal. For its part the Ministry of Trade and Industry intends to implement the promotion of renewable energy sources, in line with the working group's proposals. The following chapters present the key proposals put forward by the working group, concerning objectives, measures and state financing.

Objectives

In the view of the working group that has been engaged in the preparation of the Action Plan to promote the use of renewable energy sources, the objectives of the current programme that were set for 2010, concerning increased use of renewable sources of energy, remain fairly challenging, and there is no reason to make them more demanding. However, it is proposed that more individual definition is given to the objectives, particularly with regard to the different biofuels. Furthermore, it is proposed that interim objectives be set for 2005, relating to each fuel and production type individually.

The total objective (Table 3) for 2010 in terms of renewable energy is an increase of almost 100 PJ on the 2001 level. This means that usage would be increased by 30 %. Compared to the levels for the current programme, the use of renewable energy would be about 7 % greater in 2010. In this scenario, renewable energy would account for about 26 % of primary energy in 2010. In 2001 the share was 23 %. The 2025 vision is to increase the use of renewable energy by about another 2/3rds from the current level. Renewable energy would then account for about 30 % of primary energy.

The objective (Table 4) set for the generation of electricity in 2010 using renewable sources of energy has also been increased. The proposed level of 29.3 TWh represents an increase of 2 TWh on the objective set for the current programme. The objective set for renewable electricity corresponds to the objective set for Finland in the RES-E Directive, concerning the promotion of electricity generated from renewable energy sources, which states that renewable energy should account for 31.5 % of total electricity consumption in 2010.

Table 3. Objectives set for the use of renewable energy sources in 2005 and 2010; 2025 vision; primary energy, PJ

Fuel/Energy source	1995	2001	2005		2010		2025	
	PJ	PJ	PJ	Increase on 2001 %	PJ	Increase on 2001 %	PJ	Increase on 2001 %
Total bioenergy by sector	209	267	305	14 %	349	31 %	414	55 %
Industry	156	202	215	6 %	230	14 %	268	33 %
District heating	8	16	30	88 %	44	175 %	61	4 x
Small-scale use	45	49	59	21 %	72	46 %	76	55 %
Traffic	0	0	1.4		3.1		9	
Total bioenergy, by fuel	208.6	267.2	304	14 %	349	31 %	414	55 %
Spent liquor in wood processing ind. 1)	109.0	133.7	143	7 %	154	15 %	167	25 %
Industrial wood fuels	51.8	76.6	80	4 %	84	9 %	92	20 %
Small-scale use of wood (forest chip not inc)	43.7	45.8	50	8 %	54	19 %	59	28 %
Forest chips	3.1	9.4	22	133 %	38	4 x	63	7 x
Recycled fuels 2)	0.36	1.01	5	5 x	10	10 x	10	10 x
Biogas	0.65	0.75	2.3	3 x	4.2	6 x	8	11 x
Agrobiomass	0.00	0.00	0.9		2.1		5	
Liquid biofuels (traffic use) 3)	0.00	0.00	1.4		3.1		9	
Hydropower	46.0	46.9	49	5 %	52	12 %	58	23 %
of which > 10 MW 4)	41.8	42.8	44	2 %	45	4 %	46	8 %
" < 10 MW	4.2	4.1	6	39 %	8	88 %	11	175 %
Wind power	0.04	0.25	1.2	5 x	4.0	16 x	17	70 x
Solar energy	0.013	0.021	0.16	8 x	0.33	16 x	3.3	160 x
Solar electricity	0.004	0.008	0.08	10 x	0.17	20 x	1.7	200 x
Solar heat	0.008	0.013	0.08	6 x	0.17	13 x	1.7	130 x
Heat pumps	1.84	2.73	4	55 %	7	147 %	16	6 x
TOTAL	256	317	359	13 %	412	30 %	508	60 %

1) Not targeted by programme measures, MTI development estimate

2) The figure in the table represents the biodegradable part of the recycled fuels, estimated to be 60 % of energy content on average.

Wood residues from demolition and construction are not included in recycled fuels; they are included in industrial wood fuels.

The figures are not actual target figures; they are estimates of the energy use that is required to achieve the waste management objectives

3) The objective is preliminary and will be reviewed at a later date.

4) Programme measures do not target new investment in major hydropower, electricity generators' development estimate.

Table 4. Objectives set for the use of renewable energy sources in 2005 and 2010; 2025 vision; TWh

Energy source	1995		2001		2005		2010		2025	
	TWh	MW	TWh	MW	TWh	MW	TWh	MW	TWh	MW
Total bioenergy	6.1	2000	8.9	NA	11.0	2500	13.6	3050	22.7	4700
Hydropower	12.8	2770	13.0	2926	13.7	3100	14.5	3300	16.0	3670
of which > 10 MW	11.62	2460	11.88	2623	12.1	2675	12.4	2730	12.9	2840
" < 10 MW	1.170	310	1.150	303	1.6	425	2.2	570	3.2	830
Wind power	0.011	6	0.07	39	0.33	150	1.1	500	5.1	2000
Solar electricity	0.001	1	0.002	2.8	0.02	19	0.05	40	0.5	500
TOTAL	18.9	4777	22.0	NA	25.1	5769	29.3	6890	44.3	10870
Share of total electricity consumption	27.4 %		27.1 %		29.2 %		31.5 %		41.6 %	

3.2 Proposed action

The key action areas in the current programme to promote renewable energy sources are the development and commercialisation of new technology, financial guidance methods (such as taxation and investment grants), the removal of administrative obstacles and obstacles incorporated into the current standards as well as information and training. These same areas of action also form the basis of the new measures proposed by the working group.

Many of the measures under the current Action Plan are long-term measures. New measures will be weighed on the basis of the current programme, in the form that they take in the Climate Strategy. Consequently, the new programme will consist of the promotion measures presented in the National Climate Strategy as well as the new measures which are proposed by the working group.

The measures to be adopted for the new Action Plan will be discussed, with due consideration given to the thoughts and proposals that have arisen from the evaluation of the current Action Plan as well as those that the members of the preparatory team and the key stakeholders have put forward. The primary consideration in the selection of the measures has been to favour those which emphasise voluntary action and market direction.

Some of the measures included in the proposals of the working group constitute alternative procedures and as such they are not all intended for simultaneous application. In particular, measures such as government grants, which are used to promote electricity generated from renewable energy sources, green certification systems, possibly based on a degree of obligation, as well as the imposition of purchase obligations with regard to electricity, constitute either partly or wholly alternative action. It will only be possible to select the most appropriate action combinations once the fate of the EU emissions trade is clear and the potential common principles concerning the support given to green electricity are known.

New proposals concerning renewable energy in general and the generation of renewable electricity in particular.

Development and commercial application of technology

- Tekes will retain the technologies relating to renewable energy as part of the applications used in sustainable development and as one of the priorities of its technology strategy. The aim is to finance the technology programmes in the territory as well as the separate R&D projects, observing at least the level of the guidelines of the National Climate Strategy. The financing of bioenergy projects is specifically emphasised in the promotion of the adoption of the new technology.
- New methods will be developed and adopted which will support the new technologies when they are introduced to the markets. The methods will include, for example, innovative commercial application processes. Network guidance will also be exploited in the promotion of the commercialisation of the technologies.

Economic inducements

- Taxation will be developed, in a way which will make it more attractive to use renewable sources of energy. The potential impact of the adoption of the emissions trade directive, which is currently under preparation in the EU, on energy taxation and other guidance methods will be taken into consideration.
- With due consideration for the EU regulations and guidelines concerning government aid, the tax relief relating to electricity generated from renewable energy sources will be developed as required from the point of view of the competitiveness of each individual production method and fuel.
- The need to develop tax imposed on waste, with the situation of the 2006-2010 period in mind, will be researched. The aim would be that the waste tax would support the action and the objectives regarding the energy use of waste under the current national Waste Plan and the National Biowaste Strategy, which is currently under preparation.
- Increase the amount of the government energy aid appropriations in excess of the proposals contained in the National Climate Strategy and develop the application of energy aid, for example by organising competitive bidding. Continue the preparations for the development of the aid system relating to large-scale demonstration plants.
- On the basis of experiences in other countries, study the feasibility of adopting new methods for the financing of investments which exploit renewable energy, such as the ESCO concept or the method of acquiring financing from the energy markets.
- Increase the incentive for small-scale combination generation in order to encourage migration from pure heat generation to the combined generation of electricity and heat whenever the heat load is sufficient.

- Increase investment aid in particular for the equipment used in the collection and production of forest chips as well as for chippers and transportation units.
- Develop the aid system in order to enable wind power to progress from the construction of individual demonstration projects to the commercial phase.
- With due consideration for the natural life around rivers, support an increase in the generation of small-scale and mini hydropower.
- Support the energy use of recycled fuels and graded municipal waste, while taking into consideration the principles of the waste hierarchy which are defined in waste legislation as well as the share of renewable energy contained in waste.

Other promotion measures

- A system to guarantee the origin of electricity generated from renewable energy sources will be developed on the basis of the European RECS pilot project. Once it becomes clear whether common promotion models, such as systems based on the certification of green electricity, evolve in the common electricity markets, their practical adoption will be considered. Furthermore, in line with the statement by Parliament, the feasibility of imposing purchase obligations, where necessary, on the owners of the grid will be studied. Any system that is adopted must be compatible with the potential EU emissions trade and with the “Kyoto mechanisms” of the Kyoto Protocol as well as with the other measures of the Action Plan to promote renewable energy.
- The prerequisites for the use of recycled fuels in line with the objectives of the national Waste Plan will be developed. The national application guidelines of the Waste Combustion Directive must support the objective of the Waste Plan. Systems for measuring the biodegradable components of recycled fuels will be developed.
- In conjunction with the preparation of the National Biowaste Strategy, which is required by the Landfill Site Directive, objectives will be set concerning the key alternatives for the exploitation of biodegradable waste, one of which is the exploitation of waste as energy, such as biogas.
- Sufficient territories will be reserved for wind energy in the planning of land use and licensing procedures will be simplified.
- Instructions will be issued to the grid companies concerning the need to address the requirements of extensive generation of wind energy in advance, in their long-term planning of the main and local grid.
- The requirements relating to the use and development of hydropower as well as the regulation of surface waters will be taken into account in conjunction with the reform of water legislation. The potential to exploit existing dams in the development of small-scale hydropower will also be studied.

- The regulations relating to the grid connection of electricity generators who exploit renewable energy sources will be drafted and published. The rules concerning the division of costs will also be drawn up. In that connection, the costs and benefits of joining the grid must be addressed.
- The studies into the potential offered by wind power will be looked at in more detail. The production of sufficient and public information concerning wind conditions will be supported.

Publicity and training

- Motiva, in cooperation with various other actors, will devise a publicity programme concerning renewable energy sources. The different parties will have sufficient resources reserved for them for the preparation and implementation of the plan.

3.3 Impact on state finances

It is estimated that the impact of the new programme on the state finances will be about 40 % greater than the estimates presented in the current programme. The financing required for investment aid would be greater due to the increase in investment which is required, in order to achieve the objectives in relation to wind energy. Furthermore, the new objectives relating to the generation of agroenergy and liquid biofuels require additional investment. The achievement of the objective relating to wind energy alone requires annual aid of about Euro 15 million, at the current investment level of 35 %. It is estimated that annually about Euro 36 million will be required in the form of investment aid to support renewable energy until the year 2010. In addition to the annual investment aid, the Climate Strategy proposes that so-called demonstration aid would be payable to large plants. About Euro 25 million in total would be granted every 2-3 years.

The amount of tax relief payable for electricity generated from renewable energy has been estimated on the basis of the relief levels proposed for 2003. The tax reliefs will be greater than under the current programme, not just because of the increase in relief levels but also because of the increase in the objective relating to electricity generated from bioenergy. It is estimated that in 2010 about Euro 67 million will be required in tax reliefs. This represents an increase of 60 % on the 2001 level.

The need for appropriations for research and development corresponds to the objective set in the Climate Strategy. Accordingly, R&D relating to the generation of energy will require annually about Euro 34 million, with the financing of renewable energy sources demanding an ever greater share.

The need for appropriations is processed and decided annually in conjunction with the normal preparatory work concerning the state budget and expenditure frameworks.

Table 5. Key targets for state investment

Type of financing	2001 M€	2003-2010 Current programme M€/a	2003-2010 New programme M€/a
Investment aid	17.2	25	36
Demonstration plant aid ¹	-	9	9
Tax relief for the generation of renewable electricity	42	50	55 ²⁾
Aid for collection and chipping of energy wood	2.7	8 ³⁾	8 ³⁾
Technology financing	9.9 ⁴⁾	13	13
Information measures	0.7	1,2	2
Total	72.5	106	123

1) Appropriations amounting to Euro 25 million would be reserved for large demonstration plants.

2) In 2010, tax relief would amount to Euro 67 million per annum.

3) Preliminary estimate

4) For statistical reasons the figures do not include the financing of heat pump, fuel cell, energy storage or gasification or combustion projects, most of which concern renewable energy sources.