Finland’s national action plan for promoting energy from renewable sources pursuant to Directive 2009/28/EC

Energy Department

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1 Summary of national policy on renewable energy

Finland's renewable energy targets on a source-by-source basis

The main outlines of the approach to increasing the use of renewable energy are set out in the Long-term Climate and Energy Strategy submitted as a report to the Finnish Parliament in November 2008 (VNS 6/2008 vp). On account of the general development of the economy and the structural change taking place in the forestry industry, the Government has found it necessary to complement its outlines for the national action plan to be submitted to the Commission. The general approach to increasing the use of renewable energy as primary energy is described below on a source-by-source basis, indicating the economic instruments to be used to promote each energy source.

In 2020 it is estimated that 56 TWh will be available in fuels dependent on forestry industry production (residual lyes and industrial wood waste). The estimate is based on the production of 13.7 million tons of paper and board.

1.1 Wind power

According to the Climate and Energy Strategy, wind power production will rise to 6 TWh by 2020. In order to promote wind power, a market-based feed-in tariff scheme funded from the State budget was introduced in 2011. The feed-in tariff will be equivalent to the difference between the guaranteed price provided for by law and the actual market price of electricity.

The target price for the electricity covered by the feed-in tariff scheme is EUR83.50 per MWh. However, until the end of 2015 the target price for electricity produced from wind power is EUR105.30 per megawatt-hour, on the basis of which the feed-in tariff will be paid for a maximum of three years. The costs of the support scheme with a production of 6 TWh are estimated at around EUR200 million per year, if the market price of electricity is EUR50 per MWh.

EUR1.5 million per annum is to be earmarked for promoting the planning of construction of wind power capacity.

1.2 Wood chips/other energy from wood

In April 2010, the Ministerial Working Group on Climate and Energy Policy adopted the targets and means for promoting renewable energy. In this context, the target was set to increase the use of wood chips in CHP production and separate heat production to 25 TWh per year by 2020. This is equivalent to 13.5 million cubic metres of wood chips, which means that the usage will more than double compared to the existing level. In 2009, the use of wood chips was 6.1 million solid cubic metres. There is significant growth potential in the energy wood harvested from young forest stands and first thinning sites. The bulk of the growth in the exploitation of forest energy should be achieved using small-sized wood and stumps, but of these, the harvesting costs of small-sized wood in particular are currently too high for energy undertakings to afford. In view of these challenges, it is likely that the renewable energy targets will not be achieved with the existing aid policy, and new forms of support are needed to increase the use of forest energy.

In order to increase the use of forest energy, a three-part package has been devised which will increase the competitiveness of forest energy to a level at which the required growth can happen. The support package comprises energy support for small-sized wood, a feed-in tariff to compensate for the difference in costs between wood chips and alternative fuels, and a feed-in tariff for small CHP plants.

1.2.1 Variable support for electricity production from wood chips

The greatest problem in increasing forest energy is wood's poor competitiveness with fuels which cause carbon dioxide emissions while prices of carbon emission allowances remain low, or in other words, energy plants' inability to afford the available forest energy. At nearly all the power stations in Finland where wood is used, the 'ability to pay for wood' is calculated on the basis of the price of peat and the cost impact of emission allowances for peat.

The effect of fluctuations in the price of emission allowances can be stabilised by linking electricity production support to the price of emission allowances, in which case the competitiveness of forest energy is guaranteed in relation to peat, irrespective of the price of emission allowances. Variable production support

for electricity will increase the proportion of the fuel for Finland's energy production accounted for by wood chips.

Production support is paid as follows: Support is paid for all woodchips. The scale used to determine the support is such that when the cost of an emission allowance is EUR10 per ton of CO_2, the support is EUR18/MWh_e, and when the cost of an emission allowance is EUR23 per ton of CO_2, the support is EUR0/MWh. If the cost of an emission allowance rises to EUR20 per ton of CO_2, the support is less than the current subsidy of EUR6.9/MWh.

By means of the energy support for small-sized wood described above, it would be possible to obtain some 19 TWh from wood chips. With the current price of emission allowances, the additional cost of the support would be about EUR11 million per annum (total support EUR24.8 million), and if the cost of an emission allowance were EUR20 per ton of CO_2, the total support per annum would be EUR22 million.

It is intended that the use of coal to produce electricity and heat (currently around 15 TWh) should be partially (7-8 TWh) replaced with renewable biofuels. The work to determine the economic instruments to be used is under way, but the intention is to assess the feasibility of variable production support for electricity and investment subsidies.

1.2.2 Feed-in tariff for small CHP plants

It is possible to use the heat loads of municipalities and industry more efficiently by replacing heat boilers with small CHP units. However, the cost of generating electricity in small CHP plants is higher than the market price, and for this reason support is needed for the investment. A feed-in tariff is used as an instrument to support small CHP plants, and by linking the maximum amount of applied aid to a limit defined in euros it is possible to control annual aid costs and, if the aid is linked to plant size, to prevent potential investment distortions.

The feed-in tariff for small CHP plants is paid as follows: There is a plant-specific maximum amount for aid. Feed-in tariff is applied for all wood fuels, but only for new plants. A plant receiving the feed-in tariff cannot apply for investment aid, and is not eligible for tax subsidy for electricity production. The feed-in tariff has been channelled so that it should be most remunerative to new plants with a capacity of less than 3 MW and a thermal input of around 20 MW. The size category would correspond to the size limit for emissions trading.

The feed-in tariff for small CHP plants will facilitate as many as 60 new investments by 2020 and increase the use of wood fuel by 1-1.5 TWh. However, the increase in electricity generation secured in this way is relatively small – some 0.2 TWH_e – on account of the low power to heat ratio of small CHP plants.

1.2.3 Energy subsidies for small-sized wood

About one third of the potentially available wood chips comes from small-sized wood in young forests. Reasons for the high production costs of small-sized wood harvested from first thinning sites and young forest stands include the low amount of wood accrued per hectare and the labour-intensive nature of harvesting. Therefore, the production costs of wood chips from small-sized wood have so far been too high for energy plants to afford. In order to achieve the overall targets set for wood chip use, it is advisable to readjust the current national support schemes for harvesting and chipping energy wood.

Energy subsidies for small-sized wood should be used to obtain energy wood from young forest stands and first thinning sites while promoting first thinning and the management of young forest stands in good time in order to secure the future growth of forests. According to an initial rough estimate, the costs of energy support for small-sized wood would be approximately EUR18 million under present conditions and approx. EUR36 million in 2020.

1.3 Other renewable energy sources

1.3.1 Hydropower

According to the Climate and Energy Strategy, hydropower production is to be increased by around 0.5 TWh per year of average water flow, to 14 TWh in 2020. The increase comprises increased capacity at existing power plants and small hydropower. Small hydropower is promoted by means of the existing investment support scheme (energy support). The Ministry of Employment and the Economy has amended the guidelines for granting support so that it is possible to grant support for plants of up to 10 MW, rather

than the current maximum of 1 MW.

1.3.2 Small-scale use of wood

The aim is to maintain the small-scale use of wood for heating purposes at its present level of 12 TWh. Improving the energy efficiency of buildings reduces the specific consumption of heating, as well as the amount of wood used on a small scale. According to the revised requirements concerning the energy efficiency of buildings that will enter into force in 2012, burning wood in a heat-accumulating fireplace can be taken into account when calculating a building's total energy consumption.

There are plans to increase the flexibility of demand on the electricity market by means of hourly metering. Hourly metering makes it possible to apply electricity tariffs which vary hour by hour. This provides incentives to use wood as a source of extra heating when the market price of electricity is high.

1.3.2.1 Heat pumps

Renewable energy production by heat pumps will be increased to 8 TWh by 2020. Investments in heat pumps in renovated buildings will be subsidised with investment grants. According to the revised requirements concerning the energy efficiency of buildings that will enter into force in 2012, heating energy generated by an air-source heat pump can be taken into account when calculating a building's total energy consumption.

1.3.3 Transport biofuels

The use of transport biofuels is to be increased to 7 TWh by 2020. The target quoted in the Climate and Energy Strategy was 5 TWh. Promotion of the use biofuels would be based primarily on a distribution obligation incumbent on vendors of transport fuels. The distribution obligation has been extended until 2020. The aim is to reach a 20 per cent share (taking into account the double counting referred to in the Directive) by 2020. The use of biofuels will also be promoted by means of a tax reform of the Transport Fuels Act.

In Finland, it may be possible to construct capacity to produce between 120 000 and 150 000 tons of cereal-based bioethanol. This quantity could cover some 15 percent of the aforementioned 7 TWh target. Production would take place on a commercial basis, but it is estimated that some EUR120 million in investment could be financed by means of normal aid to businesses. One precondition for the support is that cereals-based bioethanol should comply with the sustainability criteria for biofuels laid down in the RES Directive.

1.3.4 Biogas

According to the Climate and Energy Strategy, the use of biogas should be increased to 0.7 TWh by 2020. In order to promote CHP production using biogas (reactor plants) a market-based feed-in tariff scheme has been introduced, financed from the State budget. The feed-in tariff will be equivalent to the difference between the target price provided for by law and the actual market price of electricity. The target price for electricity produced from biogas covered by the feed-in tariff scheme would be EUR83.50 per MWh. In CHP production, a heat premium of EUR50 per MWh is paid for electricity produced from biogas. The costs of the support scheme for electricity produced from biogas in 2020 are estimated to be around EUR10 million per year, if the market price of electricity is EUR50 per MWh.

In certain cases, the production of biogas will be subsidised by means of investment aid. Investments in biogas by farms can be subsidised by means of both the rural development programme for Mainland Finland 2007-2013 and the national investment aid. In addition, plants that are larger than farm-sized and that consume mainly raw material of agricultural origin may receive support from the national investment aid scheme (X157/2008).

Use of landfill gas will be promoted using the energy subsidy.

1.3.5 Agricultural and natural biomasses

The energy use of agricultural biomasses derived from animal sources or field crops, byflows of agricultural production and further processing and biomasses acquired from nature will be increased. Potential raw materials for energy use include straw, reed canary grass, byflows from food processing, low-value fish and common reed. The possibility to include new energy sources in the existing renewable energy support schemes will be studied.

1.3.6 Pellets

The target for use of pellets is 2 TWh in 2020. Measures to promote this will be decided separately. Investments related to the use of pellets in renovated buildings will be subsidised with investment grants.

1.3.7 Recycled fuels as part of renewables

The target for recycled renewables is 2 TWh.

1.3.8 Other small-scale renewables

Support for solar heating and solar power generation systems will continue with the aid of the energy subsidy in accordance with current practice. In the case of one-family houses, solar heating systems are promoted through the tax system by granting an offset for the household.

2 Estimated final consumption of energy in 2010-2020

Table 1

Expected gross final energy consumption of Finland in heating and cooling, electricity and transport up to 2020 taking into account the effects of energy efficiency and energy saving measures 2010-2020 (ktoe)

	1) Heating and cooling	2) Electricity	3) Transport as in Article 3(4)a	4) Gross final energy consumption
2005 Base year	13 970	7 530	4 220	26 260
2010 *)	14 010	7 550	4 030	25 730
2011 *)	14 380	7 770	4 060	26 330
2012 *)	14 540	7 880	4 060	26 610
2013 *)	14 670	7 990	4 080	26 860
2014 *)	14 830	8 100	4 090	27 140
2015 *)	15 000	8 210	4 100	27 420
2016 *)	15 080	8 310	4 110	27 600
2017 *)	15 1 20	8 400	4 150	27 770
2018 *)	15 1 70	8 500	4 150	27 910
2019 *)	15 260	8 640	4 1 20	28 080
2020 *)	15 300	8 740	4 080	28 170

*) Additional energy efficiency

3.1 National overall target

Table 2

National overall target for the share of energy from renewable sources in gross final consumption of energy in 2005 and 2020 (figures to be transcribed from Annex I, Part A to Directive 2009/28/EC)

A) Share of energy from renewable sources in gross final consumption of energy in 2005 (S 2005) (%)	28.5%
B) Target of energy from renewable sources in gross final consumption of energy in 2020 (S 2020) (%)	38%
C) Expected total adjusted energy consumption in 2020 (from Table 1, last cell) (ktoe)	28 170
D) Expected amount of energy from renewable sources corresponding to the 2020 target (calculated as B x C) (ktoe)	10 700

3.2 Sectoral targets and trajectories

Table 3

National 2020 target and estimated trajectory of energy from renewable sources in heating and cooling, electricity and transport. Renewable energy, %

	Heating and cooling	Electricity	Transport	Overall RES share	Of which from cooperation mechanism	Surplus for cooperation mechanism
2005	40%	27%	0%	28.8%	0%	0%
2010	37%	26%	6%	28.7%	0%	0%
2011	39%	26%	7%	30.1%	0%	0%
2012	40%	26%	8%	31.0%	0%	0%
2013	41%	27%	10%	31.6%	0%	0%
2014	42%	27%	11%	32.2%	0%	0%
2015	42%	27%	12%	32.6%	0%	0%
2016	43%	28%	14%	33.6%	0%	0%
2017	44%	29%	15%	34.7%	0%	0%
2018	45%	30%	17%	35.7%	0%	0%
2019	46%	32%	18%	36.8%	0%	0%
2020	47%	33%	20%	38.0%	0%	0%

As Part B of Annex I to the Directive	2011-2012 S 2005 + 20% (S 2020-S 2005)	2013-2014 S 2005 + 30% (S 2020-S 2005)	2015-2016 S 2005 + 45% (S 2020-S 2005)	2017-2018 S 2005 + 65% (S 2020-S 2005)	2020 S 2020
RES minimum trajectory	30.4%	31.4%	32.8%	34.7%	38.0%
RES minimum trajectory (tkoe)	8 050	8 460	9 020	9 650	10 700

Table 4a

Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)

	A) Expected gross final consumption of RES for heating and cooling	B) Expected gross final consumption of electricity from RES	C) Expected gross final consumption of energy from RES in transport *)	D) Expected total RES consumption	E) Expected transfer of RES to other Member States	F) Expected transfer of RES from other Member States and 3rd countries	G) Expected RES consumption adjusted for target (D) - (E) + (F)
2005	**5 530**	**2 030**	**0**	**7 560**	**0**	**0**	**7 560**
2010	5 210	1 950	220	7 380	0	0	7 380
2011	5 630	2 040	260	7 930	0	0	7 930
2012	5 870	2 080	300	8 250	0	0	8 250
2013	6 040	2 120	340	8 500	0	0	8 500

2014	6 190	2 160	380	8 730	0	0	8 730
2015	6 340	2 200	410	8 950	0	0	8 950
2016	6 510	2 330	450	9 280	0	0	9 280
2017	6 680	2 460	480	9 620	0	0	9 620
2018	6 860	2 590	510	9 970	0	0	9 970
2019	7 070	2 730	540	10 330	0	0	10 330
2020	7 270	2 870	560	10 700	0	0	10 700

*) RES in transport is included in electricity production figure B)

Table 4b

Calculation table for the renewable energy in transport share (ktoe)

	C) Expected gross final consumption of energy from RES in transport	H) Expected RES electricity in road transport	I) Expected consumption of biofuels from wastes, residues, non-food cellulosic material and ligno-cellulosic material in transport	J) Expected RES contribution to transport for the RES-T target (C) + (2.5 - 1) x (H) + (2 - 1) x (I)
2006	**20**	**0**	**0**	**20**
2010	230	0	0	230
2011	280	0	10	290
2012	320	0	20	340
2013	360	0	30	390
2014	400	0	50	450
2015	440	0	70	510
2016	470	0	90	570
2017	510	10	110	630
2018	540	10	140	690
2019	570	10	160	750
2020	600	10	180	800

4 Measures for achieving the targets

4.1 Overview of all policies and measures to promote the use of energy from renewable sources

Table 5

Overview of all policies and measures

Name and reference of the measure	Type of measure (*)	Expected result (**)	Target group and/or activity (***)	Existing or planned	Start and end dates of the measure
2012 regulations	Regulatory		Public administration, planners, architects	Regulations issued on 30 March 2011	Energy requirements for new buildings entered into force in 7/2012; Parts D2 and D3 of the Building Code of Finland
Amendment of the Land Use and Building Act	Regulatory		Wind power production, provision for wind power in land use planning	Act issued in 2/2011	Amendment entered into force in 1 April 2011, 134/2011
Biofuel distribution obligation (Act on the Promotion of Biofuels in Transport, 446/2007)	Regulatory		Use of biofuels in transport	Existing; new distribution obligations for 2011-2020 and sustainability requirements for biofuels defined	Amendment entered into force in 1 January 2011, 1420/2010
Sustainability criteria for biofuels and bioliquids (Government proposal for an Act on the	Regulatory		Biofuel producers and distributors, biobased fuels and liquid fuels	Preparation in progress	autumn 2011
Qualification scheme for installers	Information guidance		Installers; end users ordering installation services as indirect target group	Planning in progress	Pilot training 9/2010, qualification scheme
Production support for wind power (Act on Production Support for Electricity Produced by	Financial	2500 MVA and 6 TWh in 2020	Energy producers, wind power	Existing	2011-
Production support for biogas (Act on Production Support for Electricity Produced by Sustainable Energy Sources, 1396/2010)	Financial	19 MVA and 0,7 TWh in 2020	Energy producers, biogas	Existing	2011-

Production support for wood chips (Act on Production Support for Electricity Produced by Sustainable Energy Sources, 1396/2010)	Financial	5.3 TWh in 2020	Energy producers, wood chips	Existing	2011-
Production support for small CHP plants (Act on Production Support for Electricity Produced by Sustainable Energy Sources, 1396/2010)	Financial	160-210 MVA and 1-1.5 TWh in 2020	Energy producers, wood fuels	Existing	2011-
Fixed production support for electricity (Act on Excise Duty on Electricity and Certain Fuels, 1260/1996; from 1 January 2011, Act on Production Support for Electricity Produced by Sustainable Energy Sources, 1396/2010)	Financial		Energy producers, wind power, biogas, wood chips, small-scale hydropower	Existing	2011-(2016)
Energy subsidies (Government Decree on the General Conditions of Granting Energy Aid, VNA 1313/2007)	Financial		Energy producers and users, all measures increasing the production and use of renewable energy		
Fuel taxes (Act on Excise Duty on Liquid Fuels, 1472/1994, and Act on Excise Duty on Electricity and Certain Fuels, 1260/1996)	Financial		Energy producers and end users	Existing; revision of tax structure and tax increases from the beginning of 2011	Revised tax structure enters into force in 2011 with Amendments 1399/2010 and 1400/2011
Investment aids for farms	Financial		Thermal energy plants and biogas plants at farms that use renewable energy sources or residual heat	Existing	
Investment aid for biogas plants (Government Decree on Granting subsidies for the Production of Bioenergy, VNA 607/2008)	Financial		Promotion of construction of biogas plants in conjunction with farming in areas with a large number of animals	Existing	2008-2011
Farm energy programme (item 30.01.40, Government Decree on Farm Energy Planning Subsidy, VNA 1000/2009)	Financial and informative		Promotion of energy efficiency at farms and the production and use of renewable energy by means of energy efficiency agreements and supported energy plans	Existing	2009-2016
Energy subsidies for small-sized wood	Financial		Increasing the production of wood chips from young forest stands and first thinning sites	Act on energy support for small-sized wood (101/2011) passed, will enter into force by a Decree	2011-2016

Support schemes: energy assistance, 1254/2010	Financial	Households; aimed at increasing the deployment of renewable energy in conjunction with, for example, the renovation of principal heating systems in one-family houses; support scheme targeted particularly at one-family houses	Existing; Government Decree on the Amendment of the Decree on Grants for Repairing Dwellings or Improving their Energy Economy and Health Standard (VNA 1255/2010)	Dedicated energy assistance targeted at increasing the efficiency of the use of renewable energy, applicable in 2011. Assistance sums will be decided annually.
BioRefine – New biomass products 2007-2012 (A programme by TEKES, the Finnish Funding Agency for	Financial/Research and development	Biomass refining and second-generation transport biofuels	Existing	2007-2012
Groove – Growth from Renewables 2010-2014 (A programme by TEKES, the Finnish Funding Agency for	Financial/Research and development	Building the business competencies of renewable energy enterprises	Existing	2010-2014
Concentrations of strategic excellence, Cleen Ltd	Financial/Research and development	Energy and environment sectors	Existing	
SusEn – Sustainable Energy (A research programme by the Academy of Finland)	Financial/Research and development	Sustainable energy production	Existing	2008-2011
Means-tested grants for repairing one-family houses or improving their energy economy (Act on Grants for Repairing Dwellings or Improving their Energy Economy and Health Standard	Financial	Households, promoting renewable forms of energy in one-family houses, repairs that improve energy efficiency; support scheme aimed particularly at one-family houses	Existing	Assistance sums will be decided annually by amendments to acts and decrees
Energy economy grants justified on the grounds of the economic situation (Act on Grants for the Renovation of Certain Buildings Justified on the Grounds of the Economic Situation, 178/2009)	Financial	Deployment of renewable energy in residential buildings with a minimum of two dwellings	Expired	2009-2010
Domestic help credit (Income Tax Act 1535/1992)	Financial	Households; tax credits granted for expenses caused by deploying renewable energy, changing the heating system, etc.	Existing	
Rural development programme for Mainland Finland, items 30.10.61-63 and 30.20.43	Financial	Rural microenterprises	Existing	2007-2013
Guarantee of origin for electricity (Act on Verification and Notification of Origin of Electricity, 1129/2003)	Informative and regulatory	Electricity producers; promotion of entry to market of electricity from renewable sources	Existing; amendments required by the RES directive in preparation	2004

Provision of information by Motiva	Information guidance	Investors, end users, public administration, planners, architects, installers, general public, etc.	Existing	Ongoing activity
Energy offices	Informative	Companies and organisations; energy projects to promote the use of renewable energy, etc.	Existing	
Bioenergy and wood energy advisers	Informative	Companies, organisations and consumers; advice on the deployment of wood-based and other bioenergy	Existing	
Energy consultation projects for consumers (a total of 15 projects funded by Sitra - The Finnish Innovation Fund and the Ministry of Employment and the Economy)	Informative	Consumers; all energy consultation projects. The key objective of the projects is the promotion of energy efficiency and the dissemination of information on renewable energy and different heating systems	Existing	2009-2011
Wind Atlas	Informative	Wind energy production, mapping the suitability of production sites	Completed	
ERA 17 project	Information guidance	Investors, end users, public administration, planners, architects, installers, general public, etc.	Existing	Drafting of action programme in 2010
Synergy house	Information guidance	Planners, architects	Existing	2009-2013

4.2 Specific measures to fulfil the requirements under Articles 13, 14, 16 and Articles 17 to 21 of Directive 2009/28/EC

4.2.1 Administrative procedures and spatial planning (Article 13(1) of Directive 2009/28/EC)

(a) List of existing national and, if applicable, regional legislation concerning authorisation, certification, licensing procedures and spatial planning applied to plants and associated transmission and distribution network infrastructure:

The Land Use and Building Act is the general law concerning spatial planning. The Land Use and Building Act is complemented by the Land Use and Building Decree. The Act and Decree on Environmental Impact Assessment Procedure concern the prior assessment of environmental impacts in cases where the project involves significant adverse impacts on the environment. On a case-by-case basis, it is also possible to apply administrative procedures laid down in the Nature Conservation Act, the Environmental Protection Act or the Water Act.

(b) Responsible Ministry(/ies)/authority(/ies) and their competences in the field:

The responsible ministry is the Ministry of the Environment for all the above Acts, except for Water Act, which falls under the authority of the Ministry of Agriculture and Forestry.

(c) Revision foreseen with the view to take appropriate steps as described by Article 13(1) of Directive 2009/28/EC by:

The Land Use and Building Act has been amended (L134/2011) to allow a more extensive use of general planning as justification for construction permission for wind power plants. The amendment entered into force on 1 April 2011.

(d) Summary of the existing and planned measures at regional/local levels (where relevant):

The actual land use planning referred to in the Land Use and Building Act takes place on three levels: regional land use planning takes place on a regional level, general land use planning means broad planning on a municipal level, and development planning is detailed planning on a municipal level. National land use guidelines provide guidance for drafting the plans.

(e) Are there unnecessary obstacles or non-proportionate requirements detected related to authorisation, certification and licensing procedures applied to plants and associated transmission and distribution network infrastructure for the production of electricity, heating or cooling from renewable sources, and to the process of transformation of biomass into biofuels or other energy products? If so, what are they?

In its statement on the Government's Climate and Energy Strategy (YmVl 9/2009 vp), the Parliamentary Environment Committee found that, despite the admistrative streamlining measures carried out, there had been problems related to the planning, licensing and environmental impact assessment procedures applied during the construction of wind power plants. The Committee found it important that continued attention be paid to the acceleration of planning procedures, the development of authorisation procedures and the streamlining of the EIA legislation with respect to wind power.

(f) What level of administration (local, regional and national) is responsible for authorising, certifying and licensing renewable energy installations and for spatial planning? (If it depends on the type of installation, please specify.) If more than one level is involved, how is coordination between the different levels managed? How will coordination between different responsible authorities be improved in the future?

The bodies responsible for regional land use planning are the Regional Councils. An adopted regional plan is submitted to the Ministry of the Environment for approval. The regional plan must analyse and identify all land use requirements with at least regional or cross-municipal importance. Municipalities are responsible for the preparation of general land use plans and development plans. More general plans guide the preparation of more detailed plans.

(g) How is it ensured that comprehensive information on the processing of authorisation, certification and licensing applications and on assistance to applicants is made available? What information and assistance is available to potential applicants for new renewable energy installations on their applications?

Pursuant to the Administrative Procedure Act, authorities are obliged to provide assistance to their clients in matters falling under their authority. This assistance is free of charge. Authorities also prepare brochures and guidebooks on their fields of activity.

(h) How is horizontal coordination facilitated between different administrative bodies, responsible for the different parts of the permit? How many procedual steps are needed to receive the final authorisation/licence/permit? Is there a one-stop shop for coordinating all steps? Are timetables for processing applications communicated in advance? What is the average time for obtaining a decision for the application?

In the most extensive possible case, obtaining a final permit for a renewable energy production unit may require that the project is processed in the EIA, regional land use planning, general land use planning and development planning procedures. During or after this, the project executor may have to apply for permits by procedures referred to in the Land Use and Building Act, the Water Act and the Environmental Protection Act. If the execution of the project requires the construction of a road pass or an electricity transmission network, there are special provisions concerning the respective authority procedures. There is no one-stop shop for coordinating all steps; the project executor is responsible for obtaining all authority approvals required for the project. Pursuant to the Administrative Procedure Act, the authority shall communicate to the applicant an estimate of the timetable for processing the application on the applicant's request. Furthermore, pursuant to the Administrative Procedure Act, matters submitted to an authority for processing must be dealt with without undue delay. As the processing timetables falling under different sectoral legislation vary greatly, it is extremely difficult to define a general average processing time for an application. However, there are various statistics on the matter. If the execution of the project needs to go through an environmental impact assessment, land use planning on various levels and licencing procedures pursuant to different sectors of environment legislation, the time elapsed from the initial planning phases to the final licencing may be several years. In smaller projects, where only permission decisions are required, the processing of an application may be completed within about one month.

(i) Do authorisation procedures take into account the specificities of the different renewable energy technologies? If so, please describe how. If they do not, do you envisage taking them into account in the future?

As a rule, the basis for authorisation procedures for construction is the relevant general legislation, in which the specificities of renewable energy technologies have not been expressly mentioned as a special feature to be considered during the authorisation procedure. In practice, however, specificities may have an impact on the content of the applications, the respective authorisation procedures and, finally, the authorisation regulations associated with the granted permit. The objectives of the currently ongoing ERA 17 project is to draw up an action plan that improves the energy efficiency of the built environment, decreases the emissions incurred and promotes the use of renewable energy. In the context of the action plan, it shall also be considered whether it would be possible to achieve more energy efficient end results by predictive quality management of building supervision, whether an analysis of the greenhouse gas emissions caused by the building should be added to the analyses of energy efficiency and energy consumption carried out in the context of granting a construction permit, etc.

(j) Are there specific procedures, for example simple notification, for small-scale, decentralised installations (such as solar panels on buildings or biomass boilers in buildings)? If so, what are the procedual steps? Are the rules publicly available to citizens? Where are they published? Is the introduction of simplified notification procedures planned in the future? If so, for which types of installation/system? (Is net metering possible?)

Pursuant to the Land Use and Building Act, a local authority may stipulate in the building ordinance that building or other activities with minor importance and impact may be commenced without a building or action permit once the party concerned has notified the local building supervision authority of the matter. When required by public interest or protection of neighbours' rights, the local building supervision

authority must require the party to apply for a building or action permit, instead of making a notification. Building or other activity may begin if the local building supervision authority does not, within 14 days of receiving the notification, require an application for a permit for the project concerned to be made. More detailed provisions on the notification procedure have been issued by the Land Use and Building Act and Decree. Activities for which only a notification is required are specified in the building ordinance of each municipality. In practice, the use of notification procedure is restricted by the fact that a construction permit must always be applied for repairs and modifications, if the activity may affect the health or safety of the users of the building. Municipalities have had variable practices concerning the authorisation requirements for horizontal heat collectors, for example. For this reason, the Ministry of the Environment has found it necessary to specify the Land Use and Building Decree and to make the authorisation requirements for horizontal heat collectors more precise by adding the boring of a horizontal heat collector to the list of actions requiring a permit included in Section 62 of the Land Use and Building Decree. The Government Decree on the Amendment of Sections 62 and 63 of the Land Use and Building Decree (VNA 283/2011) was issued in March 2011, and it will enter into force on 1 May 2011.

(k) Where are the fees associated with application for authorisation/licences/permits for new installations published? Are they related to the administrative costs of granting such permits? Is there any plan to revise these fees?

Pursuant to Section 145 of the Land Use and Building Act, the permit applicant or party taking action is required to pay a fee to the local authority for official duties, in accordance with a tariff approved by the local authority. In principle, the collected fee does not have to precisely correspond to the actual costs incurred to the municipality in each individual case. However, the Act and its preparatory documents state that a tariff-based building supervision fee must represent the costs incurred to the municipality for its official duties. Fees associated with the environmental impact assessment procedure or official deliverables granted by State authorities (such as permissions pursuant to the Water Act and the Environmental Protection Act) are provided for in the Act on Criteria for Charges Payable to the State and the respective Ministerial Decrees.

(l) Is official guidance available to local and regional administrative bodies on planning, designing, building and refurbishing industrial and residential areas to install equipments and systems using renewable energy sources in electricity and heating and cooling, including in district heating and cooling? If such official guidance is not available or insufficient, how and when will this need be addressed?

The Ministry of the Environment has prepared various guidance materials for planning authorities. The guides are either general in nature or deal with a certain specific question. Recently, there has been increasing interest in matters related to renewable energy sources, for which reason the development of legislation and the associated guidance materials has concentrated and will concentrate on energy issues in particular.

(m) Are there specific trainings for case handlers of authorisation, certification and licensing procedures of renewable energy installations?

There is training available for the officials of state regional administration and municipalities who handle authorisation, certification and licencing procedures of renewable energy installations. If necessary, it is possible to consider issues concerning renewable energy in training.

4.2.2 Technical specifications (Article 13(2) of Directive 2009/28/EC)

(a) To benefit from support schemes, do renewable energy technologies need to meet certain quality standards? If so, which installations and what quality standards? Are there national, regional standards that go beyond European standards?

In Finland, the support schemes concerning renewable energy do not refer to standards, certificates or other technical reference systems. Consequently, the reception of aid is not linked to compliance with these systems. However, to benefit from support schemes, a technology is required to comply with EU directives and national legislation. Detailed provisions may be included, among others, in the environmental protection legislation, the regulations on land use and building, the electricity market legislation and the regulations concerning the safety of machines and equipment. Compliance with these or other special

regulations is not assessed separately when renewable energy aid is granted; instead, assessment of the compliance with special legislation is done by authorities enforcing such legislation. Investment aid for the construction of renewable energy plants is granted pursuant to a Government Decree (VNA 1313/2007). The Decree identifies the following quality requirements:

- supported projects shall promote the production or use of renewable energy;
- support for projects falling under the scope of Emissions Trading Act (683/2004) can only be granted insofar as the project contains new technology or belongs to the scope of the energy efficiency agreement system;
- it is possible to grant more investment aid for projects that contain new technology. Requirements concerning new technology are based on case-by-case consideration, and they are not linked to national or supranational standards.

There are restrictions concerning the capacity of installations and certain other technical requirements included in the production support scheme for renewable energy.
Plants entitled to a guaranteed price for electricity produced with wind power, biogas or small-scale CHP must be new. Plants with a capacity between 100 kVA and 8 MVA are entitled to the production support for small CHP plants. Wind power plants must have a capacity of more than 500 kVa and biogas plants must have a capacity of more than 100 kVA. The capacity of plants entitled to variable production support for wood chip must be more than 100 kVA.
Energy production of CHP plants entitled to production support supplemented with a heat premium must comply with the CHP Directive (Directive 2004/8/EC of the European Parliament and the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC).
Requirements applied to granting fixed electricity production support or investment support do not contain capacity restrictions.

4.2.3 Buildings (Article 13(3) of Directive 2009/28/EC)

(a) Reference to existing national and regional legislation (if any) and summary of local legislation concerning the increase of the share of energy from renewable sources in the building sector:
Currently, Finland promotes the increase of the share of energy from renewable sources in the building sector principally by means of *information steering*.
According to a decision by the Ministry of the Environment, the revised energy regulations adopted on 30 March 2011 will enter into force on 1 July 2012. With the revised regulations, Finland adopts the practice of overall energy analysis of buildings, taking into account buildings' energy consumption and energy efficiency. Overall energy analysis also accounts for self-produced renewable energy that can be, for example, energy produced with solar panels and collectors, local wind power or energy acquired from a heat source by a heat pump. Renewable fuels are treated as purchased renewable energy. A heat-accumulating fireplace may also fulfil the requirement for renewable energy.
The minimum requirement concerning the share of energy from renewable sources should be included in the Building Code and building regulations or otherwise be demanded to a corresponding effect by 31 December 2014.
The Draft State Budget for 2011 proposes a total of EUR90.5 million for grants for repairing dwellings or improving their energy economy and health standard under item 35.20.55 *(Grants for repairs)*. Of this appropriation, EUR30 million has been reserved for promoting a switchover to heating systems that use renewable energy in the existing housing stock. A total of EUR14 million has been allocated to other energy economy grants, of which EUR12 million has been reserved mostly for renovations improving the energy efficiency of other than single-family houses, and EUR2 million for means-tested grants for renovations improving the energy efficiency of single-family houses. The amount reserved for grants for repairing dwellings or improving their energy economy is EUR46.5 million.
The Act on Discretionary Goverment Transfers (688/2001) is applied on the grants procedure. Furthermore, the grants fall under the scope of the Act on Grants for Repairing Dwellings or Improving their Energy Economy and Health Standard (1184/2005), hereinafter the *Repair Grants Act*. Further provisions on the purposes of the grants are included in the respective Government Decree on Grants for Repairing Dwellings or Improving their Energy Economy and Health Standard (128/2006) issued under the Repair Grants Act.
The amendments of the above Act (1254/2010) and the Decree (1255/2010) provided for a special energy

economy grant to be awarded in 2011 for the purpose of increasing the use of energy from renewable sources. This energy economy grant was intended as a long-term measure that would last until 2020, and its level is decided annually in the Draft State Budget. The aid scheme for energy economy grants focuses particularly on renovations of single-family houses with the purpose of deploying renewable energy.

(b) Responsible Ministry(/ies)/authority(/ies):
The Ministry of the Environment is the responsible ministry for the above legislation.

(c) Revision of rules, if any, planned by:
The new Building Code based on the overall energy analysis of the construction of new buildings will enter into force on 1 July 2012.
The minimum share of energy from renewable sources will be taken into account by 31 December 2014.

(d) Summary of the existing and planned measures at regional/local levels:
The national rules apply to measures at regional and local levels.

(e) Are there minimum levels for the use of renewable energy in building regulations and codes? In which geographical areas and what are these requirements? (Please summarise.) In particular, what measures have been built into these codes to ensure the share of renewable energy used in the building sector will increase? What are the future plans related to these requirements/measures?
Currently, there are no requirements concerning the minimum level for the use of renewable energy. The minimum level will be included in the regulations by 31 December 2014. (For more details, please see 4.2.3 (a) above.) The Building Code of Finland is applied on a national level, and different geographical areas have the same requirements. A more precise definition of measures is currently in process.

(f) What is the projected increase of renewable energy use in buildings until 2020? (If possible differentiating between residential — "single-unit" and "multiple unit", commercial, public and industrial.) (To answer this question you may use a table as Table 6 below. Data could be given yearly, or for selected years. Both heating and cooling and electricity consumption from renewable energy sources should be included.)
See Table 6.
A significant share of the increase in the use of renewable energy in buildings is based on the increased use of wood chip in the production of district heating, and the share of the use of wood chip in the production of electricity and thermal power is expected to rise to 25 TWh by 2020.

(g) Have obligations for minimum levels of renewable energy in new and refurbished buildings been considered in national policy? If so, what are these levels? If not, how will the appropriateness of this policy option be explored by 2015?
Obligations concerning the minimun level of renewable energy will be taken into account in national policy by 31 December 2014. The situation with refurbished buildings will be analysed as the regulations concerning the energy efficiency requirements for repaired buildings are being prepared.

(h) Please describe plans for ensuring the exemplary role of public buildings at national, regional and local level by using renewable energy installations or becoming zero energy buildings from 2012 onwards? (Please take into account the requirements under the EPBD).
An ongoing research and development project “Ekotehokas toimitalo - pilottihanke passiivitoimitalojen energiaratkaisuista ja niiden ekotehokkuudesta” (‘An ecologically effective office building - a pilot project on the energy solutions in passive office buildings and their ecological effectiveness’) prepares the ground for the construction of highly energy efficient, passive office buildings as well as for the assessment and development of the ecological effectiveness of such buildings. During the project, objectives for highly eco-effective and energy efficient buildings are being prepared and criteria for the design competition and the subsequent construction planning of the future headquarters of the Finnish Environment Institute, the so-called Synergia house, are being developed.

(i) How are energy efficient renewable energy technologies in buildings promoted?

Tax credit for the use of domestic help may be awarded for renovations that improve the energy efficiency of single-family houses. The domestic help credit is a tax deduction from State or municipal tax. It can be applied for wages or work compensations included in the total costs paid by the taxpayer for the maintenance or renovation of his or her own house or flat. Therefore, domestic help credit is awarded for the share of wages incurred when the heating system is changed. The maximum amount of the tax credit is EUR3 000 for each taxpayer. A taxpayer's own contribution is EUR100. The credit can be awarded for 60 percent of work compensation (incl. VAT) or for 30 percent of wages and the full amount of social security contributions. Energy economy grants for the installation of heating systems and equipment using renewable energy sources may also be awarded on the basis of social conditions. In addition, energy economy grants justified on the grounds of the economic situation have been awarded for improving the energy efficiency of other than single-family houses through, for example, the deployment of renewable energy. This energy economy grant justified on the grounds of the economic situation was a temporary measure, and the deadline for applications was 17 September 2010.
The Draft State Budget for 2011 proposes a total of EUR90.5 million to be spent on grants for repairing dwellings or improving their energy economy and health standard under item 35.20.55 (Grants for repairs). Of this appropriation, EUR30 million is reserved for promoting a switchover to heating systems that use renewable energy in the existing housing stock. A total of EUR14 million is allocated to other energy economy grants, of which EUR12 million is reserved mostly for renovations improving the energy efficiency of other than single-family houses, and EUR2 million for means-tested grants for renovations improving the energy efficiency of single-family houses. The sum reserved for grants for repairing dwellings or improving their energy economy is EUR46.5 million.
The Act on Discretionary Goverment Transfers (688/2001) is applied on the grants procedure. Furthermore, the grants fall under the scope of the Act on Grants for Repairing Dwellings or Improving their Energy Economy and Health Standard (1184/2005), hereinafter the Repair Grants Act. Further provisions on the purposes of the grants are included in the respective Government Decree on Grants for Repairing Dwellings or Improving their Energy Economy and Health Standard (128/2006) issued under the Repair Grants Act. The amendments of the above Act (1254/2010) and the Decree (1255/2010) provided for a special energy economy grant to be awarded in 2011 for the purpose of increasing the use of energy from renewable sources. This energy economy grant was intended as a long-term measure that would last until 2020, and its level is decided annually in the Draft State Budget. The aid scheme for energy economy grants focuses particularly on renovations of single-family houses with the purpose of deploying renewable energy.
The State of Finland and the oil and gas sector have concluded an energy efficicency agreement 'Höylä III' that promotes, among other purposes, the use of renewable energy in buildings with oil-fired heating. The target is to increse the share of biofuel oil of the total liquid heating fuel deliveries to 2 percent by 2009 and to 10 percent by 2016. A quantative target is to increase the relative share of solar heat systems installed annually on oil-fired heating systems so that in 2016, a solar heat system will be installed on 20 percent of oil-fired heating systems when boilers are replaced or new heating systems installed.
The Ministry of Employment and the Economy provides support for energy saving investments by companies and organisations, such as municipalities. Priority is given to investments and new technology projects by energy efficiency agreement parties. Supported energy saving projects may also be, for example, investments in heat pumps and solar energy systems for the heating of buildings.
Together with the producer organisations of the agricultural and horticultural sectors, the Ministry of Agriculture and Forestry has launched the Farm Energy Programme to promote energy efficiency in farms and particularly to increase the use and production of renewable energy on farms. Farms participating in the programme receive aid from the Ministry of Agriculture and Forestry for the preparation of energy plans and, in the future, also for conducting more extensive energy inspections.

4.2.4 Information provisions (Articles 14(1), 14(2) and 14(4) of Directive 2009/28/EC)

(a) Reference to existing national and or regional legislation (if any) concerning information requirements according to Article 14 of Directive 2009/28/EC:
The land use and building legislation provides the general requirements for building and construction. There are special provisions concerning the qualifications of heat pump installers. Such provisions are included in the Government Decree on Servicing Equipment that Contains Ozone Layer Depleting Substances and Certain Greenhouse Gases (VNA 2009/452) and in certain rules concerning electrical safety (Decision of the Ministry of Trade and Industry, 1996/516). The Decree contains the qualification requirements for persons

installing, maintaining and servicing cooling and air conditioning equipment and heat pumps as well as for operators involved in such work. There are further qualification requirements for installers of heating boilers (liquid fuels, including biofuels). The Finnish Safety and Chemicals Agency maintains a qualification registry of persons who meet the qualification requirements in the Decree. In addition, the Finnish Safety and Chemicals Agency maintains a registry of companies who are entitled by the rules to perform such work.
Information on support schemes is provided, inter alia, with bulletins on the Repair Grants Act and the Repair Grants Decree, in the Act and Decree itself, and by the bodies responsible for the administration of the support schemes; see 4.2.3 (a).

(b) Responsible body/(ies) for dissemination of information at national/regional/local levels:
Provision of information related to increasing the use of renewable energy is the responsibility of Motiva with the support of the Ministry of Employment and the Economy.
Provision of information on support schemes concerning residential building production is the responsibility of municipalities, ARA - the Housing Finance and Development Centre of Finland and the Ministry of Environment. Local Centres for Economic Development, Transport and the Environment also contribute to information provision.

Table 6

Estimated share of renewable energy in the building sector (%)

	2005	2010	2015	2020
Residential	40%	46%	58%	68%
Total service sector	15%	18%	26%	38%
Industrial	12%	N/A	N/A	N/A
Total	31%	N/A	N/A	N/A

A key player in the provision of information, advice and training aimed at promoting the use of renewable energy is Motiva Oy. The priorities of Motiva's renewable energy activities are the promotion of small-scale use of bioenergy and energy entrepreneurship and the use of wind power, solar energy and heat pumps. Key methods are the provision of information and advice, co-operation with other organisations, and participation in international renewable energy projects.
The use of bioenergy is promoted in co-operation with other organisations. The promotion of small-scale use of pellets concentrates on marketing and installer training. Efforts have been made to increase information provision on transport biofuels. In order to promote the use of solar energy, wind power and small-scale hydropower, there are meetings and shared development projects between industry operators.
The Ministry of Environment, Motiva and training operators will provide information on matters related to installer training and certification. Furthermore, information on matters related to installer qualification and the required training is provided by industry operators and individual companies. Plans related to installer certification are being prepared.

Regional energy offices
http://www.motiva.fi/taustatietoa/energiatoimistot/
* usually by project funding

(c) Summary of the existing and planned measures at regional/local levels (where relevant):
On the initiative of the Ministry of the Environment, a plannning project for the training and certification system for the installers of biomass, heat pump, solar photovoltaic and solar thermal systems and shallow geothermal systems has been launched. The certification system must be available to installers by December 2012. The certification system development project is the responsiblity of Motiva Oy in co-operation with the Ministry of the Environment, the Ministry of Employment and the Economy, training institutions and organisations, and companies operating in the sector. Furthermore, there is a voluntary training and certification system for heat pump installers maintained by the heat pump sector.
Municipal renewable energy inspection is an important opportunity to promote the use of renewables on a

regional level. Marketing and development of such activities is the responsibility of Motiva. The promotion of the use of renewable energy also belongs to inspection and development activities with which the saving of energy is being encouraged.
The bioenergy coordination project led by the Ministry of Agriculture and Forestry will continue until the end of 2011. The purpose of the project is to enhance the exchange of information between regional project operators and increase the efficiency of the use of (public) project funding.

(d) Please indicate how information is made available on supporting measures for using renewable energy sources in electricity, heating and cooling and in transport to all relevant actors (consumers, builders, installers, architects, suppliers of relevant equipment and vehicles). Who is responsible for the adequacy and the publishing of this information? Are there specific information resources for the different target groups, such as end consumers, builders, property managers, property agents, installers, architects, farmers, suppliers of equipment using renewable energy sources, public administration? Are there information campaigns or permanent information centres in the present, or planned in the future?
The principal responsible body is Motiva which provides information on support measures, training, the use of renewable energy, etc. Information on support measures is provided by the Ministry of the Environment, the municipalities and ARA - the Housing Finance and Development Centre of Finland. Information is provided through various communication channels (Internet, newsletters, guidebooks, information events, trainings etc). The above bodies provide continuous information on the targets of the use of renewable energy. The body providing information is responsible for its own communication. Motiva's activities are based on a constant and continuous provision of information. Information resources and information provision campaigns are being planned. For example, energy regulations concerning the construction of new buildings will be communicated to various target groups (authorities, planners, end users, developers, managing agents etc). Local Centres for Economic Development, Transport and the Environment will also provide information and advice.

(e) Who is responsible for publishing information on the net benefits, costs and energy efficiency of equipment and systems using renewable energy sources for heating, cooling and electricity? (Supplier of the equipment or system, public body or someone else?)
Motiva publishes general-level information on the net benefits, costs and energy efficiency of different equipment and systems that use renewable energy sources for heating, cooling and electricity production. Such information is also published on the website of the Finnish Safety and Chemicals Agency and on the websites of the equipment and system manufacturers. Equipment and system suppliers are responsible for the information related to their own equipment and systems.

(f) How is guidance for planners and architects provided to help them properly consider the optimal combination of renewable energy sources, high efficiency technologies and district heating and cooling when planning, designing, building and renovating industrial or residential areas? Who is responsible for that?
Industry organisations, such as the Finnish Association of Architects, the Finnish Association of Civil Engineers and the Finnish Association of HVAC Societies provide training and guidance. Training is also provided by consultation and training organisations operating in the sector. In the future, there will be more guidance provided during the so-called base-level training and education of engineers, Masters of Science and architects as well as in the training provided by institutions of vocational training and universities of applied sciences. The Finnish National Board of Education is responsible for vocational training and higher education. Industry organisations are responsible for their own training. In cooperation with the pellet industry, Motiva has arranged an information campaign for building planners in order to promote a better understanding in the planning stage of the requirements for the use of pellets in heating.

(g) Please describe the existing and planned information, awareness raising and training programmes for citizens on the benefits and practicalities of developing and using energy from renewable sources. What is the role of regional and local actors in designing and managing these programmes?
Motiva is also responsible for providing information to citizens. Themes covered by Motiva's information provision activities include energy efficiency of buildings and the use of renewable energy sources. A wide

variety of media is used, such as guidebooks and the website www.energiatehokaskoti.fi. Motiva cooperates with regional and local energy offices and other organsiations. Information resources and information provision campaigns are being planned. For example, energy regulations concerning the construction of new buildings will be communicated to various target groups (authorities, planners, end users, developers, managing agents etc). As the plans concerning the certification training of installers are progressing, awareness raising campaigns are also being planned.
Motiva is also participating in the EU and Nordic projects that support Finnish promotion activities. An example of this is the shared Baltic Region project on Bioenergy Promotion that receives funding from the Interreg initiative.
Information events are arranged by regional energy offices.

4.2.5 Certification of installers (Article 14(3) of Directive 2009/28/EC)

(a) Reference to existing national and/or regional legislation (if any) concerning certification or equivalent qualification schemes for installers according to Article 14(3) of the Directive 2009/28/EC:
There are special provisions concerning the qualifications of heat pump installers. Such provisions are included in the Government Decree on Servicing Equipment that Contains Ozone Layer Depleting Substances and Certain Greenhouse Gases (VNA 2009/452) and in certain rules concerning electrical safety. The Decree contains the qualification requirements for persons installing, maintaining and servicing cooling and air conditioning equipment and heat pumps as well as for operators involved in such operations. There are further qualification requirements for installers of heating boilers (liquid fuels, including biofuels; Pressure Equipment Act, 869/1999). Requirements concerning the qualification of electricians apply to all electrical installations (Decision of the Ministry of Trade and Industry, 1996/516).

(b) Responsible body/(ies) for setting up and authorising certification/qualification schemes by 2012 for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps:
The Ministry of the Environment and the Ministry of Employment and the Economy. Practical application is the responsibility of Motiva under a mandate from the Ministry of the Environment. The ongoing project includes, inter alia, a pilot training for installers. During the project, the accreditation of training providers, the certification body for installers and the requirement concerning further training will also be reviewed.

(c) Are such certification schemes/qualifications already in place? If so, please, describe.
See 4.2.4 (a) and 4.2.4 (c) above.

(d) Is information on these schemes publicly available? Are lists of certified or qualified installers published? If so, where? Are other schemes accepted as equivalent to the national/regional scheme?
Information on certification and approval systems is publicly provided and publicly available. Information on the certificates awarded in the context of currently available certification systems is provided on the website of the Finnish Safety and Chemicals Agency (qualifications of a boiler installer, a refrigeration appliance installer and an electrician). Heat pump sector provides information on its own website on the certificates awarded through voluntary certification training. The certification and approval systems are applied on a national level. Information on the planned qualification for installers meeting the requirements of the RES directive will be publicly provided and the installer qualification register will be made publicly available. An ongoing Motiva project studies issues related to the body awarding the qualifications for installers and the qualification register.

(e) Summary of existing and planned measures at regional/local levels (where relevant).
See 4.2.5 (d) above. All measures will be applied on a national level.

4.2.6 Electricity infrastructure development (Article 16(1) and Article 16(3) to (6) of Directive 2009/28/EC)

(a) Reference to existing national legislation concerning requirements related to the energy grids (Article 16):
Electricity Market Act (386/1995), Government Decree on Electricity Market (65/2009)
Government Decree on Monitoring and Measuring Electricity Deliveries (66/2009), Electrical Safety Act

(410/1996)

(b) How it is ensured that transmission and distribution grids will be developed with a view to integrating the targeted amount of renewable electricity while maintaining secure operation of the electricity system? How is this requirement included in the transmission and distribution operators' periodical network planning?

The Electricity Market Act provides for the obligation to develop the electricity system, according to which the transmission or distribution system operator shall maintain, operate and develop its electricity system and the connections to other systems in accordance with its customers' reasonable needs, and to secure, for its part, the supply of sufficiently high-standard electricity to its customers The transmission system operator is also responsible for the technical operability and reliability of the entire electricity system (systems responsibility). A transmission system operator under the systems responsibility shall upkeep and develop its activities and services within the systems responsibility and maintain, operate and develop its electricity system and other equipment needed for fulfilling the systems responsibility and the connection to other systems, so that the prerequisites for an efficiently functioning electricity market can be ensured. The sale terms of the system services and the criteria according to which they are determined shall be equitable and non-discriminatory to all system users. Exceptions to them may only be made on special grounds.

Issues concerning the safety of electrical networks are provided for in the Electrical Safety Act.

The principal requirement of electrical safety is laid down in the Electrical Safety Act. According to this requirement, electrical devices and equipment shall be designed, constructed, manufactured, repaired, serviced and used so that they do not put any person's life, health or property at risk.

Electrical safety is ensured when electrical installations and devices do not cause a risk of fire or electric shock. Binding authority regulations, including key safety requirements, have been established for both electrical installations and devices.

Electrical networks are planned and designed by system operators. System operators shall cooperate in regional planning issues. In addition, the transmission system operator shall participate in the European network planning of the European Network of Transmission System Operators for Electricity.

The ex-ante regulation of investments is not applied in Finland. Ex post monitoring of the network investments and the appropriate quality of electricity is based on the obligation to develop the electricity system. The Energy Market Authority, the supervisory authority, is authorised to order a system operator, who has been proven to neglect the development of its electricity system, to remedy its negligence. The decision concerning the obligation can be made more effective by imposing a conditional fine.

(c) What will be the role of intelligent networks, information technology tools and storage facilities? How will their development be ensured?

Intelligent electricity networks and the associated information technology and information technology tools are increasingly important in the development of the electricity infrastructure. Some of the renewable energy production is variable, in which case the guidance and usage measures of the network must be adjusted according to the requirements of the increasingly variable load. Intelligent electricity networks have a vital role to play in this context.

One objective of the Finnish Government's Decree on the monitoring and measuring of electricity deliveries is to include most electricity network customers in the scope of hourly measuring of electricity consumption and remote reading of meters. Minimum requirements, as well as the transitory period until the end of 2013 concerning the consumption of electricity and small-scale electricity production based on hourly measuring and remote reading of meters, have been laid down in the Decree. Hourly remote reading of electricity consumption and small-scale production is an essential part of the development of intelligent networks.

The system operators' obligation to develop electricity networks also covers the development of intelligent networks and the deployment of information technology tools required by the networks.

(d) Is the reinforcement of the interconnection capacity with neighbouring countries planned? If so, which interconnectors, for which capacity and by when?

The current interconnection capacity of the Finnish electricity system is 1 650 MW with Sweden and Norway, 350 MW with Estonia and 1 460 MW with Russia. The interconnection capacity is adequate from the perspective of securing the operability of the Finnish electricity market and the electricity supply from various sources. Due to the future deployment of additional nuclear energy, and in order to enhance the

operation of regional electricity markets, the following interconnection projects are being prepared:

- Fenno-Skan 2 is a 800-MW direct current transmission connection between Finland and Sweden. The project is scheduled to be completed towards the end of 2011.
- Estlink 2 is a 650-MW direct current transmission connection between Finland and Estonia. The new link should be taken into commercial use in early 2014.

(e) How is the acceleration of grid infrastructure authorisation procedures addressed? What is the current state and average time for getting approval? How will it be improved? (Please refer to current status and legislation, bottlenecks detected and plans to streamline procedure with timeframe of implementation and expected results.)

An important feature of the construction of the grid infrastructure is the building of high-voltage (110 kV and more) lines. Building such lines
requires a construction permit issued by the Energy Market Agency. At the time of submitting the permit application, the necessary land use and environmental studies related to the construction of the line must be finished. In addition, lines passing through water areas require a permit according to the Water Act and those passing through the exclusive economic zone require a permit according to the Exclusive Economic Zone Act. After the construction permit has been issued, the line constructor often applies for a redemption permit from the Government. In normal conditions, the processing time of a construction permit for an electricity line is between one and three months. For cross-border lines, the processing time is longer, but these projects are rare. Environmental studies may take several months, depending on their required extent. For electricity networks with a voltage of less than 110 kV, the construction of an electricity line does not require a separate construction permit from the Energy Market Agency, but environmental and land use issues must be considered during construction. According to the Land Use and Building Act, system operators have the right to locate service conduits serving the community on a property.
The construction permit procedure for electricity lines does not contain elements that would unduly delay the permit procedure.

(f) How is coordination between grid infrastructure approval and other administrative planning procedures ensured?

During land use planning, the intention is to accommodate as far as possible any future or planned electric cable projects or at least to make a reservation for the potential route of an electric cable.

(g) Are priority connection rights or reserved connection capacities provided for new installations producing electricity from renewable energy sources?

Finland applies a guaranteed network access procedure. Rules concerning electricity production plants connected to the network are equal and uniform to all. In other words, the Electricity Market Act provides for an equal treatment of all connecting installations. There are no priority connection rights or separately reserved connection capacities.
On request and against reasonable compensation, the system operator shall connect to its system electricity consumption sites and power generating installations meeting the required technical specifications within its area of operation. The connection conditions and technical requirements set by the system operator shall be impartial and non-discriminatory.
It is the obligation of the system operator to charge a reasonable compensation for the service and to organise metering of the electricity supplied in an appropriate manner.

(h) Are any renewable installations ready to come online but not connected due to capacity limitations of the grid? If so, what steps are taken to resolve this and by when is it expected to be solved?

There are no such installations. The system operator is obliged under the network development obligation to reinforce its electricity network, if connection to the network so requires.
The system operator’s obligation to develop the electricity system requires that, if necessary, the system operator must increase the transmission capacity of its network in order to enable more production to connect to the network in accordance with the connecting customer’s reasonable demands.

(i) Are the rules on cost sharing and bearing of network technical adaptations set up and published by transmission and distribution system operators? If so, where? How is it ensured that these rules are

based on objective, transparent and non-discriminatory criteria? Are there special rules for producers located in peripheral regions and regions with low population density? (Cost bearing rules define which part of the costs is covered by the generator wishing to be connected and which part by the transmission or distribution system operator. Cost sharing rules define how the necessary cost should be distributed between subsequently connected producers that all benefit from the same reinforcements or new lines.)

Costs of the development of the electricity network are covered with transmission charges and the extension and the consequent reinforcement of the network are covered with connection charges. With regard to the pricing of network connections, system operators prepare the written procedures and principles themselves. These principles must follow the pricing definition procedures established by the Energy Market Agency. The content of the procedures established by the Energy Market Agency are uniform to all electricity network operators.

The purpose of the Energy Market Agency's decision concerning pricing procedures is to streamline and harmonise the definition of the pricing structure of network operator's connection charges, so that the equality, non-discriminability and reasonability of the pricing of the connections defined in the network operators' obligation to connect as provided for in the Electricity Market Act can be ensured in an adequate manner.

The distribution network operator charges a connection fee from the connecting body in accordance with the connection fee principles (terms of connection) concerning their own distribution area. Rules on cost sharing and bearing of network technical adaptations have also been defined in the terms of connection. Terms of connection must be submitted to the Energy Market Agency before their adoption, which is also the body responsible for monitoring the equality and non-discriminability of the terms. General principles for transmission and connection fees are laid down in the Electricity Market Act.

There are no special rules for producers located in peripheral regions. The system operator's rules concerning the connection to the grid shall also be applied to these producers.

Costs for the reinforcement of the grid must not be included in the charge for the grid connection of small-scale electricity production. Fees for the transmission of production must cover a relatively smaller share of the costs of the electrical network than transmission fees charged for electricity consumption.

(j) Please describe how the costs of connection and technical adaptation are attributed to producers and/or transmission and/or distribution system operators? How are transmission and distribution system operators able to recover these investment costs? Is any modification of these cost bearing rules planned in the future? What changes do you envisage and what results are expected? (There are several options for distributing grid connection costs. Member States are likely to choose one or a combination of these. According to the "deep" connection cost charging the developer of the installation generating electricity from renewable energy sources bears several grid infrastructure related costs (grid connection, grid reinforcement, and extension). Another approach is the "shallow" connection cost charging, meaning that the developer bears only the grid connection cost, but not the costs of reinforcement and extension (this is built into the grid tariffs and paid by the customers). A further variant is when all connection costs are socialised and covered by the grid tariffs.)

In 2011, the Energy Market Agency shall introduce nationally uniform procedures for the definition of connection costs applied in the distribution network and high-voltage grid. The most important change compared to the current charging system concerns the use of capacity reservation charge in a distribution network, as there has been no uniform establishment procedure for this charge, and system operators have so far defined the establishment procedure for the capacity reservation charge themselves.

System operators prepare the written procedures and principles for the pricing of network connections themselves following the pricing principles of the Energy Market Agency.

According to the planned pricing principles, the establishment of a connection fee for a production installation with a nominal electric power of more than 2 MVA that is connecting to the electricity network must be based on the direct network extension costs caused by the construction of the connection as well as on the charge for capacity reservation from the existing electrical network. In order to establish the capacity reservation charge, the system operator may use the calculation method included in the charging principles of the Energy Market Agency. In practice, the system operator shall establish the capacity reservation charge separately each year, because of the changed network component unit prices published by the Energy Market Agency that are adjusted annually according to the construction cost index.

According to the procedures planned by the Energy Market Agency, the establishment of a connection fee for an electricity production plant with a nominal electric power of 2 MVA or less must be based on the direct network extension costs caused by the construction of the connection, and these costs do not include charges for network reinforcement.
According to the provisions of the Electricity Market Act, reinforcement costs must not be included in the fee charged for the grid connection of an electricity production installation of 2 MVA or less. Acceptable reinforcement costs include the replacement of an existing power line with another with a larger cross-sectional surface, the construction of a parallel distribution network and the replacement of a transformer with a larger one.
When a production installation with a nominal electric power of more than 2 MVA is connected to the network, the system operator shall include in the connection fee the direct construction costs caused by the extension of the network as well as the capacity reservation charge. Acceptable direct network extension costs include all measures that enable the safe connection of the production installation to the operator network so that reasonable technical preconditions set by the system operator for the connection are met.
With the capacity reservation charge, a transmission capacity corresponding to the connection power is reserved from the existing network for the use of the connecting installation. Network reinforcement costs are included in the capacity reservation charge.
The pricing of the connection in the distribution network and high-voltage grid can be presented as the following formula: The capacity charge fee covers the reinforcement need of the existing network caused by the construction of new electrical connections. By paying the capacity charge, the operator of the electrical connection also obtains the right to reserve the share of the network transmission capacity corresponding to the amount of the charge.
The capacity reservation charge must be collected equitably from all connecting installations, and it cannot be applied on a case-by-case basis only on an individual connecting installation whose connection at the current transmission capacity situation requires investments in the electricity network reinforcement. The sum of the capacity reservation charge must be in relation to the electricity transmission band reserved for the connection and the respective costs incurred to the network. The capacity need and the transmission distance determine the required strength of the line and, therefore, have an effect through dimensioning on the value of the grid.
The distribution of network connection costs between the producer and/or the transmission and distribution system operators have been further defined by the Energy Market Agency in 2010, and the new procedures should take effect in the above form in 2011.

(k) Are there rules for sharing the costs between initially and subsequently connected producers? If not, how are the benefits for subsequently connected producers taken into account?
There are such rules for consumers connecting to the network, but not for producers. Network reinforcements required by production fall under the scope of the network development obligation of the system operator.

(l) How will it be ensured that transmission and distribution system operators provide new producers wishing to be connected with the necessary information on costs, a precise timetable for processing their requests and an indicative timetable for their grid connection?
According to the Electricity Market Act, the system operator must, on request, provide a connecting installation with a comprehensive and appropriately detailed estimate of the costs associated with the connection.
In addition, the distribution operator must provide the connecting installation with details of the connection delivery schedule before the connection agreement is signed.
According to the terms of connection for production installations, recommended by the industrial organisation Finnish Energy Industries and commonly followed by the system operators, the timetable for the connection to the network shall be defined in the connection agreement.

a + b x P

a includes direct network extension costs resulting from the network connection and any connection-related network protection costs, but does not include costs [in euros] incurred by network reinforcement.

b is the capacity reservation cost that covers the reinforcement of the existing mid-voltage network and the main transformer in [euro/kVA] or [euro/MVA].

P is the connecting body's connecting power in [kVA] or [MVA].

4.2.7 Electricity network operation (Article 16(2) and Article 16(7) and (8) of Directive 2009/28/EC)

(a) How is the transmission and distribution of electricity from renewable energy sources guaranteed by transmission and distribution system operators? Is priority or guaranteed access ensured?

Finland applies a guaranteed network access procedure. Rules concerning electricity production plants linked to the network are uniform and equal to all.

Access to the network is ensured through provisions of the Electricity Market Act, and the compliance with these provisions is monitored by the Energy Market Agency.

(b) How is it ensured that transmission system operators, when dispatching electricity generating installations give priority to those using renewable energy sources?

Priority is not determined by a decision of the transmission system operator, but by offers made on open markets, either on

the basis of bilateral agreements or through the power exchange on the basis of approved production offers. Producers make dispatching decisions independently. The operator of the transmission network can determine priority only on the basis of the preconditions set by the operation of the network.

(c) How are grid- and market-related operational measures taken in order to minimise the curtailment of electricity from renewable energy sources? What kinds of measures are planned and when is implementation expected? (Market and grid design that enable the integration of variable resources could cover measures such as trading closer to real time (changing from day-ahead to intra-day forecasting and rescheduling of generators), aggregation of market areas, ensuring sufficient cross border interconnection capacity and trade, improved cooperation of adjacent system operators, the use of improved communication and control tools, demand-side management and active demand-side participation in markets (through two-way communication systems — smart metering), increased distributed production and domestic storage (e.g. electric cars) with active management of distribution networks (smart grids).)

The Finnish Parliament is currently processing a proposal for an act on the production support for electricity from renewable energy sources, which would enable producers to produce energy from renewable sources in a profitable manner. The proposed act provides for State production support for electricity from wind power, biogas and wood fuels. The act provides for support for electricity production, but does not include provisions on connection to the renewable production network.

The existing measuring rules in Finland require remote reading and hourly measuring of electricity production and for large consumers. In addition, a 2009 decree obliges distribution system operators to take up hourly measuring, so that by early 2014, at least 80 percent of electricity consumers shall be included in the scope of remote-readable hourly measuring and load control. With hourly measuring, it is possible to introduce electricity measuring solutions based, for example, on the elasticity of consumer demand.

(d) Is the energy regulatory authority informed about these measures? Does it have the competence to monitor and enforce implementation of these measures?

The Energy Market Agency enforces the act on the production support for electricity from renewable sources and is responsible for tasks related to its implementation.

In addition, the Energy Market Agency monitors the compliance with rules concerning the measurement of electricity and supervises the development of the installation of hourly readable electricity meters.

(e) Are plants generating electricity from renewable sources integrated in the electricity market? Could you please describe how? What are their obligations regarding participation in the electricity market?

Plants generating electricity from renewable sources do not enjoy any special status in the electricity market compared to other electricity installations except for the production support concerning electricity

production based on wind power, biogas and wood fuels. Plants generating electricity from renewable sources do not have special obligations compared to other electricity installations.

(f) What are the rules for charging transmission and distribution tariffs to generators of electricity from renewable energy sources?
General tariff regulations are applied to generators of electricity from renewable energy sources.

4.2.8 Biogas integration into the natural gas network (Article 16(7) and Article 16(9) and (10) of Directive 2009/28/EC)

(a) How is it ensured that the charging of transmission and distribution tariffs does not discriminate against gas from renewable energy sources?
According to Chapter 1, Section 2 of the Natural Gas Market Act (508/2000), the provisions of the Act will also be applied on biogas, gas derived from biomass and other gases, if this gas is technically and safely suppliable into the natural gas network and transferrable in that network. According to Chapter 2, Section 8 of the Act, the selling prices and terms of network services and the criteria for their determination shall be equal and non-discriminatory for all network users, unless otherwise provided for special reasons. The Energy Market Agency supervises the pricing of network services.

(b) Has any assessment been carried out on the need to extend the gas network infrastructure to facilitate the integration of gas from renewable sources? What is the result? If not, will there be such an assessment?
Chapter 2, Section 2 of the Natural Gas Market Act provides for the obligation to connect. The gas network infrastructure will be extended according to the demand of network services. A general assessment on the need to extend the gas network infrastructure has not been carried out, and no such assessment is being planned.

(c) Are technical rules on network connection and connection tariffs for biogas published? Where are they published?
They have not been published.

4.2.9 District heating and cooling infrastructure development (Article 16(11) of Directive 2009/28/EC)

(a) Please provide an assessment of the need for new district heating and cooling infrastructure using renewable energy sources and contributing to the 2020 target. Based on this assessment, are there plans to promote such infrastructures in the future? What are the expected contributions of large biomass, solar and geothermal facilities in the district heating and cooling systems?
At the end of 2010, the number of flats belonging to a district heating system was 1.3 million, and they were the home to almost half of the population in Finland, i.e. 2.6 million people. Residential buildings account for about 55 percent of the total district heating consumption, office buildings for about 35 percent and industrial buildings for about 10 percent. Almost half of all residential and office buildings in Finland are connected to a district heating network.
The sale of district heat energy reached an all-time high, 32.4 TWh, last year. There are district heating networks in more than 200 Finnish municipalities, and their total length is about 12 500 km.
In Finland, three quarters of district heating is based on combined district heat and electricity production. Due to the efficiency of combined production, the consumption of fuel and, consequently, emissions to the environment are about 30 percent less than if the energy was produced in separate heat and electricity installations. Thanks to combined production, the carbon dioxide emissions in Finland are about 8 million tons less than they would be if the corresponding amount of energy was produced in separate heat and electricity installations.
In 2009, 34 percent of district heat and CHP electricity was produced with natural gas. The share of coal was 24 percent. The share of peat was 16 percent. The share of renewable energy sources was 17.5 percent, of which wood accounted for 13.5 percentage units and other biofuels for 4 percentage units. Five percent was produced with oil, and the share of industrial secondary heat was 1.5 percent.
Even though district heat is used for heating almost half of the Finnish building stock now, district heating continues to increase. Last year, about 4 000 new customers joined the district heating networks. One third

of the new customers were those who had changed heating form, mostly from oil heating.
The sales of district heating, adjusted with temperature data, and the subscription capacity of customers has increased 2 or 3 percent every year during the last five years. The increase in the number of customers and, consequently, the increase of the network construction is now at the same level as it was in the district heat boom years in the late 1970s and early 1980s.
According to studies conducted during the last few years, the increase in demand for district heat will continue at least until the 2020s. After this, the growth is estimated to level off due to the significantly smaller demand for heat in new buildings and the increasing availability of solutions that increase energy efficiency.
Even in the long term, district heat will have a key role in the heating of buildings particularly in densely habitated areas. This is true, even though the total demand for heating energy is expected to decrease by 30 percent by 2050. The sales of district heat is estimated to remain at the current level in the 2050s. At the same time, its share of the heating energy for the residential and office buildings in Finland will rise to almost 60 percent.
The selection of fuel for district heat and the associated electricity production is and will be guided by the essential need to bring down greenhouse gas emissions. It is possible to increase the share of renewable energy sources among the energy sources of district heat production considerably by improving the availability of wood fuels in particular. The objective is to increase the use of wood chip in the production of electricity and heat to 25 TWh by 2020.
Aid for renewable energy sources and the increases in excise duties on fossil fuels will substantially speed up the transfer to the use of wood fuels in the near future. In 2020, the share of renewable energy sources among district heat production fuels is estimated to rise to more than 30 percent from the current level of 17.5 percent.
By 2020, public aid may have enabled the inception of a small number of test systems that integrate district heat and solar power. In the bigger picture, however, their importance is marginal. Foreseeable technologies do not, regrettably, seem to make possible the use of geothermal energy in Finland.
The need for cooling in the building stock is constantly on the increase. At the moment, district cooling is increasing quickly only in Helsinki and Turku. However, it is evident that other large cities will follow suit in the next few years. By 2020, the sales of district cooling energy is estimated to have tripled and increased to 350 GWh.

4.2.10 Biofuels and other bioliquids — sustainability criteria and verification of compliance (Articles 17 to 21 of Directive 2009/28/EC)

(a) How will the sustainability criteria for biofuels and bioliquids be implemented at national level? (Is there legislation planned for implementation? What will be the institutional setup?)
The sustainability criteria will be implemented by adopting a sustainability criteria act that lays down provisions for a sustainability criteria and a national sustainability verification system. The authority responsible for the system would be the Energy Market Agency.

(b) How will it be ensured that biofuels and bioliquids that are counted towards the national renewable target, towards national renewable energy obligations and/or are eligible for financial support comply with the sustainability criteria set down in Article 17 (2) to (5) of Directive 2009/28/EC? (Will there be a national institution/body responsible for monitoring/verifying compliance with the criteria?)
Under the legislation on energy taxes and the distribution obligation of biofuels (see 4.5), the Finnish Customs monitors the compliance with the requirements of the sustainability system in national obligations and taxation.

(c) If a national authority/body will monitor the fulfilment of the criteria, does such a national authority/body already exist? If so, please specify. If not, when is it envisaged to be established?
Both the responsible authority for the national sustainability system, the Energy Market Agency, and the body enforcing taxation and the distribution obligation, the Finnish Customs, are existing bodies. The Energy Market Agency will be appointed to the task with the sustainability criteria act that is expected to take effect in the latter half of 2011.

(d) Please provide information on the existence of national law on land zoning and national land register for verifying compliance with Article 17 (3) to (5) of Directive 2009/28/EC. How can economic operators can access to this information? (Please provide information on the existence of rules and distinction between different land statuses, like biodiversity area, protected area etc; and on the competent national authority who will monitor this land register and changes in land status.)
There is no single national land register in Finland.
For protected areas and protected primary forests, the monitoring authorities are the Centres for Economic Development, Transport and the Environment. The draining of wetlands and swamps is not monitored, unless the draining is associated with forest clearing (in which case a forest use notification is required), peat production or construction. There are no highly biodiversive grasslands mentioned in the Directive in Finland.

(e) As far as protected areas are concerned, please provide information under which national, European or international protection regime they are classified.
The national classification system for protected areas is the Finnish legislation on the conservation of nature and, for state-owned areas, Metsähallitus has a separate classification and information system for the areas it has closed by its own decision. The Community system for protected areas is based on the classification and on the information system prepared on the basis of the Environment Directive and the Natura 2000 network and maintained by the Finnish Environment Institute. Another classification system for the Finnish natural protection areas is the protection regime of IUCN, maintained by the Finnish Environment Institute.

(f) What is the procedure for changing the status of land? Who monitors and reports at national level on land status changes? How often is the land zoning register updated (monthly, annually, bi-annually, etc.)?
A separate permit application for clearing a forest for other land use purpose is not necessary. However, a notification shall be made. It shall be indicated in the forest use notification if the purpose of the clearing is the change of the land use purpose, i.e. the forest is permanently cleared for agricultural land or construction. The forest use notification shall be submitted to a Forestry Centre at least 14 days before clearing commences. A separate permit is not required for clearing the forest for agricultural use, but the agricultural land is not automatically eligible for aid. The eligibility is subject to a decision by the Centre for Economic Development, Transport and the Environment.
In Finland, changing a wetland into land for forestry purposes requires a forest use notification.
Monitoring of the changes in land use is based on the national inventory of forests, from which the basic land use data is obtained. This data is complemented with statistics, if necessary. For peat production areas, the system in use is the VAHTI system. For cleared forests, data is not entered into the registry.

(g) How is compliance with good agro-environmental practices and other cross-compliance requirements (required by Article 17(6) of Directive 2009/28/EC) ensured and verified at national level?
The compliance with good agro-environmental practices and other cross-compliance requirements is ensured and verified by monitoring about 1 percent of beneficiaries, as laid down in the rules.
h) Do you intend to help develop voluntary “certification” scheme(s) for biofuel and bioliquid sustainability as described in the second subparagraph of Article 18(4) of Directive 2009/28/EC? If so, how?
For forest raw material, the PEFC/FSC certification system is already in place. The development of voluntary certification systems is principally the responsibility of market operators, and ministries are not planning to take an active part in this.

4.3 Support schemes to promote the use of energy from renewable sources in electricity applied by the Member State or a group of Member States

Regulation

The support schemes described later as financial support are based on law, and thus the support schemes’ regulatory basis is also described below. The schemes do not contain any obligations concerning the production or use of renewable energy.

a) What is the legal basis for this obligation/target?

- Community guidelines on State aid for environmental protection (OJ C 37/2001).
- Act on Discretionary Government Transfers 688/2001
- Government decree on general conditions for granting energy support (Valtioneuvoston asetus energiatuen myöntämisen yleisistä ehdoista, 1313/2007)

Production support scheme

- Community guidelines on State aid for environmental protection (OJ C 82/2008).
- Act on production support for electricity from renewable energy sources (Laki uusiutuvilla energialähteillä tuotetun sähkön tuotantotuesta, 1396/2010)
- Act on excise tax on electricity and certain fuels (Laki sähkön ja eräiden polttoaineiden valmisteverosta, 1260/1996, hereinafter "the Electricity Tax Act")

b) Are there any technology-specific targets?

- There are no technology-specific targets as regards the investment support scheme.

Production support scheme

The act on production support for electricity from renewable energy sources includes separate targets for wind power, biogas, wood chips and small CHP plants:

- The annual wind power production will rise from 0.15 TWh in 2005 to 6 TWh by 2020. In terms of installed capacity, the 6 TWh annual production is equivalent to 2 500 MVA, which is also the total maximum capacity of the plants to be accepted in the support scheme.
- The objective of the variable production support for electricity production from wood chips is to increase the use of wood chips as fuel from 6 TWh to 22 TWh by 2020. In addition to the variable production support, measures are being planned to increase the use of wood chips and raise electricity production from wood chips to 25 TWh.
- The purpose of the production aid for electricity production from biogas and wood is to significantly increase the use of biogas and wood in CHP.

c) What are the concrete obligations/targets per year (per technology)?

Production support scheme

The production support scheme does not contain any obligations to produce renewable energy. Furthermore, no annual targets have been set at the regulatory level. The expected impacts of the production support scheme are assessed in more detail in subsection h of the section concerning financial support. The achievement of the overall target is continuously monitored in the light of the said expected impacts.

d) Who has to fulfil the obligation?

Production support scheme

The production support scheme does not contain any obligations. Finland has decided to apply a market-based feed-in tariff type scheme. The target of all support schemes applied in Finland is to promote the use of renewable energy sources in energy production instead of obligating their use.

e) What is the consequence of non-fulfilment?

See the answers above.

f) Is there any mechanism to supervise fulfilment?

See the answers above.

g) Is there any mechanism to modify obligations/targets?

Financial support

a) What is the name and a short description of the scheme?

Investment support scheme (Ministry of Agriculture and Forestry, Item 30.01.40). Bioenergy production

support is a discretionary support. The appropriation (in 2008–2011 EUR 5 million per year) can be used, for example, for applicable research, investigation, training and communications projects promoting the establishment of bioenergy production plants as well as for pilot projects applying new research data and technologies. The target is particularly to promote the construction of biogas plants in areas with large farm animal populations and consequent environmental impacts.
Investment support scheme (Ministry of Employment and the Economy).
This scheme is part of the implementation of the National Climate and Energy Strategy. Energy support is a discretionary support. Enterprises and organisations such as municipalities are eligible for the support. The support is granted according to the continuous submission scheme. The purpose of the energy support is to promote the increased use of renewable energy sources, more efficient use of energy and energy saving, commissioning of new energy technologies and reduction of environmental damage from energy production and use. The support is also granted for electricity and heat production and cooling systems. In addition to the project type, the amount of support depends on the size of the project, the level of technology used and the cost-effectiveness of the project. The primary purpose of the support is to facilitate the launching of the investment project by improving its cost-effectiveness and reducing the financial risks related to the commissioning of new technologies and pilot plants.

Production support scheme
The production support scheme for the use of renewable energy sources is aimed at supporting electricity production from wind power, wood chips, biogas as well as in small CHP power plants using wood fuel (hereinafter “the wood fuel plant”). This support scheme also contains elements that encourage the efficient production of electricity and heat in CHP units.
The production support scheme consists of the market-based feed-in tariff type of support paid for electricity produced using wind power or biogas or in a wood fuel plant. In addition to the variable support, the production support scheme includes heat premiums for electricity produced using biogas or in a wood fuel plant. The amount of the feed-in tariff paid for the use of wood chips is based on the market price of emission allowances.
The support scheme is based on the act on production support for electricity from renewable energy sources (1396/2010), which took full effect on 25 March 2011.
In addition to these new measures, Finland has applied a support for renewable energy sources in accordance with the Electricity Tax Act since 2003. This fixed electricity production support is transferred to the act on production support for electricity from renewable energy sources as of the beginning of 2011.
The intention is to amend the production support scheme after it has started. It is being investigated, to what extent the use of hard coal in large hard coal plants could be replaced with wood-based fuels. Furthermore, alternatives suitable for the promotion of increased use of arable biomass and small-scale wood as energy sources are being investigated.

b) Is it a voluntary or obligatory scheme?
The scheme is voluntary.

Production support scheme
The production support scheme is voluntary. Finland has found that a market-based scheme that is voluntary for operators is the most suitable for the Nordic electricity markets.

c) Who manages the scheme? (Implementing body, monitoring authority)
Ministry of Agriculture and Forestry
Ministry of Employment and the Economy
Centres for Economic Development, Transport and the Environment

Production support scheme
The Ministry of Employment and the Economy is responsible for the general management, supervision and development of the production support scheme. The Energy Market Authority is responsible for the implementation tasks and monitoring of the production support scheme. The Ministry of Employment and the Economy and the Energy Market Authority operate in close cooperation to monitor the achievement of the targets set for the scheme and to develop the scheme.

d) What are the measures taken to ensure availability of necessary budget/funding to achieve the national target?

As of 2008, the appropriation available on the bioenergy production support budget item (Ministry of Agriculture and Forestry, Item 30.01.40) has been EUR 5 million, which has so far covered the biogas plant investments. The launching of the investment projects has been impeded by the overall economic situation and because a feed-in tariff scheme for electricity production from biogas has been under preparation at the same time.

During 2009, the maximum limits for eligible energy production schemes were abandoned. The maximum limits were EUR 25 million for the investment costs and EUR 4.5 million for the support. As regards wind power, the requirement concerning the use of new technology was discarded. A 2–5% "recession top-up" was introduced to investment support aid levels in cases where the increase would clearly facilitate a fast launch of a project.

Production support scheme

The funds required for the production support scheme are reserved in the annual State Budget. The financing required by the support scheme is also taken into account in the State Budget frameworks for 2011–2014. The economic impacts of the production support scheme have been thoroughly investigated. Preparations have been made to secure the financing for the support scheme in advance. There is a relatively broad political understanding on the necessity of the promotion of the use of renewable energy sources and the production support scheme.

e) How is long-term security and reliability addressed by the scheme?

The investment support scheme of the Ministry of Agriculture and Forestry is in use at least the term of office of the present Government, i.e. 2008–2011. The aim for the period is to create 6–10 biogas plants larger than farms. At present, this objective seems feasible.

Production support scheme

The objective of the renewable energy production support scheme is to secure the renewable energy operating environment for 12 years following the start of the operation. By accepting an operator in the support scheme, the State commits to pay support for the operation for the next 12 years. It has been estimated in Finland that the 12-year support period is sufficient to achieve a secure and reliable operating environment for the implementation of the new investment projects.

The act on production support for electricity from renewable energy sources is intended to remain valid until further notice. Pursuant to the act, new operators will be accepted in the scheme until the power capacity limits specified in the act are reached. On the other hand, support is paid to the operators accepted in the scheme as long as each operator is entitled to receive the support on the basis of the decision on acceptance in the scheme.

f) Is the scheme periodically revised? What kind of feedback or adjustment mechanism exists? How has the scheme been optimised so far?

As regards investment support from the Ministry of Agriculture and Forestry, the support allocation areas of the budget item concerned are revised annually. There is no separate feedback or adjustment mechanism.

In terms of the energy support, the requirement and granting criteria are revised annually. The regional Centres for Economic Development, Transport and the Environment are requested to provide proposals for instruction amendments and feedback. Each year, a joint information and training event is organised for the Centres for Economic Development, Transport and the Environment. Regular feedback and development proposals are also received from the beneficiary enterprises and organisations, consultants and equipment suppliers providing services to the former, and Motiva Oy, which manages the energy audit and energy efficiency agreement activities. For example, the minimum size of the eligible investments was reduced in 2010 on the initiative by micro and small- and medium-sized enterprises (Ministry of Employment and the Economy).

Production support scheme

The Energy Market Authority under the Ministry of Employment and the Economy is responsible for

production support scheme monitoring and implementation activities. The Ministry of Employment and the Environment is responsible for the general management, supervision and development of the production support scheme.
The Ministry of Employment and the Economy acts in a close cooperation with the Energy Market Authority, and already right after the launch of the scheme, the Ministry will have access to real-time data on the impact of the production support scheme on investments and use of renewable energy.
The starting point in issuing the production support act was to ensure a stable operating environment for the renewable energy producers, and thus it is not purposeful to amend the laws pursuant to which the support is paid without strong reasons. It is nevertheless clear that how encouraging and successful the support scheme is should be continuously assessed. If in the longer term the scheme does not seem to achieve the targets set for it, the Ministry of Employment and the Economy must react to the situation.

g) Does support differ according to technology?
No, it does not (Ministry of Agriculture and Forestry).
The investment support differs according to technology (Ministry of Employment and the Economy). Certain types of support are granted only to those who have subscribed to an energy efficiency agreement or the level of support is lower for other operators. The maximum share of the support of eligible expenses:

- renewable energy audits in the municipal sector 60%;
- energy audits in the municipal sector, microenterprises and small- and medium-sized enterprises 50%;
- other energy audits, analyses and investigation projects 40%;
- investments regarding renewable energy sources and energy-efficiency (new technologies) at maximum 40%;
- investments regarding renewable energy sources and energy efficiency (common technologies) at maximum 30%; the support level is more specifically determined for the following:
  - photovoltaic power 30%;
  - small-scale wind power 25%;
- other investments reducing environmental damage related to energy production at maximum 30%;
- investments improving the reliability and variety of energy supply (*de minimis* support.

Production support scheme
For electricity produced with a wind power unit, in a biogas plant or in a wood fuel plant, the production support paid for each megawatt-hour is the difference between the target price of EUR 83.50 and the market price for electricity. Furthermore, until the end of 2015, support based on an increased target price of EUR 103.50 is paid for electricity produced from wind power. However, the support based on the increased target price is paid for each plant for a maximum of three years. The maximum amount of support paid is determined according to the market price of EUR 30 for electricity. If the market price for electricity is under EUR 30 per megawatt-hour, the amount of support no longer increases.
In addition, a heat premium of EUR 20 per megawatt-hour is paid for electricity produced in a wood fuel plant and for electricity from biogas EUR 50 per megawatt-hour, provided that the electricity production is based on the efficient cogeneration of electricity and heat in accordance with the CHP Directive (Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of cogeneration based on a useful heat demand in the internal energy market and amending Directive 92/42/EEC). However, the maximum amount of support paid for electricity produced in a wood fuel plant is EUR 750 000 per calendar year.
To improve the competitiveness of wood chips compared to fossil fuels and peat, variable production support is paid for electricity produced from wood chips. The support varies based on the price of emission allowances. The support is the same for all electricity produced from wood chips. It has been determined to compensate the higher fuel costs from the use of wood chips compared to the use of peat. Thus the support is not paid directly to ensure the cost-effectiveness of new investments or to cover other expenses. Due to the differing target of the support, the support level also differs compared to other electricity production support types. The support is EUR 18 per megawatt-hour when the cost of an emission allowance is EUR 10 per ton of CO_2 or less. The support reduces linearly, being zero when the cost of an emission allowance is EUR 23. In addition to the support schemes referred to above, since 2003, Finland has applied a support for electricity produced from renewable energy sources paid in accordance with the Electricity Tax Act. As of the start of 2011, this fixed electricity production support will be based on a target price and it will be a

supplementing arrangement to the variable electricity production support. The fixed support is EUR 6.90 per megawatt-hour for electricity produced from wood chips or wind power and EUR 4.20 for electricity produced from biogas or in a small-scale water plant. The fixed production support is not paid for electricity produced from wind power, biogas or water if the average market price for electricity exceeds EUR 76.60 per megawatt-hour during a calendar year. Furthermore, the fixed production support is not paid for the use of wood chips if the average market price for an emission allowance exceeds EUR 18 during a calendar year.

h) What are the expected impacts in terms of energy production?

It is estimated that in the next few years, 6–10 fairly large biogas plants will be constructed with the aid of the biogas plant investments. Biogas plants can produce electricity, heat or transport fuels. In connection to biogas plants, it must be remembered that in addition to the renewable energy production, biogas plants have positive environmental impacts through the improved use of manure and reduction of greenhouse gas emissions (Ministry of Agriculture and Forestry).

The future energy production plants will use renewable energy sources and fuels in their production (Ministry of Employment and the Economy). The existing plants will transfer from the use of fossil fuels to the use of renewable energy sources. Correspondingly, renewable energy sources will be used also in transport and heating.

With the aid of the investment support scheme and the tariff scheme, the obligations set for Finland in the RES Directive will be achieved by the year 2020.

The target for the production support for wind power, included in the production support scheme, is an installed capacity of 2 500 MVA and 6 TWh per year by the year 2020. In 2005, approximately 150 GWh of electricity from wind power was produced in Finland. This means the construction of approximately a thousand new wind power units.

It has been estimated that wood chip production support will increase the use of wood chips in terms of generated electricity from 6.1 TWh in 2005 to 22 TWh by the year 2020. At present, there are approximately 90 multi-fuel boilers in Finland suitable for the use of wood chips. It is estimated that in 2020, there will be approximately 110 boilers. The estimate is that the support will increase the amount of electricity produced from wood chips to 5.3 TWh in 2020.

It is estimated that the amount of electricity produced in wood fuel plants will be approximately 1 TWh in 2020. The estimated installed electricity production capacity will be 160–200 MVA in 2020. This translates to approximately 50–60 small-scale CHP plants.

It is estimated that the total power capacity of the biogas plants within the production support scheme will increase to 19 MVA by the year 2015.

i) Is support conditional on meeting energy efficiency criteria?

No, it is not (Ministry of Agriculture and Forestry).

Yes, it is (Ministry of Employment and the Economy). Certain renewable energy investments that will reduce the amount of purchased energy are supported based on the energy efficiency criteria.

Production support scheme

The production support scheme encourages the efficient cogeneration of electricity and heat in biogas plants and wood fuel plants. A heat premium is paid for electricity produced in a wood fuel plant or a biogas plant, provided that the electricity production is based on the efficient cogeneration of electricity and heat in accordance with the CHP Directive.

j) Is it an existing measure? Could you please indicate national legislation regulating it?

The investment support scheme of the Ministry of Agriculture and Forestry is an existing measure and it has been notified to the Commission in accordance with the Commission Regulation (EC) No 800/2008 declaring certain categories of aid compatible with the common market in application of Articles 87 and 88 of the Treaty (General block exemption Regulation). The national-level Government Decree 07/2008 has been issued pursuant to Act on Discretionary Government Transfers 688/2001 (Ministry of Agriculture and Forestry).

*) See the table above under Measures for Achieving the Targets

Particularly as regards the investment support: Government decree on general conditions for granting energy support (Valtioneuvoston asetus energiatuen myöntämisen yleisistä ehdoista, 1313/2007).

Production support scheme
The fixed production support in accordance with the Electricity Tax Act has been in use as of the start of 2003. The Electricity Tax Act continues to regulate the fixed production support until the end of 2010. As of start of 2011, regulation of the fixed production support is transferred under the renewable energy production support act.

k) Is this a planned scheme? When would it be operational?
Production support scheme
The introduction of the support scheme requires that the European Commission approves the State aid included in the scheme.
After the scheme is launched, the intention is to supplement it, for example, with a support for replacement of hard coal and support enabling the use of arable biomass.

l) What start and end dates (duration) are set for the whole scheme?
The scheme started in 2008, and it will be operational at least until the end of 2011 (Ministry of Agriculture and Forestry). Investment support has been granted to enterprises at least since 1991 (Ministry of Trade and Industry, Ministry of Employment and the Economy).

Production support scheme
The production support scheme entered took full effect on 25 March 2011. The legislation regulating the support scheme is in force until further notice, but the objective is to achieve the targets set for the support scheme by the year 2020.
According to the scheme, support can be paid for a maximum of 12 years from the date the plant is accepted in the scheme. In practice this means that if the last plants were accepted in the scheme in 2020, support would still be paid in the year 2032.
The fixed support for electricity production to be transferred from the Electricity Tax Act has existed since the beginning of 2003.

m) Are there maximum or minimum sizes of system which are eligible?
No limits have been set in the legislation. In the application call, the call was restricted to biogas plants larger than farms. In the future, the support will be primarily aimed at plants not accepted in the electricity feed-in tariff scheme. (Ministry of Agriculture and Forestry).
As regards the investment support, the maximum limit was discarded in 2009 (Ministry of Employment and the Economy). The minimum limit is EUR 10 000.

Production support scheme
In terms of the target price-based production support, the power capacity of the wind power unit must be at least 500 kVA and the power of the generator of a wood chip plant, wood fuel plant or biogas plant must be no less than 100 kVA. In addition, the power of the wood fuel plant must not exceed 8 MVA. No maximum limit has been set for other technologies. The condition for the payment of the fixed electricity production support is that during a calendar year, the plant has produced at least 200 megawatt-hours of electricity. The maximum total capacity accepted in the production support scheme is 2 500 MVA of installed wind power capacity and 19 MVA of electricity production capacity from biogas. Wood fuel plants are accepted in the scheme until their total combined power capacity reaches 150 MVA or 50 plants.

n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?
No, it is not.

Production support scheme
The fixed electricity production supports included in the production support scheme can be cumulated with

the discretionary investment supports. The accumulation is monitored when granting investment support, and the operators' entitlement to the fixed electricity production support is considered when assessing the profitability of the supported investment.
The electricity production support types that vary based on the market price for electricity or emission allowances cannot be cumulated with other support types. Electricity production support for electricity from wind power, biogas or wood fuels that varies based on the market price for electricity can be paid only for plants that have not received any investment support or other production-based support. The variable production support paid for electricity from wood chips is intended to compensate only the higher fuel costs. At present, no other support that is based on the higher fuel costs of these plants are paid for the use of wood chips.

o) Are there regional/local schemes? If so, please detail using the same criteria.
There are no regional schemes in Finland. Since the market area in Finland is relatively small, it has not been considered purposeful to create any regional schemes.

Specific questions for financial support for investment:

a) What is granted by the scheme? (subsidies, capital grants, low interest loans, tax exemption or reduction, tax refunds)
Subsidies are granted by the investment support scheme of the Ministry of Agriculture and Forestry.

b) Who can benefit from this scheme? Is it specified for certain technology(/ies)?
Bioenergy production support is a discretionary support. The appropriation (in 2010 EUR 5 million) can be used, for example, for applicable research, investigation, training and communications projects promoting the establishment of bioenergy production plants as well as for pilot projects applying new research data and technologies. The target is particularly to promote the construction of biogas plants in areas with large farm animal populations and consequent environmental impact. The subsidy can be granted to enterprises, municipalities and other organisations. (Ministry of Agriculture and Forestry).
The investment support (Ministry of Employment and the Economy) is a discretionary support. The support can be granted to enterprises and organisations such as municipalities (support for household energy saving systems are granted by the Ministry of the Environment and the Housing Finance and Development Centre of Finland).
The purpose of the investment support is to promote the increased use of renewable energy sources, more efficient use of energy and energy saving, commissioning of new energy technologies and reduction of environmental damage from energy production and use.

c) Are applications continuously received and granted or are there periodic calls? If periodic, could you please describe the frequency and conditions?
Calls for applications are arranged periodically based on the situation. Thus far, two application rounds have been organised concerning biogas plant investment support. (Ministry of Agriculture and Forestry).
The investment support (Ministry of Employment and the Economy) is granted according to a continuous submission scheme.

Specific questions for tradable certificates:

a) Is there an obliged share of electricity produced from renewable sources in the total supply?
There is no tradable certificate scheme in Finland. When the policy instruments for the promotion of the renewable energy use were being selected in Finland, the applicability of tradable certificates to Finland and the Nordic electricity market was extensively investigated.
In Finland, the selected policy instrument concerning the renewable energies was a feed-in tariff type electricity production support scheme. As regards the operators not eligible for the variable support schemes, the scheme is supplemented by the fixed electricity production support and the investment support scheme. It has been assessed that the encouraging, feed-in tariff type scheme that does not include any feed-in obligations is the most suitable alternative for the Finnish environment and the Nordic electricity market as well.

b) Who has the obligation?

c) Are there technology-specific bands?

d) Which technologies are covered by the scheme?

e) Is international trade in certificates allowed? What are the conditions?

f) Is there a floor bottom price?

g) Is there a penalty for non-fulfilment?

h) What is the average price for certificates? Is it made public? Where?

i) What is the trading scheme for certificates?

j) How long can a plant participate in the scheme?

Specific questions for feed-in fixed tariffs:

a) What are the conditions to get the fixed tariff?

Production support scheme

The Finnish production support scheme, which is based on a target price, cannot be considered as fixed feed-in tariff since the tariff depends on the markets and the market price for electricity. A more detailed description of the scheme has been provided in section 4.3 under questions concerning financial support.

The production support scheme contains the fixed electricity production support, which is a fixed top-up for market price for electricity and cut off when the market price for electricity or emission allowances increases enough. Fixed production support can be paid to all producers that have not received any other form of production support and produce electricity from biogas, wood chips, wind power or in a water power plant with a less than 1 MVA capacity.

Each operator entitled to the fixed electricity production support must keep a record of all fuels used in the plant during the calendar year.

All plants eligible for the support must be located in Finland or within Finnish territorial waters and connected to the Finnish power grid. Furthermore, the operator must have operational and financial resources to carry out the activities.

b) Is there a cap on the total volume of electricity produced per year or of installed capacity that is entitled to the tariff?

Production support scheme

No cap has been determined for electricity entitled to the fixed electricity production support or installed capacity.

c) Is it a technology-specific scheme? What are the tariff levels for each?

Production support scheme

The amount of the fixed production support is technology-specific. Fixed support is paid EUR 6.90 per megawatt-hour for electricity produced form wind power or wood chips and EUR 4.20 per megawatt-hour for electricity produced from biogas or water power.

d) Are there other criteria differentiating tariffs?

Production support scheme

It has not been considered necessary to differentiate the fixed production support based on other criteria.

e) For how long is the fixed tariff guaranteed?

Production support scheme

The production support scheme (feed-in tariff) is notified to last ten years. If required, the support level can be amended as regards any new plants accepted in the scheme. However, each plant is guaranteed to receive the support granted at acceptance in the scheme for 12 years.

The fixed production support for small-scale plants included in the production support scheme is notified to last five years. In the State Budget, this fixed production support is guaranteed until further notice, but its necessity is continually assessed.

f) Is there any tariff adjustment foreseen in the scheme?

Production support scheme

The fixed production support includes a condition that the support is not paid for electricity produced from wind power, biogas or water if the average market price for electricity exceeds EUR 76.60 per megawatt-hour during a calendar year. Furthermore, the fixed production support is not paid for the use of wood chips if the average market price for an emission allowance exceeds EUR 18 during a calendar year. These support-level conditions will adjust the support automatically when the most important profitability factor changes enough.

The level of the fixed production support can be adjusted by amending the regulations behind it. The authorities are required to continuously monitor the encouraging impact of the support and the support's necessity against the changes in the operating environment.

Specific questions for feed-in premiums:

Production support scheme

A comprehensive description of the Finnish production support scheme is provided in section 4.3 under "Financial support". It can be noted that the Finnish production support scheme contains elements that can be considered feed-in premiums.

a) What are the conditions to get the premium?

b) Is there a cap on the total volume of electricity produced per year or of installed capacity that is entitled to the premium?

c) Is it an alternative to fixed tariff?

d) Is it a technology-specific scheme? What are the premium levels for each?

e) Is there a floor and/or a cap for the premium? Please specify.

f) For how long is the premium price guaranteed?

g) Is any tariff adjustment foreseen in the scheme?

Specific questions for tendering:

a) What is the frequency and size of the tenders?

Tendering has not been applied to increase the production of renewable energy. However, the suitability of tendering to Finland was investigated when the policy instruments were being selected. In Finland, tendering could be suitable for implementing a pilot project concerning offshore wind energy production.

b) Which technologies are specified?

c) Is it integrated with grid development?

4.4 Support schemes to promote the use of energy from renewable resources in heating and cooling applied by the Member State or a group of Member States

The use of renewable energy sources in heating and cooling is also supported from the investment support scheme (Ministry of Employment and the Economy).

The scheme is based on the Act on Discretionary Government Transfers (688/2001) and the Government decree on general conditions for granting energy support (Valtioneuvoston asetus energiatuen myöntämisen yleisistä ehdoista, 1313/2007). In terms of heating and cooling based on the use of renewable energy sources, the scheme complies with the electricity support scheme described in section 4.3. Rural Development

Programme for Mainland Finland 2007–2013 Investment support for farms

Biogas plants on farms

The support can be granted for the construction of a biogas plant that can be used for the production of biogas from biomass to heat the farm buildings. It can be granted for the construction of structures and a facility required by the plant equipment, construction of the gas and sludge tanks and procurement of the reactor.

Boiler houses on farms

The requirement for granting the support for the construction, expansion or renovation of a boiler house is that the boiler house must utilise waste, water, air, earth or solar heat or other renewable energy source, biomass included. If peat is used as an energy source, the boiler house must also be able to produce heat from wood or other renewable energy source. The support is not granted for costs resulting from the fact that it is possible to utilise oil, hard coal or other similar fossil fuel in the boiler house.
The same investment support scheme and laws as described in section 4.3 are applied to heating and cooling as well.
In the State Budget Proposal for 2011, the appropriation proposed for the item 35.20.55 (Subsidies for renovation measures) to be allocated as renovation, energy and adverse health effect subsidies totals EUR 90.5 million. Of the appropriation, EUR 30 million is reserved for increasing the use of heating methods utilising renewable energy sources in the existing stock of housing buildings. EUR 14 million has been reserved for other energy subsidies, of which EUR 12 million primarily for energy renovations of blocks of flats and terraced houses and EUR 2 million for means-tested subsidies for energy renovations of one-family houses. The appropriation for renovation and adverse health effect subsidies is EUR 46.5 million.
The Act on Discretionary Government Transfers (688/2001) is applied to the subsidy procedure. The subsidies are also regulated by the act on housing renovation, energy and adverse health effect subsidies (Laki asuntojen korjaus-, energia- ja terveyshaitta-avustuksista, 1184/2005, hereinafter “the Renovation Subsidy Act”). A Government Proposal on amending the Renovation Subsidy Act has been issued (Government Proposal 140/2010). The Government decree on housing renovation, energy and adverse health effect subsidies was issued pursuant to the latter act (Valtioneuvoston asetus asuntojen korjaus-, energia- ja terveyshaitta-avustuksista, 128/2006, hereinafter “the Renovation Subsidy Decree”). The decree contains specific provisions on the use of the subsidies. The proposal on amending the Renovation Subsidy Decree went to a committee statement round on 7 October 2010. The energy subsidy referred to above is intended as a long-term subsidy measure, valid at least until 2020, and its amount is determined annually in the State Budget Proposal.

a) How are the support schemes for electricity from renewable energy sources adapted to encourage the use of CHP from renewable energy sources?
The same principles are applied. The support from the production support scheme is primarily targeted at CHP plants (heat premiums for biogas and small-scale CHP). The production support for electricity from wood chips is primarily targeted at CHP plants. This support constitutes a significant support for heat production although it is targeted at electricity production.

b) What support schemes are in place to encourage the use of district heating and cooling using renewable energy sources?
The investment support scheme and the electricity production support scheme, see section 4.3.

c) What support schemes are in place to encourage the use of small-scale heating and cooling from renewable energy sources?
See item i) in section 4.2.3 and item a) in section 4.4.

d) What support schemes are in place to encourage the use of heating and cooling from renewable energy sources in industrial applications?
See section 4.3.

4.5 Support schemes to promote the use of energy from renewable resources in transport applied by the Member State or a group of Member States

Regulation

a) What is the legal basis of the obligation or goal?

- Act on the promotion of the use of biofuels in transport (Laki biopolttoaineiden käytön edistämisestä liikenteessä, 446/2007).

b) Are there any technology-specific targets?

The statutory biofuel distribution obligation concerns the total combined energy share of the biofuels distributed on the markets each calendar year by the distributors from the total energy of all transport fuels distributed on the markets, i.e. there is no technology-specific targets as regards the distribution obligation.

c) What are the concrete obligations/targets per year (per technology)?

The distribution obligation in 2010–2020 is as follows:

2010	4%
2011–2014	6%
2015	8%
2016	10%
2017	12%
2018	15%
2019	18%
2010–	20%

The procedure in accordance with Article 21(2) of the RES Directive (concerning biofuels that must be counted twice) is applied to the calculation of the biofuel energy share. Only biofuels that fulfil the sustainability criteria set out in the RES Directive are considered when assessing the fulfilment of the obligation.

d) Who has to fulfil the obligation?

The distribution obligation concerns those transport fuel distributors that are liable to pay taxes for the motor petrol or diesel oil it has supplied for taxable consumption or received.

e) What is the consequence of non-fulfilment?

A distributor that does not fulfil the distribution obligation must pay a penalty of EUR 0.04 per MJ for the missing biofuel amount.

f) Is there any mechanism to supervise fulfilment?

The Customs Administration is responsible for supervision of the fulfilment of the distribution obligation. Supervision is based on the annual notification of the supplied fuel amount itemised by products submitted by the operators to the Customs Administration. The operators must keep a record for this purpose. The Customs Administration is entitled to check the correctness of the data in an *ex post* audit.

g) Is there any mechanism to modify obligations/targets?

Normal legislation amendment procedure.

Financial support

See section 4.3. The investment support scheme of the Ministry of Agriculture and Forestry and the Ministry of Employment and the Economy can be applied to support biogas plants that produce gas for transport use. In the next few years, the investment support of the Ministry of Employment and the Economy will be used for supporting the construction of 1–2 large-scale transport biofuel pilot plants.

Transport energy taxation

- Act on excise tax on liquid fuels (Laki nestemäisten polttoaineiden valmisteverosta, 1472/1994).

- Vehicle tax act (Ajoneuvoverolaki, 1281/2003).

The structure of energy taxation has been reformed, and the new taxation structure took effect at the beginning of 2011. An energy content tax based on the fuel energy content and carbon dioxide tax based on the carbon dioxide emissions is levied for all fossil fuels and biofuels used in transport. The carbon dioxide tax takes into account the carbon dioxide emission reductions that can be achieved using biofuels in accordance with the Directive on the promotion of the use of renewable energy sources (the RES Directive). As regards transport fuels, a quality gradation will be adopted, which will take into account the fuel's impact on adverse emissions into the local environment. Based on the above-mentioned criteria (energy content, carbon dioxide emissions, quality gradation), an objective and technology-neutral taxation level has been specified for different combinations of fuels and vehicle technologies. This is implemented in practice through fuel tax or the combination of fuel tax and tax on engine power. If the biofuel used meets the sustainability criteria of the RES Directive, the carbon dioxide tax is reduced by half. Carbon dioxide tax is not levied on biofuels produced from wastes, residues, non-food cellulose material, or ligno-cellulosic material and considered twice (Article 21(2) of the RES Directive).

4.6 Specific measures for the promotion of the use of energy from biomass

4.6.1 Biomass supply: both domestic and trade

Table 7

Biomass supply in 2006

Sector of origin	Amount of domestic resource [26] Biomass as a source of energy	Imported (EU)	Imported (Non-EU)	Exported (EU/Non-EU)	Net amount	Primary energy production (ktoe)
A) Biomass from forestry [27]						
Of which:						
1. Direct supply of wood biomass from forests and other wooded land for energy generation *Optional – if information is available you can further detail the amount of feedstock belonging to this category:*						
a) fellings	0	0	0	0	0	
b) residues from fellings (tops, branches, bark,						
b1) tops, branches	1.7 million m3	0	0	0	1.7 million	287 ktoe
b2) stumps and rhizomes	0.5 million m3	0	0	0	0.5 million	96 ktoe
c) landscape management residues (woody biomass from parks, gardens, tree rows, bushes)	0	0	0	0	0	
d) other (please specify)						
d1) management of newly planted saplings,	0.7 million m3	0	0	0	0.7 million	119 ktoe
d2) firewood for one-family houses	5.2 million m3	0	0	0	5.2 million	908 ktoe
d3) large trunks	0.2 million m3	0	0	0	0.2 million	36 ktoe
2. Indirect supply of wood biomass for energy generation *Optional – if information is available you can further detail:*						
a) residues from sawmilling, woodworking, furniture	11.7 million m3	0	0	0	11.7 million	1 839 ktoe
b) by-products of the pulp and paper industry (black	22 million m3	0	0	0	22 million	3 821 ktoe
c) processed wood-fuel	259 000 t	0	0	193 000 t	66 000 t	105 ktoe
d) post-consumer recycled wood (recycled wood for						
d2) recycled wood burned in households	1.0 million m3	0	0	0	1.0 million	167 ktoe
e) other (please define)						
B) Biomass from agriculture and fisheries						
Of which:						

1. Agricultural crops and fishery products directly provided for energy generation *Optional – if information is available you can further detail:*						
a) arable crops (cereals, oilseeds, sugar beet, silage maize)	oats 700 t spring turnip rape 730 t	0 0	0 0	0 0	700 t 730 t	0.32 ktoe 0.45 ktoe
b) plantations						
c) short rotation trees						
d) other energy crops (grasses)						
e) algae						
f) other (please define)	reed canary grass, c. 67 500 t	0	0	0	67 500 t	c. 34.8 ktoe
2. Agricultural by-products / processed residues and fishery by-products for energy generation						
a) straw						
b) manure						
c) animal fat	8.35 million kg. In addition, the fat from processed carcases recovered in fur animal processing plants at a rate of 20–28% totals around 6.8 million kg.	0	0	0	15 150 t	total 13.38 ktoe
d) meat and bone meal	22 million kg. In addition, the pulp (not meat and bone meal but rather moist matter) from processed carcases recovered in fur animal processing plants at a rate of 65–80% totals around 21 million kg				22 000 t 22 000 t	c. 9.46 ktoe; c. 9.02 ktoe (pulp)
e) cake by-products (incl. oil seed and olive oil cake for energy)						
f) fruit biomass (including shell, kernel)						
g) fishery by-products						
h) clippings from vines, olive trees, fruit trees						
i) other (please define)						
C) Biomass from waste						
Of which:						

1. Biodegradable fraction of municipal solid waste including biowaste (biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants) **and landfill gas**	biogas from biowaste digestion plants, 3 million m^3	0	0	0	3 million m^3	1.4 ktoe
	landfill gas, 57 million m^3	0	0	0	57 million m^3	26 ktoe
	biodegradable fraction of municipal waste and industrial waste, 600 000 t	0	0	0	600 000 t	100 ktoe
2. Biodegradable fraction of industrial waste (including paper, cardboard, pallets)	included in C) 1.					
3. Sewage sludge	biogas, 21 million m^3	0	0	0	21 million m^3	10 ktoe

26) Amount of the resource in m3 (if possible, otherwise in appropriate alternative units) for category A and its subcategories and in tonnes for categories B and C and their subcategories.
27) Biomass from forestry should also include biomass from forest-based industries. Under the category of biomass from forestry processed solid fuels, such as chips, pellets and briquettes should be included in the corresponding subcategories of origin.
Conversion factors applied in Table 7 and Table 7a:
Oats: heat value 5.3 MWh/t, average yield 3 t/ha; Spring turnip rape: heat value 7.2 MWh/t, average yield 1.5 t/ha; Barley: average yield 3.5 t/ha; Reed canary grass: heat value 5 MWh/t, average yield 5 t/ha; Straw and energy crops: heat value 3.9 MWh/t, average yield 2.1 t/ha; Animal fat: heat value 37–39 MJ/kg, Meat and bone meal: heat value 18 MJ/kg;
Pellets: heat value 17 GJ/t; Wood biomass: 2 TWh/million m^3; Manure: methane 20 m3/t; Biodegradable fraction of waste: heat value 7 GJ/t; Biogas: heat value 19 GJ/1 000 m^3

Table 7a

Estimated biomass domestic supply in 2015 and 2020

Sector of origin		2016		2020	
		Expected amount of domestic resource	Primary energy production (ktoe)	Expected amount of domestic resource	Primary energy production (ktoe)
A) Biomass from forestry	1. Direct supply of wood biomass from forests and other wooded land for energy generation	14 million m^3	2 380	19 million m^3	3 230
	2. Indirect supply of wood biomass for energy generation	27 million m^3	4 600	28 million m^3	4 830
B) Biomass from agriculture and fisheries	1. Agricultural crops and fishery products directly provided for energy generation	reed canary grass 250 000 t	108	reed canary grass 500 000 t	215
		straw and energy crops 105 000 t	36	straw and energy crops 210 000 t	71
		spring turnip rape (biodiesel) 22 500 t	8	spring turnip rape (biodiesel) 45 000 t	15
		barley (bioethanol) 210 000 t	42	barley (bioethanol) 420 000 t	88
	2. Agricultural by-products / processed residues and fishery by-products for energy generation		54		108

C) Biomass from waste	1. Biodegradable fraction of municipal solid waste including biowaste (biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants) and landfill gas 2. Biodegradable fraction of industrial waste (including paper, cardboard, pallets) 3. Sewage sludge	item C) total 160	item C) total 190

Figures in column “Primary energy production” describe the energy content of the biofuel and not the primary energy content of the raw material in cases that these are not the same.

Table 8

Current agricultural land use for production of crops dedicated to energy in 2006 (data from the IACS system; surface of the area that has received energy crop support in ha)

Agricultural land use for production of dedicated energy crops	Surface
1. Land used for short rotation trees (willows, poplars) 2. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum	c. 6 ha (energy willows) c. 13 500 ha (reed canary grass)

4.6.2 Measures to increase biomass availability, taking into account other biomass users (agriculture and forest-based sectors)

Mobilisation of new biomass sources

a) Please specify how much land is degraded.
In Finland, agricultural land is not cultivated in manner that would degrade it. Therefore, there are no estimates of the size of such land.

b) Please specify how much unused arable land there is.
There is 5 879 ha of unused arable land and 8 810 ha of temporarily unused arable land, i.e. in total 14 689 ha of land.

c) Are any measures planned to encourage unused arable land, degraded land, etc. to be used for energy purposes?
There are no measures in Finland to encourage the use of unused arable land for energy crop production.

d) Is energy use of certain already available primary material (such as animal manure) planned?
In the future, new or growing primary material for energy production in Finland could include, for example, manure, straws, reed canary grass, food processing waste, coarsefish, common reed, sphagnum, short rotation trees. At present, the most common arable biomass used for energy production is reed canary grass, and in addition to the increase of its production and use, measures for increasing the production and use of straws, common reed and other reeds and short rotation trees are being sought. Of the primary materials referred to above, biogas production and use is supported at present (see item e below). Furthermore, the possibilities to incorporate the other aforementioned energy sources to the existing support schemes are being investigated.

e) Is there any specific policy promoting the production and use of biogas? What type of uses are promoted (local, district heating, biogas grid, natural gas grid integration)?
The production of electricity from biogas is promoted through the production support scheme (see section 4.3).

Ministry of Agriculture and Forestry:
Bioenergy production support is a discretionary support. The appropriation (in 2010 EUR 5 million) can be used, for example, for applicable research, investigation, training and communications projects promoting the establishment of bioenergy production plants as well as for pilot projects applying new research data and technologies. For the promotion of bioenergy production and use, projects are being started. It is estimated that as a result of these projects, 6–10 fairly large biogas plants will be constructed in the next few years particularly in areas with large farm animal populations and consequent environmental impact.
Energy-related targets within the scope of agricultural investment support include on-farm boiler houses and biogas plants using renewable energy sources. As regards the boiler houses,
the amount of support depends on the nature of the target receiving financing. Of the primary material used in the eligible biogas plants, 50% must originated from the farm and over 50% of the produced energy must be used on the farm.
Bioenergy investments in rural microenterprises and small- and medium-sized enterprises can receive financing from different priority axes of the Rural Development Programme for Mainland Finland. Support

can be granted, for example, to bioenergy product refinement, energy production from biomass or other construction investments related to bioenergy business activities.

f) What measures are planned to improve forest management techniques in order to maximise the extraction of biomass from the forest in a sustainable way?(4) How will forest management be improved in order to increase future growth? What measures are planned to maximise the extraction of existing biomass that can already be put into practice?

Since the 1950s, the objective of the Finnish forest policy has been to improve the growth of forests. Measures have included, for example, improvement of forest management, drainage of marshlands and paludified moorland, and fertilisation of forests. Today, the latter two are not applied extensively. Forest management, on the other hand, is still a key forest policy objective, and it is also promoted in certain situations with State funds (so-called Kemera subsidies). One goal set in the National Forest Programme, extending until 2015, is that forests' ability to grow must be ensured and the growth must be increased. In the longer term, this will create provide opportunities for wood processing, ensuring diversity and other forms of forest use. There are no planned separate measures for increasing the forest growth in terms of bioenergy production. The measures referred to above are rather part of more extensive goals set for the sustainable management and use of forests.

In Finland, the forest management recommendations are updated regularly as are the recommendations for energy wood harvest. The most recent energy wood growth and harvesting recommendations were published in summer 2010. In connection to the latest update, the most optimal growth and harvesting chains to maximise wood energy production were also investigated. For example, as regards pine forests, the forest owners can apply a so-called combined growth of energy wood and merchantable wood if they so choose. In such cases, it is recommended that the forest is maintained thicker at the youth stage than what is recommended in the traditional growth models. The combined growth of merchantable wood and energy wood normally extends the rotation period by 5–10 years compared to the growth chain of mere merchantable wood when the corresponding average diameter is the regeneration criterion. In addition to higher grade timber, the purpose of combined growth of merchantable wood and energy wood has been to produce more energy wood.

Energy support for small-scale wood will enter into force after the Commission has approved the State aids.

Impact on other sectors

a) How will the impact of energy use of biomass on other sectors based on agriculture and forestry be monitored? What are these impacts? (If possible, please provide information also on quantitative effects.) Is the monitoring of these impacts planned in the future?

The impact of energy use of forest biomass on other forestry-based sectors: At a general level, the impacts of the increasing use of wood energy, for example, on availability of wood for the use of the forest industry is monitored in connection to the monitoring of the national strategies concerning forestry (National Forest Programme 2015, Strategic Programme for the Forest Sector). At the regional level, assessments are performed. for example, by research institutes and in connection with consultations.

The impact of energy use of arable biomass on other agriculture-based sectors: So far, energy use of arable biomass has been so small-scale in Finland that there has been no need for monitoring activities.

b) What kind of development is expected in other sectors based on agriculture and forest that could have an impact on energy use? (E.g. could improved efficiency/productivity increase or decrease the amount of by-products available for energy use?)

In the next few years, the number of bioethanol plants that utilise agriculture and food industry by-products is increasing fast. This will boost the production of transport fuels from the materials concerned.

4.7 Planned use of statistical transfers between Member States and planned participation in joint projects with other Member States and third countries

According to this action plan and the prognosis document submitted to the European Commission earlier, Finland plans to meet the renewable energy obligations through domestic measures until 2020. However, the Finnish Government made a policy statement in November 2008 in its Long-Term Climate and Energy Strategy that if necessary, Finland can utilise the flexible mechanisms in the role of buyer or seller, depending on the costs from the increase of the production of renewable energy in Finland and other

Member States. Finland has started to prepare for utilisation opportunities of the cooperation mechanisms together with other Nordic countries (Sweden, Denmark and Norway). The matter is being investigated through the two-year ”Nordic Testing Ground” research project. The cooperation mechanisms are also covered in the “Concerted Action – Renewable Energy” project by the EU.
Finland expects that the aforementioned Nordic research project will provide some answers to sections 4.7.1 and 4.7.3.

4.7.1 Procedural aspects

a) Describe the national procedures (step by step) established or to be established, for arranging a statistical transfer or joint project (including responsible bodies and contact points).

b) Describe the means by which private entities can propose and take part in joint projects either with Member States or third countries.

c) Give the criteria for determining when statistical transfers or joint projects shall be used.

d) What is going to be the mechanism to involve other interested Member States in a joint project?

e) Are you willing to participate in joint projects in other Member States? How much installed capacity/electricity or heat produced per year are you planning to support? How do you plan to provide support schemes for such projects?

4.7.2 Estimated excess production of renewable energy compared to the indicative trajectory which could be transferred to other Member States

See Table 9.

4.7.3 Estimated potential for joint projects

a) In which sectors can you offer renewable energy use development in your territory for the purpose of joint projects?

b) Has the technology to be developed been specified? How much installed capacity/electricity or heat produced per year?

c) How will sites for joint projects be identified? (For example, can local and regional authorities or promoters recommend sites? Or can any project participate regardless its location?)

d) Are you aware of the potential for joint projects in other Member States or in third countries? (In which sector? How much capacity? What is the planned support? For which technologies?)

e) Do you have any preference to support certain technologies? If so, which?

4.7.4 Estimated demand for renewable energy to be satisfied by means other than domestic production

Table 9

Estimated excess and/or deficit production of renewable energy compared to the indicative trajectory which could be transferred to/from other Member States in Finland

	Estimated excess in forecast document	Estimated excess in NREAP	Estimated deficit in forecast document	Estimated deficit in NREAP
2010	0	0	0	0
2011	0	0	0	0
2012	0	0	0	0
2013	0	0	0	0
2014	0	0	0	0
2015	0	0	0	0
2016	0	0	0	0
2017	0	0	0	0
2018	0	0	0	0
2019	0	0	0	0
2020	0	0	0	0

5 Assessments

5.1 Total contribution expected of each renewable energy technology to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity, heating and cooling and transport

Table 10a

Estimate of total contribution (installed capacity, gross electricity generation) expected from each renewable energy technology in Finland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity 2010–2014

Installed capacity (MW)	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	3 040	3 050	3 050	3 050	3 050	3 050	3 050	3 060	3 070	3 080	3 090	3 100
< 1 MW	30	30	30	30	30	30	30	30	30	30	30	30
1–10 MW	280	280	280	280	280	280	280	280	280	280	280	280
>10 MW	2 730	2 750	2 750	2 750	2 750	2 750	2 750	2 750	2 760	2 770	2 780	2 790
Of which pumping	0	0	0	0	0	0	0	0	0	0	0	0
Geothermal	0	0	0	0	0	0	0	0	0	0	0	0
Solar	0	0	0	0	0	0	0	0	0	10	10	10
Photovoltaic	0	0	0	0	0	0	0	0	0	10	10	10
Concentrated solar power	0	0	0	0	0	0	0	0	0	0	0	0
Tide, wave, ocean	0	0	0	0	0	0	10	10	10	10	10	10
Wind	80	170	280	380	480	580	670	1 060	1 440	1 800	2 160	2 500
onshore	80	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1 600
offshore	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	900
Biomass	2 140	1 790	1 980	2 040	2 090	2 150	2 200	2 320	2 450	2 600	2 740	2 920
solid	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
biogas	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
biofuels	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total	5 260	5 010	5 310	5 480	5 640	5 790	5 940	6 450	6 970	7 490	8 000	8 540
of which in CHP	2 030	1 690	1 870	1 930	1 980	2 030	2 080	2 190	2 320	2 460	2 590	2 760

Table 10b

Estimate of total contribution (installed capacity, gross electricity generation) expected from each renewable energy technology in Finland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity 2015–2020

Gross energy generation (GWh)	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydro	13 910	14 210	14 210	14 210	14 210	14 210	14 210	14 250	14 290	14 330	14 370	14 410
< 1 MW	140	150	150	150	150	150	150	150	150	150	150	150
1–10 MW	1 260	1 290	1 290	1 290	1 290	1 290	1 290	1 290	1 290	1 300	1 300	1 310
>10 MW	12 510	12 780	12 780	12 780	12 780	12 780	12 780	12 810	12 850	12 890	12 920	12 960
Of which pumping	0	0	0	0	0	0	0	0	0	0	0	0
Geothermal	0	0	0	0	0	0	0	0	0	0	0	0
Solar	0	0	0	0	0	0	0	0	0	0	0	0
Photovoltaic	0	0	0	0	0	0	0	0	0	0	0	0
Concentrated solar power	0	0	0	0	0	0	0	0	0	0	0	0
Tide, wave, ocean	0	0	0	0	0	0	0	0	0	0	0	0
Wind	150	360	590	820	1 060	1 290	1 520	2 440	3 350	4 260	5 180	6 000
onshore	150	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3 500
offshore	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2 500
Biomass	9 660	8 090	8 910	9 200	9 420	9 650	9 880	10 370	10 930	11 550	12 150	12 910
solid	9 640	3 930	4 520	4 760	4 940	5 120	5 300	5 730	6 240	6 810	7 350	7 860
biogas	20	40	40	40	50	50	50	60	60	70	70	270
biofuels	included in solid biomass	4 120	4 350	4 390	4 440	4 480	4 530	4 580	4 630	4 680	4 730	4 780
Total	23 730	22 660	23 710	24 230	24 690	25 150	25 620	27 060	28 580	30 150	31 710	33 420
of which in CHP	8 480	7 980	8 480	8 750	8 980	9 210	9 430	9 900	10 440	11 040	11 620	12 340

Table 11

Of which biomass in households

Estimate of total contribution (final energy consumption) expected from each renewable energy technology in Finland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling 2010–2020.

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020

Geothermal	0	0	0	0	0	0	0	0	0	0	0	0
Solar	0	0	0	0	0	0	0	0	0	0	0	0
Biomass	5 490	4 990	5 310	5 470	5 580	5 700	5 810	5 950	6 100	6 250	6 440	6 610
solid	5 450	2 710	2 910	3 040	3 130	3 220	3 300	3 410	3 540	3 660	3 820	3 940
biogas	40	30	30	30	30	30	30	30	30	30	30	60
biofuels	included in solid biomass	2 240	2 370	2 400	2 420	2 450	2 470	2 500	2 530	2 560	2 580	2 610
Heat pumps	40	230	320	400	450	490	530	560	590	610	630	660
Total	5 530	5 210	5 630	5 870	6 040	6 190	6 340	6 510	6 680	6 860	7 070	7 270
of which DH	450	510	610	660	710	750	800	870	960	1 050	1 140	1 260
of which biomass in households	1 110	1 010	1 030	1 050	1 060	1 070	1 080	1 090	1 090	1 090	1 100	1 100

Table 12

Estimate of total contribution expected from each renewable energy technology in Finland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector 2010–2020.

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bioethanol	0	70	80	90	100	110	120	120	120	130	130	130
of which biofuels, Article 21(2)	0	0	0	10	10	10	20	20	30	30	40	40
of which imported	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0
Biodiesel	0	150	180	210	240	270	300	330	360	390	410	430
of which biofuels, Article 21(2)	0	0	10	10	20	40	50	60	80	100	120	140
of which imported	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0
Hydrogen from renewables	0	0	0	0	0	0	0	0	0	0	0	0
Renewable electricity	20	20	20	20	20	20	20	20	30	30	30	40
of which road transport	0	0	0	0	0	0	0	0	10	10	10	10
of which non-road transport	20	20	20	20	20	20	20	20	20	20	20	20
Others (such as biogas, vegetable oils, etc.)	0	0	0	0	0	0	0	0	0	0	0	0
of which biofuels, Article 21(2)	0	0	0	0	0	0	0	0	0	0	0	0
Total	20	230	280	320	360	400	440	470	510	540	570	600

5.2 Total contribution expected from energy efficiency and energy saving measures to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity, heating and cooling and transport

In November 2008, the Finnish Government approved the Long-Term Climate and Energy Strategy. According to the baseline scenario of the strategy, the final energy consumption would be 347 TWh, and according to the objective scenario, the final energy consumption would be 310 TWh in 2020. The objective thus is that a 37 TWh reduction could be achieved by energy-efficiency promotional measures.
The 38% renewable energy obligation applied to Finland would amount to approximately 132 TWh in 2020, calculated based on the baseline scenario. If calculated from the objective scenario, the renewable energy obligation would amount to approximately 118 TWh. This means that achieving the reduction objective would reduce also the renewable energy obligation amount by 14 TWh.
In April 2010, the Government decided that the amount of final energy consumption applied in the calculation of the renewable energy obligation is 327 TWh in 2020, which is higher than the objective scenario figure. The purpose is to ensure that Finland will reach its renewable energy obligation target even if it could not reach the energy consumption level in accordance with the objective scenario. The renewable energy obligation calculated on the basis of this figure is 124 TWh. In 2005, the final renewable energy consumption was 86 TWh.

5.4 Preparation of the National Renewable Energy Action Plan and the follow-up of its implementation

The present action plan is primarily based on the Long-Term Climate and Energy Strategy issued by the Government in November 2008. Preparation of the strategy included several discussion events, and the ministerial working group responsible for steering the preparation heard a variety of experts. The official preparation was based on cooperation between different ministries. The Ministry of Employment and the Economy is responsible for monitoring the implementation of the strategy and the action plan and for reporting to the European Commission in accordance with the RES Directive.
The action plan has been prepared in cooperation by the ministries pursuant to the policy decision of the strategy and the ministerial working group on climate and energy policy matters.

a) How were regional and/or local authorities and/or cities involved in the preparation of this Action Plan? Were other stakeholders involved?
The Association of Finnish Local and Regional Authorities and other stakeholders were heard during the preparation of the strategy.

b) Are there plans to develop regional/local renewable energy strategies? If so, could you please explain? In case relevant competences are delegated to regional/local levels, what mechanism will ensure national target compliance?
Several regional councils have prepared regional climate and energy programmes. In addition, for example the capital Helsinki has prepared its own programme. The competences and responsibilities concerning the achievement of the target lie with the Finnish State.

c) Please explain the public consultation carried out for the preparation of this Action Plan.
The action plan is based on the Long-Term Climate and Energy Strategy by the Finnish Government, in connection to which several hearings were organised. The strategy was also processed in Parliament, whose committees heard a variety of experts.

d) Please indicate your national contact point/the national authority or body responsible for the follow-up of the Renewable Energy Action Plan?
Ministry of Employment and the Economy

e) Do you have a monitoring system, including indicators for individual measures and instruments, to follow-up the implementation of the Renewable Energy Action Plan? If so, could you please give more details on it?

Increasing the use of renewable energy has been selected as a strategic target of the Ministry of Employment and the Economy and its achievement is closely monitored. Furthermore, the support scheme for electricity produced from renewable energy sources is monitored by the authority responsible for the organisation of the scheme, the Energy Market Authority.

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