

**FINLAND'S SECOND PROGRESS REPORT
ACCORDING TO ARTICLE 22 OF DIRECTIVE 2009/28/EC**

24 January 2014

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding 2 years (n-1; n-2 e.g. 2010 and 2009) (Article 22 (1) (a) of Directive 2009/28/EC).

Table 1: The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources¹

	2011	2012
RES-H&C ² (%)	45.9	48.2
RES-E ³ (%)	29.4	29.5
RES-T ⁴ (%)	6.4	7.9
Overall RES share ⁵ (%)	33.5	35.1
Of which from cooperation mechanism ⁶ (%)	0	0
Surplus for cooperation mechanism ⁷ (%)	0	0

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)⁸

	2011	2012
(A) Gross final consumption of RES for heating and cooling	6 325	6 808
(B) Gross final consumption of electricity from RES *	2 188	2 209
(C) Gross final consumption of energy from RES in transport	213	216
(D) Gross total RES consumption⁹	8 726	9 234
(E) Transfer of RES to other Member States	0	0
(F) Transfer of RES from other Member States and 3rd countries	0	0
(G) RES consumption adjusted for target (D)-(E)+(F)	8 726	9 234

* Electricity consumption by transport is not included in the figures

¹ Facilitates comparison with Table 3 and Table 4a of the NREAPs.

² Share of renewable energy in heating and cooling: gross final consumption of energy from renewable sources for heating and cooling (as defined in Articles 5(1)(b) and 5(4) of Directive 2009/28/EC divided by gross final consumption of energy for heating and cooling. The same methodology as in Table 3 of NREAPs applies.

³ Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1)(a) and 5(3) of Directive 2009/28/EC divided by total gross final consumption of electricity. The same methodology as in Table 3 of NREAPs applies.

⁴ Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1)(c) and 5(5) of Directive 2009/28/EC divided by the consumption in transport of 1) petrol; 2) diesel; 3) biofuels used in road and rail transport and 4) electricity in land transport (as reflected in row 3 of Table 1). The same methodology as in Table 3 of NREAPs applies.

⁵ Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

⁶ In percentage point of overall RES share.

⁷ In percentage point of overall RES share.

⁸ Facilitates comparison with Table 4a of the NREAPs

⁹ According to Article 5(1) of Directive 2009/28/EC gas, electricity and hydrogen from renewable energy sources shall only be considered once. No double counting is allowed.

Table 1.b: Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in [Member State] to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity¹⁰

	2011		2012	
	MW	GWh	MW	GWh
Hydro ¹⁴ :	3 196	14 020	3 198	14 241
<i>non pumped</i>	3 196	12 008	3 198	13 139
<1MW	32	110	32	131
1MW–10 MW	283	843	283	937
>10MW	2 881	11 055	2 883	12 071
<i>pumped</i>	0	0	0	0
<i>mixed</i> ¹²	0	0	0	0
Geothermal	0	0	0	0
Solar:	8	5	8	5
<i>photovoltaic</i>	8	5	8	5
<i>concentrated solar</i>	0	0	0	0
Tide, wave, ocean	0	0	0	0
Wind:	199	402	257	474
<i>onshore</i>	197	n/a	255	n/a
<i>offshore</i>	2	n/a	2	n/a
Biomass ¹³ :	1 910	10 953	1 956	10 846
<i>solid biomass</i>	1 910	10 819	1 956	10 706
<i>bioqas</i>	0	134	0	140
<i>bioliquids</i>	0	0	0	0
TOTAL	5 313	25 380	5 419	25 566
<i>of which in CHP</i>	n/a	9 068	n/a	9 568

Table 1c: Total actual contribution (final energy consumption¹⁴) from each renewable energy technology in [Member State] to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)¹⁵

	2011	2012
Geothermal (excluding low temperature geothermal heat in heat pump applications)	0	0
Solar	1	1
Biomass ¹⁶ :	5 962	6 365
<i>solid biomass</i>	5 904	6 316
<i>bioqas</i>	28	37
<i>bioliquids</i>	30	12
Renewable energy from heat pumps:	276	315
- of which <i>aerothermal</i>	190	212
- of which <i>geothermal</i>	86	103
- of which <i>hydrothermal</i>	0	0
TOTAL	6 240	6 681
Of which DH ¹⁷	630	759
Of which biomass in households ¹⁸	1 217	1 330

¹⁰ Facilitates comparison with Table 10a of the NREAPs.

¹¹ Normalised in accordance with Directive 2009/28/EC and Eurostat methodology.

¹² In accordance with new Eurostat methodology.

¹³ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

¹⁴ Direct use and district heat as defined in Article 5(4) of Directive 2009/28/EC.

¹⁵ Facilitates comparison with Table 11 of the NREAPs.

¹⁶ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

¹⁷ District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

¹⁸ From the total renewable heating and cooling consumption.

Table 1d: Total actual contribution from each renewable energy technology in [Member State] to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe)^{19,20}

	2011	2012
Bioethanol/ bio-ETBE (and other ethers) and biopetrol	88	90
<i>Of which Biofuels²¹ Article 21.2</i>	0.5	10
<i>Of which imported²²</i>	n/a	n/a
Biodiesel	108	108
<i>Of which Biofuels²³ Article 21.2</i>	51.5	95
<i>Of which imported²⁴</i>	n/a	n/a
Hydrogen from renewables	0	0
Renewable electricity	17	18
<i>Of which road transport</i>	0	0
<i>Of which non-road transport</i>	17	18
Others (as biogas, vegetable oils, etc.) – please specify	biogas 0.1	biogas 0.3
<i>Of which Biofuels²⁵ Article 21.2</i>	n/a	n/a
TOTAL	213	216

2. Measures taken in the preceding 2 years and/or planned at national level to promote the growth of energy from renewable sources taking into account the indicative trajectory for achieving the national RES targets as outlined in your National Renewable Energy Action Plan. (Article 22 (1) (a) of Directive 2009/28/EC).

Table 2: Overview of all policies and measures

<i>Name and reference of the measure</i>	<i>Type of measure</i>	<i>Expected result</i>	<i>Targeted group and or activity</i>	<i>Existing or planned</i>	<i>Start and end dates of the measure</i>
Biofuel distribution obligation (Act on Promoting Use of Biofuels in Transport 446/2007)	Regulatory	Share of biofuels corresponding to the obligation	Use of biofuels in transport	Existing	Amendment 1420/2010 to the Act entered into force on 1 January 2011; Amendment 394/2013 entered into force on 1 July 2013
Sustainability criteria for biofuels and bioliquids (Government Bill for an Act on Sustainability Criteria for Biofuels and Bioliquids, 393/2013)	Regulatory	The meeting of sustainability criteria by biofuels and bioliquids has already been demonstrated	Biofuel producers and distributors, bio-based fuels and liquid fuels	Existing	Act into force on 1 July 2013
Wind power production support (Act on Production Support to	Financial	2 500 MVA and 6 TWh in 2020	Energy producers, wind power	Existing	The scheme entered into force on 25 March 2011

¹⁹ For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.

²⁰ Facilitates comparison with Table 12 of the NREAPs.

²¹ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²² From the whole amount of bioethanol / bio-ETBE.

²³ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²⁴ From the whole amount of biodiesel.

²⁵ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

Electricity from Renewable Energy Sources, 1396/2010)					
Biogas production support (Act on Production Support to Electricity from Renewable Energy Sources, 1396/2010)	Financial	19 MVA and 0.7 TWh in 2020	Energy producers, biogas electricity	Existing	The scheme entered into force on 25 March 2011
Production support to small-scale CHP (Act on Production Support to Electricity from Renewable Energy Sources, 1396/2010)	Financial	160–210 MVA and 1–1.5 TWh in 2020	Energy producers, wood fuels	Existing	The scheme entered into force on 25 March 2011
Production support to woodchips (Act on Production Support to Electricity from Renewable Energy Sources, 1396/2010)	Financial	5.3 TWh in 2020	Energy producers, woodchip electricity and indirectly woodchip CHP heat	Existing	The scheme entered into force on 25 March 2011
Energy support (Government Decree on General Terms and Conditions for Granting Energy Support 1063/2012)	Financial		Energy producers and users, all measures that increase the production and use of renewable energy	Existing	The scheme was revised as of 1 January 2013
Wind power compensation areas (Act on Wind Power Compensation Areas, 490/2013)	Informative and regulatory		Energy producers, wind power	Existing	Act into force on 1 July 2013
Guarantee of origin for electricity (Act on Verification and Notification of Origin of Electricity 1129/2003)	Informative and regulatory		Producers of electricity, promotion of access to the market for electricity from renewable sources	Existing; amendments required by the RES Directive are being prepared	Amendment 445/2013 to the Act entered into force on 14 June 2013
Communication by Motiva	Informative		Investors, end users, public administration, planners, architects, installers, citizens, etc.	Existing	Continuous operations
Energy offices	Informative		Undertakings and institutions, energy projects to promote use of renewable	Existing	

			energy, etc.		
Consumers' energy advice projects	Informative	Promotion of energy efficiency and dissemination of information on renewable energy and heating methods	Consumers	Existing	Continuous operations
Farms' investment subsidies	Financial		Farm energy plants and biogas plants utilising renewable energy sources or waste heat	Existing	
Investment assistance for biogas plants (Government Decree on Assisting Bioenergy Production, 607/2008)	Financial	Promotion of the construction of biogas plants in connection with agriculture in regions where there are a great number of animals	Companies, municipalities, other communities	Existing	2008–2013
Farms' energy programme (sub-item 30.01.40, Government Decree on Support to Farms' Energy Plans, 1000/2009)	Financial and informative	Promotion of farms' energy efficiency and the production and use of renewable energy through energy-efficiency agreements and energy plans	Farms	Existing	2009–2016
Rural development programme for mainland Finland 2014–2020	Financial		Microenterprises and SMEs in rural areas	Planned	2014–2020
Energy wood harvesting and chipping subsidies under the Act on the Financing of Sustainable Forestry	Financial		Forest owners	Existing (proposed to be replaced by the energy support to low-grade timber as of 2015)	1992–
Regional wood energy consultants	Informative		Undertakings, institutions and consumers, guidance on the harvesting and use of forest-based energy	Existing	
Amending the Land Use and Building Act (132/1999)	Regulatory	Taking wind power into account in land use planning, e.g. setting up wind turbines using a derogation procedure for industrial and port areas	Wind power construction	Existing	Amendment 989/2013 to the Act entered into force on 1 January 2014

Amending the Land Use and Building Act to determine a minimum level for renewable energy	Regulatory		End users, public administration, planners, architects, installers, citizens etc.	Existing	Regulatory decree process launched on 1 May 2013
Installer certification scheme	Guidance through information		Installers; end users ordering installations as an indirect target group	Existing	Scheme launched in 2013
Energy support (Government Decree on Repair, Energy and Health Hazard Assistance for Housing; 128/2006, amended 1255/2010)	Financial	Increasing the deployment of renewable energy in connection with the renovation of detached houses' main heating systems	Households; the support scheme is specifically directed at detached houses	Terminated	A specific energy assistance directed at boosting the use of renewable energy was applied in 2011 and 2012
Energy and repair assistance for detached houses (Act on Repair, Energy and Health Hazard Assistance for Housing, 1184/2005)	Financial	Promotion of renewable forms of energy in detached houses, repairs improving energy efficiency	Households; the support scheme is specifically directed at detached houses	Existing	The assistance amounts are decided on annually in the state budget
Discretionary state aid for wind farm planning (Act on Discretionary Government Transfers, 688/2001)	Financial		Regional councils, municipalities	Existing	2011–
Information and communication	Guidance through information		End users, public administration, planners, architects, installers, citizens, etc.	Existing	Continuous operations
Synergy Building	Guidance through information		Planners, architects	Existing	2009–2013
Act on the Excise Tax on Liquid Fuels (1472/1994), taking life-cycle greenhouse gas emissions into consideration in the CO ₂ based taxation of fossil motor petrol and diesel oil	Financial	Tightening the CO ₂ taxation of fossil fuels and encouraging biofuels usage	Energy producers and end users		As of 1 July 2012
Act on the Excise Tax on Liquid Fuels (1472/1994), raising the tax on motor petrol and	Financial	Encouraging biofuels usage	Energy producers and end users		To be implemented in two stages, the first as of 1 January 2012 and the second as of

diesel oil by 10%					1 January 2014
Act on the Excise Tax on Liquid Fuels (1472/1994), raising the CO ₂ tax on heating and machinery fuels from 30 to 35 euros per tonne of CO ₂	Financial	Encouraging biofuels usage	Energy producers and end users		As of 1 January 2013
Sustainable Growth and Work – Finland's Structural Fund Programme 2014–2020	Financial	New renewable energy and energy efficiency solutions, improved energy efficiency in SMEs	SMEs, municipalities, research and educational institutions	Planned	January 2014 to June 2022
BioRefine – New Biomass Products 2007–2112 (Tekes programme)	Financial; research and development	New information or innovation	Refining of biomass and second generation transport biofuels	Terminated	2007–2012
Groove – Renewable Energy, Growth through Internationalisation 2010–2014 (Tekes programme)	Financial; research and development	New information or innovation	Improving the business competencies of renewable energy undertakings	Existing	2010–2014
Future bioenergy solutions – BEST (programme by Cleen Ltd and FIBIC Ltd)	Financial; research and development	New information or innovation	Future business possibilities in bioenergy	Existing	2013–2016
Sustainable Energy (Finnish Academy programme)	Research and competence development	New information	Sustainable energy production	Terminated	2008–2011
Energy programme (Finnish Academy programme)	Research and competence development	New information	Sustainable energy production	Planned	
ForestEnergy 2020 (Research and innovation programme by VTT Technical Research Centre of Finland and Finnish Forest Research Institute)	Financial; research and development		Solutions for the entire forest energy production and consumption chain	Existing	2012–2016
Improvement of renewable energy research infra by VTT Technical Research Centre of Finland (RES-infra)	Financial; research and development		Speeding up the commercialisation of renewable energy R&D findings with industrial partners in the sector	Existing	2012–2015
Cleantech strategy programme	Policy programme	Increasing cleantech business	Improving the conditions for renewable energy business	Existing	2012–2015

2.a Please describe the progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of renewable energy. (Article 22(1)(e) of Directive 2009/28/EC).

The Land Use and Building Act will be amended so that permits can be granted for the construction of wind power units in derogation from local plan in built industrial and port areas. This amendment entered into force on 1 January 2014.

The Ministry of the Environment has prepared a guide to enable smoother and higher quality wind turbine construction planning. The guide was published in July 2012 and it addresses land use planning, environmental impact assessment and the application of legislation concerning permit procedures and environmental impacts of wind turbines. The Ministry of the Environment, the Ministry of Employment and the Economy and Motiva Oy published a brochure in the summer of 2013, presenting ways to integrate wind turbines into living environments for the general public.

Wind power construction

The application of procedures for wind power construction has gained increased clarity in the years 2012 and 2013. The Ministry of Employment and the Economy set up a working group for promoting wind power on 7 May 2012. The working group investigated ways to reduce the obstacles and restrictions of wind power construction and to reconcile measures falling under the administration of various ministries. The greatest challenges have to do with the administrative domains of the Ministry of the Environment, Ministry of Defence and Ministry of Transport and Communication. The working group's term was from 7 May 2012 to 31 December 2013. The Ministry of Employment and the Economy has the principal responsibility over wind power development.

The various administrative branches have intensified their measures and key results have been achieved in removing administrative obstacles to wind turbine construction. A particular effort during the term of the working group was to reconcile the interests of the various administrative branches. One of the key results was improved dialogue and cooperation between the authorities.

The most impactful measures were taken in the administrative domain of the Ministry of Transport and Communication, where, among other things, instrument flight rules (IFR) levels were revised and roadside security zones narrowed to improve the preconditions for wind power construction. The Ministry of Employment and the Economy, the Ministry of Employment and the Economy, the Finnish Transport Safety Authority (Trafi), the Finnish Transport Agency and Finavia Corporation have commissioned a survey of wind power farms' impacts on transport safety.

The procedures in locating wind farms in relation to transport have been clarified and restrictions have been notably mitigated. The required distance of a wind turbine from the road is now 300 m instead of 500 m and the distance from navigation channels at sea is 0.5 to 1.5 km as a rule. The distance requirement along railways was also narrowed down. The decision by the air traffic service provider Finavia Corporation to revise its flight obstacle limitation zones on 15 December 2011 also freed up significant areas for wind farm construction. The Finnish Transport Safety Authority is considering freeing certain areas of flight obstacle limitations. Currently the Finnish Transport Safety Authority can also consider issuing a flight obstacle permit on a case by case basis even if the wind turbine may have some impact on the flight traffic flow according to Finavia Corporation's statement. The Finnish Transport Safety Authority issued more specific guidelines for the marking and illumination of wind turbines on 1 February 2013.

The Ministry of the Environment, in collaboration with Finnish Energy Industries and Finnish Wind Power Association, conducted a project which resulted in drafting proposed guidelines for wind power modelling and measurement, published in the June 2013 issue of the VTT Technical Research Centre of Finland's publication series.

The modelling guidelines seek to create harmonised and predictable practices for selecting modelling programmes and their calculation parameters. The guidelines address noise emissions and noise level measurements. Based on the project findings, the Ministry of the Environment is now preparing noise guidelines.

The Ministry of the Environment appointed a working group to develop a point of contact system for the Environmental Impact Assessment (EIA) procedure on 3 October 2012. The working group investigates, with an eye on wind farm projects, in particular, how the point of contact could promote the reconciliation of the EIA procedure and land use planning better than is currently the case. The group is also tasked with investigating how the dialogue contained in EIA procedures could better provide a clear idea to citizens on the measures and participation opportunities in the various measures required by the project.

The Finnish Wind Power Association and Finnish Energy Industries have written an advice sheet for wind power constructors, advising the turbine operator to sign a land use agreement with landowners in the vicinity of the wind turbine whose land lies within an area covering five times the length of the turbine rotor's diameter.

Radar obstacles of wind power construction

There are currently areas in Finland that are well suited for wind farms in terms of wind conditions, but in which wind power construction has been prevented specifically due to the radar impact caused by wind turbines. A precondition for setting up a wind farm is a statement by the Defence Forces that the wind turbines do not disturb the Defence Forces in performing their statutory duties. The Ministry of Employment and the Economy investigated in 2013 how wind farm construction could best be reconciled with the Defence Forces' area surveillance duty and tried to determine alternatives for funding the required changes.

The Act on Wind Power Compensation Areas came into force on 1 July 2013. Under this Act, the construction and commissioning of wind farms in wind power compensation areas no longer requires that the Defence Forces separately investigate the impacts of the wind turbine on Finland's area surveillance, the Defence Forces' regional operating conditions and on military aviation. Construction is also possible even if the Defence Forces have issued a denial in the past. A turbine-specific wind power fee is charged for wind farms built in each area. The first wind power compensation area nominated in the Act is the *Bay of Bothnia wind power area*. The area is excellent in terms of wind conditions, and the wind turbines to be set up there are estimated to generate more than 1 TWh of power in 2020. The new wind turbines in the Bay of Bothnia wind power area can be commissioned from the beginning of 2014. As required, new wind power compensation areas can be annexed to the Act.

Reconciling the security of the Defence Forces' statutory duties and wind power construction requires a solution to implement compensation. The ideal compensation solution varies from one area to the next as local conditions, wind power projects planned for the area, the Defence Forces' surveillance systems and operational needs in each area vary. Similarly, the costs of compensation solutions will vary from one area to the next, and may even rise to tens of millions of euros. Funding for compensation solutions is therefore an issue which needs to be addressed and solved on a case-by-case basis.

Annexing new wind power compensation areas to the Act on Wind Power Compensation Areas requires the Defence Forces to have drafted a local compensation solution under which no distraction is created by the wind turbines to the Defence Forces' performance of their statutory duties. Coming up with a compensation solution typically requires that the calculation method by the VTT Technical Research Centre of Finland has been used to investigate the wind farm's radar impact.

Small-scale power production

The National Energy and Climate Strategy updated in March 2013 (Government report 2/2013 vp) contains several measures for promoting small-scale power production. To implement the strategy, the Ministry of Employment and the Economy has appointed a working group to investigate how it could be promoted. The working group investigates the role of small-scale power production in promoting renewable energy and the energy efficiency of buildings. Further, the working group assesses measures to improve the profitability of small-scale production. The group's term will end on 30 November 2014.

In 2013 the case of small-scale production has progressed in leaps and bounds. Commissioned by the Ministry of Employment and the Economy and as part of the National Energy and Climate Strategy implementation, two working groups are currently working on small-scale production under the supervision of Motiva. The commercial working group and the grid working group for small-scale production have held meetings since December 2012.

Finnish Energy Industries has issued national recommendations on the technical requirements of connecting small-scale production to the national grid and has recommended that devices which meet German standards be approved for grid use also in Finland. The Finnish Energy Industries has also drafted a small-scale production connection template and related recommendation. This template is already being used by many companies. Further, the Energy Authority is preparing to expand its electricity comparison website to cover the sales of electricity produced by small-scale producers as well. The new website will go online by early 2014.

Negotiations have taken place with the Tax Administration on the fair and uniform treatment of small-scale producers. The goal is to provide nationwide instructions for tax offices. The issue is currently being addressed by the Tax Administration. Motiva Oy has also actively negotiated with several instances, among them the Ministry of the Environment, on harmonising established interpretation of the Land Use and Building Act. The variation of permit procedures between municipalities has been a problem.

The Ministry of Employment and the Economy has launched an investigation in 2013 regarding the legal and optimisation issues related to the net invoicing procedure, and has started monitoring the development of the surplus electricity market of small-scale production.

2.b Please describe the measures in ensuring the transmission and distribution of electricity produced from renewable energy sources and in improving the framework or rules for bearing and sharing of costs related to grid connections and grid reinforcements. (Article 22 (1) (f) of Directive 2009/28/EC).

The Electricity Market Act sets out a grid development obligation for operators of transmission and distribution grids, according to which a system operator must maintain, use and develop its electricity grid and connections to other grids according to the reasonable needs of customers and to secure, for its part, the supply of high-quality electricity to customers. In addition, an operator of an electricity transmission grid is responsible for the technical functionality and operational reliability of the entire electricity system (system responsibility). A transmission grid operator with system responsibility must maintain and develop its functions and services that fall within the scope of the system responsibility and maintain, use and develop its electricity grid and other equipment needed for managing the system responsibility and connections to other grids so that the preconditions for an efficiently functioning electricity market can be secured. The sales terms and conditions of grid services and their determination bases must be equal and non-discriminatory for all users of the grid. They may only be deviated from for special reasons.

Finland applies a secured grid access procedure. Equal rules that are the same for everybody apply to the electricity production plants connected to the grid; all those connecting to the grid must be treated equally in accordance with the Electricity Market Act. Primary connection rights or separately reserved connection capacity is not in use.

A system operator must, on request and against reasonable compensation, connect to its grid the places of electricity use and electricity production plants within its operating area that meet the technical requirements. The conditions and technical requirements set by the system operator for connection must be equal and non-discriminatory.

One of the obligations of the system operator is that the payment charged for the service is reasonable and that the measurement of the energy supplied is organised in an appropriate manner.

The development obligation of the system operator requires that, if necessary in order to enable more production to be connected to the grid, the system operator must increase the transmission capacity of its grid in accordance with a reasonable request of the customer connecting to the grid.

The costs incurred for developing the electricity grid are covered by transmission fees, and the extension of the grid and the resulting reinforcement are covered by connection fees. With regard to connections to the grid, system operators prepare written terms and conditions concerning connection pricing methods and principles for their own use. These principles must comply with the methods confirmed by the Energy Market Authority for determining the pricing of connections. The content of the methods confirmed by the Energy Market Authority are uniform for all electricity grid operators.

The distribution grid operator charges a connection fee in line with the valid connection fee criteria (connection terms and conditions) concerning its own distribution area. These terms and conditions also determine the rules concerning the bearing and sharing of costs due to the technical adaptations of the grid. The connection terms and conditions must be approved by the Energy Market Authority before they are adopted, and the Energy Market Authority also supervises the equal and non-discriminatory nature of the terms and conditions. The general criteria for transmission and connection fees are laid down in the Electricity Market Act.

In 2011, the Energy Market Authority introduced nationally uniform methods to determine the fees charged for the connection of production applicable to the distribution grid and the high-voltage distribution grid. The most significant change related to pricing concerns the use of the capacity reservation fee in the distribution grid: for this fee, a uniform definition method had not been in use before, but the system operators themselves decided the manner for determining the capacity reservation fee. When the methods for determining fees charged for connection of production were introduced, the determination principles of fees charged for connecting consumption were also updated so that they are now uniform with the determination principles of fees charged for connection of production.

3. Please describe the support schemes and other measures currently in place that are applied to promote energy from renewable sources and report on any developments in the measures used with respect to those set out in your National Renewable Energy Action Plan. (Article 22(1)(b) of Directive 2009/28/EC).

Table 3: Support schemes for renewable energy

RES support schemes year n (e.g. 2011)		Per unit support	Total (M€)*
Instrument (provide data as relevant)	Obligation/quota of biofuels (%) 6% in 2011-> 20% in 2020	Not applicable	-
	Penalty/Buy out option/Buy out price (€/unit)	-	-
	Average certificate price	-	-
	Tax exemption/refund	-	-
	Investment subsidies (capital grants or loans) (€/unit)		€88.3 million (2011) €26 million (2012)
	Energy support		€18 million (2013)
	Production incentives Production support for wind power, biogas electricity and a sliding premium feed-in tariff on wood in small-scale CHP; for woodchips a premium feed-in tariff determined by the price of wood, emission right, and peat price and tax (scheme launched in 2011)	Target price of €83.5/MWh (for wind power: target price of €105.3/MWh until the end of 2015); for biogas electricity a heat premium of €50/MWh; and for forest chips electricity a premium of €18/MWh in 2012 and €13.1/MWh in 2013	(2011 not comparable) €33.2 million (2012) €54.9 million (2013)
	Supply fees	-	-
	Tendering	-	-
Total annual estimated support in the electricity sector (the feed-in tariff targets electricity production, but indirectly it also promotes the production of renewable heat)			€5.5 million (2011) €34.2 million (2012) €56.5 million (2013)
Total annual estimated support in the heating sector			€31 million (2011), €3 million (2012), €20 million (2013)
Total annual estimated support in the transport sector			€3 million

Use of biomass in electricity and heat production

The use of biomass in electricity and heat production has progressed faster than foreseen in the National Renewable Energy Action Plan (in the NREAP for 2010, the electricity production based on biomass was 8 090 ktoe and heating and cooling was 4 990 ktoe, while the actual figures were 10 718 ktoe in electricity production and 5 243 ktoe in heating and cooling). The variable production support (feed-in tariff) to electricity produced from woodchips introduced in March 2011 has continued to increase the use of woodchips.

In 2011 and 2012, the energy support (investment subsidy for investments in renewable energy) has enabled a significant provision of support to biomass boilers, which have replaced oil boilers.

Wind power

The wind power production support (feed-in tariff) adopted in March 2011 has resulted in the launching of a multitude of projects. By the end of August 2013, Finland had published wind farm projects at a total capacity of approximately 11 000 MW, of which projects to be built at sea accounted for around 3 000 MW. Land use planning and various administrative procedures slow down the implementation. By December 2013, wind turbines with a total capacity of 380 MW had been approved for the feed-in tariff system, with an estimated annual output of over 1 TWh. At the same time a preliminary notification had been made of an additional 200 MW of wind power capacity.

The discretionary state support for land use planning directing the construction of wind power introduced in 2011 has promoted the land use planning for wind power construction in regional councils and municipalities.

A great number of regional land use plans and municipal master plans directly steering wind power construction are under consideration around the country. The total potential capacity in regional land use plans under consideration at the end of 2012 was 14 800 MW, consisting of 4 900 individual wind turbines. The pending master plans that directly steer wind power construction comprise wind power construction reservations on land corresponding to a total of 5 300 MW and around 1 700 wind turbines, and at sea a total of 1 300 MW and around 450 wind turbines. Furthermore, a few regional councils have final regional land use plans containing areas suited for wind farms. These areas are almost exclusively at sea and enable a total of around 6 000 MW.

Biofuels and bioliquids

Distribution obligation

The most important promotion measure for transport biofuels is the distribution obligation, which has been in force since 2008. The extent of the distribution obligation is defined as the share of biofuel energy content of the total energy of supplied petrol, diesel and biofuels. The annual distribution obligation is as follows:

Year	Obligation
2011–2014	6%
2015	8%
2016	10%
2017	12%
2018	15%
2019	18%
2020->	20%

The double counting for biofuels produced from waste, residues, non-food cellulosic material and ligno-cellulosic material is applied to the distribution obligation. Biofuels accepted within the scope of the distribution obligation have been shown to meet the sustainability criteria.

Fuel taxation

In 2010, an energy tax reform was drafted and it entered into force at the beginning of 2011. The most important element of the reform is that the taxation of all fuels, including transport fuels, is now based on their energy content and carbon dioxide emissions.

Compared with the earlier scheme, where the tax per litre for biofuels was the same as for fossil fuels, the position of biofuels is improved in the new tax structure, as it takes into account the lower energy content of biofuels, particularly ethanol.

Taking the carbon dioxide emissions into account also benefits biofuels. The carbon dioxide tax for biofuels is based on the life-cycle emissions of CO₂ compared with their fossil counterparts. The same CO₂ tax is levied on unsustainable biofuels as on fossil fuels, 50% of the CO₂ tax on a comparable fossil fuel is levied on sustainable biofuels, and no CO₂ tax is levied on double counted biofuels as defined in the RES Directive. The counting basis for the carbon dioxide tax is €58/tCO₂ from the beginning of 2014.

The primary aim of the new tax structure is to guide the use of biofuels to second generation alternatives. A comparable tax structure is also applied to bioliquids, but with heating fuels both the energy content tax and the carbon dioxide tax are clearly lower than with transport fuels.

Other measures

In addition, attempts have been made to promote the production of biofuels by strongly increasing appropriations to investment subsidies for biofuel technologies and to research and development operations.

3.1. Please provide the information on how supported electricity is allocated to final customers for purposes of Article 3(6) of Directive 2003/54/EC. (Article 2 (1)(b) of Directive 2009/28/EC).

The electricity market has been liberated and electricity from renewable energy sources does not have any special position in electricity trade. The profitability of renewable production is supported through support schemes. As is the case with regular energy, electricity from renewable energy sources is also sold to the electricity exchange, electricity retailers or directly to end users.

From 2014 electricity retailers must indicate the origin of the electricity sold on the electricity bill at least once a year. Only electricity certified with a guarantee of origin can be indicated as electricity from renewable energy sources. Companies sell electricity from renewable energy sources using different brands (Ringed Seal Electricity, Utility Electricity, etc.). For the time being it is not known what extent of supported energy production is allocated to various end users.

4. Please provide information on how, where applicable, the support schemes have been structured to take into account RES applications that give additional benefits, but may also have higher costs, including biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material?) (Article 22(1)(c) of Directive 2009/28/EC).

As stated in the reply to Section 3, attempts are made to promote the adoption of more advanced but more expensive biofuels by using the double counting method of the RES Directive and by means of the new fuel tax structure. Biofuel production investment subsidies are also allocated to advanced biofuels.

5. Please provide information on the functioning of the system of guarantees of origin for electricity and heating and cooling from RES, and the measures taken to ensure reliability and protection against fraud of the system. (Article 22(1)(d) of Directive 2009/28/EC).

In Finland, the guarantee-of-origin system is only applied to the guarantees of origin for electricity, including electricity produced from effective combined production. The system works well, and the guarantee of origin regulation required by the RES Directive was fully implemented in the summer of 2013.

The reliability of the system has been ensured by assigning the granting of guarantees of origin to the grid operator in charge of the system. The granted guarantees of origin are based on the verification of the production method of the power plant and the energy sources used by it and the measurement of the electricity produced. The guarantee of origin is the only method for verifying that the electricity has been produced using renewable sources. To avoid double counting, the electricity retailer must use the national residual distribution when reporting data on origin to electricity users.

Table 4a. Current domestic agricultural land use for production of crops dedicated to energy production (ha)

Land use	Surface (ha)	
	Year n-1, 2012	Year n-2, 2011
1. Land used for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) (Please specify main types)	n/a	n/a
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	36	40
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	10 444	14 949

7. Please provide information on any changes in commodity prices and land use within Finland in the preceding 2 years associated with increased use of biomass and other forms of energy from renewable sources? Please provide where available references to relevant documentation on these impacts in Finland. (Article 22(1)(h) of Directive 2009/28/EC).

Figure 1 shows the price trend in woodchips in the place of use, and Figure 2 shows the price trend in pellets. The use of woodchips has increased significantly, which is reflected in woodchip prices. The price increase does not appear to have affected the price of timber used by the pulp industry (Figure 3). The utilisation of arable biomasses is not extensive in Finland, which means that the increased use of renewable energy sources has not affected the prices of food or feed crops.



PIX FOREST BIOMASS FINLAND INDEX

FOEX Indexes Ltd-PIX Bioenergy - December/Joulukuu 10, 2013

	Index Value Indeksiarvo	Change Muutos
PIX Forest Biomass Finland	EUR/MWh 19.17	+ 0.56

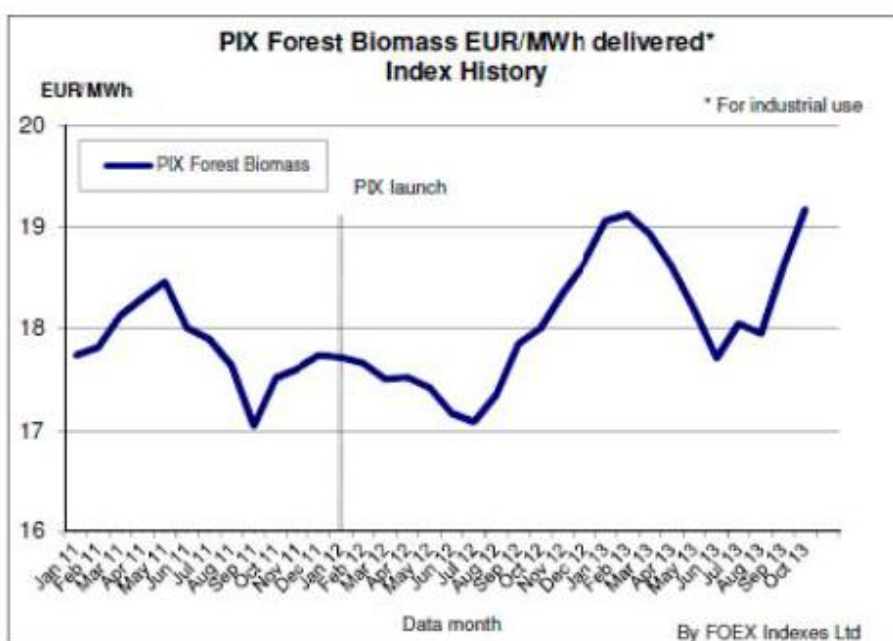


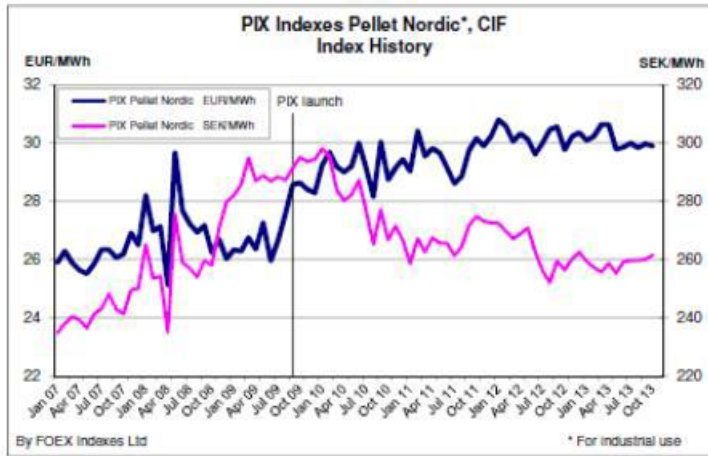
Figure 1: Woodchips price change from January 2011 to October 2013, €/MWh



PIX PELLET NORDIC INDEX

FOEX Indexes Ltd - PIX Bioenergy – November 19, 2013

Grade	Index Value	Change	Confidence interval
Pellet Nordic CIF	EUR/MWh	29.89	- 0.08
	SEK/MWh	261.47	+ 1.46



Index is based on previous month's data.
 For price conversion between price per ton and price per MWh, a coefficient of 4.8 is used, if not otherwise informed by the price provider.

Figure 2: Pellet price change from January 2007 to October 2013, €/MWh

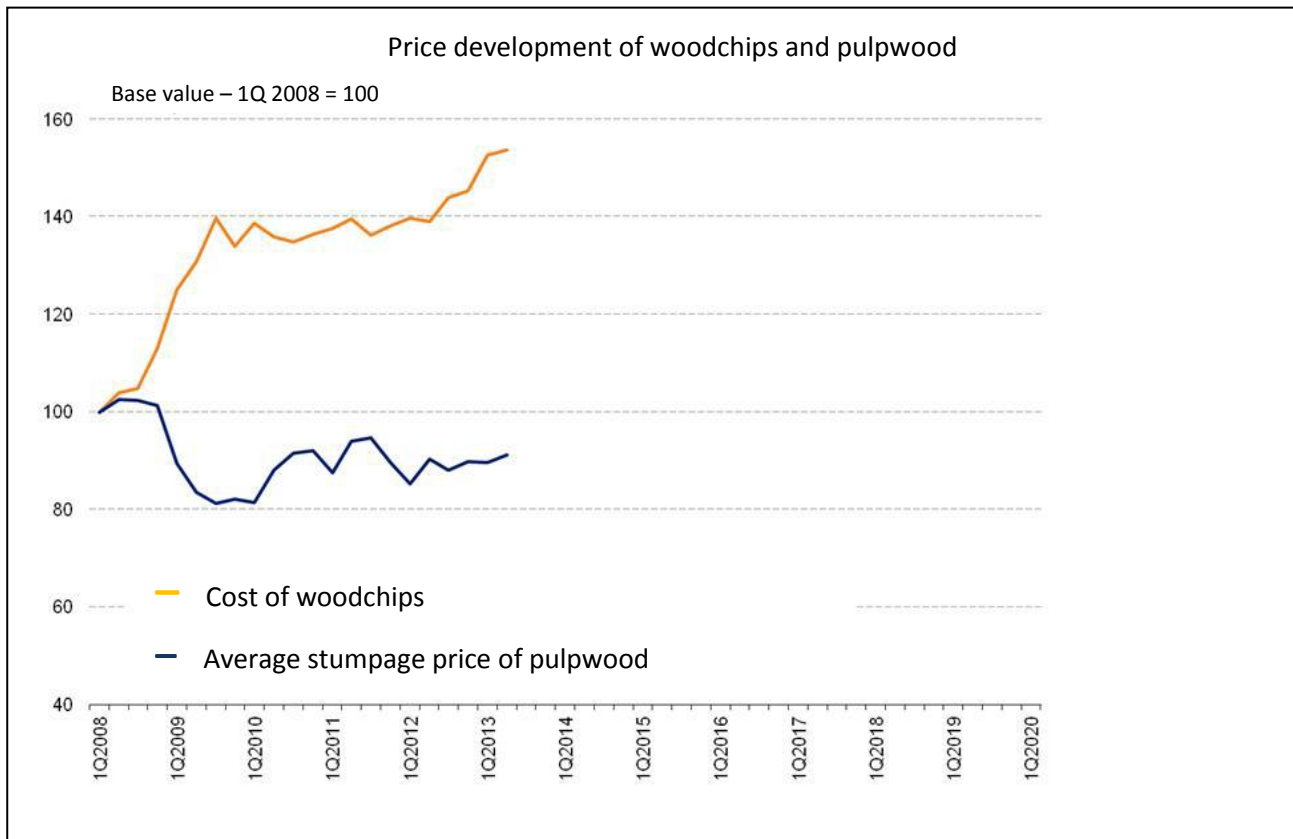


Figure 3: Price development of woodchips and pulpwood

8. Please describe the development and share of biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material. (Article 22(1)(i) of Directive 2009/28/EC).

No statistics are available on the production of biofuels. The table below indicates the real energy volume of biofuels in terms of consumption and its percentage value.

Table 5: Production and consumption of Art. 21(2) biofuels (Ktoe)

Article 21(2) biofuels²⁶	2011	2012
Production – Fuel type X (Please specify)	n/a	n/a
Consumption – Diesel component (HVO, FAME)	51.5	95
Petrol component (Ethanol, ethers, biopetrol)	0.5	10
Total production Art. 21(2) biofuels	n/a	n/a
Total consumption Art. 21(2) biofuels	52	105
% share of Art. 21(2) fuels from total RES-T	24%	49%

9. Please provide information on the estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality within Finland in the preceding 2 years.

Please provide information on how these impacts were assessed, with references to relevant documentation on these impacts within Finland. (Article 22(1)(j) of Directive 2009/28/EC).

So far, the production of biofuels and bioliquids in Finland is mainly based on imported raw material and, to some extent, domestic waste and residue raw materials. For this reason, it can be estimated that in Finland, the production of biofuels has not had an impact on any of the above-mentioned issues.

10. Please estimate the net greenhouse gas emission savings due to the use of energy from renewable sources (Article 22(1)(k) of Directive 2009/28/EC).

The estimate of the net greenhouse gas emission savings presented below is theoretical. The electricity and heat production of the forest industry is based on biomass created as a secondary flow of industrial processes. Particularly with regard to the forest industry, it is essentially incorrect to assume that the electricity and heat needed by the industry would be produced from fossil fuels or peat. If the use of biomass in the production of the electricity and heat by the forest industry were not possible, no forest industry would have arisen in Finland.

In the estimates of net greenhouse gas emission savings due to the use of renewable energy, the following have been assumed:

- For biofuels: In accordance with Article 22(2) of Directive 2009/28/EC.
- With regard to separate electricity production (hydro power, wind power, photovoltaic electricity and separate electricity production from bioenergy), the net savings have been estimated using an emission coefficient of 0.0951 Mt CO₂/PJ. The emission coefficient corresponds to the average emission coefficient of Finland's separate condensate production based on fossil fuels. The consumption ratio of hydro power, wind power and photovoltaic electricity is assumed to be 2.4. With regard to bioenergy, the fuel consumption ratio used in calculations is 1. In assessing the emissions reduction provided by bioenergy, biomass emissions have been accounted for in accordance with Annex II of the Commission's report.
- In the calculation, heat pump energy and solar heat are replaced by separate fossil heat production. Net savings have been estimated using an emission coefficient of 0.075 Mt CO₂/PJ. The emission coefficient corresponds to the average emission coefficient of Finland's separate heat production based on fossil fuels. With regard to the separate heat production based on bioenergy, the net savings have been estimated using an emission coefficient of 0.074 Mt CO₂/PJ. The emission coefficient includes the reduction in net savings by biomass emissions, for which a default value of 0.001 Mt CO₂/PJ is provided in Annex II of the Commission's report.

²⁶ Biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material.

- With regard to combined electricity and heat production, the net savings have been estimated using an emission coefficient of 0.081 Mt CO₂/PJ. The emission coefficient corresponds to the average emission coefficient of Finland's combined electricity and heat production based on fossil fuels and peat, less biomass emissions as provided in Annex II of the Commission's report.

Table 6: Estimated GHG emission savings from the use of renewable energy (Mt CO₂ eq.)

Environmental aspects	2011	2012
Total estimated net GHG emission saving from using renewable energy²⁷		
- Estimated net GHG saving from the use of renewable electricity	16.6	16.5
- Estimated net GHG saving from the use of renewable energy in heating and cooling	22.3	24.0
- Estimated net GHG saving from the use of renewable energy in transport	0.4 Mt	0.5 Mt

11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2020) the excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/imported from other Member States and/or third countries, as well as estimated potential for joint projects until 2020. (Article 22(1)(l), (m) of Directive 2009/28/EC).

In the context of its update of the National Energy and Climate Strategy, the government investigated and estimated the growth of the renewable energy share. Finland is still on the path laid down in the RES Directive, such that Finland's 2020 target will be achieved. At present, the share of renewables exceeds the pathway scenario, but the main reason for this is the reduction of energy end use due to the prevailing economy.

Table 7: Actual and estimated excess and/or deficit (-) production of renewable energy compared to the indicative trajectory which could be transferred to/from other Member States and/or third countries in [Member State] (ktoe)^{28,29}

	Year n-2 (2009)	Year n-2 (2010)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)	0	0	0	0	0	0	0	0	0	0	0	0

11.1. Please provide details of statistical transfers, joint projects and joint support scheme decision rules.

Finland has not implemented statistical transfers, joint projects or joint support schemes with other countries in 2011–2013, and nor has it concluded such agreements concerning future years.

12. Please provide information on how the share for biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates. (Article 22(1)(n) of Directive 2009/28/EC).

The share of biodegradable waste in waste used for energy production is estimated to be 60 per cent. The estimate is based on sample surveys.

²⁷ The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

²⁸ Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up to 2020. In each report Member State may correct the data of the previous reports.

²⁹ When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).