



# Assessment of climate change policies as part of the European Semester

DRAFT Country Report Finland

**20 January 2015**

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## Document Control

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## 1 Short Summary

In Finland several policy documents form the backbone of energy and climate change policies. The National Climate and Energy Strategy is the main policy document and is described in more detail below (see Chapter 2). The strategy is updated every two years, last time in 2013. This policy document presents concrete policy measures by 2020 and beyond and among other things promotes cogeneration of heat and power, systematic energy audits and good coverage of optional energy efficiency agreements. In addition, different ministries have their own climate change and energy strategies, which in certain cases makes it difficult to determine which policy prevails.

By 2020, Finland needs to reduce its emissions not covered by the EU ETS by 16% compared to 2005, according to the Effort Sharing Decision (ESD). The latest data for 2013 show that Finland not only met but exceeded its annual allocation interim target under the ESD for the year 2013 by 7.3 percentage points. However, the latest national projections indicate that the country will miss its 2020 target by about 4.4 percentage points with existing measures and by about 1.1 percentage points with additional measures.

Among Finland's latest developments is the introduction of Energy and Climate Roadmap 2050 of 16 October 2014, which describes possible scenarios of climate change and its effect on different sectors of Finland (See Chapter 2). Further policy developments relate to the implementation of the Energy Efficiency Directive (See Chapter 4.2.2), and development of the Climate Act, which is expected to be in force in spring 2015 (See Chapter 2).

## 2 Climate and energy policy priorities

Finland's policies addressing climate change mitigation started with the National Climate and Energy Strategy adopted in 2001. The most recent update to this strategy was published in March 2013. This policy document presents concrete policy measures by 2020 and beyond. Cogeneration of heat and power, systematic energy audits and good coverage of optional energy efficiency agreements, are examples of effective energy saving measures that the National Climate and Energy Strategy favours and promotes. The strategy also entails the so-called Clean Energy Programme. The aim of the programme is to invest in domestic production of clean energy in order to replace imports and thereby reducing energy dependence, creating tens of thousands of new jobs in the energy cluster, and reducing Finland's greenhouse gas emissions (GHG) to a level that is on track to meet the EU's 2050 target reduction in 2025 (TEM, 2013).

In October 2014, the Parliamentary Committee on Energy and Climate Issues published its report "Energy and Climate Roadmap 2050". Finland's long term target is a carbon free society, which means that the GHG emissions must be lowered by 80-95% by 2050 compared to 1990 levels. According to the roadmap, Finland is able to increase energy self-sufficiency by 50-60% and the share of renewable energy can be increased by up to 50-60% of total energy production. Approx. 80% of all GHG emissions in Finland come from energy production and consumption and from the transport sector. The roadmap outlines Finland's energy policy objectives and the climate-related targets for 2050. One of the main ideas is to reduce GHG emissions while enhancing security of energy supply. This will be done through new energy efficiency measures, moderate pricing of energy, and decreasing Finland's energy dependency. From the energy policy perspective, Finland's energy supply must support economic growth, be competitive, and ensure a reliable long-term supply. In addition to these objectives, energy consumption and production must offer jobs and create export opportunities for new technologies (Energy and Climate Roadmap 2050, 2014).

The Government is currently drafting a Climate Act (Ilmastolaki) which is expected to come into force in spring 2015. It aims at creating a framework to steer the reduction of non-ETS GHG emissions. The Climate Act will oblige the Government and the Parliament to achieve GHG emissions in a cost-effective way. It will regulate the public sector, rather than create obligations for the private sector directly (Ilmastofoorumi, 2014).

Nearly all Finnish regions have prepared their own climate strategies, which primarily aim at using practical innovations and promoting sustainable consumption to increase economic activity and create local jobs, but also to achieve nationwide climate goals (Energia- ja ilmastostrategia 2013). This shows that climate change issues are also taken seriously at the regional level.

Green growth and clean technology is considered to be a priority in Finland, as it provides clean solutions for the environment and is also seen as providing an economic advantage in international markets.

The National Strategy for Adaptation to Climate Change was adopted in 2005 by the Ministry of Agriculture and Forestry. The latest revision, called National Adaptation Plan for Climate Change 2022 was published in November 2014. The aim of the adaptation strategy is to increase Finland's capacity to adapt to climate change and to reduce the cost to society where possible. The strategy describes the impacts of climate change and potential adaptation measures for economic growth, natural resources, development of technology, social well-being, population growth, and development of policymaking with a vision up to 2080.

### 3 GHG trends and projections

Finland reduced its total GHG emissions by 13% between 2005 and 2013. The share of GHG emissions not covered by the European Emission Trading Scheme (EU ETS) is around 48%, which is below the EU28 average (see Table 1).<sup>1</sup>

**Table 1 Key data on GHG emissions**

		National data				EU28
		2005	2011	2012	2013	2013
<b>Total GHG emissions</b>	Mt CO <sub>2</sub> eq	68.6	66.9	61.0	60.6	4,539
<b>Non-ETS emissions</b>	Share in total emissions	52%	48%	52%	48%	58%

Source: EEA 2014a EEA 2014c

By 2020, Finland needs to reduce its emissions not covered by the EU ETS by 16% compared to 2005, according to the Effort Sharing Decision (ESD). The latest data for 2013 show that Finland not only met but exceeded its annual allocation interim target under the ESD for the year 2013 by 7.3 percentage points (see figures in Table 2). However, the latest national projections indicate that the country will miss its 2020 target by about 4.4 percentage points with existing measures (WEM) and by about 1.1 percentage points with additional measures (WAM) (EEA 2014a).

<sup>1</sup> The European Environment Agency has developed a complex methodology to measure progress on the Non-ETS/ESD targets of all EU Member States. This report uses the figures arrived on this basis. A detailed explanation and the underlying absolute amounts are contained in Annexes 1-3 of the EEA report No 6/2014 "Trends and projections in Europe 2014. Tracking progress towards Europe's climate and energy targets for 2020" available at <http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2014/>

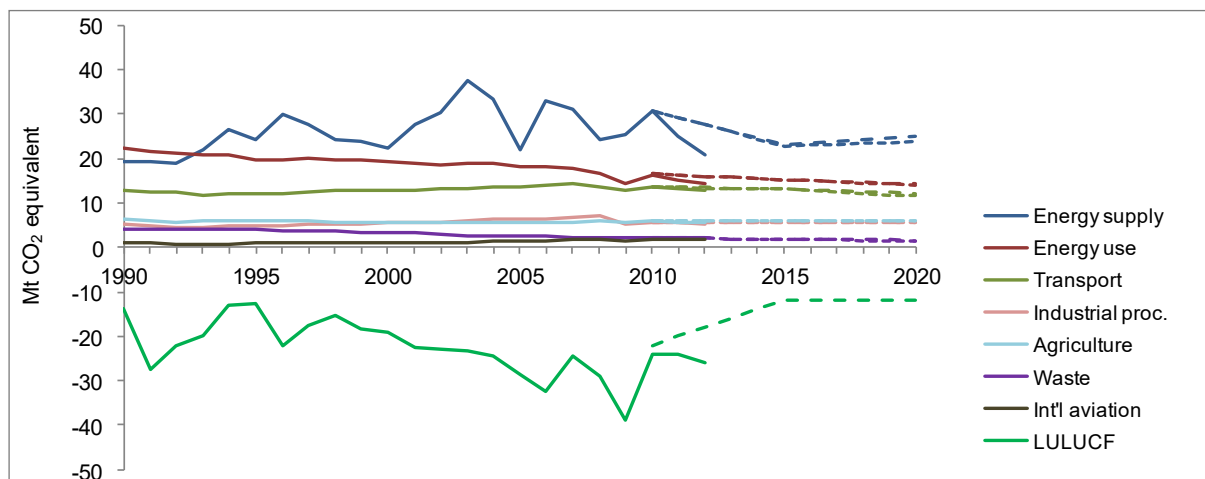
**Table 2 Non-ETS emission targets, trend and projections**

		Compared to base year
<b>2013</b>	ESD interim target	- 5.9%
	ESD emissions	- 13.2%
<b>2020</b>	ESD target	- 16.0%
	ESD projections WEM	- 11.6%
	ESD projections WAM	- 14.9%

Source: EEA 2014a. Green indicates target met or exceeded, orange indicates a value below.

GHG emissions are mainly from the energy industry followed by direct fuel consumption (e.g. households for heat generation) and the transport sector (see Figure 1 below for historic and estimated emissions by sector). Projections indicate that by 2020 emissions from all three sectors will be reduced from 2010 levels.

**Figure 1 GHG trends and projections by sector**



Source: EEA 2014a. Actual data until 2012 and projections from 2010 onwards.

## 4 Policy development

This section covers significant developments made in key policy areas between January and December 2014. It does so through two different perspectives: (1) identifying progress on the policies communicated under the National Reform Programme, and (2) identifying developments in the identified national priority sectors and policy areas.

### 4.1 Key policies as outlined in the National Reform Programme

Member States prepare National Reform Programmes (NRPs) each April outlining the country's progress and the key policies and measures to achieve targets under the EU 2020 Strategy. These key policies and measures are summarised in the following table and their current status (in force, amended, abolished, or expired) is provided.

**Table 3 Key policies and measures as outlined by the NRP 2014**

<b>Development of Energy Efficiency Law</b>	
<b>Status in the NRP</b>	Working group has been prepared
<b>Status as per Dec 2014</b>	Draft has been completed and publicly presented and will be in force from 1 January 2015
<b>Description of policy</b>	Energy Efficiency Law implements the EU Energy Efficiency Directive into domestic legislation. The purpose of this law is to improve energy efficiency and at the same time decrease energy end-use. The Energy Efficiency Law is a tool for Finland to achieve its energy efficiency targets. This will be done by increasing energy efficiency in industrial and energy production sectors. It also obliges large enterprises to carry out mandatory energy audits every four years.

<b>Amendments to the Land Use and Building Act</b>	
<b>Status in the NRP</b>	Under preparation
<b>Status as per Dec 2014</b>	Completed, amendments in force from 1 January 2015
<b>Description of policy</b>	Amendments were made Land Use and Building Act so that new buildings and buildings that go through substantial reconstruction must apply minimum levels of renewable energy. The minimum level of renewable energy depends on the building size, and the area of reconstruction. However the minimum level of renewable energy in all new buildings must be 23 % of all energy consumption and for buildings that go through substantial reconstruction the level is 20%. Calculations take into account consumption of cogenerated heat and power.

<b>Development of Climate Act</b>	
<b>Status in the NRP</b>	Working group has been assigned
<b>Status as per Dec 2014</b>	Work still on-going. Estimated to come into force in spring 2015.
<b>Description of policy</b>	The purpose of the Climate Act is to prepare a framework act on emissions outside emissions trading scheme that would not impose obligations on private operators. The purpose of the act is to serve as a tool for the Government and the Parliament for achieving the 2050 emission reduction target as cost-effectively and systematically as possible.

<b>Energy and Climate Roadmap 2050</b>	
<b>Status in the NRP</b>	Working group has been assigned.
<b>Status as per Dec 2014</b>	Completed, Energy and Climate Roadmap 2050 published on 16 October 2014.
<b>Description of policy</b>	The purpose of the Energy and Climate Roadmap 2050 is to determine Finland's energy policy objectives and the climate-related targets. One of the main ideas is to reduce GHG emissions while enhancing security of energy supply. This will be done through new energy efficiency measures, moderate pricing of energy, and increase in self-sufficiency.

<b>Finnish Bioeconomy Strategy</b>	
<b>Status in the NRP</b>	Work is on-going.
<b>Status as per Dec 2014</b>	Completed, Finnish Bioeconomy Strategy was published in May 2014.
<b>Description of policy</b>	The purpose of the Finnish Bioeconomy Strategy is to analyse the possibilities of generating new economic growth and new jobs from an increase in the bioeconomy business. The leading idea of the strategy is that competitive and sustainable bioeconomy solutions for global problems will be created in Finland, and that new business will be generated both in the Finnish and international market, thus boosting the welfare of the whole Finland.

## 4.2 National policy priorities

The below sub-sections provide updates on key existing and new policies in priority sectors and policy areas of relevance to the energy and climate targets under the Europe 2020 strategy<sup>2</sup>. Each sector or policy area contains information on the most important policy instruments in operation or development.

### 4.2.1 Environmental Taxation

In Finland, the implicit tax rate on energy of 128 EUR per tonne of oil equivalent in 2012 is below the EU average (Eurostat, tsdcc360). However, the share of environmental tax revenues in overall tax revenue was 7% in 2012 and therefore above the EU average of 6.1% (Eurostat, ten00064). Environmental tax revenues amounted to 3.1% of GDP in 2012. Thus, Finland has the fifth highest share of environmental tax revenues compared to GDP in the EU (where the average is 2.4%) (Eurostat, ten00065).

In 2013, environmental taxes accounted for a total of 5.8 billion EUR, which is the same level as it was in 2012. In 2013, almost 40% of environmental taxes came from transport fuels (motor gasoline and diesel oil). Environmental taxes accounted for 6.5% of the entire tax revenue of the state, which was slightly less than in the year before. Environmental taxes were collected mainly for fuel oil, hard coal, fuel peat, natural gas and electricity and waste. The vehicle-related taxes were collected 1.8 billion EUR in 2013. This accounts for almost 31% of the entire tax revenue of the state (Statistics Finland, 2014).

According to the information provided by the Ministry of Employment and the Economy, cheap coal has replaced wood chips in many power plants in Finland. Although tax rates on peat were increased in 2013 by Minister Vapaavuori, the rates were lowered again in 2014 because coal was becoming more competitive. According to the taxation system in place, subsidies for wood-chip industry decrease if taxation of peat is raised. So an increase of peat taxes affects the renewable wood chip industry negatively. The low price of coal in the United States makes it very competitive in European markets, as CO<sub>2</sub> prices are very low. Finland reduced tax rates on peat from 4.9 EUR to 3.4 EUR per MWh from the beginning of January 2015 (TEM, 2014c).

### 4.2.2 Energy Efficiency

Among the EU28, the energy intensity of Finland's economy is above average. It ranks as the twelfth most energy-intensive economy. Energy intensity declined by only 7% from 2005 to 2012, which is below the EU average of 13% (Eurostat, tsdec360). Final energy consumption stayed constant between 2005 and 2012. Thus Finland is one of the seven EU MS that did not decrease final energy consumption during this time period at all. This is mainly due to consumption increases in the

<sup>2</sup> The Consortium jointly with DG Clima identified these based on identified challenges in Country Profiles (EEA, 2014), share of sectors in total GHG emissions, and Country Specific Recommendations (2014). DG Clima has identified additional relevant issues to be reviewed for some or all Member States, including country specific energy challenges.



transport, residential and service sectors (Eurostat, tsdpc320). Finland is currently on track towards meeting its positive EU energy efficiency target (EEA, 2014a).

According to the National Energy and Climate Strategy, the main option for Finland to increase its energy efficiency is the efficient cogeneration of heat and electricity. Also voluntary energy efficiency agreements alongside with the systematic implementation of energy audits have resulted in the increase of energy efficiency. Finland was delayed in transposing the Energy Efficiency Directive (EED). On 25 August 2014, the Ministry of the Environment published a press release, saying that the implementation of the EED will be done by 1 January 2015. Due to recent changes, from 2019 onwards all state-owned buildings in Finland must be zero-energy buildings. Newly constructed buildings must be zero-energy buildings from 2020. (YM, 2014c)

Another step forward in the field of energy efficiency in 2014 was the introduction of energy labels on lighting products, as per the requirements of the transposed Directive 2010/30/EU on energy labelling. These labels help consumers to choose lamps which are most energy efficient. Finland introduced mandatory energy labels on lamps from March 2014. Every lamp must have an energy label and consumers must be informed about the energy-class of the product (Motiva, 2014a).

Several energy efficiency programs were announced in 2014. One of them, announced by the Housing Finance and Development Center of Finland (Asumisen rahoitus ja kehittämiskeskus - ARA), concerns elderly and disabled people living in private households. The subsidy is aimed at renovating the houses and making them more energy efficient. Total sum of subsidy in 2014 was 43 million EUR, 3 million EUR more than in 2013. Also the income level of applicants was increased by 8.5% making it accessible for more people. Therefore people with lower income will also benefit in the future from lower heating bills (ARA, 2014). No estimates of the GHG impacts of this policy were found.

In April 2014, a contract was signed between the Ministry of the Environment and several renewable energy-related associations in order to improve awareness on efficiency in the renewable heating sector. In Finland, many old heating systems are used, which can be significantly improved. The Energy Efficiency Directive obliges EU Member States to organize inspections in all houses with heating boilers exceeding capacity of 20 kW or alternatively organize consultations. A consultation campaign was launched in April 2014 on how to improve energy efficiency in heating boiler systems by maintaining them regularly and by using the best renewable fuel, as well as on possibilities for installing solar energy systems. Boiler owners will receive information about how to achieve cost savings, how to keep their boilers clean and efficient, and how to reduce emissions (YM, 2014d).

In 2014, energy certificates were introduced for terraced houses. The Energy Certificate Law came into force in June 2013. From 2014 energy certificates that include the energy class of a building must be presented in case of selling or renting a terraced house as well. Energy certificates that are issued to existing buildings must also contain suggestions on how to improve their energy efficiency (Motiva, 2014b).

#### **4.2.3 Renewable Energy**

The share of renewables in gross final energy consumption was 34.3% in 2012, which is above the indicative 2020 target of 30.4% set out by the Renewable Energy Directive (RED). The average annual growth rate was 2.7% between 2005 and 2012. Thus, an annual growth rate of 2.2% is needed between 2013 and 2020 to reach the 2020 target of 38% (EEA, 2014a). The share of renewable electricity generation in final electricity consumption increased only slightly from 26.9% to 29.5% between 2005 and 2012, while the share of renewable heating increased more substantially from 39.3% to 48.1% (Eurostat, SHARES 2014).

In 2011, total energy consumption in Finland was 1,392 petajoules (PJ), of which approximately 28.3 % (394 PJ) was generated from renewable sources. The total consumption of energy in 2011 was 5 % less than in 2009.

Since early 2011, the main promotion scheme for electricity from renewable sources in Finland is a premium feed-in tariff for electricity from wind, biomass and biogas. The support rate varies depending on the technology – electricity from biogas receives 0.0835 EUR per kWh with a possible heat bonus 0.05 EUR per kWh, electricity from biomass receives 0.018 – 0.0835 EUR per kWh with a possible heat bonus of 0.02 EUR per kWh, and wind receives 0.0835 EUR – 0.15 EUR per kWh. These

subsidy amounts are in force up to 31 December 2015. In contrast to most other support schemes in the European Union, the Finnish premium feed-in tariff is not funded through the final consumers via the electricity bill but through the budget of the Energy Authority.

Although biomass is an important sector in Finland, the main policy developments in 2014 were in the wind sector.

The feed-in-tariff has led to investment in large wind power projects so that the capacity of installed wind power has increased to 288 MW at the end of 2012 from 199 MW in 2011 and 196 MW in 2010. The tariff only applies to large installations in wind, biomass and biogas – not photovoltaics or for instance biomass plants with a nominal capacity of less than 100 kW.

In 2014, the Government submitted to the Parliament a proposal for amendments to the Renewable Energy Production Law. The amendments if enacted would allow companies who receive investment subsidies for developing off-shore wind energy pilot projects to also receive support through the premium feed-in tariff system. Six companies applied for off-shore wind energy pilot projects. Suomen Hyötytuuli Oy's offshore wind power farm project was selected as a pilot project by the Ministry of Employment and the Economy (MEE). The MEE granted 20 million EUR in investment subsidies for the implementation of this project in November 2014. In addition, the project is eligible for premium-tariff for the period of 12 years (TEM, 2014d).

In January 2014, the Ministry of Environment (Ympäristöministeriö) confirmed the Pohjois-Savo County Wind Energy Plan (Tuulivoimamaakuntakaava) in eastern Finland. The plan specifies 18 locations for wind energy projects with total capacity of 210-230 3MW turbines (YM, 2014e). Although Finland's climatic conditions do not favour solar power, several new projects have been announced in 2014. The largest solar power project encompasses four counties, where solar PV will be installed on different state-owned buildings such as city council buildings, schools, health centres and flats. In total thirty solar PV systems of capacities between 2-7 kW will be installed. Cost of the project amounts to 240,000 EUR (Aurinkoenergia, 2014).

In September 2014, the Ministry of the Environment approved the Wind Energy Development Plan for Varsinais-Suomi county located in the Southern part of Finland. The Wind Energy Development Plan specifies areas for wind energy development in inland, coastal areas and on larger islands. The Plan contains 20 bigger and 13 smaller wind energy development areas. The Ministry did not ratify the wind energy area in Järvekylä in Salo, because it would have been too close to a Natura 2000 area in Halikonlahti (SSS, 2014).

#### **4.2.4 Energy Networks**

Currently, two submarine electricity interconnections exist between Finland and Estonia: Estlink 1, commissioned in 2007, and Estlink 2 commissioned in the beginning of 2014. In addition, negotiations about the submarine gas pipeline called the Balticconnector pipeline which shall connect the Finnish and Estonian gas infrastructures are currently ongoing. The project is included in the Projects of Common Interest (PCI) list, making it eligible for support from the EU's Connecting Europe Facility (CEF) program, and has been provisionally granted support for the planning stage. The environmental impact assessments has already been completed, however the route selection is still open. In the future the Balticconnector would open the opportunities for the biogas market to emerge.

In May 2014, the Energy Agency of Finland confirmed the conditions for the export of electricity from Finland to Russia by Finland's TSO Fingrid. So far electricity has only been imported from Russia, however long-term export possibilities have been discussed between the two countries. Electricity export started in June 2014. Finland will be able to export 350 MW of electricity to Russia (Energiavirasto, 2014)

#### **4.2.5 Transport**

Emissions from transport have slightly decreased between 1990 and 2012 with a downward trend since 2007. Their proportion among Finland's total emissions is fluctuating and amounted to 20% in 2012. In contrast, energy consumption has increased by 13% between 1990 and 2012 (Eurostat, tsdcc210 and tsdpc320). Average emission rates for newly registered cars are high in Finland with a level of 131.8 CO<sub>2</sub>/km. This value is above the EU average but has decreased by 27% between 2005

and 2013, which is a higher rate than the EU average decline of 22% (Eurostat, 2013a). Fuel taxation in Finland is above the EU average. The road fuel excise duties on petrol are the seventh highest among EU MS and the excise duties on diesel are the sixth highest (EEA, 2014b). There were no changes to these taxation rates in 2014.

By 2020, Finland aims for its vehicle fleet to achieve average CO<sub>2</sub> emissions of 137.9 g/km. Measures to achieve these goals include basing Finland's vehicle taxes largely on CO<sub>2</sub> emissions. Both registration and ownership taxes are based solely on CO<sub>2</sub> emission rates (ACEA, 2014).

Government of Finland is also promoting renewable energy solutions on road transport. In 2014, the Ministry of Employment and the Economy granted a subsidy amounting to 12 million EUR for the construction of a biorefinery in Kajaani. The planned biorefinery will produce about 10 million litres of advanced biofuel from sawdust for the transport sector. Additional side products will be bioethanol, lignin, furfural, and turpentine. The cost of the whole project is 40 million EUR. Burning bioethanol emits less greenhouse gas emissions compared to fossil fuels. It is estimated that the new plant might reduce Finland's CO<sub>2</sub> emissions by about 160,000 tonnes a year (TEM, 2014e).

#### **4.2.6 Land use, land use change and forestry (LULUCF)**

According to the National Climate and Energy Strategy, wood is the single most important raw material in the pursuit of Finland's 2020 renewable energy targets. The aim is to raise the use of wood chips in heat and electricity production from about 16 TWh to 25 TWh by 2020. Considering these goals the Parliament amended the Forest Act in January 2014 and changed the applicable harvesting rules. The aim is to allow the private forest owners to better manage their forests and guarantee the supply of raw material and smooth the current fluctuations in the supply. From January 2014 several significant amendments to the Forest Act, Forest Management Act, Law on Prevention of Forest Damage and Wood Product's Measurement Act came into force. Changes in the Forest Act allow the forest owners to decide more freely about the management of their forest, giving greater financial benefits for them. The aim of the change is to allow forest trade industry to become more active. Amendments also lower the minimum age and minimum wood diameter in order to cut the trees in special silviculture areas. Changes in the Forest Management Act provide forest owners with more freedom and flexibility in choosing services necessary in order to manage their forest in a more cost efficient way. Significant change is also the cancellation of the forest management tax (MMM, 2014).

The EU's Renewable Energy Directive (2009/28/EC) serves the purpose of increasing renewable energy sources in new and renovated buildings and it affects also land use and forestry sector. In June 2014, the Ministry of the Environment created a working group to amend the relevant national laws and develop necessary decrees in order to implement the RED on time. The working group started by reviewing the Land Use and Construction law and decrees based on it. As a result, by the end of 2014 several new decrees and acts were amended and developed (YM, 2014f).

In 2014, further amendments have been made to Nature Protection Act in order to implement EU's Habitats Directive. Changes concern the procedural rules for forming Natura 2000 areas. Requirements for environmental protection were strengthened. Thus some activities that were freely actionable before, need to obtain an official permission now.

Finally, the Government of Finland approved amendments to the Environmental Conservation Decree (Ympäristösuojeluasetus), which came into force on 10 October 2014. With the new Environmental Conservation Act (Ympäristösuojelulaki), which entered into force on 1 September 2014, decree is part of the environmental package. Amendments to the Environmental Conservation Decree are made in order to implement the Industrial Emissions Directive (2010/75/EU) and its rules for license proceedings and best available technology (BAT) principle.

## 5 Policy progress against Country Specific Recommendations (CSRs) issued 2013

The EU Commission provides Country Specific Recommendations (CSRs) for each MS for consideration and endorsement by the European Council. The recommendations are designed to address the major challenges in relation to the targets of the EU 2020 Strategy. In the following table, the CSRs relevant for climate change and energy are listed, and their progress towards their implementation is assessed.

Existing CSRs	Progress
<p><b>Step up the development of cross-border gas connection to Estonia.</b></p>	<p>The Balticconnector pipeline project is in the planning stage. Decision on the launch of the project will be made in spring 2015, once the preparatory measures, prerequisites and final support decision on the design project are in place.</p> <p>The prerequisites for the implementation of the regional Balticconnector pipeline project are the realisation of the LNG terminal project and progress made in the major gas infrastructure projects in the Baltics.</p> <p>The Environmental Impact Assessment (EIA) has been completed by both Finland and Estonia separately and the full EIA report including both countries EIA's will be completed in October 2015.</p>

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