

**Ministry of Petroleum and Energy**

**National Renewable Energy  
Action Plan  
under Directive 2009/28/EC**

**Norway**

Inofficial translation of  
September 2012, based on  
NRAP in Norwegian of June 2012

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## **Introduction**

When preparing the Norwegian National Action Plan, the obligatory template was used as a basis, cf. the Commission Decision 2009/548/EC dated 30 June 2009 and Resolution 16/2012 in the EEA Committee dated 10 February 2012.

The National action plan was published in Norwegian in June 2012. This is an unofficial translation to English.

The template focuses on direct subsidy schemes, and places less emphasis on discussing general subsidy schemes and measures that could be significant for renewable energy. Such schemes are thus to a small extent referred to discussed in this document.

## 1. SUMMARY OF NATIONAL RENEWABLE ENERGY POLICY

Norway is in a unique position as regards renewable energy. Unlike most other countries, nearly all of Norway's electricity production is based on hydropower. Norway has a share of renewable energy that is much higher than in all EU countries. In 2011, renewable electricity production was about 124 TWh.

The Government places great emphasis on increasing supply of renewable energy. During the period 2006-2011, new facilities with a total production capacity equalling about 5.3 TWh became operational. The number of permits given has also increased. In 2006-2011 overall, final permits have been granted to facilities with an annual production capacity corresponding to about 8.0 TWh.

Furthermore, the use of district heating has increased considerably. The volume of delivered district heating in 2010 was 2.0 TWh higher than in 2005. Licences have been granted to facilities with an annual potential production totalling 4.1 TWh in the period from 2006-2011.

Use of renewable energy sources is also increasing in the transport sector. The share of renewables in transport has increased from 1.3 per cent in 2005 to 4.0 per cent in 2010. Norway has one of the world's largest fleets of electric cars, and leads the world as regards the number of electric cars per resident. In the first quarter of 2012, electric cars accounted for 2.5 per cent of total car sales.

The Government has significantly increased the scope of measures and instruments related to development of renewable energy and energy efficiency. Efforts will continue to be strengthened. One important element in the increased efforts is the establishment of a joint Norwegian-Swedish electricity certificate market from 1 January 2012. In the nine years from 2012-2020, production capacity which shall result in a total of 26.4 TWh renewable electricity production in Norway and Sweden in 2020 will be developed. This corresponds to about 20 per cent of current Norwegian power production. Wind, water and bio energy will be the most important energy resources in the certificate market. Norway is committed to finance 50 per cent of the certificates, regardless of where the production is located in each of the two countries.

To facilitate increased production of renewable energy, the further licence processing has been strengthened and streamlined. The Government has as a goal a climate-friendly energy system which takes into consideration nature diversity, local communities and other public interests.

Increased production of renewable energy depends on a well-functioning electricity grid. Considerable emphasis is placed on carrying out grid developments and improving the transmission grid both domestically and abroad. For instance, Statnett's grid investments have increased considerably in recent years, and will remain high in the future. In 2010, Statnett's investments totalled nearly NOK 1.9 billion.

Furthermore, the efforts in energy diversification through Enova and the Energy Fund will continue to be strengthened. Enova's total income in 2011 reached nearly NOK 2.0 billion. This is an increase from about NOK 0.7 billion in 2005. The target areas are i.a. directed at increasing the use of energy carriers other than oil, gas and electricity for heating, energy efficiency measures in the industry sector and buildings and full-scale demonstration of new

energy technologies. The areas that will be strengthened includes the promotion of the transition from fossil-fuel-based energy consumption to an energy consumption based on renewable energy and the promotion of energy efficiency. Among other things, Enova is to facilitate conversion to environmentally-friendly energy consumption in households. This contributes to a more diversified energy supply and improved security of supply. The efforts also attend to important environmental considerations.

In White Paper No. 21 (2011-2012) *Norwegian Climate Policy* to Parliament, the Government has proposed a new climate and technology initiative. The initiative is to be financed through the yields from capital increases into a fund. Furthermore the White Paper presents a designated action plan with the goal of reducing overall energy consumption in the construction sector significantly by 2020.

Several other instruments in place also contribute towards energy diversification. Such measures include the introduction of a system requiring mandatory energy labelling and regular energy assessments of technical systems. The goal of this measure is that the energy status of buildings becomes part of the decision basis when buying and renting a building.

Pendant on a few specified preconditions, the Government proposes in White Paper No. 21 (2011-2012) to strengthen the energy requirements set in the technical regulation for buildings to passive house level in 2015 and nearly zero energy level in 2020. Furthermore, the Government proposes to introduce component requirements for existing buildings, and to phase out the use of oil boilers in households and for base loads by 2020. It is also indicated that the State as a builder and buildings owner should act as a driving force in the efforts on energy diversification and phase-out of fossil fuels in buildings.

The efforts in renewable energy and energy efficiency are also supported by broad efforts in research and development. Through the Norwegian Research Council, programmes for development of knowledge and technologies for renewable energy, energy efficiency and environmentally friendly transport have been strengthened. Measures to implement new solutions are important elements both in Enova's and Transnova's efforts. White Paper No. 21 (2011-2012) proposes further strengthening of these efforts.

The efforts in renewable energy and energy efficiency measures are further strengthened through the settlement achieved in the Storting in connection with the processing of White Paper No. 21 (cf. Recommendation to the Storting 390 S (2011-2012)) For instance, the Storting adopted a resolution asking the Government to introduce a ban on heating based on fossil fuels in households and for base loads in other buildings in 2020, The Storting also adopted a resolution asking the Government to establish a goal for energy efficiency measures in buildings. Moreover, the Storting asked the Government to establish a new Fund for Climate, Renewable Energy and Energy Diversification based on Enova's Base Fund. The fund capital will increase by NOK 10 billion in 2013, NOK 5 billion in 2014, NOK 5 billion in 2015 and NOK 5 billion in 2016.

The high Norwegian ambitions in the area of renewable energy are also reflected in the targets established in the agreement on the Renewables Directive. The Norwegian target is a renewable percentage of 67.5 in 2020. In 2010, the percentage was about 61. The Renewables Directive also requires Norway to achieve 10 per cent renewable energy in the transport sector in 2020.

White Paper No. 21 (2011-2012) states that the Government will increase the mandatory sale of biofuel to five per cent, assuming the sustainability criteria are satisfactory. When we have enough experience with the sustainability criteria, the Government's goal is to further

increase the mandatory sale to 10 per cent. Furthermore, the Government will contribute to the development of the value chain for second generation biofuel and contribute to biogas development in Norway. The Government also proposes that a goal be established for the average emissions from new passenger cars in 2020 to not exceed 85 g CO<sub>2</sub>/km<sup>2</sup>. The Government also reviews other measures that may contribute to increased electrification and use of alternative fuels in the White Paper.

The efforts in the transport area were strengthened further through Recommendation to the Storting No. 390 S. Here it was determined e.g. that the current tax advantages associated with purchasing and using zero emission cars will be continued through the next parliamentary term (2017), as long as the number does not exceed 50,000.

## 2. EXPECTED FINAL ENERGY CONSUMPTION 2010-2020

### *Power, heating and cooling (stationary energy consumption)*

Estimates of *stationary energy consumption* were calculated by the Norwegian Water Resources and Energy Directorate (NVE). The analyses were carried out with a basis in calculations of the useful energy demand for different end-user groups. Stationary energy consumption in mainland Norway is divided into three end-user groups; residential, service and industry.

The calculations of useful energy demand in residential and service sectors are based on Statistics Norway's projections of population growth, assessments of area development in residential and commercial buildings, and measures and standards that impact future energy consumption, including technical regulations for buildings and energy efficiency measures financed through Enova, the Agency for Energy Efficiency in Oslo, etc.

Energy consumption in industry is highly dependent on national and international economic development and shows considerable variations over time. Shutdowns and more efficient energy consumption have contributed to a reduction of energy consumption in Norwegian industry by 8 TWh since 2005. The future development in the industry's energy demand is uncertain. In assessments of future consumption, planned shutdowns and plans for increased consumption have been taken into consideration. Beyond this, relatively unchanged consumption up to 2020 is assumed in the calculations, including continued energy efficiency measures in industry in the years to come.

Based on the estimates of net useful energy demand in the three sectors, the TIMES model was used to calculate final energy consumption by energy commodity (delivered energy). TIMES is a cost optimisation model which calculates the optimal consumption of different energy commodities to cover the useful energy demand.

### *Transport*

The figures presented here for the energy consumption in the *transport sector* were prepared based on energy consumption for transport for the basis years 2005 and 2010 which are reported to Eurostat by Statistics Norway (SSB) and used in the SHARES model. The development in energy demand in the transport sector up to 2020 was calculated based on the latest prognoses from the 2011 national budget and estimates for energy efficiency in the sector.

Based on this, energy consumption has been calculated at 4860 ktoe (thousand tonnes oil equivalents) in the transport sector in 2020.

In particular, more efficient passenger cars contribute to the estimated improved energy efficiency in the transport sector. Reductions in aviation energy consumption have also been calculated due to higher cabin factor and investments in better technology.

Continued significant efficiency improvement of the motor vehicle fleet is expected, as well as introduction of more energy-efficient vehicles. A further transition in cargo transport to sea and rail will contribute to less energy consumption. This also applies to transitions from road to public transportation, bicycles and walking. For railroads in Norway, the efficiency potential lies particularly in transferring cargo transport from road to rail.



### *Overall energy consumption*

The estimate for overall energy consumption in Table 1 includes effects of energy efficiency measures as result of the current technical regulations and other measures that contribute to more efficient energy consumption, cf. Chapter 4. The main trajectory presented for the projections therefore constitutes the energy efficiency trajectory, which includes measures both before and after 2009. Both the organisation of the support systems for energy efficiency measures and implementations of building standards entail that many of the measures planned before 2009 do not have an energy consumption effect until after 2009.

Estimates indicate that expected overall energy consumption for all sectors will increase to 21483 ktoe in 2020. This is equivalent to an energy consumption growth of 8.4 per cent from 2005-2020 and 0.4 per cent per year from 2010-2020. A decline in energy consumption for heating and cooling is estimated.

There is significant uncertainty concerning energy consumption projections. In addition to the uncertainty in basic conditions such as population growth, area development and economic growth, Norwegian energy consumption is very exposed to temperature variations. This can result in significant fluctuations in overall energy consumption from year to year. These variations can also have significant and unpredictable impact on the renewable percentage in the period.

However, further measures as a result of the efforts promoted through White Paper No. 21 (2011-2012) and the settlement entered into in the Storting (cf. Recommendation to the Storting No. 390 S) have not been included in the calculations separately.

**Table 1: Expected gross final energy consumption of Norway in heating and cooling, electricity and transport up to 2020 taking into account the effects of energy efficiency and energy saving measures<sup>1</sup> 2010-2020 (ktoe)**

	2005	2010		2011		2012		2013		2014	
	base year	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency
(1) heating and cooling <sup>2</sup>	4 406	-	4 619	-	4 366	-	4 360	-	4 353	-	4 347
(2) electricity <sup>3</sup>	10 765	-	11 319	-	10 814	-	10 822	-	10 830	-	10 838
(3) transport as in Art. 3(4)a <sup>4</sup>	4 029	-	4 274	-	4 444	-	4 488	-	4 533	-	4 579
(4) Gross final energy consumption <sup>5</sup>	19 821	-	20 998	-	20 660	-	20 750	-	20 840	-	20 930
<i>The following calculation is needed only if final energy consumption for aviation is expected to be higher than 6.18% (4.12% for Malta and Cyprus):</i>											
Final consumption in aviation	622	-	786		821		855		889		923

<sup>1</sup> These estimates on energy efficiency and energy savings shall be consistent with other such estimates that Member States notify to the Commission, notably in Action Plans under the Energy Services Directive and the Energy Performance of Buildings Directive. If different units are used in those Action Plans the conversion factors applied should be indicated.

<sup>2</sup> It is the final energy consumption of all energy commodities except electricity for purposes other than transport, plus the consumption of heat for own use at electricity and heat plants and heat losses in networks (items '2. Own use by plant' and '11. Transmission and distribution losses in page 23 and 24 of the energy Statistics Regulation, OJ L304 of 14.11.2008) .

<sup>3</sup> The gross electricity consumption is national gross electricity production, including autoproduction, plus imports, minus exports.

<sup>4</sup> Transport consumption as defined in Art. 3(4)a) of Directive 2009/28/EC. Renewable electricity in road transport for this figure should be multiplied by a factor of 2,5, as indicated by Article 3(4)c) of Directive 2009/28/EC.

<sup>5</sup> As defined in Article (2)f) of Directive 2009/28/EC. This comprises final energy consumption plus network losses and own use of heat and electricity at electricity and heating plants (NB: this does not include consumption of electricity for pumped hydro storage or for transformation in electrical boilers or heat pumps at district heating plants).

Reduction for aviation limit <sup>6</sup> Art. 5(6)	-	-	-	-	-	-	-	-	-	-	-
TOTAL consumption after reduction for aviation limit	19 821	-	20 999	-	20 660	-	20 750	-	20 840	-	20 930

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<sup>6</sup> According to Article 5(6) consumption for aviation has to be considered only up to 6.18% (Community average), for Cyprus and Malta up to 4.12% of gross final energy consumption.

	2015		2016		2017		2018		2019		2020	
	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency	reference scenario	additional energy efficiency
(1) heating -cooling <sup>7</sup>	-	4 340	-	4 334	-	4 327	-	4 321	-	4 314	-	4 307
(2) electricity <sup>8</sup>	-	10 846	-	10 855	-	10 863	-	10 871	-	10 879	-	10 887
(3) transport as in Art. 3(4)a <sup>9</sup>	-	4 624	-	4 671	-	4 717	-	4 765	-	4 812	-	4 860
(4) Gross final energy consumption <sup>10</sup>	-	21 021	-	21 113	-	21 205	-	21 297	-	21 390	-	21 483
<i>The following calculation is needed only if final energy consumption for aviation is expected to be higher than 6,18% (4,12% for Malta and Cyprus):</i>												
Final consumption in aviation	-	958	-	992	-	1 026	-	1 060	-	1 095	-	1 129
Reduction for aviation limit <sup>11</sup> Art. 5(6)	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL consumption after reduction for aviation limit	-	21 021	-	21 113	-	21 205	-	21 297	-	21 390	-	21 483

<sup>7</sup> See footnote 4.

<sup>8</sup> See footnote 5.

<sup>9</sup> See footnote 6.

<sup>10</sup> See footnote 7.

<sup>11</sup> See footnote 8.

### 3. RENEWABLE ENERGY TARGETS AND TRAJECTORIES

#### 3.1 National overall target

Norway has committed to a national target for renewable energy equivalent to 67.5 per cent in relation to Directive 2009/28/EC.

In 2010, the Norwegian renewable percentage was about 61 per cent. Based on the estimated development of energy consumption and production, a renewable percentage of 67.5 per cent is expected in 2020. The contribution from renewable electricity production constitutes an important part of this, and the percentage which can be credited to the Norwegian renewable share is determined through the agreement on the electricity certificate market with Sweden.

However, there is still uncertainty associated with the estimates. As regards renewable electricity production, the greatest uncertainty lies with the hydrological conditions in coming years. A normal year inflow has been used as a basis for the projections, but many dry years in a row will impact the normalisation of the hydropower and can result in a lower calculated power production. There is also uncertainty associated with the development in energy consumption, cf. discussion in Chapter 2.

**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 of Directive 2009/28/EC):**

(A) Share of energy from renewable sources in gross final consumption of energy in 2005 (S2005) (%)	60.1%
(B) Target of energy from renewable sources in gross final consumption of energy in 2020 (S2020) (%)	67.5%
(C) Expected total adjusted energy consumption in 2020 (from Table 1, last cell) (ktoe)	21 483
(D) Expected amount of energy from renewable sources corresponding to the 2020 target (calculated as B x C) (ktoe)	14 501

#### 3.2 Sectoral targets and trajectories

The renewables share in the different sectors is based on actual figures up to and including 2010. The renewables percentage within heating and cooling was 33.3 in 2005 and 36.4 in 2010. The percentage is expected to increase to 43.2 in 2020.

The renewables percentage in electricity was 97.0 per cent in 2005 and 96.9 per cent in 2010. The renewables share in electricity has declined from 2005 to 2010, mainly because 2010 was a cold year with high electricity consumption in Norway. The decline in the renewable percentage between 2005 and 2010 was alleviated somewhat because more renewable electricity production has been installed during the period and because new, wetter inflow years have been included in the calculation of the normalised hydropower production. For 2020, a renewable percentage of 113.6 per cent has been calculated for electricity.

The renewables share in the transport sector was 1.2 per cent in 2005 and is estimated at 4.1 per cent in 2010. The percentage increases to 10 in 2020 in the calculations. The estimate is based on technical calculation preconditions as regards the distribution of electric cars and use of biofuel respectively, cf. Chapter 5.

With the preconditions used as a basis for projections of energy consumption and production, the Norwegian renewable percentage will be higher than the indicative trajectory for the entire period up to 2020, cf. Figure below.

The uncertainty of the estimates is particularly associated with annual variations in temperatures and inflow that can trigger unpredictable changes in both energy consumption and normalised hydropower production from year to year.

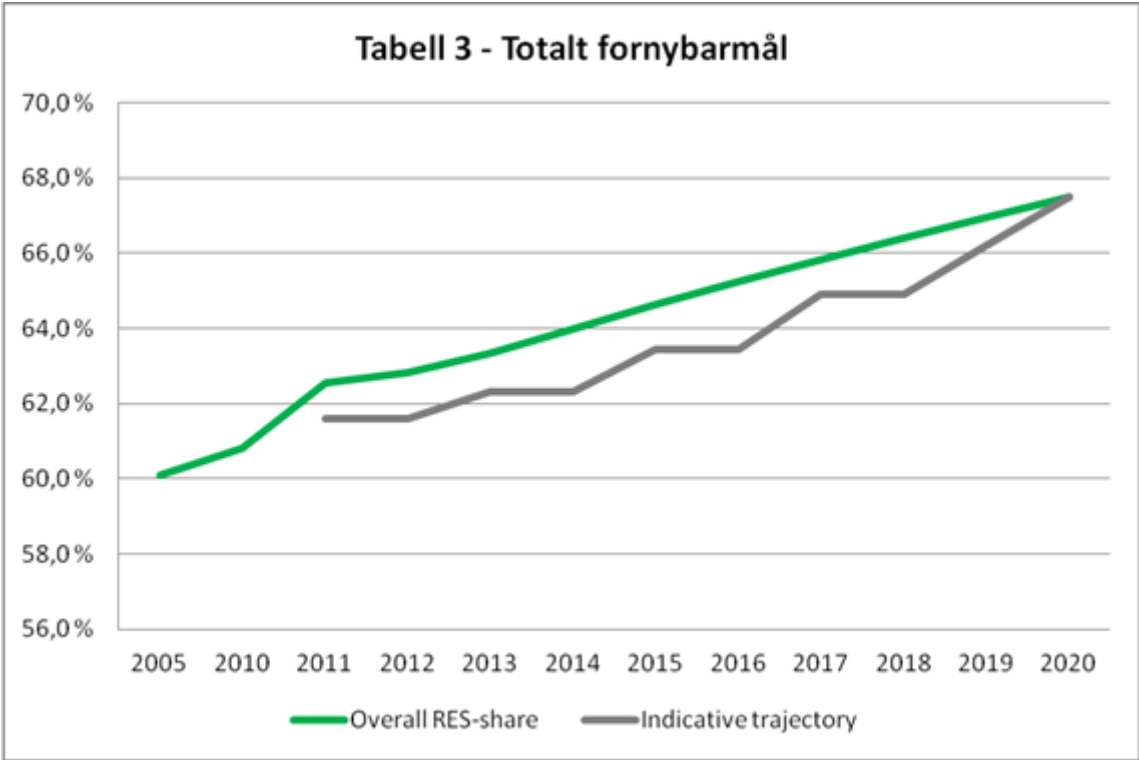


Figure 1: The figure shows Norway’s renewable percentage for each year up to 2020 in green. The grey line shows Norway’s indicative trajectory, as the Renewables Directive stipulates. The figures come from Table 3.

**Table 3: National 2020 target and estimated trajectory of energy from renewable sources in heating and cooling, electricity and transport** (*Calculation tables 4a and 4b are expected to guide the preparation of table 3.*)

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
RES-H&C <sup>12</sup> (%)	33,3 %	36,4 %	37,2 %	37,8 %	38,5 %	39,2 %	39,8 %	40,5 %	41,1 %	41,8 %	42,5 %	43,2 %
RES-E <sup>13</sup> (%)	97,0 %	96,9 %	103,3 %	103,8 %	104,9 %	106,2 %	107,5 %	108,8 %	110,0 %	111,2 %	112,4 %	113,6 %
RES-T <sup>14</sup> (%)	1,2 %	4,1 %	4,6 %	5,3 %	5,9 %	6,5 %	7,1 %	7,7 %	8,3 %	8,9 %	9,4 %	10,0 %
Overall RES share <sup>15</sup> (%)	<b>60,1 %</b>	<b>60,8 %</b>	<b>62,6 %</b>	<b>62,8 %</b>	<b>63,3 %</b>	<b>64,0 %</b>	<b>64,6 %</b>	<b>65,2 %</b>	<b>65,8 %</b>	<b>66,4 %</b>	<b>67,0 %</b>	<b>67,5 %</b>
<i>Of which from cooperation mechanism<sup>16</sup> (%)</i>		0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %
<i>Surplus for cooperation mechanism<sup>17</sup> (%)</i>		0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %	0,0 %

<sup>12</sup> 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(1b) and 5(4) of Directive 2009/28/EC divided by gross final consumption of energy for heating and cooling. Line (A) from table 4a divided by line (1) of table 1.

<sup>13</sup> Share of renewable energy in electricity: gross final consumption of electricity from renewable sources for electricity (as defined in Articles 5(1a) and 5(3) of Directive 2009/28/EC divided by total gross final consumption of electricity. Row (B) from Table 4a divided by row (2) of Table 1.

<sup>14</sup> Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1c) 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). Line (J) from Table 4b divided by row (3) of Table 1.

<sup>15</sup> Share of renewable energy in gross final energy consumption. Row (G) from Table 4a divided by row (4) of Table 1.

<sup>16</sup> In percentage point of overall RES share.

<sup>17</sup> In percentage point of overall RES share.

As part B of Annex I of the Directive			2011-2012	2013-2014	2015-2016	2017-2018		2020
			S <sub>2005</sub> + <b>20%</b> (S <sub>2020</sub> -S <sub>2005</sub> )	S <sub>2005</sub> + <b>30%</b> (S <sub>2020</sub> -S <sub>2005</sub> )	S <sub>2005</sub> + <b>45%</b> (S <sub>2020</sub> -S <sub>2005</sub> )	S <sub>2005</sub> + <b>65%</b> (S <sub>2020</sub> -S <sub>2005</sub> )		S <sub>2020</sub>
RES minimum trajectory <sup>18</sup> (%)			61,6%	62,3%	63,4%	64,9%		67,50%
RES minimum trajectory (ktoe)			12 778	13 044	13 392	13 824		14 501

<sup>18</sup>

As defined in Annex I.B of the Directive 2009/28/EC.



**Table 4a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)**

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(A) Expected gross final consumption of RES for heating and cooling	1 467	1 681	1 623	1 649	1 676	1 702	1 728	1 754	1 780	1 807	1 833	1 859
(B) Expected gross final consumption of electricity from RES	10 447	10 972	11 168	11 235	11 356	11 509	11 663	11 806	11 950	12 088	12 226	12 364
(C) Expected final consumption of energy from RES in transport	-	116	133	149	165	181	197	213	230	246	262	278
(D) Expected total RES consumption <sup>19</sup>	<b>11 913</b>	<b>12 770</b>	<b>12 924</b>	<b>13 033</b>	<b>13 196</b>	<b>13 392</b>	<b>13 589</b>	<b>13 774</b>	<b>13 960</b>	<b>14 140</b>	<b>14 320</b>	<b>14 501</b>
(E) Expected transfer of RES <u>to</u> other Member States		-	-	-	-	-	-	-	-	-	-	-
(F) Expected transfer of RES <u>from</u> other Member States and 3rd countries	-	-	-	-	-	-	-	-	-	-	-	-
(G) Expected RES consumption adjusted for target (D)-(E)+(F)	<b>11 913</b>	<b>12 770</b>	<b>12 924</b>	<b>13 033</b>	<b>13 196</b>	<b>13 392</b>	<b>13 589</b>	<b>13 774</b>	<b>13 960</b>	<b>14 140</b>	<b>14 320</b>	<b>14 501</b>

<sup>19</sup> According to Art.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 4b: Calculation table for the renewable energy in transport share (ktoe)**

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
(C) Expected RES consumption in transport <sup>20</sup>	50	174	198	221	245	268	292	315	340	364	388	413
(H) Expected RES electricity in road transport <sup>21</sup>	0	0	5	10	14	19	24	29	34	39	44	50
(I) Expected consumption of biofuels from wastes, residues, non- food cellulosic and lingo-cellulosic material in transport <sup>22</sup>	-	-	-	-	-	-	-	-	-	-	-	-
(J) Expected RES contribution to transport for the RES-T target : (C)+(2,5-1)x(H)+(2-1)x(I)	<b>50</b>	<b>174</b>	<b>205</b>	<b>236</b>	<b>266</b>	<b>297</b>	<b>328</b>	<b>358</b>	<b>391</b>	<b>422</b>	<b>454</b>	<b>488</b>

<sup>20</sup> Containing all RES used in transport including electricity, hydrogen and gas from renewable energy sources, and excluding biofuels that do not comply with the sustainability criteria (cf. Article 5(1) last subparagraph). Specify here actual values without using the multiplication factors.

<sup>21</sup> Specify here actual values without using the multiplication factors.

<sup>22</sup> Specify here actual values without using the multiplication factors.

#### 4. MEASURES FOR ACHIEVING THE TARGETS

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

**Table 5: Overview of all policies and measures**

Name and reference of the measure	Type of measure*	Expected result**	Targeted group and/or activity***	Existing or planned	Start and end dates of the measure
Tax on electricity, cf. Storting's decision relating to tax on electricity. (The bill and draft resolution on taxes 2012).	Financial	Reduced electricity consumption	Electricity consumers, households, businesses and industry	Existing	1951-
Support for R&D (The Research Council of Norway/ the RENERGI- and FME-schemes) (www.forskningradet)	Financial	Increased R&D for renewable energy, the energy system, energy efficiency and alternative fuels. Social science for renewable energy.	Research institutions, industry, companies, organisations	Existing	RENERGI: 2004 – FME: 2009-
Support for pilot, demonstration and infrastructure for alternative fuels ( <a href="http://www.Transnova.no">www.Transnova.no</a> )	Financial	Pilot projects and infrastructure rollout	Companies, local and regional authorities, organisations	Existing	2009 -
National guidelines for planning and placement of wind power plants	Information	Changed behaviour	Public administration / Developers	Existing	Completed 2007
Regional wind power plans Regional small power plans	Information/ Regulatory	Facilitation for wind power development	Public administration	Existing and planned	Recommended from 2007
Planning and Building Act Climate and energy planning	Regulatory	Changed behaviour	Public administration/ general public	Existing and planned	
National guidelines for small hydropower plants	Information	Changed behaviour	Public administration / Developers	Existing	Completed 2007
Planning and building Act and technical building regulations (TEK). Requirements for energy consumption and energy supply in new constructions and for extensive rehabilitation	Regulatory	More energy-efficient buildings with a greater share of renewable energy consumption	Construction sector	Existing	TEK revised in 2007, changed in 2020. Energy-related requirements also before this

Programmes for expertise development in the construction industry, e.g. Cities of the Future/Buildings of the Future, Low Energy Programme, Ecobox, Build Up Skills	Information	Increased expertise in the construction industry regarding energy solutions	Construction industry and municipalities	Existing	Different programmes have different start and end dates
Norwegian State Housing Bank: Quality requirements for energy in the Norwegian State Housing Bank's basic loan, subsidy schemes	Financial support	Buildings with better energy qualities than applicable technical construction regulations	Construction industry and municipalities/other developers, residents	Existing	
Energy requirements for public procurements of buildings (Supplier collaboration, requirements for procurements, OFU contracts, etc.)	Regulatory	Public buildings with better energy qualities	State, county municipal and municipal developers	Existing	
Support for information projects from the Ministry of Local Government and Regional Development (Green energy municipalities, Inland Norway Energy Agency, etc.)	Information	Increased knowledge about energy consumption in buildings in municipalities	Municipalities	Existing	Different programmes have different start and end dates
Energy Act with appurtenant regulations. Energy rating residences and buildings and energy assessment of technical facilities in buildings.	Regulation	Decree for rating and assessment will provide more information about the residence's/ building's energy consumption	Building owners	Existing	2010-
Royal Decree on requirements for energy-flexible heating systems in State-owned buildings, as well as in private buildings that are rented to the State	Regulation	More flexible heating systems in buildings used by the State	State building owners	Existing	1998-
Local energy assessments	Information	Socially efficient and environmentally-friendly development of the energy system	Municipalities, etc.	Existing	2003
Electricity certificates	Financial	Increased production of electricity from renewable energy sources in Norway and Sweden corresponding to 24.6 TWh in 2020	Producers of new electricity production based on renewable energy sources	Existing	1 Jan. 2012 to 1 Apr. 2036

Enova's information and advisory activity	Information tools	Better information regarding energy-efficiency and renewable energy solutions	Households, private businesses, industrial companies, public administration, children and young people	Existing	2002
Enova's subsidy programme for households	Financial	Increased investments in specific solutions that contribute to energy savings	Households	Existing	2006
Enova's subsidy programmes for district heating	Financial	Increased investments in district heating infrastructure and production based on renewable energy, waste heat and heat pumps	District heating companies	Existing	Enova has had subsidy programmes for district heating since 2002
Enova's subsidy programme for local heating plants	Financial	Increased investments in local energy plants based on renewable energy, heat pumps and waste heat	Building owners, industrial companies, suppliers of heating plants, etc.	Existing	Enova has had subsidy programmes for small heating plants since 2008
Enova's subsidy programmes for buildings	Financial	Increased investments in energy-efficient solutions and heating plants based on renewable energy, waste heat and heat pumps in buildings	Building owners, private businesses, industrial companies and public administration	Existing	Enova has had this type of subsidy programme directed at the construction sector since 2002
Energy rating of appliances	Information	Better information about energy efficiency of appliances	Consumers	Existing	1996
Eco design requirements	Regulatory	Promote development and application of energy-efficient and environmentally-friendly energy-related products	Consumers	Existing	2011
The bio energy programme <a href="http://www.innovasjon Norge.no/Kursomrade/Landbruk/Bioenergiprogrammet/">http://www.innovasjon Norge.no/Kursomrade/Landbruk/Bioenergiprogrammet/</a>	Financial	Increased investment and use of bio energy in agriculture, and increased delivery of bio energy from agriculture	Primarily owners of agricultural property	Existing	2003 ->
Support for extracting forest raw materials for energy purposes "Energy chip scheme" (FOR-2004-02-04 no. 447)	Financial	Increased access to raw materials for energy production	Forest owners	Existing	2009 ->

National development programme for climate measures in agriculture	Financial	Will contribute to increasing expertise regarding emissions of greenhouse gases from agriculture and the impact of agriculture policy on emissions  Will facilitate implementation and highlighting of effective measures that contribute to reduction of greenhouse gas emissions from agriculture	Agricultural enterprises or other companies  Trade and industry organisations  Expertise companies, R&D environments	Existing	2008-2012
Act relating to forestry (LOV-2005-05-27, No. 31)	Regulatory	Sustainable forestry and management of forest resources	Forest owners	Existing	2005 ->
Regulations relating to sustainable forestry (FOR-2006-06-07, No. 593)	Regulatory	Sustainable forestry and administration	Forest owners and logging contractors	Existing	2006 ->
Regulations relating to subsidies for forestry and environmental measures (FOR-2004-02-04, No. 447)	Regulatory	Regulates subsidy administration of forest and environmental measures.	Forest owners	Existing	2004 ->
Regulations relating to forestry planning with environmental registrations (FOR-2004-02-04, No. 449)	Regulatory	Regulates subsidy administration with significance for mapping forest resources and environmental values in forests	Forest owners	Existing	2004->
Regulations relating to forest funds (FOR-2006-07-03, No. 881)	Regulatory	Regulates use of forest funds for e.g. energy measures	Forest owners	Existing	2006 ->
Bioenergy Programme <a href="http://www.innovasjon Norge.no/Kursomrade/Landbruk/Bioenergi/programmet/">http://www.innovasjon Norge.no/Kursomrade/Landbruk/Bioenergi/programmet/</a>	Financial	Increased investment and use of bioenergy in agriculture, and increased delivery of bioenergy from agriculture	Primarily owners of agricultural property	Existing	2003 ->
Support for using forest raw materials for energy purposes (FOR-2004-02-04, No 447)	Financial	Increased raw material access for energy production	Forest owners	Existing	2009 ->
Obligation to connect producers	Regulatory	Facilitation for new renewable power production. All socioeconomically profitable projects have the right to be connected to the grid	Power producers and grid companies	Existing	Introduced on 1 January 2010

Introduction of AMS	Regulatory	Increase flexibility with end-users. Contribute to better utilisation of existing infrastructure and enable increased integration of intermittent power production.	Producers, consumers and grid companies	Existing and planned	Requirement for hourly measurement since 2006 for major end-users  AMS introduced with all end-users by 1 January 2017
Schedule for receiving and processing grid connection requests	Regulatory	Increased predictability for new power producers that want to connect to the grid	Producers, consumers and grid companies	Existing	Introduced from 1 January 2012
Schedule for implementation of grid connection	Regulatory	Increased predictability for new power producers that want to connect to the grid	Producers, consumers and grid companies	Existing	Introduced from 1 January 2012
Reporting of operational measures that limit renewable power production	Regulatory	Prevent undesirable reduction in renewable power production	Systems manager, regulators and renewable power producers	Existing	Introduced from 1 January 2012
CO2 tax on mineral products, cf. the Storting's tax decision relating to tax on mineral products, etc. (The bill and draft resolution on taxes 2012)	Financial	Reduced consumption of mineral products that result in CO2 emissions	Consumers of mineral products	Existing	1991 -
Sulphur tax, cf. Storting's tax decision relating to tax on mineral products, etc. (The bill and draft resolution on taxes 2012)	Financial	Reduced consumption of sulphurous mineral oil	Consumers of sulphurous mineral oil	Existing	1991 -
Basic tax on mineral oil, cf. the Storting's tax decision relating to restricted rate on mineral oil (The bill and draft resolution on taxes 2012)	Financial	Reduced consumption of mineral oil	Consumers of mineral oil used for heating, etc.	Existing	2001-
Road usage tax on fuel, cf. Storting's tax decision relating to road usage tax on fuel. (The bill and draft resolution on taxes)	Financial	Reduced consumption of fuel used to power motor vehicles	Transport	Existing	1931/1993 -
Half road usage tax for biodiesel, cf. Storting's decision relating to road usage tax on fuel, Section 1, litera b, Item 4.  Other bio-products are not included under the	Financial	Increased use of alternative fuels	Transport  Motor vehicle owners	Existing	Wind up by 2020, exemptions will be evaluated in 2015

tax, cf. (The bill and draft resolution on taxes 2012)					
Exemption for electric cars and hydrogen cars from motor vehicle registration tax, cf. Storting's tax decision relating to motor vehicle registration tax, Section 5, litera h and o	Financial	Increased motivation for purchase of electric cars and hydrogen cars	Transport Motor vehicle owners	Existing	1990/2006 – Will be assessed in years to come
Reduced annual tax on motor vehicles for electric cars and hydrogen cars, cf. Storting's tax decision relating to annual tax, Section 12, litera f, Item 5	Financial	Increased motivation for purchase of electric cars and hydrogen cars	Transport Motor vehicle owners	Existing	1996/2005 – Will be assessed in years to come
Exemption from value added tax, on electric cars and hydrogen cars, cf. the Value Added Tax Act, Section 6-6 (1)	Financial	Increased motivation for purchase of electric cars and hydrogen cars	Transport Motor vehicle owners	Existing	Will be assessed in years to come
Storting's decision relating to tax on marine engines does not include electric engines, Section 1	Financial	Increased motivation for purchase of electric marine engines	Transport Owners of marine engines	Existing	1978 – assessed continuously
Exemption for percentage biodiesel in mineral oil, Storting's decision relating to basic tax on mineral oil, Section 2, second subsection	Financial	Increased motivation for mixing in bio-products	Transport Bio-product users	Existing	1999 - assessed continuously
CO <sub>2</sub> tax exemption for percentage biodiesel in mineral oil, bioethanol in fuel, and biogas in natural gas and LPG, cf. Storting's decision relating to CO <sub>2</sub> tax on mineral products, Section 3, second subsection, Section 4, second subsection and Section 5, second subsection	Financial	Increased motivation for mixing in bio-products	Transport Bio-product users	Existing	1999/2007/2010 - assessed continuously
Free highway ferry for electric cars and hydrogen cars. State scale for ferry fares	Financial		Transport		2009 - assessed continuously
Mandatory sale requirement for biofuel in road traffic	Regulatory	Increased use of biofuel in road traffic	Transport Fuel converters	Existing	2009-

\* Indicate if the measure is (predominantly) regulatory, financial or soft (i.e. information campaign).



\*\*Is the expected result behavioural change, installed capacity (MW; t/year), energy generated (ktoe)?

\*\*\*Who are the targeted persons: investors, end-users, public administration, planners, architects, installers, etc? or what is the targeted activity / sector: biofuel production, energetic use of animal manure, etc)?

It is noted that Norway also has a tax on motor vehicles and boat engines that will impact energy consumption. These are a vehicle registration one-time tax, annual tax and annual weight tax and a tax on marine engines. These taxes have a more indirect and complex impact on energy consumption and have therefore not been included in the table. However, the table includes exemptions from these taxes that particularly impact renewable energy consumption,

Major subsidy programmes in Norway have been developed without thematic restrictions, and are open to all industry areas. Open competition for research and innovation funds contributes to projects with high-quality research and considerable value creation potential receiving public support regardless of what thematic area they belong to. The actual public support received by businesses and industry for renewable energy thus exceeds the earmarked schemes. For example, the Ministry of Trade and Industry administers about NOK 2.2 billion for industry-targeted research over the 2012 budget. In addition, there is about NOK 1.2 billion for trade and industry through tax deductions and disbursed contributions for R&D projects through the licensee-based Tax Deduction Scheme. Furthermore, the Ministry of Trade and Industry manages about NOK 1.5 billion for Innovation Norway (except loan and capital items) over the 2012 budget to promote innovation and internationalisation of Norwegian trade and industry and for profiling Norway. The loan framework for Innovation Norway's low risk and innovation loans constitutes about NOK 2.5 and 0.5 billion in the 2012 budget, respectively. The company for industry growth (SIVA) has considerable property involvement within renewable energy, particularly in relation to the solar industry and offshore wind energy. For R&D, thematic priorities are given by the Energi21 energy R&D strategy.

## **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)***

#### *Introduction to the procedure for securing a permit for establishing a facility for production and transmission of renewable energy*

To promote the understanding of the subsequent overview of national regulations, relevant authorities and assessment of measures, a brief overview is hereby provided of the procedure for securing permits for facilities for production and transmission of renewable energy in Norway. Furthermore, to understand the Norwegian legislation and appurtenant administration, it is important to note that nearly all existing and planned power production in Norway is renewable. Legislation and administration practices have developed gradually over time. Measures to ensure progress and sufficient access to renewable energy have been continuously assessed and implemented in Norway over a period of many years. Many considerations noted in Article 13 of the Renewables Directive have therefore already been integrated in the administration in Norway over time.

### *Procedure for hydropower plants*

Hydropower plants generally need a licence according to the Water Resources Act, and potentially also the Industrial Licensing Act and/or the Watercourse Regulation Act, (cf. 4.2.1 a). The Norwegian Water Resources and Energy Directorate (NVE) is responsible for the coordinating work in the reporting and application phases. This applies regardless of whether NVE or the King in Council is making the licence decision, cf. 4.2.1 b).

For hydropower plants larger than 10 MW or with an annual production exceeding 50 GWh, there must first always be a clarification in relation to the Master plan for watercourses<sup>23</sup>. An application is sent to NVE for projects in need of processing according to the Master plan and NVE will process this in consultation with the Directorate for Nature Management.

Hydropower plants larger than 40 GWh must always be impact assessed in pursuance of the Planning and Building Act's rules for reporting and impact assessments (IA). Facilities larger than 30 GWh must be impact-assessed if they could have a significant impact on the environment, nature, cultural artefacts or society, cf. the criteria in Section 4 of the regulations relating to impact assessments. The developer must assess whether to impact-assess the project. Plants for which an IA must be carried out start the processing procedure by sending a report to the NVE. The report is made available for public inspection and submitted for consultation to local authorities and organisations. The NVE then stipulates a final impact assessment programme after submitting this to the Ministry of the Environment if the plan or project could conflict with national or important regional considerations. The developer must then carry out the assessments stipulated by the programme, and include these when sending the application to the NVE.

In projects less than 30 GWh, there are no requirements for impact assessments and reports. In matters where there is no reporting requirement pursuant to the Planning and Building Act, the consequences of the project must still be described thoroughly as a part of the licence application. The application, together with a potential impact assessment, is submitted for consultation to affected authorities, organisations and property owners for statements. The NVE will then carry out an overall assessment of the case.

In matters regarding hydropower plants larger than 10 MW, as well as hydropower plants that require a licence according to the Watercourse Regulation Act and/or the Industrial Licensing Act, in addition to the Water Resources Act, the decision-making authority lies with the King in Council. In such cases, the NVE sends a recommended decision to the Ministry of Petroleum and Energy. The Ministry submits a recommendation to the King in Council. The recommendation is prepared based on the application, the NVE's recommendation, affected ministries' and local authorities' viewpoints, as well as the Ministry's own assessments. A decision is then made regarding development and regulation in the form of a Royal Decree. Major or controversial regulation and power development cases are first submitted to the

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<sup>23</sup> The Master plan for watercourses was established through multiple Storting processing rounds in the 1980s and 1990s and ranks relevant hydropower projects based on conflict and plant economy. In 2005, the Storting decided that hydropower projects with planned installation up to 10 MW or annual production up to 50 GWh are exempt from processing in the overall plan.

Starting in the form of a proposition to the Storting before the licence is formally granted by the King in Council.

Hydropower plants with installed capacity under 10 MW are subject to simpler processing rules than larger projects. For these cases, the NVE has the authority to grant a licence according to the Water Resources Act. The purpose of the delegation is to contribute to a quicker processing procedure. The NVE's decision can be appealed to the Ministry of Petroleum and Energy.

*Procedure according to the Energy Act (power transmission facilities, wind power plants, district heating)*

The Norwegian Water Resources and Energy Directorate (NVE) is responsible for the coordinating work in the reporting and application phases. This applies regardless of whether the NVE or the King in Council is making the licence decision, cf. 4.2.1 b).

If the application is included in Chapter 14 of the Planning and Building Act, cf. regulations relating to impact assessments, the impact assessment must be enclosed with the application. Any processing according to the Planning and Building Act regarding reporting and impact assessment is the same as for projects according to the Energy Act and watercourse legislation, cf. discussion above regarding procedure for water resource matters. Projects according to Section 3-1, third subsection of the Energy Act are exempt from processing according to the Planning and Building Act with the exception of Chapters 2 and 14. See further elaboration on this under the discussion of the Planning and Building Act under 4.2.1 a).

If the project will not be impact-assessed according to the Planning and Building Act, such as for small power lines, the case starts directly with an application to the NVE according to the Energy Act. In such cases, the NVE assesses the consequences of the project in connection with processing the application. In connection with processing all applications, the NVE will hold a consultation for affected interested parties and possibly hold public meetings, etc.

For cases according to the Energy Act, NVE generally has the authority to make licence decisions. The NVE's licence decisions can be appealed to the Ministry of Petroleum and Energy. In the appeals procedure it is normal for the Ministry to hold additional consultations if needed, and meetings and inspections are also usually carried out. When the Ministry has made an appeals decision, the licence decision will be final.

When facilities that produce renewable energy pollute, an emission/discharge permit is required from the pollution authorities, a permit which comes in addition to the licence mentioned above. For example, district heating plants will in some cases require an emission permit according to Section 11, first subsection of the Pollution Control Act, a quota permit according to Section 11, second subsection and a permit according to the Energy Act.

In 2012, an exemption from the main rule will be introduced entailing that the authority to make licence decisions according to the Energy Act lies with the NVE. The decision authority in cases regarding power lines of 300 kV and 420 kV and over 20 km that are covered under the impact assessment regulations will be transferred to the King in Council, cf. White Paper No. 14 (2011-2012) "*We are building Norway – development of the power grid*". Decisions made by Royal Decree cannot be appealed. For these matters, the NVE will send a recommended decision to the Ministry of Petroleum and Energy, while the Ministry prepares the case for the King in Council. Other changes slated for cases regarding major power lines involve making the grid company responsible for carrying out an external quality assessment

of its concept choice, as well as introducing early political involvement by submitting the concept choice and needs assessment to the Ministry of Petroleum and Energy before the case is reported.

- (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:**

#### **Legislation that is relevant for planning and licence processing of energy facilities**

Licences for developing new energy facilities within hydropower, wind power, power lines and district heating are granted in Norway primarily through licence processing which is carried out by the energy authorities at a national level, cf. the description of the different authorities' roles and expertise in 4.2.1 b). A number of statutes are relevant for planning and licence processing of energy facilities. The most relevant statutes are discussed below:

##### *The Industrial Licensing Act*

If the developer does not already own the waterfall that will be utilised in a hydropower plant, the developer must gain possession of the waterfall. Acquisition of property rights of a waterfall or other rights over waterfall requires a licence or decision according to the Act relating to acquisition of watercourses, etc. of 14 December 1917, No. 16 (Industrial Licensing Act) if the waterfall is expected to produce more than 4 000 natural horsepower when regulated. This limit is so high that small hydropower plants under 10 MW without regulation facilities will not be included by the act. In the Industrial Licensing Act there are e.g. obligatory basic conditions relating to licence fees and compensation in the form of power to the host municipality for electricity production. This condition entails that the municipality and alternatively the county municipality will have a right to extract 10 per cent of the produced power at cost. It is also empowered to impose conditions out of consideration to the environment and local communities.

##### *The Watercourse Regulation Act*

To establish hydropower plants with a regulating reservoir, a permit pursuant to the Act relating to regulation of watercourses of 14 December 1917, No. 17 (the Watercourse Regulation Act) is needed. The Watercourse Regulation Act includes regulations that balance the rate of flow in a watercourse over the year, typically through storage of water, and transfer of water from one watercourse to another. The Act, for all intents and purposes, provides authority to impose on the concessionaire the same terms as in the Industrial Licensing Act. In addition, special terms can be set to reduce the damage in the watercourse as a result of the regulation. Separate terms can be set relating to e.g. establishment of a fish fund if the regulation results in damage to the fish population in a watercourse. Manoeuvring rules are also determined and contain provisions relating to minimum release and rules relating to what water volumes can be released at different times during the year.

The terms in the oldest regulation licences can be revised 50 years after the licence was granted. In any event, revision can take place 30 years after an amendment in 1992. The NVE determines whether a revision should take place after a municipality or other party which represents the interests of the general public have demanded a revision of terms. The NVE

can also choose to open revision independently if there are indications that this is necessary. The revision access primarily provides opportunities for stipulating new terms for correcting environmental damage that occurred as a result of the regulations.

In regulation licences there is an order relating to compensation in the form of power to the host municipality for electricity production and relating to payment of an annual licence tax to the State and the municipality(ies) in which the watercourse is located. The size of the tax is calculated according to the volume of the power increase as a result of the regulation. Furthermore, it is possible to stipulate terms regarding a business development fund for the municipality when the licence is granted.

### *The Water Resources Act*

Even if a power developer already owns the waterfall rights, and does not want to regulate the watercourse, any encroachment in the watercourse necessary to utilise the power will normally require a special permit according to the Act relating to river systems and ground water of 24 November 2000, No. 82 (the Water Resources Act). The Water Resources Act is a general act which applies to all types of encroachments in watercourses. The purpose of the act is to ensure socially responsible use and management of watercourses and ground water. The main criterion for granting a permit for developing projects is that the advantages of the project exceed the damage and disadvantages for the general public and private interests that are affected in the watercourse or drainage basin. Terms can also be stipulated according to this act with the objective of compensating for and alleviating the damage caused by the project in the watercourse. Some micro and mini power plants and expansions of existing plants can have such insignificant effects that they could be licence-free. A developer can have the licence duty pre-assessed by the NVE.

### *The Energy Act*

Construction and operation of wind power plants, district heating plants and power transmission and conversion plants are included under the Act relating to the generation, conversion, transmission, trading, distribution and use of energy, etc. of 29 June 1990, No. 50 (the Energy Act) cf. Section 1-1. Facilities for generation, conversion, transmission and distribution of electricity cannot be built, operated or owned without a licence, cf. Section 3-1. This applies if at least one of the electrical components in the facility has voltage over 1 kV, cf. Section 3-1 of the Energy Act Regulations. The licence scheme not only includes new facilities, but also modification or expansion of existing facilities. The licence processing takes a basis in the Energy Act's mission provision in Section 1-2, which stipulates that generation, conversion, transmission, trading, distribution and use of energy must take place in a socially efficient manner, including taking general public and private interests into consideration. This entails that in the licence processing according to the Energy Act, all advantages and disadvantages of the measure must be weighed against each other. Licences are granted to projects that are generally considered socially efficient.

### *The Expropriation Act*

When building an energy facility, the developer must acquire the necessary land rights and rights for the facilities. This can either take place through voluntary agreements or expropriation. When the developer applies for a licence, it will often be applied for an

expropriation permit at the same time in the event such voluntary agreements cannot be achieved with affected landowners and licensees.

Provisions relating to expropriation and advance possession are laid down in the Act relating to expropriation of real property of 23 October 1959, No. 3 (Expropriation Act). Consent can only be granted for expropriation if it is likely that the project will, without doubt, result in greater advantages than disadvantages. If the developer cannot achieve amicable agreements with affected landowners and licensees, expropriation is implemented through a subsequent discretionary judgement case before the courts, for determining possible compensation for the expropriation measure. If the construction work needs to start before such a discretionary judgement has been rendered, the developer can apply for advance possession.

The Watercourse Regulation Act contains specific provisions regarding expropriation for regulation purposes.

### *The Planning and Building Act*

Energy production facilities are covered under the planning provisions in the Act relating to planning and building matter processing of 27 June 2008, No. 71 (Planning and Building Act). There is no regulation duty for energy production facilities for which licences are required, but a municipality can choose to prepare such a plan, cf. Section 12. If the applicable plan hinders implementation of the project, plan changes can be carried out, exemption can be granted according to Section 19, or a licence can be made effective as a public land use plan, cf. Section 6.

For central and regional grid facilities, transformer stations and other major power lines that require a facility licence according to the Energy Act, only the provisions relating to impact assessment (Chapter 14) and relating to localised information (Chapter 2) apply.

There is no requirement for a building permit according to the Planning and Building Act for projects subject to a licence under energy and watercourse legislation, including district heating plants. The exemption for municipal building matter processing includes grid facilities for which licences are required, including those built in pursuance of area licensing, cf. Section 4-3, litera c) of the Building Regulations. For energy production facilities that are exempt from building matter processing according to the Building Regulations, the provisions in Section 29-5 (Technical requirements) and Section 29-7 (Requirements for products for structures) with associated parts of the technical building regulations, if relevant, still apply. Buildings and associated infrastructure for electricity and heat production that do not fall under the exemptions mentioned above, such as office buildings, are processed according to the Planning and Building Act.

County municipalities are encouraged to prepare regional plans for wind power plants and small hydropower plants. There are guidelines from the Ministry of the Environment and the Ministry of Petroleum and Energy for preparation of such plans.

The regulations relating to impact assessments under the Planning and Building Act stipulate requirements for impact assessments and processing rules when planning energy production facilities and power lines exceeding specific sizes.

### *The Pollution Control Act*

The Act relating to protection against pollution and relating to waste of 13 March 1981, No. 6 (the Pollution Control Act) shall protect the environment against pollution and reduce existing pollution. The Pollution Control Act has a general prohibition against polluting emissions/discharges, but allows for enterprises to apply to the environmental authorities for emission/discharge permits. When facilities that produce renewable energy pollute, a permit from the pollution authorities is required.

For example, incineration facilities with clean fuels with a nominal added thermal effect of more than 50 MW, need a special permit from the pollution authorities according to Section 11, first subsection of the Pollution Control Act, cf. Section 27-2, first subsection of the Pollution Regulations. Solid biofuel is considered clean fuel in this context. For smaller facilities with a nominal added thermal effect from 1 up to and including 50 MW, the requirements emerge directly from Chapter 27 of the Pollution Regulations. However, the pollution authorities can also require a special permit from facilities with a nominal thermal effect of less than 50 MW, if required due to special conditions.

For facilities that produce renewable energy with more than 20 MW energy produced, a special permit for CO<sub>2</sub> emissions subject to quotas is generally needed according to Section 11, second subsection of the Pollution Control Act, cf. Section 4 of the Act relating to greenhouse gas emissions allowance trading and the duty to surrender emission allowances of 17 December 2004, No. 99 (Greenhouse Gas Emission Trading Act). However, the quotas do not apply for emissions from combustion of biomass and from energy production when incinerating hazardous waste and when incinerating waste in waste incineration plants as defined in Section 10-3, litera e of the Regulations of 1 June 2004, No. 930 relating to recycling and waste handling (Waste Regulations). However, such waste incineration plants still need a permit according to Section 11, first subsection of the Pollution Control Act, cf. Section 29, cf. Section 10-4 of the Waste Regulations.

As regards development of hydropower plants, the basis according to the Pollution Control Act is that “normal pollution from temporary construction activity” is permitted, cf. Section 8, first subsection, No. 3 of the Pollution Control Act. To the degree the development involves extraordinary pollution (depends on type, scope and effects), or it cannot be considered temporary, a permit is required according to Section 11 of the Pollution Control Act. This could typically be the case where the recipient is particularly vulnerable. The County Governor has the authority for such temporary construction activity.

### *The Nature Diversity Act*

Chapter II of the Act relating to the management of biological, geological and landscape diversity dated 19 June 2009, No. 100 (the Nature Diversity Act) contains provisions regarding how administration should facilitate a good decision basis when decisions that affect nature diversity are being made, founded in other legislation. Licences for wind power, hydropower and power from other renewable sources and new power lines could affect nature diversity, and must therefore be considered in line with these provisions so it takes place in a manner which does not conflict with the management goals for ecosystems, types of nature and species.

The principles in Sections 8-12 must be used as a basis as guidelines in exercise of discretion. How the principles are assessed and emphasised must emerge from the decision, cf. Section 7, second sentence.

### *The Cultural Artefacts Act*

The Act relating to cultural artefacts of 9 June 1978, No. 50, (the Cultural Artefacts Act) has the purpose of ensuring the protection of cultural artefacts and cultural environments. Cultural artefacts from before 1537 and Sami cultural artefacts more than 100 years old are automatically protected, cf. Section 4 of the Cultural Artefacts Act. When planning public and major private projects, Section 9 of the Act requires the developer to investigate whether the project interferes with automatically protected cultural artefacts in such a manner as discussed in Section 3 of the Act. If there is a conflict, exemption must be applied for, cf. Section 8 of the Act. The developer must cover the expenses of archaeological investigation, cf. Section 10. Newer cultural artefacts and cultural environments can be protected through administrative decisions, cf. Sections 15, 19 and 21 of the Act.

### *The Public Administration Act*

The Act relating to procedure in cases concerning the public administration of 10 February 1967 (the Public Administration Act), stipulates a framework for how the authorities' processing should take place. The Act contains general rules regarding the processing of decisions, etc. and supplements the special processing rules in the special laws, for instance in the Energy Act and the Expropriation Act.

### *The Reindeer Husbandry Act*

According to Section 22 of the Act relating to Reindeer Husbandry of 15 June 2007, No. 40, it is prohibited to close migration routes. This includes not only complete blockage of routes, but also restrictions of and construction near routes, as well as any disturbances involved with building the measure which can be included under the provision if this hinders herding the reindeer along the migration route. This must be assessed in each individual case. The Ministry of Agriculture and Food can grant consent for re-routing migration routes and opening new migration routes. However, migration routes can be affected and potentially closed in connection with more extensive projects when the preconditions for expropriation are present.

If the reindeer cannot be practically herded past an energy facility or underneath a power line which crosses a migration path, the developer may be obligated to compensate any damage, or potentially implement remediating measures out of consideration to the reindeer husbandry, determined by the licensing authority following prior consultations with the Sami Parliament and the affected reindeer migration district, see Procedures for consultations between State authorities and the Sami Parliament dated 11 May 2005.

### *The Sea Energy Act*

The Act relating to renewable energy production at sea of 4 June 2010, No. 21 (the Sea Energy Act) governs renewable energy production, as well as conversion and transmission of electricity at sea. The act stipulates that the right to utilise renewable energy resources at sea belongs to the State, cf. Section 3-1. The act applies in Norwegian sea territories outside the base line and on the continental shelf, but provisions in the act can also be made effective for inland waters. Establishment of facilities for production, conversion or transmission of power



in the scope of the act requires a licence, see Chapter 3 of the Act. The main rule for establishment of offshore power production facilities is that this can only be applied for following a prior impact assessment conducted by the State, see Sections 3-1, final subsection and 3-2, final subsection, with subsequent decision by the King in Council relating to opening areas for licence applications, see Section 2-2. However, exemptions from this main rule can be made for temporary pilot projects or similar, cf. Section 2-2, fourth subsection. Furthermore, facilities within the base line can be processed for licences according to the Energy Act.

### *The Electricity Certificate Act*

Norway and Sweden have entered into an electricity certificate cooperation, cf. discussed in more detail in 4.3. The collaboration is regulated in an agreement between Norway and Sweden relating to a joint market for electricity certificates dated 29 June 2011. The electricity certificate system entered into force in Norway on 1 January 2012 and is regulated through the Act relating to electricity certificates (Act of 24 June 2011, No. 39). The Regulations relating to electricity certificates (Regulations of 16 December 2011, No. 1398) stipulate more detailed provisions regarding how the scheme should work. Owners of facilities for power production based on renewable energy sources, which fulfil the requirements in the Electricity Certificate Act, can be issued one electricity certificate for each megawatt hour (MWh) of produced electricity. The electricity certificates are issued for a period of 15 years. Facilities where construction started after 7 September 2009 (or 1 January 2004 for hydropower plants up to 1 MW) are included under the scheme. The facilities must be operational by 31 December 2020 to receive electricity certificates. The scheme will terminate on 1 April 2036 with annulment of electricity certificates for 2035.

### *Relevant regulations for planning and licence processing of energy facilities*

A selection of the most important regulations within energy and water resources management is listed below. A considerable number of these regulations are founded in the Energy Act, which is a framework law. Monopoly control necessitates strong regulation. There are also extensive regulations within water resource management. Safety and preparedness in watercourses necessitates this.

- Act relating to the generation, conversion, transmission, trading, distribution and use of energy etc., of 7 December 1990, No. 959
- Regulations relating to the system operation in the power system, of 7 May 2002, No. 448
- Regulations relating to measurement, calculation and coordinated actions for sale of power and invoicing grid services, of 11 March 1999, No. 301
- Regulations relating to financial and technical reporting, revenue ceiling for grid activities and tariffs, of 11 March 1999, No. 302
- Regulations relating to contingency planning in the power supply system, of 16 December 2002, No. 1606
- Regulations relating to quality of supply in the power system, of 30 November 2004, No. 1557

- Regulations relating to expertise requirements, etc. for construction and area concessionaire, of 10 March 2011, No. 263
- Regulations relating to rental of hydropower plants, of 25 June 2010, No. 939
- Regulations relating to safety of watercourse facilities, of 18 December 2009, No. 1600
- Regulations relating to adjustment of licence fees, annual compensation and funds, etc. in pursuance of the watercourse legislation of 4 December 1987, No. 945
- Regulations relating to internal control according to the watercourse legislation of 28 October 2011, No. 1058
- Regulations relating to framework for water administration, of 15 December 2006, No. 1446
- Regulations relating to who should be the watercourse authority according to the Water Resources Act of 15 December 2000, No. 1270
- Regulations relating to impact assessments, of 26 June 2009, No. 855
- Regulations relating to guarantees of origin for electricity production, of 14 December 2007, No. 1652
- Regulations relating to electricity certificates, of 16 December 2011, No. 1398
- Regulations relating to pollution restriction, of 1 June 2004, No. 931
- Regulations relating to recycling and waste handling, of 1 July 2004, No. 930

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

Licensing bodies:

The authority to grant licences for the different types of facilities for development of production and transmission of renewable energy is distributed as follows:

- *The Norwegian Water Resources and Energy Directorate:* Authority to make licence decisions for power transmission grids with the exception of the largest power lines<sup>24</sup>, wind power plants, district heating plants, hydropower plants between 1-10 MW, as well as hydropower plants under or equal to 1 MW in protected watercourses. NVE also has the authority to make decisions in cases regarding assessment of licence requirements according to the Water Resources Act. Clarifications/exemptions:
  - *County municipalities:* Authority to make decisions in cases regarding hydropower plants up to 1 MW based on recommendations from the NVE. The exemption is hydropower plants in protected watercourses.
  - *Municipalities:* As a local planning authority, the municipalities, according to the Planning and Building Act, process cases regarding transmission lines and

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<sup>24</sup> In 2012, the authority to make licence decisions in matters regarding power lines of 300 kV and 420 kV and over 20 km that are included under the impact assessment regulations will be transferred from NVE to the King in Council, cf. Storting White Paper No. 14 (2011-2012).

small wind turbines under 1 kV and small hydropower plants where the NVE has granted an exemption for a licence requirement according to the Water Resources Act.

- *The Ministry of Petroleum and Energy:* Authority to make decisions in complaints regarding licences for power transmission facilities, wind power plants, district heating plants, hydropower plants under 10 MW and licence requirement assessments of hydropower plants.
- *The King in Council:* Licence decisions in hydropower matters over 10 MW, as well as hydropower plants that need a licence according to the Act relating to regulation of watercourses and/or the Industrial Licensing Act. In 2012, the authority to make licence decisions in matters regarding power lines of 300 kV and 420 kV and over 20 km, that are covered under the impact assessment regulations will be transferred from the NVE to the King in Council, cf. White Paper No. 14 (2011-2012).
- *The Storting:* Major or controversial regulation and hydropower development cases are submitted to the Storting for consent in the form of a Storting proposition before the licence is formally granted by the King in Council.

*Other authorities with roles associated with licensing matters:*

*The Ministry of the Environment*

The Ministry of the Environment has primary responsibility to ensure the consistency in the Government's environmental and climate policies. The Ministry is the highest authority in matters subject to e.g. the planning part of the Planning and Building Act, the Nature Diversity Act, the Pollution Control Act and the Cultural Artefact Act. The Directorate for Cultural Heritage, the Directorate for Nature Management and the Climate and Pollution Agency are underlying agencies under the Ministry of the Environment.

*The Directorate for Cultural Heritage*

The Directorate for Cultural Heritage is an advisory and executive body for the management of cultural artefacts and cultural environments. The Directorate for Cultural Heritage has decision authority for protection and exemption from automatic protection. It also has the authority to lodge objections under the Planning and Building Act. The Directorate for Cultural Heritage is also responsible for providing guidance in different planning and environmental matters that pertain to their discipline. The Directorate for Cultural Heritage has delegated the responsibility for giving consultation statements in connection with licence applications for energy facilities to the county municipalities.

*The Directorate for Nature Management*

The Directorate for Nature Management is a consultation body in planning cases and cases under the regulations relating to impact assessments. The Directorate is also responsible for providing guidance vis-à-vis the municipalities. The Directorate for Nature Management is also a consultation body for licence applications for new energy facilities.

In watercourses with anadromous fish such as salmon and trout, the Directorate for Nature Management is also responsible for audits and inspection with follow up of nature management conditions in certain licences, and can potentially issue new orders within the framework of given nature management conditions in the licence terms for hydropower plants.

#### *The Climate and Pollution Agency*

Authority to issue permits according to the Pollution Control Act, where the authority is not delegated to the County Governor.

#### *The County Governor*

The County Governor participates in planning processes according to the Planning and Building Act, e.g. through providing consultation statements, providing guidance and lodging objections.

The County Governor has authority to prepare suggestions for terms according to the Pollution Control Act in watercourse regulation cases. They process licence applications according to the Pollution Control Act in the construction phase for new hydropower plants. Applications for a permit according to the Pollution Control Act for potential permanent pollution from new hydropower plants are approved/rejected by the Climate and Pollution Agency or the Ministry of the Environment.

The County Governor as a regional administrative authority is a consultation body in licence applications for new energy facilities, as well as during assessment of licence requirements (exemption from licence) for small hydropower plants.

The County Governors are responsible for supervision and inspection with follow up of nature management conditions in certain licences in watercourses without anadromous fish (i.e. when this is not subject to the Directorate for Nature Management, cf. above), and can potentially issue new orders within the framework of certain conditions regarding nature management in the licence terms for hydropower plants.

#### *The County municipalities and the Sami Parliament*

The county municipalities and the Sami Parliament are the regional cultural artefact administration and are subject to the Directorate for Cultural Heritage's expertise. The county municipalities and Sami Parliament are responsible for follow-up of the developer's investigation duty associated with automatically protected cultural artefacts. They are also responsible for safeguarding national and regional cultural artefact interests in development cases according to the Planning and Building Act and the energy and watercourse legislation. Certain county municipalities are also river basin district authorities according to the EU's Water Framework Directive.

#### *Public agencies with right of objection according to Section 2-1 of the Energy Act*

Municipalities, county municipalities, the Sami Parliament and State agencies and other State authorities also have a right of objection in applications for a construction licence according to Section 2-1 of the Energy Act.

### *The Ministry of Agriculture and Food*

The Ministry of Agriculture and Food is responsible for agriculture and food policy and is the highest authority for regulations relating to agriculture and forestry, including the Land Act and the Forestry Act, etc. which are important as regards energy raw materials from agriculture areas. Key goals for the agriculture and food policy include food safety, agriculture throughout the country, increased value creation and sustainable agriculture.

### *The Norwegian Agricultural Authority*

Handles directorate tasks for the Ministry of Agriculture and Food. The Norwegian Agricultural Authority is a competent authority which ensures comprehensive management of policy instruments throughout the country and value chain. For example, the Authority administrates a scheme of subsidies for using forest raw materials for wood chip and energy production.

### *Consultation procedures*

As indigenous peoples, the Sami have a right to be consulted in matters where consideration is given to introducing measures that could have a direct significance for them. Such consultations must take place in good faith and with the goal of achieving agreement. This right is stipulated in ILO convention No. 169 relating to indigenous peoples and tribal communities in independent states, Article 6. The *Agreement on procedures for consultations between public authorities and the Sami Parliament* dated 11 May 2005, stipulates more detailed procedures for how the consultations with the Sami Parliament should take place. The agreed procedures are, through Royal Decree, upheld to apply for the entire public administration. Public authorities may also have a duty to consult with other Sami interests in addition to the Sami Parliament. This particularly applies in matters that directly affect Sami industries, such as reindeer husbandry.

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

Norway has long experience with developing renewable energy, and nearly all of our electricity production is based on renewable sources. Ensuring good processes with sufficient progression has been and therefore continues to be a key consideration. Establishment of energy facilities is necessary and important, but can impact many interests and may be controversial. Thorough processes which ensure good involvement of affected parties are therefore important, at same time as it is crucial to ensure that requirements and processes associated with licence processing are reasonable and necessary and that the progression is sufficient to achieve the goals set by the Government for renewable development. The Government has planned measures to strengthen grid access and make licence processing more efficient in the future. Measures implemented in recent years to strengthen and make licence processing efficient include:

- The processing for small hydropower plants under 10 MW installed capacity was simplified in 2004. The licensing authority was delegated from the Ministry of Petroleum and Energy to the Norwegian Water Resources and Energy Directorate, a

requirement for separate assessment according to the Master hydropower plan was removed and it is now permitted to clarify connection to the distribution grid locally. This resulted in a considerable increase in the number of licences awarded to small power projects, and also reduced processing time.

- Up to 2009, all new energy facilities had to be clarified both according to the Energy Act and Planning and Building Act. Power lines are now exempt from the planning provisions in the Planning and Building Act, and there is also no requirement for preparation of separate regulation plans for new energy production facilities (hydropower and wind power). See discussion under 4.2.1 a). This has contributed to simpler processing, particularly in matters where multiple municipalities are involved.
- Strengthened coordination between licence processing of grids and production has been introduced. This ensures the projects that receive licences can clarify possible grid connection, to the extent possible. Odelsting Proposition No. 62 (2008-2009) also introduced a requirement for grid companies to connect new production, also if new investments are required. The exemption from this connection requirement applies if the new power plant and the necessary grid connection, in total, are not considered socioeconomically profitable. In such cases, the grid company can apply to the NVE for an exemption from the connection requirement.
- Prioritisation criteria have been introduced for wind power licence processing. The criteria are published on NVE's website. NVE coordinates licence processing of wind power projects with necessary grid connection projects. This strengthens the basis for the assessment of the projects, ensures the best projects are processed more quickly and good coordination between the development of new production and grid capacity.
- Guidelines for planning and localisation of wind power plants and guidelines for small hydropower plants were determined in collaboration between the Ministry of Petroleum and Energy and the Ministry of the Environment in 2007. The guidelines, together with improved guideline materials published on NVE's website provide increased predictability for developers that want to adapt their project to existing licensing policy and application content requirements. The guidelines also help county municipalities that want to prepare regional plants that facilitate wind power and/or small hydropower plants.
- White Paper No. 14 (2011-2012) "We are building Norway – development of the power grid" addresses the Government's policy for development of the power grid. It states that the licence processing is well-suited to balance different considerations and to find good solutions that fulfil the grid policy goals. However, the Government proposes changes to strengthen early involvement of interested parties, clarify political choices and contribute to reduced processing time. The changes are discussed in more detail in 4.2.6 e).
- The case processing capacity in NVE has strongly increased in recent years, and today there are twice as many full-time equivalents within licence processing as in 2005. The case processing capacity within licence and appeals processing in the Ministry of Petroleum and Energy has also been strengthened.

The Government considers the administrative procedures for granting permits for development of production and transmission of renewable energy in Norway, i.e. the licence processing with associated environmental and area clarification procedures, to be in line with Article 13 (1) of the Renewables Directive. However, the Ministry of Petroleum and Energy

continuously assesses the need for further measures and changes to ensure sufficient progress in licence processing.

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

Cf. response in 4.2.1 a), b) and c), licence processing mainly takes place at a national level in Norway. A simplification of the local plan processing of energy projects was conducted in 2009 through changes to the Planning and Building Act, cf. Items 4.2.1 a) and c). This removed the previous potential double processing of projects. However, municipalities still have an important consultation role in licensing matters. Furthermore, municipalities, county municipalities, the Sami Parliament, public agencies and other public authorities have a right of objection in facility licence applications according to Section 2-1 of the Energy Act.

The exception to the rule relating to national energy authority licence processing is decisions in cases regarding licences for hydropower plants under 1 MW that are made by county municipalities based upon recommendations from NVE. This scheme entered into force in 2010 and few cases have been processed under the revised procedure so far. It is too early to evaluate whether there is a potential basis for changing the scheme.

Furthermore, the municipalities process power plants as planning matters according to the Planning and Building Act where the energy authorities have granted exemption from the licence requirement. This processing is already simplified compared with the licence processing, and further simplification is not recommended.

**(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?**

Sufficient progress in the licence processing of energy projects is important based on considerations such as security of power supply, industrial development and renewable energy development. However, energy facilities could be extensive projects that impact multiple parties, cause disputes and create conflicts of interest. Thorough assessments and processing are therefore necessary with close and open involvement locally, regionally and centrally. It is important that the decisions made regarding permits and project design will stand the test of time. The efficiency consideration must be balanced with prudent and engaging planning and licence processes. In such processes, possible consequences must be highlighted well, local populations and stakeholder groups must be consulted and remedying measures must be assessed and ordered.

On this basis, the Government believes there are no unnecessary restrictions or disproportionately stringent requirements within the permit processes for renewable energy. However, reference is made to already implemented measures for efficiency and improvement of the licensing process which is addressed in 4.2.1 c). Furthermore, it is key to ensure assessment requirements stipulated for developers focus on providing information that is relevant to the decision. The Ministry of Petroleum and Energy and NVE continuously assess the need for further measures and changes to ensure sufficient progress in licence processing.

- (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?**

Main characteristics of the procedure for securing a permit for establishment of production or transmission of renewable energy are described in the introduction, and the various authorities' expertise is described under *Licensing bodies* in Item 4.2.1 b) above. As described, the energy authorities (NVE and the Ministry of Petroleum and Energy) are generally responsible for licence processing of energy projects, but other authorities participate as consultation bodies. If a renewable energy production facility pollutes, a permit from the pollution authorities is also required. There are routines for the practical coordination between the authorities and this is considered to function satisfactorily. This system could almost be described as a one-stop-shop.

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

Requirements for licence applications for new energy facilities are stipulated in the Water Resources Act, the Energy Act and the energy regulation, and are also clarified in various guidelines and templates from NVE which are e.g. available on the Directorate's website.

Applicants can also receive guidance by contacting NVE. On the website you can also read decisions made in similar cases and thus gain an overview of the existing practice. Guidelines for small hydropower plants stipulated by the Ministry of Petroleum and Energy and guidelines for planning and localisation of wind power plants stipulated by the Ministry of the Environment and Ministry of Petroleum and Energy also provide information for developers regarding how the environmental and energy authorities balance different considerations.

There are also a number of consultant firms with experience from many renewable energy projects. Such companies are used by most developers. The regelhjelp.no website is another tool to gain an overview of relevant legislation for developers.

As a contribution to promote development of renewable power production, the energy authorities, through NVE, have prepared, published and updated knowledge regarding the resource potential for energy production development, particularly for hydropower, wind power and bioenergy. For wind power, wind resource maps have been developed which have e.g. been used for regional plans developed by county authorities, which highlight areas of opportunity for the developers. For hydropower project developers, the authorities have prepared and published resource maps and guidelines that include a cost estimate for introductory studies, advice regarding hydrology and environmental measures, description of the licensing process, licence application requirements and information regarding relevant regulations. The guideline material is regularly updated to build expertise regarding the technology and cost development.



Norwegian authorities are strongly involved in research and development projects in collaboration with the industry. The administration's active role as a communicator of knowledge and guidelines has had a significantly positive impact on the developers' ability to make investment decisions.

- (h) How is horizontal coordination facilitated between different administrative bodies, responsible for the different parts of the permit? How many procedural 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?**

Main characteristics of the procedure for securing a permit for establishment of production or transmission of renewable energy are described in the introduction, and the various authorities' expertise is described under *Licensing bodies* in Item 4.2.1 b). See also Item 4.2.1 f) regarding coordination between different authorities.

As described in the introduction, there are normally two or three steps depending on whether the licence decision is appealed in large projects where a report is required according to the impact assessment regulations. For smaller projects such as district heating and hydropower plants under 10 MW, there are one to two steps depending on whether the licence decision is appealed.

The Norwegian licence processing system can almost be described as a "one-stop shop" with NVE as the central authority for all or significant parts of the processing. Developers do have to contact multiple authorities within different topics, but this is primarily to acquire information for the application and for making small adaptations in the project. One of the strengths of the system is that NVE is a licensing authority for both production and grids. This contributes to good coordination between production and transmission capacity permits. NVE looks at licence applications regarding new production in connection with available grid capacity in the area, and where necessary, the licence processing of production projects and associated necessary grid reinforcements are coordinated.

There is a need for coordination where the location of planned or existing energy facilities and protected areas according to the Nature Diversity Act overlap. Where protection is suggested in an area with planned or existing energy facilities, there will often be attempts to limit the protected area so this type of installation is no longer located inside the protected area. If such installations are still located inside the protected area, an opening will be added to the protection regulations for maintenance and potential upgrades. If an application is submitted for establishment of new energy facilities in an existing protected area, an application for exemption from the protection guidelines according to Section 48 of the Nature Diversity Act must also be submitted. The competent authority can make exemptions from a protective decision if this does not conflict with the purpose of the decision and cannot significantly impact the protected values, or if safety considerations or significant public interest considerations necessitate this.

The time spent on licence processing can vary considerably between projects, depending on e.g. the degree of conflict, private-law factors, the municipality's planning processing, coordination of multiple applications in the same area, season for inspections and the number of applications. The processing time also depends on whether NVE's licence decision is appealed. Applicants receive information regarding when they can expect their application to

be processed, and NVE's website has an overview of projects at various processing stages distributed by type and geographical area.

A review of some of the more recent cases in which the NVE has made a decision shows that the average effective processing time (from when the report is submitted for consultation until the impact assessment programme has been determined, as well as from when the application is submitted for consultation until a decision has been made by NVE) is around three years for major hydropower plants, wind power plants and power lines. In addition, the developer spent 1-2 years preparing a licence application and carrying out assessments. In addition, there will be any final licence processing or potential appeals processing in the Ministry of Petroleum and Energy. Major projects can thus typically take about 6-7 years in total. For minor projects such as small hydropower plants and small power lines, licence processing in NVE can typically take between 1-3 years, but a significant influx of applications means that there could be some wait time before the applications can be processed. District heating applications can often be processed in about six months. In addition, the time spent is impacted by whether or not the decisions are appealed, but the percentage of appeals is significantly lower for smaller projects than for larger ones.

- (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 described in the introduction to 4.2.1, the licence processing is both formally adapted and adapted as regards content to the various types of technology and cases. See also the overview of which authority levels have decision expertise for the different cases in Item 4.2.1 b). Both process and degree of detail requirements in assessments are adapted to the case type, and smaller projects are subject to simpler procedures than more extensive projects.

- (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 procedural 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?)**

Connection of small installations that produce electricity to low voltage installations in connected buildings is normally permitted. Small-scale, decentralised facilities such as solar panels, bio-boilers and small wind turbines do not require licence processing as long as each component has lower voltage than 1 kV. They are processed by the municipalities in the same manner as building permits for buildings.

Minor projects in buildings are exempt from the application requirements according to the Planning and Building Act as they are in compliance with existing, municipal plans in the area. The municipalities can also exempt other minor measures from the application requirements if needed. There are no designated rules for small-scale installations for renewable energy in buildings (solar heating installations, solar cell panels, bioenergy boilers, etc.). The rules with guidelines can be found on the Norwegian Building Authority's website, which is the public agency, expertise centre and central authority for the building part of the Planning and Building Act.

The municipalities' planning and building authorities can provide more detailed guidelines regarding planning and procedures in their municipality. The rules that apply in each municipality must be made available to the public by the municipality and can usually be found on the municipality's website. There are somewhat different practices in the municipalities for how such cases with small renewable energy installations are processed.

- (k) Where are the fees associated with applications 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?**

There are no fees to the state for processing licence applications according to the energy and watercourses legislation. NVE's environmental audits of the facilities during the construction process and approval with conclusion are financed through fees (at cost).

The municipalities' processing of building matters according to the Planning and Building Act for new structures/constructions and modifications is based on full cost and is financed through fees. The level is determined in each municipality. Municipalities can choose to impose lower fees for processing of renewable energy facilities. For instance, in some municipalities (Oslo and Drammen) there is no charge when applying for installation of a solar collector on facades. Fees are published by each municipality.

- (l) Is official guidance available to local and regional administrative bodies on planning, designing, building and refurbishing industrial and residential areas to install equipment 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?**

Enova offers guidance and energy advice via the "Ask Enova" service, where professionals, including public entities, can receive energy advice and tips, order booklets and publications, or receive information regarding Enova's programmes for different target groups.

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

Executive officers within licence processing firstly need formal higher education, and, following employment in NVE or the Ministry of Petroleum and Energy, are trained within their respective discipline. NVE has a relatively large expert environment within each case type which trains new employees.

#### **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 general, the regulations that apply for receiving a permit for development must also be fulfilled to receive support.

When awarding support in areas where there are standard requirements in the legislation, for instance building regulations, the support recipient must carry out measures that are more ambitious than the standard. This applies to Enova's subsidy programmes, basic loans through the Norwegian State Housing Bank and to support for facilities, equipment and work through Innovation Norway's bio energy programme.

The support programmes' programme criteria also constitute a kind of restriction, or in other words a quality delimitation. For instance, there will be demarcations as to what kinds of projects are eligible for support for local heating plants. There is a restriction in the electricity certificates system as regards facilities with electrical production based on renewable energy. To participate in the programme, the facility must have started construction after 7 September 2009, it must be renewable according to the definitions in the Renewables Directive and must have been built in compliance with licences, licence terms or preconditions for exemptions from licence requirements.

The *Scheme on support for alternative, renewable heating and electricity savings in private households administered by Enova* lists specific technical quality requirements. The following quality standards must be satisfied in order for a measure to qualify for grants:

##### **Pellet stoves**

- The stove must have at least 80 per cent efficiency and a control system with the option of a week programme.
- The stove must have a nominal heat output and a storage tank for pellets which enables constant operation for at least 24 hours with a normal pattern of operation. It must be documented that the product satisfies the requirements in the technical regulations with for instance a Scandinavian user manual and installation instructions adapted to Norwegian building traditions.

##### **Pellet boiler**

- Subsidies are granted to complete boiler systems with a new boiler, burner, feeding system and pellet storage tank.
- The boiler system must have at least 15 kW output for heating water.
- It must be documented that the product satisfies the requirements in the technical regulations with e.g. a Scandinavian user manual and installation instructions adapted to Norwegian building traditions.

##### **Central heating control system**

- There must be a central heating control system for electricity or water-based heating solutions
- The control system must be capable of handling at least three temperature zones independently of each other

- Settings must not be deleted in the event of power outages or voltage drops.

#### **Solar collector**

- The solar collector solution must be integrated with the residence's solution for heating tap water and potentially the room heating solution.

#### **Heat pump (air/water and liquid/water)**

- The cooling medium must be an HFC type or natural cooling media.
- The heat pump solution must be CE-labelled.
- The total system must satisfy the requirements in standard NS-EN 14511-4.

### **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:**

A number of national provisions promote the use of renewable energy in buildings. Several parts of the legislation are relevant to influence the development. The legislation is directed at the actual buildings with requirements for energy efficiency and energy supply, the municipalities' duties and rights in planning processes and energy suppliers.

Relevant provisions include:

- Section 27-5 of the Planning and Building Act relating to *District heating plants*:  
<http://www.lovdato.no/all/hl-20080627-071.html#27-5>
- Section 29-5 of the Planning and Building Act relating to *Technical requirements*:  
<http://www.lovdato.no/all/tl-20080627-071-038.html#29-5>
- Section 14-7 of the Technical Building Regulations relating to *Energy supply*:  
<http://www.lovdato.no/cgi-wift/ldles?doc=/sf/sf/sf-20100326-0489.html#14-7>
- Section 14-8 of the Technical Building Regulations relating to *District heating*:  
<http://www.lovdato.no/cgi-wift/ldles?doc=/sf/sf/sf-20100326-0489.html#14-8>
- The Energy Act with associated regulations contains provisions relating to energy rating of residences and buildings, as well as energy assessment of technical systems in buildings. <http://www.lovdato.no/all/nl-19900629-050.html>. For a more detailed description of these provisions, reference is made to item i), see Chapter 8 of the Energy Act, cf. regulations relating to energy rating buildings and energy assessment of technical systems, of 18 December 2009, No. 1665.
  - The Energy Act contains provisions relating to licences for developing district heating plants, see Sections 1-1 and 1-3; see Item 4.2.1 a) above.
  - According to Section 10-6 of the Energy Act, the grid companies are required to make energy assessments for each municipality, cf. Sections 9 and 10 in the regulations relating to energy assessments of 16 December 2002, No. 1607.

- Royal Decree dated 14 September 1998 relating to requirements for energy flexible heating systems in public buildings, as well as in private buildings that are being leased to the State.

**(b) Responsible Ministry(ies) / authority(ies):**

A number of ministries and agencies have tasks, instruments and measures that impact energy consumption in the residences and buildings sector. The most central of these are:

- *The Ministry of Local Government and Regional Development* is responsible for the building part of the Planning and Building Act with associated regulations.
- *The Norwegian Building Authority (DIBK)* is an expertise centre for construction rules and helps the Ministry develop regulations.
- *The Norwegian State Housing Bank* can grant basic loans for building new residences or improving existing residences and certain other buildings. There are more stringent energy requirements for basic loans than applicable regulations.
- *The municipalities* are the authority in local building matters and can implement audits to ensure compliance with the construction rules.
- *The Ministry of Government Administration and Reform* has overall responsibility for public construction activity and administration of public property. Through the underlying agencies Difi (the Agency for Public Management and eGovernment) and Statsbygg (Public Construction and Property Management) in particular, the Ministry of Government Administration and Reform has a key position in the environmental efforts associated with the State's own buildings.
- *Several other ministries* are responsible for new construction and administration of public property through their underlying agencies. Some examples include the Ministry of Defence (Norwegian Defence Estates Agency) and the Ministry of Health and Care Services (health authorities).
- *The Ministry of Petroleum and Energy* is responsible for the Energy Act with regulations and is the supervisory body for Enova SF's administration of the Energy Fund.
- *The Norwegian Water Resources and Energy Directorate (NVE)* is responsible for the energy rating regulations.
- *The Ministry of the Environment* is responsible for the planning part of the Planning and Building Act and State planning guidelines.

**(c) Revision of rules, if any, planned by: [date]**

White Paper No. 21 (2011-2012) *Norwegian climate policy* emphasises that the Government will sharpen the energy requirements in technical building regulations to a passive house level in 2015 and nearly zero energy level in 2020. The Government will subsequently determine provisions that define the passive house level and nearly zero energy level. A decision regarding the requirement level must be made based on assessments of socioeconomic and health-related consequences and the expertise in the construction industry. A date for revision of relevant provisions has not been determined.

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

Municipalities can impact energy consumption in buildings in multiple areas. Municipalities and grid companies are also subject to planning duties.

### *Local energy assessments*

Grid companies must update and publish energy assessments for each municipality in the licence area at least every two years. The concessionaire must also invite all relevant energy players, local media and other stakeholders in the municipality to a meeting regarding the energy assessment. The main objective of energy assessments is contributing to socially efficient and environmentally-friendly energy system development. Local energy resources and consumption development are of particular interest in the assessments. The plans will be included as a basis for power system planning and are used when preparing municipal climate and energy plans.

### *Municipal climate and energy plans*

On 4 September 2009, the Ministry of the Environment adopted State planning guidelines for climate and energy planning in the municipalities through Royal Decree. The guidelines entail that the municipalities must incorporate measures and instruments to reduce greenhouse gas emissions, and ensure more efficient energy consumption and environmentally-friendly energy conversion in their municipal plans or separate municipal sector plans. Revision of plans dealing with climate and energy matters must be considered regularly and at least every four years. It could be relevant for two or more municipalities to cooperate on their climate and energy planning, cf. Section 9-1 of the Planning and Building Act. As of 20 April 2012, 404 municipalities (of 429 municipalities in total in Norway) have prepared an energy and climate plan. Another 24 municipalities have made decisions to prepare such plans<sup>25</sup>.

### *Connection requirement to district heating*

Through Section 27-5 of the Planning and Building Act, the municipality can stipulate a connection requirement to district heating in the municipal plan. The provision can only be used in cases where the district heating plant has a licence under the Energy Act. The municipality can grant full or partial exemption from the connection requirement where it is documented that use of alternative solutions for the measure will be more environmentally sound than a connection.

In cases where a connection requirement is relevant, the technical building regulations (TEK 10, Section 14-8) stipulates requirements for new buildings to be equipped with heating systems so that district heating can be used for space heating and hot water. The provision also applies for major rehabilitation projects (general renovation).

### *Facilitation for water heating in the planning process*

In order to utilise energy carriers other than electricity and oil for heating, it will often be necessary to install water heating systems in buildings. This provides flexibility in selecting energy sources. Through the Planning and Building Act, the municipality has a key role in facilitating water heating in buildings already in the planning process, assuming the

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<sup>25</sup> <http://www.klimakommune.enova.no/sitepageview.aspx?sitepageid=1416>

municipality has made a decision regarding a connection requirement for district heating (cf. Section 27-5).

The municipal plan determines future land use for the entire municipality. According to Section 11-9, No. 3 of the Planning and Building Act, provisions can be stipulated for facilitation for supply of water heating (district heating) to new development, and sequential requirements according to Section 11-9, Item 4 related to this. Such provisions could be connected to a special consideration zone according to Section 11-8, third subsection, litera b, Zones requiring special infrastructure with indication of infrastructure type. It emerges from Section 27-5 that this means that a connection requirement can also be stipulated in planning provisions. The provision can be used in cases where the district heating plant has a licence according to the Energy Act.

The zoning plan is a more detailed plan indicating concrete objectives, development and can also stipulate provisions regarding requirements for facilitation for supply of water heating for new developments relating to the land use, or a special consideration zone, cf. Section 12-7, No. 8. According to Section 12-7, No. 10, there could be sequential provisions associated with such infrastructure development. In a zoning plan with such provisions, areas for heating plants and power line routes must be ensured. The provision can be used in cases where the district heating plant has a licence according to the Energy Act.

#### *Orders and land development agreements*

The municipality can contribute to increased investments in energy-efficient buildings and renewable heating systems through orders and land development agreements where the municipality is the developer, landowner or is selling the area.

- (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 consumption in the building sector will increase? What are the future plans related to these requirements / measures?**

Norway has had building standard requirements, including energy-related requirements for a long time. The requirements have been strengthened several times. In 2007, special requirements were determined for energy supply in buildings.

#### *Energy supply requirements in technical building regulations (TEK)*

Section 14-7 of the technical building regulations stipulates requirements entailing that buildings of more than 500 square metres of heated grossarea must be planned and executed such that at least 60 per cent of the net heating need can be covered with other energy supplies than direct-acting electricity or fossil fuels with the end-user. For buildings less than 500 square metres heated gross area, 40 per cent of net heating need applies correspondingly.

Typical heating solutions to satisfy the requirement include solar collectors, district heating, heat pumps, pellet stoves, wood-burning stoves, bio-boilers, biogas, bio-oil, etc. Surplus heat from permanent installations such as server farms, refrigeration units, etc. can also be included as fulfilment of the requirement, assuming the heat is transferred via a water system.



There are exemptions for buildings where it is documented that natural conditions make it practically impossible to satisfy the requirement. There is also an exemption for residential buildings if the net heating need is calculated to less than 15 000 kWh per year or if the requirement leads to additional costs over the lifetime of the residential building.

- (f) **What is the projected increase of renewable energy consumption 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.)**

**Table 6 Estimated share of renewable energy in the building sector (%)**

	2005	2010	2015	2020
Residential	75 %	78 %	81 %	84 %
Commercial	24 %	33 %	43 %	53 %
Public	N/A	N/A	N/A	N/A
Industrial	N/A	N/A	N/A	N/A
TOTAL				

\* Commercial buildings are not distributed between private and public buildings.

The percentage of renewables is calculated similarly as for RES H&C in Table 3

- (g) **Have obligations for minimum levels of renewable energy in new and newly 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?**

Energy supply requirements that apply for new structures/buildings, cf. Item e), also apply for major general renovation.

- (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).**

The requirements described in Item e) apply similarly today for public buildings and other buildings, there are no separate national rules for public buildings. However, the State promotes use of renewable energy in buildings through several instruments.

#### *Subsidies from Enova to public buildings*

Public players can apply for subsidies from Enova when executing energy projects, just like private players. Enova i.a. provides investment aid for installations of heating plants based on

renewable energy, assessments of passive house standards and constructions of low energy houses and passive houses. More information on Enova is provided under Item 4.2.4. Special guidelines have been established for flexible heating in public buildings. At the same time, public building owners often have their own ambitions within both energy efficiency and environmentally-friendly heating systems, according to signals given for this, such as State planning guidelines relating to municipal climate and energy planning. Guidelines and networks for municipal building owners have been established.

### *Flexible energy systems for heating in public buildings*

Since 1999, there has been a requirement for energy flexible heating systems in all new buildings and annexes larger than 1000 square metres in gross area constructed by the State (cf. Royal Decree dated 14 September 1998). Energy flexibility in buildings entails the possibility to utilise multiple energy sources for space heating, ventilation and water heating. This provides incentives for investing in renewable energy sources in new public buildings.

### *Public procurements*

Pursuant to the act relating to public procurements, when planning procurements, state, municipal and county municipal authorities and governmental bodies must take lifecycle costs, universal design and environmental consequences of the procurement into consideration.

In 2007, the Government submitted a three-year action plan for environmental and social responsibility in public procurements. The plan contains a designated environmental policy for public procurements of prioritised product groups, including buildings and property. Instructive environmental criteria have been established for procurements, including energy consumption and energy supply in buildings and property. The action plan states that public enterprises must “stipulate requirements that the heating energy supply is based on other sources than electricity and fossil fuels. The requirements should be more stringent than the minimum requirements in the technical regulations.” Municipalities and county municipalities are encouraged to follow the action plan. The Agency for Public Management and eGovernment (Difi) is responsible for implementation of the action plan at a national level.

### *Lifecycle tools for buildings*

Difi has prepared tools for early calculation of lifecycle costs. The tool provides a decision basis and calculates investment and operating costs by building energy efficiently. Both the low energy level and passive house level have been included as parameters. The tool is designed for everyone who makes important decisions regarding procurements, particularly those who will choose energy solutions in buildings (both efficiency measures and selecting heating solutions). The tool will ensure the consideration for lifecycle costs is maintained, i.e. products and solutions are chosen which, assessed over the lifecycle, are most economical (have lowest annual costs). The tool is available to the public on the internet (<http://tidliglcc.difi.no/>).

Furthermore, the Directorate of Public Construction and Property and the Norwegian Defence Estates Agency have developed LCCWeb.no (<http://www.lccweb.no/>). This is a calculation tool which provides lifecycle analyses (LCC analyses) in varying levels of detail. LCCWeb

can be used for all types of projects during all phases of planning and operating the building. The calculations are carried out according to the Norwegian Standard NS3454 "Lifecycle costs for buildings – principles and structure". Using LCCWeb is free of charge.

The State, through the Agency for Public Management and eGovernment has established a web-portal for buildings and construction (BAE portal) which the state, municipalities, as well as the building, construction and real estate industries can use. The portal is meant to aid in processing for planning, setting environmental requirements and following up contracts through building projects and in the operating phase of a building.

#### *The Directorate of Public Construction and Property's work with renewable energy in buildings*

The Directorate of Public Construction and Property is the State's central adviser in building and real estate matters, a building owner, property manager and property developer, with an administrative area of about 2.7 million square metres of buildings.

The Directorate for Public Construction and Property's environmental strategy from 2010 sets the goal of testing new methods and tools, materials and work processes, to stay ahead of the curve in new regulatory requirements, harvest experience and increase the expertise level internally and in the construction industry.

In 2010, the Directorate for Public Construction and Property developed [www.klimagassregnskap.no](http://www.klimagassregnskap.no) with a new module ("Early phase module for materials"), which makes it easier to conduct greenhouse gas calculations for materials during the drafting phase of a project. In 2010, development of a new module for calculating emissions from outdoor areas also started. The tool is free and available on the internet. In addition to this, the Ministry of Government Administration and Reform has asked the Directorate for Public Construction and Property to assess the possibility of demonstrating the design (making a computer model) of a building with nearly zero energy consumption as a virtual model building, based on Recommendation No. 16 S (2011-2012).

The Directorate for Public Construction and Property participates in the Research centre for environmentally-friendly energy – Zero Emission Buildings (ZEB), which is a national research effort between NTNU (Norwegian University of Science and Technology), SINTEF, key material and building industry partners and the Norwegian Research Council.

#### *Norwegian Armed Forces' work with renewable energy in buildings*

The Armed Forces is Norway's largest property manager, and the Norwegian Defence Estates Agency manages about 4.5 million square metres of buildings. The Armed Forces has initiated measures significant for reduced energy consumption and use of more environmentally-friendly energy carriers in three main fields: There is an energy reduction project according to agreement with Enova, conversion of boilerhouses to more environmentally-friendly energy carriers (energy efficiency in the Armed Forces), as well as energy performance requirements in buildings.

During the period 2006-2012, the Armed Forces has reduced or converted a total of 157 GWh through the energy leadership programme and "Energy Efficiency in the Armed Forces". This is distributed between 98 GWh through energy-reducing measures and improved operational management of existing buildings, and 59 GWh through a transition from fossil fuels to alternative energy sources based on biofuel and/or heat pump solutions. Old heating plants are

phased out and new, environmentally-friendly heating plants will be installed to satisfy the current requirements for e.g. CO<sub>2</sub> emissions, modernisation, efficiency and more profitable operations.

The Ministry of Defence's implementation letter to the Norwegian Defence Estates Agency for 2012 states that a higher energy class (energy classes are explained under Item i) than that of current regulatory requirements will be considered for nationally financed projects. The project documentation must explain the consequences of the investment and operating costs by selecting energy classes A and B. An analysis must show the difference in investment cost between building within regulatory requirements (technical building regulations) and energy class A, potentially energy class B. The energy class decision is made by the Ministry of Defence when initiating the investment projects.

The Norwegian Defence Estates Agency designs and completes several buildings with a better calculated energy efficiency than applicable regulatory requirements (technical building regulations that correspond to energy class C). In 2010, a decision was made to build a new administrative building for the Armed Forces' management at Bardufoss as a passive house with energy class A. Other examples include new officers' quarters at Bardufoss with energy class A, with planned completion in 2013. Furthermore, an office building is planned at Haakonsværn (Bergen), where possible solutions for constructing this building as the Armed Forces' first zero energy building will be assessed during the design phase. The Norwegian Defence Estates Agency is also a partner in the Research centre for environmentally-friendly energy – Zero Emission Buildings (ZEB).

#### *Use of renewable energy in health buildings*

The State owns an extensive building mass through its ownership of the specialist health service, which administers a total of about 4.8 million square metres of buildings.

Through its governance of the regional health trusts, the Ministry of Health and Care Services has followed up with various requirements for measures in the environment area. As a step in their follow-up of this, the regional health trusts have e.g. prepared a special report in 2010 relating to climate and environmental measures in new structures, and when renovating buildings in the specialist health service. A key topic here was energy consumption. The report discusses relevant energy measures related to new structures and renovation, and energy measures related to the operations phase. It also emphasises the importance of establishing energy management as a necessary part of the work on management, operation and maintenance. Furthermore, the report concluded with a recommendation that new structures, as a minimum, must satisfy the requirement for energy rating B (energy rating scheme is explained under Item i) and that passive houses or low energy buildings must be considered for all new structures from and including 2014. For existing buildings, energy management must be introduced, and energy-conserving measures must be installed during modification and renovation work. Relevant financing measures for conserving energy are also discussed, for example energy conservation contracts.

The Ministry of Health and Care Services followed up this report at the general meeting in January 2011, where the regional health trusts were asked to follow up the goals and recommended measures described in the final report. The national environment project has asked that measures related to buildings and the environment, including the question of energy, be followed up by a separate expert group which will deliver its report during autumn 2012.

A particularly interesting project in relation to renewable energy has been the construction of the new Akershus University Hospital (AHUS). In connection with this construction project, AHUS has established Europe's largest geothermal plant. In addition, the specialist health service started its first passive house standard construction project, the Knowledge Centre at St. Olav's Hospital in Trondheim.

#### *Supplier development for increased use of renewable energy*

The Cities of the Future is a collaboration project for the largest cities in Norway, based on agreements between 13 cities, four ministries, The Norwegian Association of Local and Regional Authorities (KS) and the three major industry organisations. The Cities of the Future e.g. cooperates with the Confederation of Norwegian Enterprise's (NHO's) supplier development programme, which actively develops and promotes innovation of products and services in connection with public procurements. The supplier development programme is responsible for holding courses for procurement environments in all of the 13 cities. One example is the work to phase out oil boilers in Oslo schools. All oil boilers in the municipal Oslo schools will be replaced with non-fossil energy solutions by 2013.

#### *Buildings of the Future and Future Built – pilot projects in the municipalities*

FutureBuilt (Drammen and Oslo) and Buildings of the Future (the other 11 cities in Cities of the Future) are networks with the objective of promoting climate-friendly buildings and areas. The two sub-programmes have achieved a total of 36 approved prototype and pilot projects so far. These include area development, day care centres, residences, cultural buildings, schools, crisis centres, etc. Most projects are municipal buildings, but private buildings can also apply to be prototype projects. The approved projects (normally) receive financial support and advice from Enova, as well as advice from the Cities of the Future.

- i) **How are energy efficient renewable energy technologies in buildings promoted? (Such measures may concern biomass boilers, heat pumps and solar thermal equipment fulfilling eco-label requirements or other standards developed at national or Community level [cf. text of Article 13(6)]).**

#### *Energy performance certification of buildings*

Energy performance certification of residences and buildings has been established as a scheme to provide information regarding the energy performance of a building or apartment to owners and potential buyers. It is assumed that the scheme will create greater interest in implementing energy efficiency measures and conversion to alternative heating systems. The scheme may contribute to a more accurate value estimation of buildings when they are sold or rented.

The energy performance certificate consists of a grade scale from letter A-G (energy grade). It expresses the calculated delivered energy to the building during normal operating conditions. Furthermore, it has a colour scale from green to red (heating grade). The colour scale expresses to what extent the building's heating needs can be covered by energy carriers other than electricity, oil and gas.

The energy performance certificate is discussed in more detail under Item 4.2.4. The scheme is based on the energy performance of buildings directive (2002/91/EF) and is founded in

Chapter 8 of the Energy Act and the energy performance certification regulations, see item a) above.

In Norway the energy performance certificate is based on calculated delivered energy, which takes the energy system's performance into consideration. High-efficiency energy systems will reduce the need for delivered energy, and thus contribute to a better energy performance certificate. It also entails that the heating system is assessed in the scheme.

The list of measures enclosed with the energy performance certificate contains suggested measures that could improve both the energy grade and heating grade. For example, a house with an installed oil boiler could improve its heating grade by replacing the oil boiler with a pellet boiler, solar collectors, a heat pump or by connecting to district heating. The energy grade could be improved through measures that reduce the need for delivered energy, both through energy efficiency measures on the actual building and the heating system.

#### *Energy assessment of technical systems in buildings*

Energy assessment of technical systems in buildings has been established as a scheme to provide owners of boilers and air conditioners with information regarding the systems' condition and operating conditions. The energy assessment report is therefore primarily a document for the owner with recommended measures for improvement of the systems' operating conditions. For example, deficient inspection and maintenance could have negatively impacted operation, or the system might no longer be correctly dimensioned in relation to the building's needs.

The energy assessment requirement regularly applies for systems of a particular size:

- Boiler plants based on fossil fuels with a nominal effect greater than 20 kW.
- Heating/air conditioner units with an overall nominal effect greater than 12 kW or heated area larger than 500 square metres.

In addition, there is a requirement for a one-time energy assessment of boiler plants older than 15 years. This scheme is based on the energy performance of buildings directive (2002/91/EF) and is founded in Chapter 8 of the Energy Act and the energy performance certification regulations; see Item a) above. The scheme contributes to awareness regarding good operation of technical systems and the correct dimensioning of these.

#### *Energy labelling of household appliances and eco-design*

Energy labelling of household appliances was established in Norway in 1996 and is based on the EU's Council Directive 92/75/EØF on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances. The labelling will help consumers choose the most energy-efficient product. While the energy label is a pure information measure, the eco-design regulations were established to ensure that the least energy-efficient products are not provided to the market. The regulations follow up Directive 2009/125/EF which promotes development and application of energy-efficient and environmentally-friendly energy-related products to contribute to limit energy consumption and the strain on the environment for the entire lifecycle of the products.

### *Official environmental labels*

The Swan (Nordic Ecolabelling) and EU Ecolabel (formerly Blomsten) are the official environmental labels in Norway, and the Norwegian Foundation for Environmental Labelling manages the schemes. The Swan is a Nordic label, while EU Ecolabel is the European environmental labelling scheme. In order to receive an official environmental label, the product must satisfy set environmental requirements. There are an increasing number of construction materials with official environmental labels, but the total number is still modest.

### *Enova Recommends*

Enova has established a designated labelling system for energy-efficient windows and insulation material. More information on Enova is provided under Item 4.2.4.

#### **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:**

A number of instruments are used to promote renewable energy technologies. Information is often directed both at heating solutions and general energy efficiency improvement solutions.

### *Enova's information activities*

Enova is an important player when it comes to information activities. This is regulated in a special term in the agreement with the Ministry of Petroleum and Energy according to which Enova is to provide information to the market. Enova prepares general information material which is readily available on its website, and rolls out special information campaigns that are meant to have a broader appeal. Enova also has several other information activities, such as participating in various fairs to promote possible solutions, organising seminars for municipalities, construction and industry networks and has established a labelling system for energy-efficient windows and insulation material. Enova provides general advisory services to different players, from a phone service for households, to advice for professionals. Enova also has information activities directed at children and youth. Parts of the information activities are closely linked to the subsidy programmes.

### *Statnett's information activities*

In situations where the power situation is strained, information campaigns are one of the instruments Statnett will assess. In the event of a very tight power situation (SAKS), an information campaign must be carried out before Statnett can implement special SAKS measures (such as redeeming energy options and starting up back-up power plants).

### *Energy performance certification of buildings*

Energy performance certification for residences and buildings was established to provide owners and potential buyers with information regarding a building's energy performance. It is assumed that the scheme will create greater interest in implementing measures for more efficient energy consumption and conversion to alternative heating systems, and provide a more accurate value estimation of buildings when they are sold or rented. In addition to the energy rating, the energy declaration contains a list of proposed measures that the owner may consider. The system requires the owner to show an energy performance certificate when marketing the building for sale and rent. In addition, all new buildings and commercial buildings larger than 1000 square metres must have an energy declaration.

The energy performance certificate consists of a grade scale from letter A-G (energy grade). It expresses the calculated delivered energy to the building during normal operating conditions. Furthermore, it has a colour scale from green to red (heating grade). The colour scale expresses to what extent the building's heating needs can be covered by energy carriers other than electricity, oil and gas. The system is based on the Directive on the energy performance of buildings (2002/91/EF) and is founded in the energy performance certification regulations.

In Norway the energy performance certificate is based on calculated delivered energy, which takes the energy system's performance into consideration. High-efficiency energy systems will reduce the need for delivered energy, and thus contribute to a better energy performance certificate. It also entails that the heating system is assessed in the scheme. The list of measures enclosed with the energy performance certificate contains suggested measures that could improve both the energy grade and heating grade. For example, a house with an installed oil boiler could improve its heating grade by replacing the oil boiler with a pellet boiler, solar collectors, a heat pump or by connecting to district heating. The energy grade could be improved through measures that reduce the need for delivered energy, both through energy efficiency measures on the actual building and the heating system.

### *SIVA*

SIVA, the Industrial Development Corporation of Norway SF, contributes practical information and infrastructure services for innovation enterprises. SIVA has partial ownership of industrial estates, innovation centres, knowledge centres, industrial parks and incubators and will mobilise local and regional players. In 2010, a broad evaluation of SIVA's organisation, instruments and goals was carried out, and the evaluation report was completed in 2011. SIVA has major property involvements within renewable energy, particularly in connection with the solar energy industry and offshore wind energy. The evaluation was followed up in the White Paper regarding Innovation Norway and SIVA in 2012. SIVA's instruments for innovation support are financed by the Ministry of Trade and Industry and the Ministry of Local Government and Regional Development.

#### **(b) Responsible body/(ies) for dissemination of information at national / regional / local levels:**

Enova has a duty to provide information regarding energy efficiency and renewable energy for consumers, households and professional players at a national level.

Statnett is responsible for assessing information campaigns during situations with very strained power situations.



NVE is responsible for energy performance certification of buildings, the work on energy labelling products and eco-design.

The Norwegian Foundation for Environmental Labelling manages the Swan and EU Ecolabel schemes.

Transnova, a national body under the Ministry of Transport and Communications, will contribute to increase knowledge and use of alternative transport means for people and cargo, including availability of transport means and necessary infrastructure, increased knowledge on climate-friendly transport planning for people and cargo and more climate-friendly mobility patterns in private and public enterprises.

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

At a regional level there is information activity through energy companies, commercial companies and municipalities. Grid companies must update and publish an energy assessment for the municipalities at least every two years. In their municipal plans or municipal sector plans, the municipalities must make plans for more efficient energy consumption and environmentally-friendly energy conversion. This is discussed in more detail under Item 4.2.3 d). Some municipalities have extensive activity in the area.

The Ministry of Local Government and Regional Development provides support for a number of information projects with the purpose of motivating and helping municipalities take climate and renewable energy into consideration in their activities, decisions and plans.

The Ministry of Local Government and Regional Development supported the Green energy municipalities project during the period 2007-2010. The Inland Norway Energy Agency received support in 2010-2011 and the environmental foundation ZERO has received a funding commitment for 2012. The two latter projects are expected to last until 2013 and 2015. The objective of the projects is to inform and motivate municipalities to implement measures to reduce local greenhouse gas emissions and increase use of renewable energy.

The County Governor has a key role within advising, guidance and control of regulations vis-à-vis the municipalities in the agriculture area, including how agriculture can contribute to production of renewable energy. The county municipalities, as regional development players and partial owners of Innovation Norway, are key development players for increased use of renewable energy solutions.

**(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?**

Enova is responsible for making available, verifying and publishing information relating to its subsidy programmes. Enova largely communicates through its website and is responsible for

ensuring that the information available on their website is always up-to-date. Enova has established “Ask Enova”, a free hotline where private individuals and professional players can inquire about energy advice.

The Norwegian State Housing Bank carries out information work regarding energy consumption related to designated support and subsidy programmes. In 2011, a major campaign directed at housing cooperatives was implemented in cooperation with Enova and NBBL (the Norwegian Federation of Cooperative Housing Association). The Norwegian State Housing Bank also provides expertise assistance for knowledge and communication projects for sustainable residential and building quality (NOK 21 million in 2011). The projects have different goals and target groups.

The Norwegian Building Authority (DIBK) provides guidelines and information regarding energy efficiency requirements and energy supply requirements in buildings. The Authority is a partner in several programmes that contribute to increased focus on energy consumption in buildings through efforts in prototype projects, research and increasing expertise.

Motor vehicle owners can receive information on energy efficiency measures, alternative forms of transportation and technology through different projects, as well as permanent web pages financed through the Ministry of Transport and Communication’s underlying agencies.

- (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?)**

Enova has been mandated to provide information regarding energy efficient and renewable energy solutions to the market. Enova uses different channels to disseminate information, cf. more detailed description under Item 4.2.4 a).

- (f) How is guidance for planners and architects provided to help them to 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?**

Enova has an extensive advisory service for the construction industry with the goal of increasing their expertise in order for the industry to become able to plan and build energy-efficient, sound and safe buildings for the future. Enova provides project-specific advice in detail engineering and/or construction phases. In particular, projects with the aim of achieving passive house level can receive advice support, in addition to the investment support. Advice can be provided either by Enova’s own advisory team or by other advisers that have documented sufficient qualifications.

The Low Energy Programme is a ten-year collaboration between public agencies and the construction industry. The programme has the goal of helping the Norwegian construction industry become the best in Europe as regards building energy and environmentally-friendly buildings. The parties responsible for the programme are the Federation of Norwegian Construction Industries, Arkitektbedriftene (Federation of Norwegian Architecture Companies), the Norwegian State Housing Bank, Enova, the Norwegian Building Authority

(DIBK), the Norwegian Water Resources and Energy Directorate and the Directorate of Public Construction and Property.

The programme works on two main areas. One involves increasing expertise in the entire construction industry, from design to implementation. This is done through courses, guidelines and information relating to a number of topics. The other area is prototype projects. The Low Energy Programme will stimulate implementation of prototype projects in multiple areas. The goal of the programme is to contribute to a significant percentage of passive houses in Norway between 2014 and 2017.

DIBK also has considerable guidelines for the construction industry available on its website.

- (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 the designing and managing these programmes?**

Enova has extensive information activities via newsletters, conferences, press releases and a considerable number of publications and brochures. Enova has e.g. established the *Rainmaker school* which is an educational programme for the 4<sup>th</sup> – 7<sup>th</sup> grades in primary and lower secondary school on climate and energy education.

The Directorate of Public Roads has established a website enabling motor vehicle buyers to find models that produce the least possible emissions, as well as satisfy other technical specifications. It must be possible to calculate the external costs related to both climate and local emissions from the vehicles. For new car buyers, fuel costs are incorporated in the vehicle's lifetime so it motivates people to purchase vehicles with low fuel consumption and emissions.

Through Transnova, the Directorate of Public Roads has financed the Nobil project. Through their website and mobile telephones with GPS, it will be easy for electric car motorists to find charging stations throughout the country.

“Green Car” is a project which e.g. Transnova is behind. Green Car works to get as many electric cars and rechargeable hybrid cars as possible on Norwegian roads by 2020. The calculator on their website allows consumers and other interested parties to find out what it costs to use an electric car, as well as follow the progress within electric car technology.

The Norwegian Public Roads Administration is responsible for certifying driver's education for all traffic. Approved driver's education requires completed eco-driving training.

#### **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:**

Relevant statutory provisions are:

- Chapter 22 of the Planning and Building Act, *Approval of enterprise to accept responsibility*: <http://www.lovdato.no/all/hl-20080627-071.html#map031>

- Part 3 of the Building Matter Regulations. *Approval and responsibility:* <http://www.lovdata.no/ltavd1/filer/sf-20100326-0488.html#map011>

- (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 Local Government and Regional Planning is responsible for the relevant provisions as mentioned above.

- (c) Are such certification schemes / qualifications already in place? If so, please, describe.**

Through the Planning and Building Act, enterprises can apply for central approval for the right to accept responsibility for measures requiring an application according to the Planning and Building Act. This e.g. includes heating installations in new buildings and major general renovation. The Norwegian Building Authority is the approval authority.

- (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 regarding the central approval of enterprises scheme is published on the Norwegian Building Authority's website: <http://www.dibk.no/no/Sentral-Godkjenning/>

- (e) Summary of existing and planned measures at regional / local levels (where relevant).**

Not relevant.

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

##### *Introduction:*

As the electricity grid is a natural monopoly, the grid operations in Norway are subject to extensive public regulation. The responsibility is divided between the energy authorities, system operator and grid companies. The objective of the regulation is to ensure the users do not overpay, at the same time as the investments are sufficient to ensure good capacity and quality.

The energy authorities are responsible for the overall framework for regulation of the grid sector. The authority to make decisions pursuant to the Energy Act has to a great degree been delegated by the Ministry of Petroleum and Energy to the Norwegian Water Resources and Energy Directorate (NVE), which is the regulator for the sector. The Ministry of Petroleum and Energy is the appeals body for decisions made by NVE, based on the Energy Act. In

matters where the Ministry is the first instance, for example in export and import licensing, the King in Council will be the appeals body.

Through licence, the state enterprise Statnett SF is appointed the system operating grid company (TSO) with the overall physical management and control of the country's power system. Responsibilities and duties concerning the exercise of system operation are governed through the regulations relating to system operation (For 2002-05-07-448). The objectives of these regulations are to facilitate an efficient power market and satisfactory delivery quality in the power system, and thus lead to efficient utilisation of the power resources for society as a whole.

In addition to Statnett, there are currently 156 different grid companies in Norway. There are three grid levels: the transmission grid, regional grid and distribution grid. The transmission grid shall link production and consumption in different parts of the country, give players in all parts of the country access to the marketplace and ensure main transmission points in all regions. The transmission grid also includes the international interconnectors. Statnett SF owns 92 per cent of the transmission grid which mainly consists of power lines with voltages of 300 or 420 kV.

The regional grids link the transmission grid and distribution grids, and mainly consist of power lines with 66 kV and 132 kV voltage. In some cases the regional grid is also directly connected to end-users. The distribution grids are the local grids that normally ensure distribution of power to end-users such as households, services, and industry. The distribution grids normally have voltage up to 22 kV, and the voltage is converted down to 230 volts for delivery to normal power users.

Power trade usually takes place on Nord Pool Spot (NPS), which is the Nordic marketplace for physical power. In 2010, 74 per cent of the power production in the Nordic countries was traded here; the remaining production is traded bilaterally. The trade takes place through two complementary markets; the day-ahead market Elspot and the intraday market Elbas. The system price and (elspot) area prices for the next day are calculated daily based on reviews (bids) from the players who purchase and sell power.

The system operator must determine elspot areas pursuant to the regulations on system operation to handle major and long-lasting bottlenecks, as well as scarcity of energy in a restricted geographical area. These factors could change over time. The system price does not take grid limitations into account. If the calculated power flow between the areas exceeds the trading capacity set by the system operator, the market must be clarified again. NPS then calculates a price for each elspot area based on the grid capacity between the areas and bids from players.

**(a) Reference to existing national legislation concerning requirements related to the energy grids (Article 16):**

The Act of 29 June 1990, No. 50 (the Energy Act) lays down the framework for the organisation of the power supply in Norway. The Act e.g. regulates development and operation of the transmission grid. It is especially Chapter 3 of the Act, relating to electrical systems, that contains provisions regarding grid requirements. In addition, Chapter 1 contains general provisions, Chapter 2 relates to application processing, Chapter 3 relates to electrical systems, Chapter 7 relates to energy planning and Chapter 10 has various provisions.

Supplementary provisions for the Energy Act are e.g. provided in the Regulations of 7 December 1990, No. 959 (Energy Act Regulations), laid down by the Ministry of Petroleum

and Energy pursuant to the Energy Act. Furthermore, based on the Energy Act and Energy Act Regulations, NVE has stipulated regulations that contain more detailed requirements and guidelines for operation and development of the grid. Relevant provisions are found in the Regulations of 11 March 1999, No. 302 (Control Regulations), Regulations of 11 March 1999, No. 301 (Settlement Regulations), Regulations of 7 May 2002, No. 448 (Regulations relating to the system operation in the power system), Regulations of 30 November 2004, No. 1557 (Regulations relating to quality of supply in the power system) and the Regulations of 16 December 2002, No. 1607 (Regulations relating to energy assessments).

In addition to the Energy Act with associated regulations, there are several other relevant regulations that contain requirements for application and licensing processes for investments in grid facilities. The most important here are the Act of 29 June 1990, No. 50 (Planning and Building Act) and the associated regulations of 26 June 2009, No. 855 (Impact Assessment Regulations), the Act of 19 June 2009, No. 100 (Nature Diversity Act), the Act of 9 June 1978, No. 50 (Cultural Artefact Act), the Act of 15 June 2007, No. 40 (Reindeer Husbandry Act), the Act of 10 February 1967 (Public Administration Act) which stipulates the framework for how public authorities' case processing should take place and the Act of 23 October 1959, No. 3 (Expropriation Act) which contains provisions relating to expropriation and advance possession. Procedures and requirements for applications relating to building distribution and transmission grids are described in more detail in 4.2.1.

There are also several different areas that are protected by various legislation, such as the Nature Diversity Act, the Planning and Building Act, protection plans for watercourses, etc.

The implementation of the Renewables Directive has entailed certain amendments in the Regulations relating to the system operation in the power system and the Energy Act Regulations. These are described in more detail under questions g) and 1). There will also be amendments of acts and regulations when implementing the EU's third energy market package.

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

The grid companies are responsible for the quality and operational reliability of their grids and must carry out the necessary investments to fulfil their duties. In particular, the energy authorities' role in the grid development is to stipulate the overall framework of regulations set up requirements and obligations for the grid companies and grant permits for building facilities. Through the grid regulations, the authorities ensure the grid companies make the necessary grid investments and receive incentives for rational and efficient operation. A basic consideration of the regulation is that grid services must be offered at non-discriminatory and objective terms, and ensure all customers access to the power market. There are thus no special rules that apply for renewable power producers, but their access to the grid is nevertheless ensured through the general grid regulations.

The grid regulations consist of direct and indirect instruments, in addition to supervisory activity. The direct regulations set up explicit requirements or obligations for the grid operations. The indirect regulations of the grid operations are based on financial incentives.

Mainly, the direct regulations of the grid companies will ensure that necessary investments are made and that the grid is satisfactorily maintained.

On 1 January 2012 an amendment of Section 3-4 in the Energy Act entered into force, introducing a general obligation for all grid owners to provide grid connection to new consumers and producers. This established by law the already applied practice of an obligation to connect consumers at all grid levels, meaning that consumption can only be denied grid connection in extraordinary cases. For production, the connection requirement entails that all socioeconomically profitable projects have the right to be connected to the grid. The provisions relating to the obligation to connect producers are described in more detail in Section 3-4 of the Energy Act Regulations.

The obligation to connect applies to everyone who has a construction permit or area licence for grid facilities. The grid companies are required to ensure market access to existing grids if this is operationally reasonable. If there is no capacity in the existing grid, all affected grid companies must carry out necessary investments in their grids to be able to connect the production project as soon as possible. Grid companies that receive a connection inquiry must indicate an appropriate date for connection to their grid, clarify whether investments must be carried out before the connection can be implemented, and are responsible for clarifying the grid situation with the adjacent concessionaire. In the case the joint investment in grid and production is seen to be economically inefficient, the grid owner may apply for an exemption from the obligation to give connection.

Connection can only take place when any measures needed to make the connection operationally reasonable are implemented. This means that the connection does not impair the delivery quality to existing customers. This e.g. means that transmission limits for components in adjacent and overlying grids must not be exceeded and that voltage limits stipulated in the regulations regarding delivery quality must be maintained in underlying and adjacent grids.

Statnett has a special role as the system operator (TSO), the major owner of the transmission grid and the assessment manager for development of the transmission grid. The company's statutes and mission declaration state that Statnett is responsible for socioeconomically rational operation and development of the grid. This entails both an investment duty to ensure new consumption and power production access to the transmission grid, and a responsibility for maintaining the quality of existing facilities and the operating security of the power system.

Section 14 of the Regulations relating to the system operation contains provisions that regulate planning and implementation of technical facilities in the power system, including production facilities. In this manner, the Regulations relating to the system operation help to ensure that the TSO maintains control of what is connected to the grid and can stipulate requirements for the functionality of the connecting facilities so the delivery quality or reliability in the system are not reduced.

Pursuant to the Regulations relating to the system operation, the concessionaire must inform the TSO regarding their plans for new facilities or changes to facilities connected to the regional or transmission grids when other concessionaires are affected by this. New facilities or changes cannot be implemented without a decision by the TSO. The area concessionaire must inform the TSO regarding plans for new production projects or changes to existing production facilities in the distribution grid when these plans could be significant for the operation and utilisation of the regional and transmission grids. The TSO can make decisions regarding the functionality of the facilities.

According to Section 7-1 of the Energy Act, everyone with a construction permit, area licence or district heating licence is required to participate in energy planning. This is described in more detail in the regulations relating to energy assessments. Chapter 1 of the regulations stipulates provisions regarding coordinated power system assessments in regional and transmission grids. Pursuant to this regulation, the NVE has established 18 assessment areas in Norway, 17 regional areas and one area for assessment of the transmission grid. The grid companies that NVE appoints to be in charge of the assessments are responsible for coordinating the work on a long-term power system assessment within their geographical assessment area.

The power system assessments must describe the current power grid, future transmission and distribution conditions, as well as expected measures and investments. The assessment must present statistics with data for production, transmission, distribution and consumption of energy, and describe factors that are significant for the development of the power system in the assessment area. The party in charge of the assessment must also describe various alternatives (scenarios) for the development of the power system and carry out simplified socioeconomic analyses of the alternatives. In this scenario, the uncertainty of the factors that drive the development of the power system must be taken into account, including how stipulated goals for production from renewable energy sources will impact the power system in the relevant area.

The power system assessment must be updated annually. As a part of the assessment work, all grid companies that hold an area, facility or district heating license within the assessment area, the system coordinator, and parties responsible for assessment in adjacent assessment areas, as well as major grid customers and the power supply's district managers are invited to contribute with information through participation in power system meetings and power system committees. The assessment will provide the grid users with the possibility to impact the design of the transmission and distribution grids they depend on. The power system assessments function as a tool to identify the need for investments and are also important background documents for NVE's assessment of licence applications for energy facilities.

In line with power system assessments being carried out for regions, a power system assessment is also carried out for the transmission grid. Statnett is responsible for this assessment, also of the parts of the transmission grid which the enterprise does not own itself. Statnett publishes a grid development plan which is made available to the public. Statnett also carries out more specific analyses for certain areas as needed. Both the regional power system assessments and Statnett's own power system assessment provide important information which Statnett uses when the enterprise assesses individual projects in more detail.

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

In Norway, power production mainly comes from renewable energy sources. We therefore have long experience with operating a grid with considerable integration of renewable power. The transmission grid is largely operated with modern technology and market-based solutions, such as the spot market and the markets for balance services, have contributed to efficient price formation and the best possible utilisation of the power system.

However, the future energy mix in the Nordic power system will have a steadily growing share of distributed intermittent production. This requires innovation regarding the design, development and operation of the transmission and distribution grids. Norway's high



percentage of conventional hydropower is a good basis. The reservoirs contribute to balance the overall power supply, and reduce the need for other advanced forms of storage facilities. In the longer term, use and development of intelligent grids and IT tools will be part of the solution to how the grid should be designed to meet the challenges the energy sector will face in the future.

Different forms of intelligent grids that entail increased consumer flexibility will be used in the Norwegian system to a greater extent, e.g. to smooth the consumption between peak load periods and other times. An important step to increase small- and medium-sized users' consumer flexibility is introduction of advanced metering systems (AMS) in the distribution grid. AMS will provide hourly metering of the consumption and improve the end-users' information regarding prices and energy consumption. AMS must be installed with all consumers by 1 January 2017. For large consumers, there has been a requirement for hourly metering since 2006. Part of the flexibility of the large consumers is also utilised through agreements between the grid company and the consumer regarding the option to temporarily disconnect the consumer, e.g. in the balancing markets.

Implementation of advanced metering and management systems (AMS) is an important step in order to automate the power system, but it only constitutes one part of a so-called intelligent grid. Even today, ICT and advanced control systems are largely used in the operation of the Norwegian transmission grid. Statnett uses an advanced operations centre system as a platform for collection and presentation of operational metering which provides an overview of the condition of the power system at all times. Statnett has used system protection and advanced components for a long time, such as SVC facilities, to control the voltage and reactive effect. This has contributed to optimal utilisation of existing infrastructure and enabled the increase of transmission capacity without making major grid investments.

Extensive research and development activity directed at power distribution systems is continuously carried out in Norway. Intelligent energy systems and new technological solutions are prioritised areas in the national R&D strategy for the Norwegian energy sector. The official R&D is firstly channelled through the Research Council of Norway's RENERGI programme. RENERGI finances multiple projects within AMS and intelligent grids. Statnett also has considerable R&D activity related to development of new operational applications and intelligent grid solutions.

The Energy Act and associated regulations stipulate requirements for grid companies concerning e.g. grid connection of new facilities and delivery duty. The grid companies are responsible for the quality and operational reliability of their grids and must carry out the investments necessary to fulfil the company's duties. It is up to the grid companies to choose solutions that are technically feasible and financially reasonable for connecting renewable power production. Intelligent grids and advanced IT tools are likely to play an increasing role for the grid companies to meet these requirements. Intelligent grids are therefore considered to play an important role in the efforts of increasing renewable power production, reducing demand for output and increasing flexibility in power consumption.

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

Since the first international interconnection to Sweden, Nea-Järpstrømmen, was built in 1960, Norway has been part of an international power market. We currently have interconnections with Sweden, Denmark, Finland, the Netherlands and Russia.

Statnett, as the TSO in Norway, facilitates the power exchange with other countries. The enterprise has started building a new 700 MW interconnector to Denmark, (Skagerak 4) which is expected to be operational in 2014. In addition, a new 1400 MW capacity connector to Sweden (Sydvestlinken) is planned and was notified to NVE in October 2011. Furthermore, work is ongoing on two more connections, to England and Germany, respectively. The plan is for one cable to be completed in 2018 and the other in 2020, assuming the power grid in Southern Norway is reinforced.

**(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.)**

In Norway, a licence is required to build, operate or own grid facilities for transmission and distribution of electricity, cf. Section 3-1 of the Energy Act, cf. discussion in Chapter 4.2.1. The authority to make licence decisions lies with the Ministry of Petroleum and Energy, cf. Section 2-2 of the Energy Act. The Ministry of Petroleum and Energy has delegated this authority to the NVE. This does not prevent the Ministry from making decisions or submitting the matter to the King in Council in individual matters.

An area licence is needed for construction and operation of grid facilities with a voltage of 22 kV or lower. If an area licence is obtained, there is no need to apply for a licence according to the Energy Act for each facility. This scheme is a simplification compared to the more extensive procedure for facility licences. One of the conditions in area licences is that the grid company is required to deliver electricity to subscribers within the geographical area for which the licence applies.

When constructing grid facilities not included under the area licence scheme, an application must be submitted for each facility. The scheme applies to all electrical facilities above the licence requirement limit under the Energy Act Regulations. This licence scheme will ensure a uniform practice for constructing and operating electrical facilities. Power lines with high voltage and transformer stations often entail considerable interventions. In line with the Energy Act's mission statement, the licence processing emphasises socioeconomic considerations, including the consideration for the general public and private parties' interests as regards e.g. nature intervention and the environment. The goal of the licence processing is, pursuant to the Energy Act, to find the solutions that provide the greatest overall benefits for society.

The procedure for matters according to the Energy Act is described in the introduction to 4.2.1. The processing time can vary significantly between projects, depending on e.g. the degree of conflict, private-law matters, coordination with facilities for new production in the same area, season for inspections and the number of facilities. A review of some of the more recent matters in which the NVE made a decision show that the processing time in NVE, from

the time when a report is submitted for consultation until a decision is made by NVE, could be around three years or more for major power lines, including the time spent by the developer on preparing a licence application and conducting assessments. Following this comes any concluding licence processing or potential appeals processing by the Ministry of Petroleum and Energy. Major projects can take a total of five years or more. For minor power lines that can be applied for without being notified first, the licence processing in NVE could be around one year from the time when the application is received to NVE's decision, but the necessary time spent can also vary for these matters.

4.2.1 c) describes measures implemented in recent years to strengthen and increase efficiency of licence processing, including power line processing. Of the already implemented measures to increase efficiency in power line licence processing, it can be noted in particular that the licence processing capacity in NVE and the Ministry of Petroleum and Energy has been reinforced, and that power lines were exempted from the planning provisions in the Planning and Building Act in 2009. The differentiated processing of the various grid levels can also be noted. It is more efficient that distribution grids up to 22 kV can be built according to area licences and do not need a facility licence for each new investment. Furthermore, the reporting requirement, assessment requirements and decision authority are differentiated according to voltage level and the length of the power line, cf. 4.2.1.

As regards new measures, reference is made to the White Paper No. 14 (2011-2012) which defines the Government's policy for development of the transmission electricity grid. It confirms that licence processing is well-suited to balance different considerations and find solutions that fulfil the grid policy goals. The Government, however, proposes some changes to strengthen early involvement of stakeholders, clarify the political choices and ensure efficiency. The most important changes are introduction of external quality assurance of the questions regarding need and main solution (concept choice), an early political statement from the Ministry regarding need and concept choice and that the decision authority is transferred to the King in Council for major matters. These decisions cannot be appealed. The fact that principal decisions regarding need and concept choice are addressed early in the process should contribute to a reduction of subsequent processing time.

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

Licence applications for new grid facilities are normally only processed by the NVE. If there is a need for coordination vis-à-vis municipal planning, this is ensured by the developer and NVE. The formal coordination procedures are clarified. New distribution grids within the area licences are clarified vis-à-vis the municipalities by the developer.

Grid facilities that require a facility licence are exempt from most chapters of the Planning and Building Act, cf. Section 1-3 of the Energy Act. This means that the facilities can be granted licences and be built independent of the planning status, that there is no requirements of providing a zoning plan, to grant derogation or to adopt planning provisions for this type of facility. Furthermore, these facilities do not need a municipal building permit. The exemption for municipal building matter processing includes all grid facilities subject to a licence requirement, including those built in pursuance of area licences, cf. Section 4-3, litera c) of the Construction Matter Regulations.

When constructing an energy facility which requires a facility licence according to Section 3-1 of the Energy Act, the developer must obtain the necessary ground and rights for the

facilities. When the developer applies for a facility licence, an application is also submitted for an expropriation permit in case voluntary agreements are not reached with the affected landowners and licensees. Rules relating to expropriation and advance possession are founded in the Expropriation Act of 23 October 1959. Consent for expropriation can only be granted if it is likely that the measure undoubtedly provides more benefits than disadvantages.

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

Section 3-4 of the Energy Act states that all parties with licences for grid facilities are obligated to provide grid connection to new production facilities and invest in grid facilities if necessary. The right to be connected to the grid apply equally to all producers of electricity.

All parties who own grid facilities need a trading licence. For all of these trading concessionaires, a general duty according to Section 4.4, litera d) of the Energy Act Regulations applies; ensuring market access according to non-discriminatory and objective tariffs and conditions. The duty to ensure market access to producers applies to existing grids if this is operationally reasonable.

The connection requirement concerns access to existing grids. In cases where it is operationally reasonable to connect new production units, the main principle is that the party which first clarifies its connection status (e.g. enters into binding connection agreement) is the party which can connect to the grid first. It is not permitted to reserve future spots in the grid. All connection agreements entered into by the grid company and potential developers must be time-restricted, so projects that are not realised within a reasonable date do not prevent other players from connecting. There is no differentiation between producers of electricity from renewable energy sources and other power producers. .

To guarantee security in the national power system and secure energy supply, the TSO (Statnett) must report major measures that reduce the percentage of renewable production to NVE, cf. Section 24, fifth subsection of the regulations relating to the system operation. The reporting must describe the actual conditions and indicate possible measures to prevent undesirable reductions in renewable power production.

**(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?**

In instances where there is not sufficient capacity to connect new production to existing grids, the connection obligation according to Section 3-4 of the Energy Act and Section 3-4 of the Energy Act Regulations entails that all affected concessionaires must implement measures in their grids in order to connect producers that request this. See discussion of the connection obligation under question b). The duty to provide connection and implement necessary investments applies to all parties with a facility licence or area licence for grid facilities.

In the event of a need for investments in increased grid capacity, the party which has a licence for the existing facility is required to assess, apply for a licence and invest without unnecessary delay. The local grid company must assess the investment need in its own grid and obtain information from overlying grids regarding any necessary investments. Based on the assessment of the investment need, all affected grid concessionaires must be able to indicate an expected date for the final implementation of the grid connection. Alternatively,

the developer must be informed that one or more of the affected grid concessionaires will apply for exemption from the connection obligation as they find that the net investments in production and grid will not be socially efficient,.

There are currently no facilities that are ready for connection which have not been connected due to limited grid capacity.

There are some projects with final licences located in areas with grid limitations. This relates to approx. 0.8 TWh/year hydropower with a final licence, as well as two wind power projects (Bessakerfjellet II and Harbakfjellet) with final licences totalling approx. 0.3 TWh/year.

Through the power system assessments, the location of capacity limitations in the regional and central (transmission) grids in Norway is chartered. As of January 2012, there are certain areas with no capacity to connect any new production. In addition, there are several areas with limited capacity where only small facilities can be connected. .

Statnett is planning and is about to complete a number of projects that will alleviate the situation in areas with grid limitations and facilitate connection of new renewable power production. This e.g. relates to the connections Sima-Samnanger and Ørskog-Fardal, which are being constructed and will increase capacity in the counties of Hordaland and Sogn- and Fjordane.

- (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.*)**

Grid companies determine and publish their own tariffs in Norway. Tariffs include all prices and other financial remuneration determined by the grid company for connection to and use of electrical grid facilities. The grid companies' income mainly stems from point tariffs for distribution and transmission of electricity. The point tariffs are used throughout the entire Nordic system and entail that grid customers pay a transmission and distribution tariff only to their local grid company to gain access to the entire power market. Another important part of the tariffs is the connection tariffs which the grid companies can collect to cover construction costs incurred for new connections or when reinforcing or modifying the grid for existing customers.

Both the design of the tariffs and the grid companies' total income must be in accordance with applicable statutes and regulations. Relevant provisions can be found in the Energy Act Regulations and the Control Regulations which are managed by the NVE pursuant to the Energy Act. The NVE carries out continuous control and supervision of the grid companies, and can issue orders relating to compliance with regulations. Disagreement regarding tariffs and income caps can be submitted for appeals processing with the NVE who will then make a decision in the matter. The Ministry of Petroleum and Energy is the appeal body for decisions made by the NVE pursuant to the Energy Act.

The NVE annually determines an income cap for each grid company which reflect the cost conditions in the delivery area and which represents a ceiling for the overall income the grid company can collect over the tariffs. The income caps are determined so the income covers the costs of operation and depreciation of the grid over time, as well as to provide reasonable returns on invested capital assuming efficient operation, utilisation and development of the grid. The income cap regulation will ensure that the companies do not have unreasonable monopoly profits, as well as ensuring that cost reductions also benefit customers.

Section 4-4 of the Energy Act stipulates overall guidelines for the design of grid tariffs. More detailed provisions are indicated in Part 4, Chapter 13-17 of the Control Regulations. One general requirement is that grid services must be provided at non-discriminatory and objective point tariffs and conditions and ensure all customers access to the power market, cf. Section 4-4, litera d of the Energy Act Regulations and Section 13-1 of the Control Regulations. Furthermore, the tariffs must be designed such that they, to the greatest extent possible, provide long-term signals regarding efficient utilisation and development of the grid. The tariffs can be differentiated according to objectives and verifiable criteria based on relevant grid conditions.

The transmission and distribution tariffs are composed of multiple tariff segments, and must have a minimum of two tariff segments, cf. Section 13-2 of the Control Regulations. There is one segment which varies with the customers continuous input or output of power (energy segment), as well as one or two segments which do not vary with continuous energy (other tariff segments). The energy segment must reflect the load on the grid and generally be determined based on marginal loss costs at the relevant connection point. The second segment must ensure sufficient revenues in relation to the grid company's income cap. For all production facilities, the second tariff segment consists of a fixed segment which is the same regardless of what company and grid level the producer is connected to. The fixed segment for production in 2012 is 0.8 øre/kWh/year. This applies to all producers, including the producers located in peripheral regions and regions with low population density.

Statnett determines and publishes the transmission tariff for the transmission grid (central grid tariff). Similar to the distribution tariffs, the central grid tariff must be designed pursuant to the above-mentioned tariff provisions. The costs in the transmission grid are included in the cost basis for the regional grid companies when they calculate point tariffs in the regional grid. Similarly, regional grid costs are included in the cost basis for the distribution grid companies. Customers that are connected to lower grid levels thus contribute to cover costs also in overlying grid levels. As producers pay the same transmission and distribution tariff (fixed segment) regardless of grid level, this is primarily significant for consumers. Consumers that are connected to the distribution grid normally pay a higher tariff than customers in the regional and transmission grids.

As regards new connections or reinforcement or modification of the grid for existing customers, pursuant to Section 17-5 of the Control Regulations, the grid company can require a connection tariff from the customer(s) that triggers the investment. The purpose of the connection tariff is to highlight the costs of a new connection or reinforcement and distribute costs between the customer that triggers the investment and the grid company's other customers.

The connection tariff is an individually calculated one-time payment that should cover the actual costs triggered by measures such as a new connection, modification or reinforcement. Reinvestments can not be covered through connection tariffs. The grid companies are not required to collect connection tariffs, but must have a practice that is objective and non-

discriminatory. In practice, most grid companies collect connection tariffs when it is possible pursuant to applicable regulations. The grid companies' right to demand connection tariffs applies equally for both consumption and production.

Section 17-5 of the Control Regulations indicates in more detail what kind of investment costs can be covered by grid companies through connection tariffs. The regulations differentiate between investments in customer-specific grids, radial joint facilities and meshed grids. In customer-specific facilities, i.e. facilities where the customer is the sole user, the entire investment cost can be collected from the customer as long as the grid company has dimensioned the facility according to the minimum standard in relation to the customer's need. In radial joint facilities, the connection tariffs can be equal to each developer's proportionate share of the construction costs. Radial joint facilities are grids that supply a limited and identifiable customer group, and it is therefore possible to attribute the benefit of the investments as a whole to this customer group. Proportionate share means that the customer cannot be charged for costs incurred due to the capacity in distribution facilities exceeding the customer's maximum need.

In meshed grids, current regulations only allow use of connection tariffs in extraordinary cases. In the event of reinforcements or new connections that entail investments in meshed grids, the investment cost is covered by the customer collective through the point tariffs for transmission and distribution of electricity.

- (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.)**

The costs of connection and technical adaptation in the grid are distributed between producers and grid companies according to the provisions on transmission and distribution tariffs and connection tariffs, as well as the grid companies' practice of these. See discussion in response to question 4.2.6. i). The income cap regulation (described in section 4.2.6 i) ensures that normally efficient companies achieve normal returns on their investments. The NVE works continuously to ensure this regulation is expedient and provides the correct investment incentives for the grid companies.

Renewables Directive II, Article 16, No. 4, second sentence entails that the EEA states, every second year from and including 30 June 2013, must review and implement any necessary improvements in the rules relating to connection tariffs.

In order to fulfil this item of the Directive, Section 9-1 of the Energy Act Regulations included a requirement for the NVE to review the rules relating to connection tariffs every other year with the intention of ensuring integration of new producers within renewable energy in the market, and to clarify whether the rules are in compliance with our EEA legal obligations, effective from 1 January 2012.

**(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?**

Section 17-5 of the Control Regulations relating to connection tariffs contain provisions relating to distribution of investment costs between original customers and customers connected at a later date. The connection tariff can be divided between customers that are connected when the facility is completed and customers that are connected at a later date, but no later than ten years following completion of the facility. Such a distribution is mainly carried out by the grid company prepaying the investment costs and determining the connection tariff pro rata vis-à-vis customers that are eventually connected to the grid. The rules apply equally for consumption and production.

**(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?**

Renewables Directive II, Article 16, No. 5, litera b entails that the EEA states must order the grid companies to provide a reasonable and precise schedule for receiving and processing grid connection requests.

Pursuant to Section 4-4, litera f of the Energy Act Regulations, the grid company must provide information regarding tariffs and terms for grid use on its own initiative. Furthermore, the grid company is required to provide information on calculation of tariffs and terms that are relevant to the customer. However, it has not been defined that the grid company must submit a schedule for processing the grid connection application. To fulfil the Directive's requirement, a duty for the grid companies to submit a schedule for processing grid connection applications has been added in an amended Section 3-4 in the Energy Act Regulations, effective from 1 January 2012.

Renewables Directive II, Article 16 No. 5, litera c stipulates that the EEA countries are required to order the grid companies to provide a reasonable and indicative schedule for a proposed grid connection.

Such a duty could be interpreted into Section 3-4, third subsection of the Energy Act Regulations which states that the connection obligation includes, if necessary for the connection, a duty to plan, apply for licence and invest in new grid facilities without unnecessary delay. However, the wording does not expressly state that the concessionaire must indicate a schedule for proposed grid connections. To fulfil the Directive's requirements on this point, an explicit duty for grid companies to submit a reasonable precatory schedule for the connection was added to an amended Section 3-4 which entered into force on 1 January 2012.



#### **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?**

Nearly all power production in Norway stems from renewable energy sources. In any case, Norwegian energy legislation treats all power producers the same, regardless of what energy source they use. According to Section 3-4 of the Energy Act, all grid facility concessionaires are obligated to connect new facilities for production of electric energy, and invest in grid facilities if necessary. See also 4.2.6 b).

According to Section 6-1 of the Energy Act, the Ministry must grant the authority to exercise the system operation in more closely stipulated terms. Statnett SF has been appointed the transmission system operator (TSO) in accordance with the regulations on the system operation in the power system.

The responsibility of transmission system operation entails ensuring instantaneous balance between production and consumption at all times and that operation takes place within the physical limitations of the system. According to Section 6-1 of the Energy Regulations and Section 4 of the Regulations relating to the system operation in the power system, the TSO must act neutrally and independently of the players in the power market, as well as utilise instruments that are based on commercial principles to the greatest possible extent.

Power buyers and sellers in the physical power markets are responsible for their own power balance. When reporting in each elspot area, they must ensure a planned balance between their obligations and rights for every hour. The players can add hourly purchase or sales bids in Elspot on Nord Pool Spot for the coming day. Bilateral transactions that involve output and input in different reporting areas must also be reported in the elspot market. Elbas, the intraday market, enables trading in balance closer to the hour of operation.

Balance in the actual hour of operation is ensured by Statnett regulating the players that provide regulation services based on transparent and non-discriminatory conditions. These markets are activated after the trades in Elspot and Elbas are concluded, and continue in the hour of operation.

With balance between production and consumption of electricity, the frequency of the voltage in the Nordic power system is 50.00 Hz. The immediate reaction to a change in production or consumption is automatically detected by the rotating mass in the power system. This leads to the frequency changing somewhat and the frequency-driven reserves are automatically activated in the power plants. The *Nordic system operation agreement* stipulates requirements for Statnett as regards the amount of reserves present in Norway at all times. Out of consideration for operational security, Statnett stipulates requirements for minimum delivery of frequency-driven reserves from the power plants. A basic delivery of the service is ensured through a requirement for players with a certain generator size (generators over 10 MVA regarding maximum droop adjustment). The players are paid a fixed rate for this basic delivery. Delivery beyond the basic delivery can be reported in the market for frequency-driven reserves. The market consists of a week and day market.

The primary regulation has a short duration since up and down regulation of production can only last a few minutes. Therefore, manual regulation is facilitated if necessary. This so-called tertiary regulation is ensured through a Regulation power market. Producers that can adjust

their own production up or down with up to a 15 minute warning, participate as active players in this market. Major power consumers that are able to disconnect their own consumption on short notice are also active in this market. Statnett exchanges balancing power with the other system operators in the Nordic region through a common Nordic merit order list. Together, Statnett and the Swedish Kraftnät are responsible for the balancing in the Nordic region. During the hour of operation, the system operators continuously assess the need for regulation, and activate the cheapest available bids at that time. The last bid used in this hour determines the regulating power price. This means that a market-based uniform price is determined for all players.

To ensure sufficient resources in the balancing market, Statnett enters into contracts regarding output reserves with producers and major consumers in the balancing power option market (RKOM). RKOM is operated on a seasonal and weekly basis and both consumption and production can be provided. The price is stipulated in the balancing power market.

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

See response under 4.2.7 a). The balance services are carried out by the system operator, who has to act neutrally and independently of players in the power market and to the greatest possible extent use instruments based on commercial principles. Norway has no prioritised dispatch of electricity; the Norwegian energy legislation treats all power producers the same, regardless of what energy source they use.

**(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).*)**

As a result of EU Directive 2009/28/EC, the NVE adopted an amendment in the Regulations relating to the system operation in the power system on 22 December 2011. The amendment entails that the system operator must report any considerable measures to the NVE that limit renewable power production and that are implemented to ensure satisfactory operational and supply security. The reporting must describe the actual conditions, as well as indicate possible measures to prevent undesirable reductions in renewable power production. The amendment entered into force on 1 January 2012.

In 2009, Norway opened for Elbas, the intraday market for electricity on Nord Pool Spot. Intraday trading facilitates trading in the time between the clearing of the day-ahead market

and the operational hour, and enables players to trade themselves in balance instead of paying for any imbalances through the balancing market.

Facilitating development of renewable energy is an important element in the Government's energy policy when the grid is being developed and upgraded. Statnett's grid development plan for 2011 shows that the enterprise is planning to invest between NOK 40 and 50 billion in development and upgrade of new power grids in Norway in the next decade.

Another important area is the possibility of increasing flexibility on the consumer side. Different forms of intelligent grids, which entail increased consumer flexibility, will to a greater degree be used in the Norwegian system, not least to smooth the consumption between peak load periods and the remaining time. An important step to increase small and medium users' consumer flexibility is introduction of advanced metering systems (AMS) in the distribution grid. See 4.2.6 c).

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

NVE is responsible for following up the Energy Act and Water Resources Act. Among other things, the NVE has regulatory expertise, makes administrative decisions and prepares matters for the Ministry of Petroleum and Energy. NVE conducts audits of the follow-up of provisions stipulated in their regulations and licences.

The NVE has prepared a system for follow-up of Statnett within Statnett's tasks as the system operator (TSO). NVE has established fixed meetings with Statnett and publishes minutes from the last three meetings. In addition, NVE makes an annual decision for Statnett regarding the reporting as the transmission system operating grid company.

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

Any party who wants to produce power has the right to be connected to the grid and to be treated according to neutral and non-discriminatory rules. All facilities that produce electricity are integrated in the power market if they want this, regardless of what energy source they use.

More than 70 per cent of the consumption in the Nordic region is sold through physical power contracts at Nord Pool Spot. The rest is traded through bilateral agreements. The power price is determined based on supply and demand, taking transmission and distribution capacity into consideration.

In order to trade on Nord Pool Spot, the players must have balancing agreements with the system operator or via a third party in the area where the trade will take place.

**(f) What are the rules for charging transmission and distribution tariffs to generators of electricity from renewable energy sources?**

See also response under 4.2.6 i).

There is no differentiation in the transmission and distribution tariffs as regards what energy source is used to produce the electricity. All energy sources are treated equally. The tariffs are e.g. regulated in the Control Regulations. The Regulations shall ensure correct delivery quality and price of power transmission and distribution and that the grid can be utilised and developed in a secure and socioeconomically efficient manner.

Grid investments are financed by each transmission and distribution grid user, through the tariffs (grid rent) paid to the grid companies. The authorities set an income cap for the grid companies, meaning a maximum limits on tariffs. The income caps are determined so the income over time will cover the costs of operation and depreciation of the grid, as well as provide a reasonable return on invested capital assuming efficient operation, utilisation and development of the grid.

The tariffs are set for both output of power (consumption) and input of power (production) and are composed of at least two segments; energy segments and other segments. In addition, the grid companies can determine a connection tariff to cover the construction costs in the event of new grid connections or reinforcement of the grid for existing customers. The connection tariff must be calculated based on the costs entailed in the customer's connection to the grid.

The purpose of the connection tariff is to highlight the costs of new connections or reinforcement, and to distribute the costs between the customer that triggers the investment and the grid company's other customers. The part of the construction cost not covered by the customer triggering the investment, but covered by the grid company, will increase the grid company's income cap. An increased income cap means that the cost is distributed among all of the grid company's customers through higher grid rent.

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

Several instruments are established to promote the use and production of biogas, cf. Item 4.6.2 e). In total, about 35 biogas plants have been established in Norway, delivering almost 200 GWh annually. Of these, 23 plants are based on sewage sludge, five on food waste, one for co-treatment of sewage sludge and food waste and five small plants for manure with co-treatment with waste. The produced gas is currently mostly used for heating and power production. Some is also used to fuel buses in the largest cities.

Downstream infrastructure for natural gas can only be found in certain, restricted areas in Norway. Based on the EEA Committee decision on Directive2003/55/EF, Norway's status is as an emergent market until 2014.

#### **(a) How is it ensured that the charging of transmission and distribution tariffs does not discriminate against gas from renewable energy sources?**

There are currently no requirements relating to third party access to downstream gas infrastructure in the natural gas act or natural gas regulations.

- (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?**

Not relevant.

- (c) **Are technical rules on network connection and connection tariffs for biogas published? Where are these rules published?**

Not relevant.

**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?**

In 2010, 4.3 TWh of district heating was delivered to consumers. The district heating deliveries have increased from 1.5 TWh in 2000. District heating has been established or is under development in most major cities and is under development or being planned in many smaller cities and communities.

Enova provides investment support for district heating, cf. discussion under Item 4.4. District heating projects that have received investment support from Enova (as of 31 December 2011) are expected to deliver district heating totalling 4 TWh. Considerable parts of the projects have not yet been completed, but are expected to be completed by 2020. Continued growth in district heating deliveries is therefore expected up to 2020. The growth assumes expansions in infrastructure in existing district heating plants and establishment of new infrastructure where there are currently no district heating plants.

**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 included in the provisions relating to fuel quality and biofuel (currently Section 2-20) in the Product Regulations (Regulations relating to restriction in use of hazardous and environmentally toxic chemicals and other products (Product Regulations) (2004-06-01, 922)).

- (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?)**

The regulatory provisions will specify that the sustainability criteria must be fulfilled in order for biofuel to be included with this. All reporting must be sent to the Climate and Pollution Agency, which will carry out audits to ensure compliance with the requirements.

- (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?**

Yes, it already exists. The Climate and Pollution Agency.

- (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 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.)**

Production of liquid biofuel based on domestic raw materials from agricultural or forestry areas in Norway is still very modest. However, this could change over time. It is not desirable to use the agricultural area in Norway for growing energy raw materials (cf. White Paper No. 9 (2011-2012)). The forest is the most important land-based source of energy raw materials.

Article 17(3) shall ensure that raw materials for production of liquid biofuel are not acquired from land areas with high biological diversity. Environmental considerations in agriculture and forestry, including safeguarding biological diversity, are governed by the Forestry Act and Land Act and associated regulations, as well as provisions in the Nature Diversity Act. In addition, the Planning and Building Act is an important tool for land use management.

Forestry activity, including harvest of lumber and raw materials for bioenergy/biofuel, shall be carried out in line with the regulations mentioned above. Extractions of raw material from the forest must be based on the principles for sustainable forestry, and measures must be adapted such that they have a positive or acceptable effect on biological diversity, the landscape, recreation and cultural artefacts. Measures that impact endangered species' habitats negatively, or with equivalent serious consequences for important environmental assets, must be avoided. Out of consideration for the work on increased forest conservation, emphasis will be placed on preventing logging from destroying forest areas with national conservation values. Increased activity must be combined with improved knowledge regarding the environmental values in forests and strengthened environmental consideration in forestry in line with White Paper No. 39 (2008-2009) *Climate challenges – agriculture is part of the solution*, including strengthening the safeguarding of such values in connection with planning and operation, environmental registrations, voluntary protection, collaboration agreements and use of the new instruments in the Nature Diversity Act.

Article 17 (3), litera a states: “primary forests and other forests, i.e. forests and other forest land with resident species where there are no visible signs of human activity, and the ecological processes are not significantly disturbed”. It will be necessary to clarify which Norwegian forest areas are included under Article 17 (3), litera a. Mapped areas that will not be used for logging, e.g. living environments according to environmental registrations, will most likely be included under this.

Grass areas with considerable biodiversity are still pending further definition and guidelines from the Commission, cf. final subsection in Article 17 (3) litera c. It is assumed – depending on a final definition from the EU – that further follow-up with affected expert agencies is needed before such areas can be easily identified by the general public.

As regards Article 17 (4) litera a and 17 (5), trenching in bogs and swampy forests with the intention of enhance forestry production is prohibited pursuant to the regulations relating to sustainable forestry and is furthermore stipulated as a requirement in the forestry environmental standard “Living Forest”. There is no prohibition against cultivation of bogs and peat land for agriculture. The regulations relating to cultivation will be revised to also reflect climate considerations (cf. White Paper No. 9 (2011-2012)).

Areas for nature conservation and the like, cf. Article 17 (3-5) are to some extent identifiable through area categories and map information related to plans according to the Planning and Building Act. In addition, landowners, developers, as well as planning and licensing authorities can find information regarding nature diversity, including protected areas, selected nature types and prioritised species, e.g. in the Species Map and Nature Base ([http://dnweb12.dirnat.no/nbinnsyn/NB3\\_viewer.asp](http://dnweb12.dirnat.no/nbinnsyn/NB3_viewer.asp)). In the Ministry of the Environment’s guideline to T-1514 Nature Diversity Act, Chapter II, page 28 there is more information regarding relevant sources. Reference is also made to the database Kilden (the Source) (<http://kilden.skogoglandskap.no/map/kilden/index.jsp?theme=http://kilden.skogoglandskap.no>). Information in these registries is updated continuously and e.g. includes information on protected areas founded in statutes, nature types and environmental registrations in forests (MiS). The registries are open to the general public.

- (e) **As far as protected areas are concerned, please provide information under which national, European or international protection regime they are classified.**

National classification of the most relevant protected areas, as regards Article 17 (3) litera b, Item i is: Nature reserves, national parks, special landscape areas.

- (f) **What is the procedure for changing the status of land? Who monitors and reports at national level on land status changes? How often are the land zoning register updated (monthly, annually, bi-annually, etc.)?**

Cf. discussion under question d).

Re-allocation of land and forest areas for other purposes than agriculture can only take place when the authorities have granted the necessary permits. The Land Act contains rules relating to re-allocation of cultivated and cultivable land and sharing agriculture property. In Norway, only 3 per cent of the total area is cultivated land. Nevertheless, in recent years an annual re-allocation of more than 20,000 decares cultivated and cultivable agricultural area for purposes other than agriculture was reported. Securing agriculture areas suited for growing food grains

and valuable cultural landscapes is a national performance goal in the environmental conservation policy.

Re-allocation of cultivated land can take place by the municipality adopting plans according to the Planning and Building Act relating to use of the area for purposes other than agriculture, and by individuals applying to use parts of or the entire property for purposes other than agricultural production according to the rules in the Land Act. In densely populated areas, use of the areas is generally regulated by the Planning and Building Act. Re-allocation of agricultural area according to the Planning and Building Act takes place following an assessment of the municipality's total area need in the long term.

Through KOSTRA (municipality state reporting), the municipalities are required to report land use changes in the form of re-allocations according to the Planning and Building Act and Land Act, respectively. The Norwegian Institute for Forest and Landscape keeps map registries of these changes and Statistics Norway keeps extensive data registries from the reporting. The Norwegian Institute for Forest and Landscape is part of a partnership relating to establishment, administration, operation, maintenance and use of detailed map data and orthophotos – Geogrowth – and Norway digitally, with national responsibility for procuring geodata, cf. White Paper No. 30 (2002-2003). Changes in the KOSTRA registries are generally updated annually.

- (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?**

This must be followed up further, if relevant. Currently, there is no production of biofuel based on Norwegian agricultural areas (i.e. besides forests), and the established policy is that top-soil in Norway will not be used to produce energy goods.

- (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?**

No decision regarding this as of today.

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

##### *Electricity certificates*

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

The electricity certificate system is a market-based support system for development of renewable electricity production. The system is a collaboration between Norway and Sweden, where the countries have a common goal of increasing the renewable electricity production by a total of 26.4 TWh from 2012 to 2020. Norway is obligated to finance half, 13.2 TWh, regardless of the share of production that is located in each of the two countries. The proportion or amount of electricity produced by a joint project which is to be regarded as counting towards the national overall target shall be notified in accordance with the



Renewable Directive. The amount of electricity production from facilities that are included in the Norwegian-Swedish electricity certificate market and put into operation after 1 January 2012 shall be distributed with 50 per cent in Norway and 50 per cent in Sweden.

Electricity producers that fulfil the requirements pursuant to the Act relating to electricity certificates (Lov-2011-06-24-39) can receive one electricity certificate for each megawatt hour (MWh) they produce. Facilities that are put into operation after 1 January 2012 and before 31 December 2020 have a right to electricity certificates for 15 years. The system will terminate on 1 April 2036 with the annulment of certificates for 2035.

Electricity suppliers and certain consumer groups have a statutory duty to buy electricity certificates for a certain percentage of their consumption or delivery. The number of electricity certificates they must buy increases in line with the more production that shall be financed through the electricity certificate system. As production facilities are phased out, the percentage for which they must buy electricity certificates will decline. On 1 April each year, the electricity suppliers and consumer groups that are obliged to buy certificates must annul a certain number of certificates to cover their previous calendar year's required electricity certificate delivery or consumption.

Producers entitled to electricity certificates receive an income from the sale of electricity certificates in addition to the sale of electricity in the regular power market. The system thus stimulates increased development of renewable electricity production.

Information regarding the electricity certificate system is available from: <http://www.nve.no/no/Kraftmarked/Elsertifikater/>

**(b) Is it a voluntary or obligatory scheme?**

The system is obligatory for all electricity consumers that are required to buy quotas pursuant to the Act relating to electricity certificates. The system is voluntary for producers that have a right to electricity certificates, i.e. producers of new electricity from renewable energy sources.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

The percentage of consumption for which players required to buy quotas must buy electricity certificates each year is stipulated by Act relating to electricity certificates (Lov 2011-06-24, No. 39). The Norwegian Water Resources and Energy Directorate is the administrative authority under the electricity certificate system and Statnett is responsible for the electronic registry.

**(d) What are the measures taken to ensure availability of necessary budget/funding**

The electricity certificate system is not financed over the State budget. Producers of renewable electricity entitled to electricity certificates pursuant to the Act relating to electricity certificates are awarded one certificate per MWh produced electricity. Electricity consumers that are required to purchase electricity certificates pursuant to the Act relating to electricity certificates must purchase electricity certificates corresponding to a percentage of their consumption or delivery of electricity. Producers with a right to electricity certificates thus receive additional income through the sale of electricity certificates.

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

Long-term credibility is ensured by through a statutory demand for electricity certificates for each year from 2012 up to and including 2035. Everyone entitled to electricity certificates is issued certificates for up to 15 years.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The electricity certificate system is the subject of revisions through control stations. The first control station will be carried out in 2015. Control stations will thereafter take place every four years. As the electricity certificate system is a joint project between Norway and Sweden, control stations will be coordinated between the countries.

**(g) Does support differ according to technology?**

The electricity certificate system is neutral as regards technology. This means that all technologies defined as renewable energy sources pursuant to the renewables directive receive the same subsidy amount.

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

Norway and Sweden have through the electricity certificate system a common goal of establishing 26.4 TWh new electricity production based on renewable energy sources in 2020.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

The electricity certificate system is a collaboration between Norway and Sweden. The collaboration is regulated in an agreement between Norway and Sweden relating to a joint electricity certificate market (2011-06-29). The electricity certificate system was introduced in Norway on 1 January 2012 and is governed through the Act relating to electricity certificates (Lov 2011-06-24, No. 39). The Regulations relating to electricity certificates (2011-12-16, No. 1398) provide more detailed guidelines regarding how the system should work.

**(k) Is this a planned scheme? When would it be operational?**

The electricity certificate system was introduced on 1 January 2012.

**(l) What start and end dates (duration) are set for the whole scheme?**

The start date for the scheme is 1 January 2012 and the date of the final annulment of electricity certificates is 1 April 2036. New facilities must be put into operation before 31 December 2020 at the latest to qualify for the scheme.

**(m) Are there maximum or minimum sizes of system which are eligible?**

All power plants that fulfil the requirements in the Electricity Certificate Act and where construction started after 7 September 2009 can participate in the electricity certificate system. There are no size restrictions. There is an upper limit for hydropower in a transition scheme; hydropower plants that are 1 MW or smaller and where construction started after 1 January 2004 qualifies for the scheme.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

There are no other support measures with the purpose of contributing to increased electricity production from renewable energy sources. Production facilities that previously have been granted public investment support with the purpose of increasing renewable electricity production must repay the support in order to participate in the electricity certificate system.

Prototype facilities for immature technologies that receive public support for technology development can receive support through the electricity certificates system.

**(o) Are there regional / local schemes? If so, please detail using the same criteria.**

No.

**Specific questions for tradable certificates:**

**(a) Is there an obliged share of electricity produced from renewable sources in the total supply?**

The Storting has adopted the Act relating to electricity certificates which sets the quotas determining the demand for electricity certificates. The Act relating to electricity certificates stipulates quotas for every year from 2012 up to and including 2035. These quotas determine the percentage of electricity consumption for which players must buy electricity certificates. The quotas start at 3 per cent in 2012 and increase to 18.3 per cent in 2020, depending on how much production that will be financed in a given year.

**(b) Who has the obligation?**

Players that deliver electricity to end-users, consume self-produced power and purchase electricity for own consumption via the Nordic power exchange or bilateral agreements are required to purchase electricity certificates.

**(c) Are there technology-specific bands?**

No.

**(d) Which technologies are covered by the scheme?**

All new electricity technologies have a right to certificates as long as the production facility satisfies the requirements stipulated in the statutes and regulations relating to electricity certificates. The comments to the regulations relating to electricity certificates reference the Renewables Directive (2009/28/EC) for a definition of what should be considered renewable energy sources.

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

Only Norwegian and Swedish certificates can be used to fulfil the quota requirement in Norway.

**(f) Is there a floor bottom price?**

No.

**(g) Is there a penalty for non-fulfilment?**

If a player subject to quotas does not annul a sufficient number of certificates, a penalty fee is imposed. The fee is 150 per cent of the electricity certificate price weighted by volume registered from and including 1 April in the calculation year up to and including 31 March of the following year.

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

When certificates are transferred from a seller to a buyer the seller of electricity certificates must register the number of electricity certificates which are transferred from the seller to the buyer, the sales price and the date when the contract was signed in the electricity certificate registry. The sales price is the price the seller and buyer have agreed upon. The sales price in the joint system is published by the parties responsible for the registry in Sweden and Norway: <https://elcertifikat.svk.se/> and <http://necs.statnett.no>. The average electricity certificate price in the Norwegian registry from 1 January 2012 to 31 March 2012 was 127 NOK/MWh. The average electricity certificate price in the Swedish registry in the same period was 211 SEK/MWh.

**(i) What is the trading scheme for certificates?**

Trade in electricity certificates takes place bilaterally between producers and those required to purchase electricity certificates. There are no requirements that certificates must be traded in a specific marketplace. There are brokers that facilitate trade between players in the electricity certificate market.

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

A facility is entitled to electricity certificates for a maximum of 15 years. Facilities that have been put into operation before 1 January 2012 will have their allocation period of 15 years shortened by the time the facility was put into operation until 1 January 2012.

***Research and development***

The reporting below relates to support for research and development (R&D) in the energy area through the RENERGI research programme and FME scheme. Funds for these schemes are channelled through the Research Council of Norway.

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

RENERGI will develop knowledge and solutions as a basis for environmentally-friendly, economical and efficient development of Norway's energy resources, high security of supply and internationally competitive industry associated with the energy sector. At the same time, the research should also contribute to solve the global energy and climate challenges and answer the political challenge relating to Norway's role and responsibility as an international initiator. RENERGI is limited to renewable energy production, transmission and efficient energy consumption.

The Research centres for environmentally-friendly energy (FME) scheme will provide time-limited research centres with concentrated, focused and long-term research efforts at a high international level to solve highlighted challenges in prioritized energy areas.

**(b) Is it a voluntary or obligatory scheme?**

Participation in RENERGI is voluntary. Players must apply for research support for concrete projects in announcement rounds. The awards are distributed by the programme board according to a competition principle where the applications with the highest grade receive funds.

The FMEs were also established in the same manner.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

The Research Council of Norway administers RENERGI's allocations. The majority of the funding for the programme come from the Ministry of Petroleum and Energy, the remainder comes from the Ministry of Transport and Communications, the Ministry of the Environment, the Ministry of Trade and Industry, the Ministry of Education and Research and the Ministry of Agriculture and Food. The FMEs are also managed by the Research Council of Norway. Ten centres are financed by the Ministry of Petroleum and Energy, one is financed by the Ministry of Education and Research.

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

Each year, RENERGI and the FMEs receive funds over the fiscal budget. There will be some uncertainty related to how much is granted for energy research from year to year, depending on the development of the yearly budgets.

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

The long-term perspective and predictability is maintained as RENERGI has a programme period of 10 years. Even though the programme will expire in 2013, the work to establish a new energy research programme has started.

For the FMEs, a long-term perspective is ensured by granting support for up to eight years.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The Research Council of Norway carries out external evaluations of their research programmes when they are completed, including RENERGI. Midway evaluations of the programmes are normally also carried out. The purpose of the evaluations is to check whether the programmes achieve the stipulated goals, as well as use the results as a basis for continuation of the programmes and adjustment of programme plans.

The arrangement of RENERGI is adjusted in connection with the annual project announcement rounds, including prioritisation of research topics, and in line with the national Energi21 energy R&D strategy.

The FMEs are also evaluated after five years to assess the basis for further support for three more years. The first centres of this type were started in 2008, and midway evaluations have therefore not yet been carried out.

As the RENERGI programme period will end in 2013, and to prepare for a new programme period, the Ministry of Petroleum and Energy has evaluated its funding for R&D through the Research Council of Norway, including funding for RENERGI and the FMEs.

**(g) Does support differ according to technology?**

Allocation of funds is based on free competition pursuant to announcements. The announcements can vary from period to period. The priorities mainly follow Energi21's strategy, but areas such as transport are also to be included. Guidelines are provided in announcement letters each year.

The areas that have special interest within each topic will be the result of an annual strategy process. Key instruments within RENERGI are basic research projects, expertise projects and user-directed innovation projects. The instruments to be used in the various topics are clarified in the above-mentioned strategy process.

The FMEs control their own research priorities within the centres' topics.

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

There are no specific goals as regards energy production for RENERGI or the FMEs.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

RENERGI and the FMEs are ongoing schemes. They are not regulated by law. They are managed by the Research Council of Norway which is subject to the Ministry of Education and Research. The Research Council of Norway is a strategic agency which highlights areas of effort, manages and awards research funds and assesses the research being carried out.

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

RENERGI was established in 2004 and will be completed in 2013. This will be followed by a new research programme which is currently being planned.

The eight first FMEs were started in 2008 and will receive support for up to eight years. Three FMEs for social research were established in 2010. These will also receive support for up to eight years.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

No, not for the same type of activity.

**(o) Are there regional / local schemes? If so, please detail using the same criteria.**

No.

#### **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**

##### ***Enova – general***

Enova is a public enterprise which was established by Royal Decree on 1 June 2001, effective from 22 June 2001. The founding of the enterprise was based on the decision to establish the Energy Fund on 5 April 2001, cf. Proposition to the Odelsting No. 35 (2000-2001) regarding statutes and changes in the Act of 29 June 1990 No. 50 relating to the generation, conversion, transmission, trading, distribution and use of energy, etc. (the Energy Act) and Recommendation to the Odelsting No. 59 (2000-2001). Enova administers the Energy Fund, which is a long-term financing source for the diversification of energy consumption and generation.

Enova promotes environmentally friendly diversification of energy consumption and energy production (energy diversification). This is a long-term effort in the development of markets for efficient energy solutions that contribute to strengthen the energy security of supply and reduce greenhouse gas emissions.

Enova works in close cooperation with the players in the energy sector. Enova has extensive support schemes for industrial companies, district heating companies, the construction industry and households. In addition, Enova provides general advisory services for different players, from an advisory telephone service for households, to advising professional players. Enova also has information activities directed at children and youth.

A key premise for Enova's use of policy instruments is that the investment support must have a triggering effect, e.g. contribute to triggering projects that otherwise would not have been carried out.

##### ***Energy diversification***

Norway is different from other countries in that the majority of the domestic stationary energy consumption is covered by electricity. This is i.e. due to the significant use of electricity for heating purposes in buildings. The high share of electricity in consumption, as well as electricity production based on hydropower, creates special challenges for the security of supply in Norway.

Oil boilers have played an important role for security of supply. Until the beginning of the 1970s, it was common to install waterheating systems and oil boilers in buildings. Since the 1990s, there has been a considerable decline in the use of fuel oil for heating. For environmental reasons, Norway has a sustained effort to phase out fuel oil for heating buildings. However, if old fuel oil boilers were to be replaced with direct electric heating, the vulnerability in the energy supply would increase. The established measures promoting energy diversification are therefore directed at continuing the phase-out of fuel oil for heating in buildings, and to ensure that oil boilers are not replaced with direct electric heating. Enova's activities facilitate that heating systems based on renewable energy, waste heat and heat pumps become more widespread. The long term goal is to achieve lasting market changes where environmentally-friendly solutions are competitive.



Enova also facilitates more efficient energy consumption, which helps reduce the energy need and reduce peak loads on cold winter days. Enova's work on energy diversification is especially directed at the construction sector and industrial companies. To lay the foundation for adaptation in a long-term perspective, Enova also contributes to demonstration and introduction of new energy and climate technologies.

**a) How are the support schemes for electricity from renewable energy sources adapted to encourage the use of CHP from renewable energy sources?**

District heating plants with combined power and heat production can receive support from Enova's heating programme. If the power delivery does not receive electricity certificates, it can be included in the energy yield in addition to the heating delivery.

**b) What support schemes are in place to encourage the use of district heating and cooling using renewable energy sources?**

Through Enova's Heating Scheme, investment aid can be granted to both new establishments of district heating, as well as district heating infrastructure.

**c) What support schemes are in place to encourage the use of small-scale heating and cooling from renewable energy sources?**

Through Enova's Heating Scheme, investment aid can also be granted to small heating plants, for instance in buildings and industry.

In addition, Enova has a Scheme on support for alternative, renewable heating and electricity savings in private households, which grants support for investments in certain environmentally-friendly heating technologies to households.

The Bioenergy Programme (Innovation Norway) provides investment support for establishment of facilities for sale of heating, where the upper limit for the heating boiler's output is 2 MW. This assumes at least 50 per cent of the ownership interest in the heating plant lies with agricultural property owners.

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

Through Enova's Industry Programme, industry players can apply for investment aid for converting from fossil fuels to renewable energy sources in the industry. This includes support for heating plants.

Below is a review of the different programmes under Enova's Heating Scheme:

### ***Support for new establishment of district heating (Enova)***

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

Enova promotes the establishment of district heating. This entails initialisation of district heating where both infrastructure and associated energy plants must be established based on renewable energy sources.

Infrastructure for district heating and cooling includes transmission and distribution facilities up to the metering point for output of heating, including any heat exchangers, branch pipelines and customer centres.

Conversion of existing heating plants for renewable base load production in plants established before 1 January 2008 is also included under the programme.

More information can be found here:

<http://naring.enova.no/sitepageview.aspx?articleID=332>

**(b) Is it a voluntary or obligatory scheme?**

This is a voluntary scheme.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

The subsidy scheme is managed by Enova.

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

This scheme is financed through the resources in the Energy Fund. If there is a need for further resources beyond what has been allocated for this scheme, Enova can redistribute funds from the other schemes managed by Enova. Enova can transfer resources in the Energy Fund from one year to another. This helps ensure a cost-efficient management of funds.

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

A significant part of the Energy Fund's revenue comes from the returns from the Basic Fund for renewable energy and energy efficiency, and from the levy on the grid tariff.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The use of the resources in the Energy Fund is reported annually in Enova's annual report to the Ministry of Petroleum and Energy. The Ministry of Petroleum and Energy reviews and assesses the results on a yearly basis.

**(g) Does support differ according to technology?**

No.

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

The programme was established in 2008. From 2008 to 2011 included, Enova has entered into agreements that will contribute to 1.6 TWh a year in district heating deliveries after the projects have been completed.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Yes.

Enova must manage the Energy Fund's resources with a basis in the Energy Act and statutes for the Energy Fund:

- Establishment of the Energy Fund was based on the Act relating to amendments to the Act of 29 June 1990 No. 50 relating to the generation, conversion, transmission, trading and distribution of energy, etc. (the Energy Act), Section 4-4, cf. Proposition to the Odelsting No. 35 (2000-2001) and Recommendation to the Odelsting No. 59 (2000-2001).
- Statutes for the Energy Fund.

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

No dates have been determined for the duration of the scheme. The Energy Fund was recently approved by EFTA's supervisory body until the end of 2016.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Support can be cumulated with support from other subsidy administrators to cover the same costs. Enova must ensure that the total support granted does not exceed the amount necessary to trigger the measure. Support is restricted by the rules for state aid in the EEA Agreement.

- (o) **Are there regional/local schemes? If so, please detail using the same criteria.**

No.

***Support for district heating infrastructure (Enova)***

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

Enova provides support for district heating infrastructure. The programme is to compensate for deficient profitability, i.e. to trigger infrastructure projects that are not initially profitable, and compensate for uncertain developments in heating demand. District heating infrastructure includes transmission and distribution facilities up to the metering point for output of district heating and cooling, including any heat exchangers, branch pipelines and customer centres.

More information can be found at:

<http://naring.enova.no/sitepageview.aspx?articleID=331>

- (b) **Is it a voluntary or obligatory scheme?**

This is a voluntary scheme.

- (c) **Who manages the scheme? (*Implementing body, monitoring authority*)**

The subsidy scheme is managed by Enova.

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

This scheme is financed through the resources in the Energy Fund. If there is a need for further resources beyond what has been allocated for this scheme, Enova can redistribute funds from the other schemes managed by Enova. Enova can transfer resources in the Energy Fund from one year to another. This helps ensure a cost-efficient management of the funds.

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

A significant part of the Energy Fund's revenue comes from the returns from the Basic Fund for renewable energy and energy efficiency and the levy on the grid tariff.

- (f) **Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The use of the resources in the Energy Fund is annually reviewed and assessed in Enova's annual report to the Ministry of Petroleum and Energy.

- (g) **Does support differ according to technology?**

No.

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

The programme was established in 2008. From 2008 to 2011 included, Enova has entered into agreements that will contribute to 950 GWh a year in district heating deliveries after the projects have been completed.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Yes.

Enova must manage the Energy Fund's resources with a basis in the Energy Act and statutes for the Energy Fund:

- Establishment of the Energy Fund was based on the Act relating to amendments to the Act of 29 June 1990 No. 50 relating to the generation, conversion, transmission, trading and distribution of energy, etc. (the Energy Act), Section 4-4, cf. Proposition to the Odelsting No. 35 (2000-2001) and Recommendation to the Odelsting No. 59 (2000-2001).
- Statutes for the Energy Fund.

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

No dates have been determined for the duration of the scheme. The Energy Fund was recently approved by the EFTA's supervisory body until the end of 2016.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Support can be cumulated with support from other subsidy administrators to cover the same costs. Enova must ensure that the total support granted does not exceed the amount necessary to trigger the measure. Support is restricted by the rules for state aid in the EEA Agreement.

**(o) Are there regional/local schemes? If so, please detail using the same criteria.**

No.

### ***Support for central heating (Enova)***

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

Enova promotes the installation of central heating based on renewable energy sources such as solid biofuel, thermal solar heat, ambient heat (heat pumps) and waste heat. The subsidy scheme targets registered enterprises and public enterprises that want to establish or convert to the use of renewable energy in small heating plants. The target groups are:

- Building owners
- Industrial companies
- Heating companies

More information can be found at:

<http://naring.enova.no/sitepageview.aspx?articleID=4216>

**(b) Is it a voluntary or obligatory scheme?**

This is a voluntary scheme.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

The subsidy scheme is managed by Enova.

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

This scheme is financed through the resources in the Energy Fund. If there is a need for further resources beyond what has been allocated for this scheme, Enova can redistribute funds from the other schemes managed by Enova. Enova can transfer resources in the Energy Fund from one year to another. This helps ensure a cost-efficient management of funds.

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

A significant part of the Energy Fund's revenue comes from the returns from the Basic Fund for renewable energy and energy efficiency and the levy on the grid tariff.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The use of the resources in the Energy Fund is annually reviewed and assessed in Enova's annual report to the Ministry of Petroleum and Energy.

**(g) Does support differ according to technology?**

No.

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

The programme was established in 2008. From 2008 to 2011 included, Enova has entered into agreements that will contribute to 200 GWh a year of heating deliveries after the projects have been completed.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Yes.

Enova must manage the Energy Fund's resources with a basis in the Energy Act and statutes for the Energy Fund:

- Establishment of the Energy Fund was based on the Act relating to amendments to the Act of 29 June 1990 No. 50 relating to the generation, conversion, transmission, trading and distribution of energy, etc. (the Energy Act), Section 4-4, cf. Proposition to the Odelsting No. 35 (2000-2001) and Recommendation to the Odelsting No. 59 (2000-2001).
- Statutes for the Energy Fund.

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

No dates have been determined for the duration of the scheme. The Energy Fund was recently approved by the EFTA's supervisory body until the end of 2016.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Support can be cumulated with support from other subsidy administrators to cover the same costs. Enova must ensure that the total support granted does not exceed the amount necessary to trigger the measure. Support is restricted by the rules for state aid in the EEA Agreement.

- (o) **Are there regional/local schemes? If so, please detail using the same criteria.**

No.

*Enova's scheme on support for alternative, renewable heating and electricity savings in private households (Enova)*

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

The purpose of the scheme is to provide consumers with incentives to invest in certain environmentally-friendly heating technologies that are not widely used in the Norwegian market and that can contribute to reduce the use of electricity and fossil fuels in private households. The scheme includes pellet stoves and boilers, heat pumps connected to water heating systems, management systems to reduce electricity consumption and investment in solar collectors that are connected to water-borne heating systems.

More information can be found at:

<https://tilskudd2006.enova.no/>

- (b) **Is it a voluntary or obligatory scheme?**

This is a voluntary programme.

- (c) **Who manages the scheme? (Implementing body, monitoring authority)**

The programme is managed by Enova.

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

This programme is financed through the resources in the Energy Fund. If there is a need for further resources beyond what has been allocated for this programme, Enova can redistribute funds from the other schemes managed by Enova. Enova can transfer resources in the Energy Fund from one year to another. This helps ensure a cost-efficient management of funds.

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

A significant part of the Energy Fund's revenue comes from the returns from the Basic Fund for renewable energy and energy efficiency and the levy on the grid tariff.

- (f) **Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The use of the resources in the Energy Fund is annually reviewed and assessed in Enova's annual report to the Ministry of Petroleum and Energy.



**(g) Does support differ according to technology?**

Yes, subsidies are limited to NOK 4000 for pellet stoves and central heating management systems. For heat pumps, pellet boilers and solar collectors, the subsidies are limited to NOK 10,000. Private households can apply for a maximum refund of 20 per cent of documented and eligible costs.

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

The programme is expected to generate renewable energy production, but since the eligible facilities are very small, the effect has not been calculated.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Yes, this is an existing measure.

The programme was proposed by the Norwegian Government in Proposition to the Storting No. 82 (2005-2006), and adopted by the Storting in September 2006. In Proposition to the Storting No. 120 (2010-2011) the Subsidy programme for households was incorporated into the Energy Fund, effective on 1 July 2011.

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

No dates have been determined for the duration of the scheme. The Energy Fund was recently approved by the EFTA's supervisory body until the end of 2016.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Support can be cumulated with support from other subsidy administrators to cover the same costs. Enova must ensure the total support does not exceed the amount necessary to trigger the measure. Support is restricted by the rules for state aid in the EEA Agreement.

- (o) **Are there regional/local schemes? If so, please detail using the same criteria.**

-

***Bioenergy programme (Innovation Norway)***

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

The Bio Energy Programme, which is managed by Innovation Norway, stimulates increased use of renewable energy sources, and has two areas of effort: Small-scale bio energy plants both internally in agriculture and for sale to other social sectors and wood chip production equipment. Designated guidelines have been prepared for development and investment in wood chip production equipment. The purpose is to stimulate farmers and foresters to produce, use and deliver bioenergy in the form of fuel or mature heat. The target group is farmers, forest owners and the greenhouse industry. The programme provides investment support for facilities built for sale of heating, farmhouse heating plants, greenhouses and biogas. All projects supported must be able to prove reductions in greenhouse gas emissions. Support is also granted for pre-studies/pre-projects, as well as knowledge and expertise measures. An underlying goal is for the bioenergy programme to contribute to utilisation of raw materials from forests or cultural landscapes. The bioenergy programme functions in harmony with Enova's measures, which are directed at large-scale facilities.

- (b) **Is it a voluntary or obligatory scheme?**

Voluntary.

- (c) **Who manages the scheme? (*Implementing body, monitoring authority*)**

The bioenergy programme is managed by Innovation Norway.

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

Through annual budget processes in coordination with the fiscal budget/Agricultural Agreement.

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

Depends on political prioritisations.

- (f) **Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The subsidy programme is assessed annually in the form of management dialogue and letters of allocation.

**(g) Does support differ according to technology?**

The subsidy rates vary somewhat for different measures in the programme, but it is generally up to 35 per cent of investment costs. For expertise and development measures, support can be granted for up to 50 per cent of costs.

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

Since the start-up of the bioenergy programme in 2003 to the end of 2011, support has been granted for about 1680 projects, which have triggered a total produced heating amount of approx. 208 GWh. The production of wood chips for fuel triggered by the programme is not included in this figure. In 2011, NOK 79 million was spent on the bioenergy programme and the planned produced heating amount was 42.5 GWh.

**(i) Is support conditional on meeting energy efficiency criteria?**

Not relevant.

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

Existing. Regulated through the Act of 19 December 2003 No. 130 relating to Innovation Norway and annual budget propositions, Storting Proposition No. 1 S (2010-2011) and annual agricultural settlements, Storting Proposition No. 126 S (2010-2011).

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

Established in 2003. The programme will continue until a decision relating to cessation is made.

**(m) Are there maximum or minimum sizes of system which are eligible?**

The effect limit for bio energy boilers for facilities for sale of heating is set from 0 to 2 MW. The effect limit for bio boilers in greenhouses is set from 0 to 1 MW.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Generally, no. However, bio heating plants that have received public support through the bioenergy programme can, in special cases, be partially financed by the forest owner using the forest fund scheme as a supplement for private funds.

- (o) **Are there regional/local schemes? If so, please detail using the same criteria.**

-

***Energy chip scheme***

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

Support for extraction of forest raw materials for chip and energy production (Energy Chip Scheme). The scheme, managed by the Norwegian Agricultural Authority, was established in 2009. Its primary purpose is to contribute to increased profitability by harvesting forest raw materials for chip and energy production and thus contribute to more forest fuel in the market. The measure is a step in a balanced development of the value chain for bioenergy, from the forest to the energy producer, in line with the national strategy for increased development of bioenergy (Ministry of Petroleum and Energy, 2008).

- (b) **Is it a voluntary or obligatory scheme?**

Voluntary.

- (c) **Who manages the scheme? (*Implementing body, monitoring authority*)**

The Energy Chip Scheme is managed by the Norwegian Agricultural Authority (SLF). The County Governor has power of decision following municipal processing of subsidy applications.

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

Through annual budget processes in connection with the fiscal budget.

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

Depends on political prioritisations.

- (f) **Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far? EN 15.7.2009 Official Journal of the European Union L 182/**

The subsidy scheme is assessed annually in the form of management dialogue and letters of allocation between the Ministry of Agriculture and Food and SLF.

- (g) **Does support differ according to technology?**

The subsidy rate varies somewhat depending on the type of raw material being harvested.

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

In 2010, about NOK 31 million was allocated in subsidies for harvest of forest raw materials corresponding to about 500,000 loose cubic metres of energy chips. In 2011, NOK 39 million in subsidies was granted for harvest of forest raw materials corresponding to about 820,000 loose cubic metres of energy chips.

**(i) Is support conditional on meeting energy efficiency criteria?**

Not relevant.

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

Existing. Regulated through the Regulations of 4 February 2004 No. 447 for subsidies for forestry and environmental measures. Financial framework emerges from annual budget propositions, Storting Proposition No. 1 S (2010-2011).

**(k) Is this a planned scheme? When would it be operational?**

-

**(l) What start and end dates (duration) are set for the whole scheme?**

Established in 2009. The scheme will be continued until a decision relating to cessation is made.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Generally, no.

**(o) Are there regional/local schemes? If so, please detail using the same criteria.**

-

*Forest fund for bioenergy measures*

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

The forest fund for bioenergy measures is governed by the Regulations of 3 July 2006 No. 881 relating to a forest fund, etc. The purpose of the regulation is to ensure financing for sustainable management of forest resources through forced allocation of funds. From 4 to 40 per cent of the gross value of sold lumber must be earmarked. The forest fund resources are

related to the agricultural property. The funds are not interest-bearing for the property owner. Forest funds used for defined measures, including bioenergy measures, yield an 85 per cent tax exempt share. Forest funds used for bioenergy measures include facilities and equipment, but not fixed expenses, which are used in production of mature heating for delivery, connected to the property. At least 75 per cent of the production capacity must be suited for delivery of mature heating outside own agricultural business activity.

**(b) Is it a voluntary or obligatory scheme?**

Voluntary.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

Managed by forest owner. Requires approval from the municipality.

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

The forest owner is responsible for selecting the withholding rate (4-40 per cent) of gross lumber income, and through this ensure sufficient forest fund resources in relation to the investment need on the property.

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

Depends on political priorities.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

No.

**(g) Does support differ according to technology?**

Not relevant.

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

Use of forest funds for bioenergy measures must take place in compliance with regulations and be approved by the municipality.

**(i) Is support conditional on meeting energy efficiency criteria?**

Not relevant.

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

Existing. Regulated in the Regulations of 3 July 2006 No. 881 relating to a forest fund etc.

- (k) Is this a planned scheme? When would it be operational?**

-

- (l) What start and end dates (duration) are set for the whole scheme?**

Forest fund for bioenergy measures that came as an amendment to the regulations effective from 2007.

- (m) Are there maximum or minimum sizes of system which are eligible?**

No.

- (n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Generally, no.

- (o) Are there regional/local schemes? If so, please detail using the same criteria.**

-

### ***Research and development***

The reporting below relates to support for research and development (R&D) in the energy area through the RENERGI research programme and FME scheme.

These programmes are also discussed under 4.3.

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

RENERGI shall develop knowledge and solutions as a basis for environmentally-friendly, economical and efficient administration of Norway's energy resources, high security of supply and internationally competitive industry associated with the energy sector. The research must also contribute to solve the global energy and climate challenges and answer the political challenge relating to Norway's role and responsibility as an international initiator. RENERGI is limited to energy production, transmission and stationary energy consumption.

The Research centres for environmentally-friendly energy (FME) scheme will provide time-limited research centres with concentrated, focused and long-term research efforts at a high international level to solve highlighted challenges in the energy and environment areas.

**(b) Is it a voluntary or obligatory scheme?**

Participation in RENERGI is voluntary. Players must apply for research support for concrete projects in announcement rounds. The awards are distributed according to a competition principle where the applications with the highest grade receive funds.

The FMEs were established this way.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

The Research Council of Norway manages allocations to RENERGI. The majority of the allocations come from the Ministry of Petroleum and Energy, the remainder comes from the Ministry of Transport and Communications, the Ministry of the Environment, the Ministry of Trade and Industry, the Ministry of Education and Research and the Ministry of Agriculture and Food. The FMEs are also managed by the Research Council of Norway. Ten centres are financed by the Ministry of Petroleum and Energy, one is financed by the Ministry of Education and Research.

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

Each year, RENERGI and the FMEs receive funds over the fiscal budget. There will be some uncertainty related to how much is granted for energy research from year to year.

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

The long-term perspective and predictability are maintained as RENERGI has a programme period of 10 years. Even though the programme will expire in 2013, the work to establish a new energy research programme has started.

For the FMEs, a long-term perspective is ensured by granting support for up to eight years.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

The Research Council of Norway carries out external evaluations of their research programmes when they are completed, including RENERGI. Midway evaluations of the programmes are normally also carried out. The purpose of the evaluations is to check whether the programmes achieve the stipulated goals, as well as use the results as a basis for continuation of the programmes and adjustment of programme plans.

The arrangement of RENERGI is adjusted in connection with the annual project announcement rounds, including prioritisation of research topics.

The FMEs are also evaluated after five years to assess the basis for further support for three more years. The first centres of this type were started in 2008, and midway evaluations have therefore not yet been carried out.



**(g) Does support differ according to technology?**

Allocation of funds is based on free competition pursuant to announcements. The announcements can vary from period to period. The priorities mainly follow Energi21's strategy, but areas such as transport are also to be included. Guidelines are provided in announcement letters each year.

The areas that have special interest within each topic will be the result of an annual strategy process. Key instruments within RENERGI are research projects, expertise projects and user-directed innovation projects. The instruments to be used in the various topics are clarified in the above-mentioned strategy process.

The FMEs control their own research priorities.

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

There are no specific goals as regards energy production for ENERGI or the FMEs.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

RENERGI and the FMEs are ongoing schemes. They are not regulated by law. They are managed by the Research Council of Norway which is subject to the Ministry of Education and Research. The Research Council of Norway is a strategic agency which highlights areas of effort, manages and awards research funds and assesses the research being carried out.

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

RENERGI was established in 2004 and will be completed in 2013. This will be followed by a new research programme which is currently being planned.

The eight first FMEs were started in 2008 and will receive support for up to eight years. Three FMEs for social research were established in 2010. These will also receive support for up to eight years.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

No, not for the same type of activity.

- (o) **Are there regional / local schemes? If so, please detail using the same criteria.**

No.

#### **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**

- (a) **What are the concrete obligations / targets per year (per fuel or technology)?**

The national mandatory sale requirement is that the total annual sold amount (by volume) of biofuel must constitute at least 3.5% calculated as a percentage of total annual sold amount (by volume) of fuel for the road sector. All types of biofuel, including e.g. biogas, are included in the mandatory sale requirement. The mandatory sale requirement applies equally regardless of technology or energy type.

- (b) **Is there differentiation of the support according to fuel types or technologies? Is there any specific support to biofuels which meet the criteria of Article 21(2) of the Directive?**

Different types of support are granted for increased electrification of road traffic, particularly through reduced taxes on motor vehicles, support for establishment of charging stations and other policy instruments such as use of a carpool/mass transit lane, free parking and tolls, cf. Table 5.

For biofuel, the excise tax vary depending on fuel type and the mixture. Half of the road usage tax for diesel is charged for biodiesel, low mixture bioethanol has a full road tax for petrol and high mixture bioethanol has no road usage tax. There is no specific support for biofuel that fulfils the criteria for Article 21 (2).

As a measure to contribute to development of the value chain for 2<sup>nd</sup> generation biofuels, the Government is also discussing a gradual increase in the contribution to Transnova, as well as contributing to development of biogas in Norway, cf. White Paper No. 21 (2011-2012).

#### ***Trading requirement for biofuel for road traffic***

##### **Regulation**

- (a) **What are the concrete obligations / targets per year (per fuel or technology)?**

The total sale of biofuel (which by definition includes all types of biofuel) must annually constitute at least 3.5 per cent by volume of the total sold fuel for road traffic (Cf. 4.5 a) above).

- (b) Is there differentiation of the support according to fuel types or technologies? Is there any specific support to biofuels which meet the criteria of Article 21(2) of the Directive?**

No. Cf. 4.5 b) above.

- (c) What is the legal basis for this obligation/target?**

Stipulated in regulations (Regulations relating to restriction on use of hazardous and environmentally toxic chemicals and other products (Product Regulations), FOR 2004-06-01 No. 922.).

- (d) Are there any technology-specific targets?**

No.

- (e) What are the concrete obligations/targets per year (per technology)?**

See response under a).

- (f) Who has to fulfil the obligation?**

Those who sell fuel in Norway. Players can cooperate on fulfilment.

- (g) What is the consequence of non-fulfilment?**

Consequences emerge in the regulations' general provisions. The Climate and Pollution Agency can make decisions regarding compulsory fines according to Section 13 of the Product Control Act to ensure the regulation is implemented.

In the event of transgression of the regulations, according to Section 12 of the Product Control Act, punishment can include fines or incarceration – unless more stringent penal clauses apply.

- (h) Is there any mechanism to supervise fulfilment?**

It must be reported to the Climate and Pollution Agency annually. They conduct audits to ensure compliance with the requirement.

- (i) Is there any mechanism to modify obligations / targets?**

Not in the actual provision. Can be changed through political decisions (Government decision).

### ***Road usage tax – reduced rate for biodiesel***

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

The road usage tax includes petrol and autodiesel.

For biofuel, the following rules apply:

All biodiesel is charged 50% of the rate for autodiesel.

Low mixture bioethanol is charged the road usage tax for petrol.

There is no road usage tax for high mixture bioethanol.

There is no road usage tax for biogas.

There is also no road usage tax for other alternative fuels. This e.g. applies to natural gas, electricity and hydrogen.

**(b) Is it a voluntary or obligatory scheme?**

Obligatory.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

Directorate of Customs and Excise.

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

Not relevant.

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

In the budget for 2012, The bill and draft resolution on taxes 2012, the Government stated its desire to transition to a more general road usage tax. By 2020, road usage taxes will be charged on all fuel according to the energy content of the fuel. The road usage tax will cover external costs and safeguard the State revenue considerations. In 2015, the exemptions from the road usage tax must be evaluated. The evaluation must emphasise State revenue, climate and environmental considerations and the economic activity in the districts. The Government has no plans to implement changes in the road usage taxes for alternative fuels before the evaluation in 2015.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

See response to question e).

**(g) Does support differ according to technology?**

Biodiesel is charged 50 % of the tax rate for fossil diesel. Low mixtures of ethanol in petrol are charged the same rate as petrol. Other fuels are not included under the tax scheme.

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

Not calculated.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Existing measure. The taxes are determined each year by the Storting in connection with the fiscal budget.

**(k) Is this a planned scheme? When would it be operational?**

No, existing.

**(l) What start and end dates (duration) are set for the whole scheme?**

The exemptions have existed for some time, with a few adaptations and changes along the way. See response under e) for end date.

The road usage tax includes petrol and autodiesel. Biodiesel was included under the tax scheme from 2010 at a rate of 50%. Other fuels have never been included under the tax. See response under e) for end date.

**(m) Are there maximum or minimum sizes of system which are eligible?**

Not relevant.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Yes, the restriction does not limit support received from other measures.

**(o) Are there regional / local schemes? If so, please detail using the same criteria**

No.

***Vehicle Registration tax– exemption for electric cars and hydrogen cars***

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

Electric cars and hydrogen cars are exempt from the vehicle registration tax, i.e. the tax charged for first-time registration of motor vehicles weighing less than 3,500 kg in Norway.

**(b) Is it a voluntary or obligatory scheme?**

Obligatory.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

Directorate of Customs and Excise.

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

Not relevant.

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

In the budget for 2012, The bill and draft resolution on taxes 2012, the Government stated that it does not have concrete plans to change the framework conditions for electric cars, but that the totality of the framework conditions for electric cars must be considered in coming years due to the development in sales of such vehicles. From the Climate settlement (Recommendation to the Storting No. 390 A (2011-2012)), it emerges that the current tax advantages for purchase and use of clean zero emission cars will be continued through the next Storting period (2017), assuming the number of clean zero emission cars does not exceed 50,000.

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

See response under e).

**(g) Does support differ according to technology?**

Both electric cars and hydrogen cars are fully exempt. Other technologies are not exempt. Hybrid cars, i.e. cars that both use combustion engines and an electric engine, are exempt from the output of the electric engine and the weight of the batteries and the electric engine (routine deduction in weight of 10 per cent).

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

Not calculated.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Existing measure. Taxes are determined each year by the Storting in connection with the fiscal budget.

**(k) Is this a planned scheme? When would it be operational?**

No.

**(l) What start and end dates (duration) are set for the whole scheme?**

Introduced on 1 January 1990. See response under e) for end date.

**(m) Are there maximum or minimum sizes of system which are eligible?**

Not relevant.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Yes, the tax exemption does not limit support from other potential measures.

**(o) Are there regional / local schemes? If so, please detail using the same criteria.**

No.

*Annual tax on motor vehicles – exemption for electric cars and hydrogen cars*

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

Electric cars and hydrogen cars are exempt from the annual tax, i.e. the annual tax on motor vehicles under 3,500 kg.

**(b) Is it a voluntary or obligatory scheme?**

Obligatory.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

Directorate of Customs and Excise.

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

The Storting determines the tax in the annual fiscal budgets.

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

In the budget for 2012, The bill and draft resolution on taxes 2012, the Government stated that it does not have concrete plans to change the framework conditions for electric cars, but that the totality of the framework conditions for electric cars must be considered in coming years due to the development in sales of such vehicles. From the Climate settlement

(Recommendation to the Storting No. 390 A (2011-2012)), it emerges that the current tax benefits for purchase and use of clean zero emission cars will be continued through the next Storting period (2017), assuming the number of clean zero emission cars does not exceed 50,000.

- (f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

See response under e).

- (g) Does support differ according to technology?**

Both electric cars and hydrogen cars are fully exempt. Other technologies are not exempt.

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

Not calculated.

- (i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Existing measure. Taxes are determined each year by the Storting in connection with the fiscal budget.

- (k) Is this a planned scheme? When would it be operational?**

No, existing measure.

- (l) What start and end dates (duration) are set for the whole scheme?**

Introduced in 1996. See response under e) for end date.

- (m) Are there maximum or minimum sizes of system which are eligible?**

Not relevant.

- (n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Yes, the tax exemption does not restrict support from potential other measures.



- (o) **Are there regional / local schemes? If so, please detail using the same criteria.**

No.

*Value added tax – exemption for electric cars and hydrogen cars*

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

Electric cars and hydrogen cars are exempt from value added tax, i.e. have a zero rate instead of 25 per cent which is the normal value added tax rate.

- (b) **Is it a voluntary or obligatory scheme?**

Obligatory.

- (c) **Who manages the scheme? (*Implementing body, monitoring authority*)**

Directorate of Taxes.

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

Not relevant.

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

In the budget for 2012, The bill and draft resolution on taxes 2012, the Government stated that it does not have concrete plans to change the framework conditions for electric cars, but that the totality of the framework conditions for electric cars must be considered in coming years due to the development in sales of such vehicles. From the Climate settlement (Recommendation to the Storting No. 390 A (2011-2012)), it emerges that the current tax advantages for purchase and use of clean zero emission cars will be continued through the next Storting period (2017), if the number of clean zero emission cars does not exceed 50,000.

- (f) **Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

See response under e).

- (g) **Does support differ according to technology?**

Both electric cars and hydrogen cars are fully exempt. Other technologies are not exempt.

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

Not calculated.

**(i) Is support conditional on meeting energy efficiency criteria?**

No.

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

Existing measure. Taxes are determined each year by the Storting in connection with the fiscal budget.

**(k) Is this a planned scheme? When would it be operational?**

No, existing.

**(l) What start and end dates (duration) are set for the whole scheme?**

See response under e) for end date.

**(m) Are there maximum or minimum sizes of system which are eligible?**

Not relevant.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Yes, the fee exemption does not restrict support from potential other measures.

**(o) Are there regional / local schemes? If so, please detail using the same criteria.**

No.

***Other financial and useful incentive schemes for electric and hydrogen cars***

- Electric cars and hydrogen cars can drive in carpool lanes, park for free in public parking spaces, travel through toll rings on public roads free of charge and travel free of charge on highway ferries (cars only, not people).
- Access to carpool lanes is regulated in Section 5, Item 2 of the traffic rules. Enforced by the Norwegian Public Roads Administration
- Free public parking for electric cars and hydrogen cars is governed in the regulations relating to public parking regulation and parking fees, Section 8a. Enforced by the local parking authorities.
- Free toll ring is regulated in Section 27 of the Roads Act. Enforced by the Norwegian Public Roads Administration.
- Free highway ferries are regulated in the State scale for ferry rates. Enforced by the Norwegian Public Roads Administration.

- The schemes are assessed continuously. In the budget for 2012, The bill and draft resolution on taxes 2012, the Government stated that it does not have concrete plans to change the framework conditions for electric cars. The Climate settlement entered into in June 2012 confirmed that the current tax advantages for purchase and use of clean zero emission cars will be continued through the next Storting period (2017), assuming the number of clean zero emission cars does not exceed 50,000. However, the totality of the framework conditions must be assessed in coming years based on the development in sales of such vehicles.

***Support for R&D projects within alternative fuels through the Research Council of Norway's RENERGI programme***

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

RENERGI – The future's clean energy systems, sub-unit Energy for transport

A financing programme which supports projects within strategic basic research and applied research. The sub-unit Energy for transport made annual disbursements of approx. NOK 70 million in 2010 and 2011. The main financing for this sub-unit comes from the Ministry of Transport and Communications, but the Ministry of Petroleum and Energy and the Ministry of Agriculture and Food are also important financial contributors.

**(b) Is it a voluntary or obligatory scheme?**

Voluntary.

**(c) Who manages the scheme? (*Implementing body, monitoring authority*)**

The Research Council of Norway.

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

Annual allocations over the fiscal budget.

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

See response under f).

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

RENERGI is a programme effective from 2004-2013. A process is ongoing to make plans for a subsequent programme. Reporting and dialogues with the sponsoring ministries take place both during the programme's operational period and to an even greater extent in connection with cessation of the programme. There are also external evaluations of the RENERGI programme in connection with the conclusion of the programme. The programme itself has initiated an external evaluation. In addition, the Ministry of Petroleum and Energy initiated a separate external evaluation.

**(g) Does support differ according to technology?**

The level of support is independent of technology type, but varies depending on project type. Research projects receive up to 100 per cent support. Expertise projects need at least 20 per cent cash financing from one or more private companies. Both research projects and expertise projects have universities/colleges or research institutes as the institution responsible for the project. Innovation projects can receive up to 50 per cent support (large companies receive somewhat less). The innovation projects have private companies as the institution responsible for the project.

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

RENERGI projects currently do not produce energy with any significant usefulness. However, successful research results will become very important for energy conversion in the transport sector at a later date.

**(i) Is support conditional on meeting energy efficiency criteria?**

Energy efficiency for the proposed processes is not a separate evaluation criterion, but an important factor in connection with one or more of the evaluation criteria (depending on project type).

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

Yes, but the RENERGI programme will be formally concluded in 2013. A subsequent programme is being planned and will start from and including 2014 so the best possible continuity in project follow-up and new allocations is ensured. The programme is a subsidy scheme and is covered under the regulations for state aid and research financing.

**(k) Is this a planned scheme? When would it be operational?**

See responses under f) and j).

**(l) What start and end dates (duration) are set for the whole scheme?**

The existing programme period is 2004-2013. The subsequent programme is scheduled to start in 2014.

**(m) Are there maximum or minimum sizes of system which are eligible?**

Yes, but overall public support for a project must be in compliance with the state aid regulations. For example, some projects also receive support from the tax deduction scheme in the Research Council of Norway. The Research Council of Norway is an adviser for the Norwegian authorities in research and development questions. The mandate involves being a national, research-strategic, research-financing and network-building agency.

- (n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Yes, but total state aid for one project must be in accordance with the state aid regulations. Some projects also receive support through the tax deduction scheme in the Research Council of Norway.

- (o) Are there regional/local schemes? If so, please detail using the same criteria.**

No.

**Specific questions for financial support for investment (alternative fuels through the Research Council of Norway's RENERGI programme):**

- (a) What is granted by the scheme? (subsidies, capital grants, low interest loans, tax exemption or reduction, tax refunds)**

Triggering subsidies. Some of the funds go to physical investments, but since the establishment of Transnova, funds for new projects will mainly go to research work.

- (b) Who can benefit from this scheme? Is it specified for certain technology(/ies)?**

Universities and colleges, research institutes and companies. Thematically, the projects are distributed between the topics of biofuel, hydrogen, battery electric transport and associated social issues.

- (c) Are applications continuously received and granted or are there periodical calls? If periodical, could you please describe the frequency and conditions?**

Funds are announced once or twice a year. Applications are assessed by external experts and the Research Council of Norway's administration. The decision to reject the application or grant support is made by RENERGI's programme board. The projects report progress and costs at least once a year, as well as when the project is completed. The organisation responsible for the project receives tertiary disbursements in line with progress.

***Support for demonstration projects and infrastructure for alternative fuels through Transnova***

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

Transnova is a public agency established by the Ministry of Transport and Communications, delegated to the Norwegian Public Roads Administration. Transnova manages the Ministry of Transport and Communications' subsidies for projects that could contribute to replacing fossil fuels with alternative fuels and other climate and environmental projects within transport. The subsidies target pilot and demonstration projects, as well as establishment of charging and

filling stations for alternative fuels. Transnova is run with annual allocations through the fiscal budget. During the period 2009-2011, annual allocations have varied between NOK 50 and 100 million. Storting White Paper No. 21 (2011-2012) “*Norwegian climate policy*”, which was presented on 25 April 2012, confirms that the allocations will be gradually increased.

**(b) Is it a voluntary or obligatory scheme?**

Voluntary.

**(c) Who manages the scheme? (Implementing body, monitoring authority)**

The Norwegian Public Roads Administration manages the agency. The Norwegian Public Roads Administration is the State’s and county municipalities’ expert agency for roads and traffic.

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

Annual allocations over the fiscal budget. The budget item can be transferred between years.

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

See response under f).

**(f) Is the scheme periodically revised? What kind of feed-back or adjustment mechanism exists? How has the scheme been optimised so far?**

Transnova was evaluated as a scheme in 2010. Transnova reports to the Ministry of Transport and Communications 2-3 times a year, e.g. as part of the Norwegian Public Roads Administration’s normal reporting to the Ministry. White Paper No. 21 (2011-2012) “*Norwegian climate policy*” confirms that Transnova should be established as a permanent agency.

**(g) Does support differ according to technology?**

See response under d).

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

Subsidies from Transnova contribute to increased use of renewable energy in the transport sector. There are no thorough calculations of the production effects based on the agency’s mandate. The main intention is demonstrating and testing new technology in a somewhat larger scale and acquiring new knowledge, as well as contributing to establishment of necessary infrastructure for increased electrification and new knowledge.

**(i) Is support conditional on meeting energy efficiency criteria?**

No, but the project is required to contribute to reduced greenhouse gas emissions from transport. This must be documented.

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

Yes, the measure exists, but it is not regulated in Norwegian legislation. White Paper No. 21 (2011-2012) “*Norwegian climate policy*” confirms that Transnova should be established as a permanent agency.

**(k) Is this a planned scheme? When would it be operational?**

See l).

**(l) What start and end dates (duration) are set for the whole scheme?**

Transnova was established in 2009. No end date. White Paper No. 21 (2011-2012) “*Norwegian climate policy*” confirms that Transnova should be established as a permanent agency.

**(m) Are there maximum or minimum sizes of system which are eligible?**

No. The subsidies should be triggering – i.e. support is only granted to projects that would not have been carried out otherwise, e.g. due to deficient profitability and high risk. A maximum limit of NOK 4 million per year per project has been set.

**(n) Is it possible for the same project to be supported by more than one support measure? Which measures can be cumulated?**

Yes, but total state aid for a project must be in accordance with the state aid regulations.

**(o) Are there regional/local schemes? If so, please detail using the same criteria**

No.

**Specific questions for financial support for investment:**

***Demonstration projects and infrastructure for alternative fuels through Transnova***

**(a) What is granted by the scheme? (subsidies, capital grants, low interest loans, tax exemption or reduction, tax refunds)**

Financial support is granted to projects with applications that satisfy budget items and/or the agency’s mandate as triggering contributions, i.e. only granted to projects that would otherwise not have been carried out without support, e.g. due to deficient profitability and high risk.

**(b) Who can benefit from this scheme? Is it specified for certain technology(ies)?**

Companies, local and regional authorities, NGOs, etc. can apply for support. Public institutions and households cannot apply.

Transnova mainly has a technology-neutral basis – i.e. different technologies within thematic areas, e.g. within alternative fuels, must compete for subsidies. However, Transnova has announced separate programmes for charging stations for electric cars.

**(c) Are applications continuously received and granted or are there periodical calls? If periodical, could you please describe the frequency and conditions?**

Programmes are announced a few times a year. The applications are processed in groups. Transnova gives funding commitments twice a year based on documented expenses. Final payment, at least 10 per cent of the funding commitment, is paid when the projects are completed and final reports are made.

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

Bioenergy accounts for approximately 10 per cent of total stationary end consumption of energy in Norway. About half (of the use of bio energy) is used in wood-burning stoves in residences, while a significant part of the remaining consumption is combustion of bi-products in wood processing industry companies. Some bioenergy is also used for production of district heating and electricity.

*4.6.1 Biomass supply: both domestic and trade*

**Table 7: Biomass supply in 2006**

Sector of origin		Amount of domestic resource <sup>26</sup> GWh	Imported, GWh		Exported, GWh	Net amount (GWh)	Primary energy production (ktoe)
			EU	Non-EU	EU/non-EU		
A) Biomass from forestry <sup>27</sup> :	<i>Of which:</i>	12408				12577	1081
	<b>1. direct supply of wood biomass from forests and other wooded land for energy generation</b>	7336	299		14/0	7621	655

<sup>26</sup> Amount of the resource in m<sup>3</sup> (if possible, otherwise in appropriate alternative units) for category A and its subcategories and in tonnes for categories B and C and their subcategories.

<sup>27</sup> 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.



	<p><i>Optional - if information is available you can further detail the amount of feedstock belonging to this category:</i></p> <p>a) fellings</p> <p>b) residues from fellings (tops, branches, bark, stumps)</p> <p>c) landscape management residues (woody biomass from parks, gardens, tree rows, bushes)</p> <p>d) other (please define)</p>						
	<b>2. indirect supply of wood biomass for energy generation*</b>	5071	40		156/-	4956	426
	<p><i>Optional - if information is available you can further detail:</i></p> <p>a) residues from sawmilling, woodworking, furniture industry (bark, sawdust)</p> <p>b) by products of the pulp and paper industry (black liquor, tall oil )</p> <p>c) processed wood-fuel</p> <p>d) post consumer recycled wood (recycled wood for energy generation, household waste wood)</p> <p>e) other (please define)</p>						
<b>B) Biomass from agriculture and fisheries:</b>	<i>Of which:</i>						
	<b>1. agricultural crops and fishery products directly provided for energy generation</b>	Insignificant					Insignificant
	<p><i>Optional - if information is available you can further detail:</i></p> <p>a) arable crops (cereals, oilseeds, sugar beet, silage maize)</p> <p>b) plantations</p> <p>c) short rotation trees</p> <p>c) other energy crops (grasses)</p> <p>d) algae</p> <p>e) other (please define)</p>						
	<b>2. Agricultural by-products / processed residues and fishery by-products for energy generation</b>	Insignificant					Insignificant
	<p><i>Optional - if information is available you can further detail:</i></p> <p>a) straw</p> <p>b) manure</p> <p>c) animal fat</p> <p>d) meat and bone meal</p> <p>e) cake by-products (incl. oil seed and olive oil cake for energy)</p> <p>f) fruit biomass (including shell, kernel)</p>						

	g) fishery by product g) clippings from vines, olives, fruit trees h) other (please define)						
<b>C) Biomass from waste:</b>	<i>Of which:</i>	1562			652	909	78
	<b>1. Biodegradable fraction of municipal solid waste including biowaste</b> (biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants) <b>and landfill gas**</b>	932			432	500	43
	<b>2. Biodegradable fraction of industrial waste (including paper, cardboard, pallets) **</b>	630			220	409	35
	<b>3. Sewage sludge</b>						

\* Figures for indirect supply of wood based biomass are probably both underreported and reflecting effective heat input (reduced by efficiency factor) rather than gross heat input. Actual gross value is expected to be about 7 TWh. Import and export was not possible to divide into EU and non EU countries

\*\* Exported waste numbers are only covering quantities reloaded at Norwegian waste plants, and hence is probably underestimated. The division between municipal and industrial waste is uncertain.

**Please explain the conversion factor/calculation methodology used above for the conversion of the amount of available resources to primary energy.**

The volume of biomass has been acquired from different sources, mainly Statistics Norway.

Energy carrier	Theoretical energy content	Density
Wood	16.8 GJ/tonne = 8.4 GJ/fm <sup>3</sup> = 2333 kWh/fm <sup>3</sup>	0.5 tonnes/fm <sup>3</sup>
Waste wood (solids)	16.25-18 GJ/tonne = 6.5-7.2 GJ/fm <sup>3</sup>	0.4 tonnes/fm <sup>3</sup>
Waste	10.5 GJ/tonne = 2.9 MWh/tonne	..

**Please specify on what basis the biodegradable fraction of municipal solid waste and of industrial waste was calculated.**

The renewable share in waste for energy production is based on results from analyses of waste delivered to Norwegian incineration facilities performed on behalf of NVE. The report “Fornybarandel i avfall til norske forbrenningsanlegg” (NVE-2/2011) shows that the average renewable share is 52 per cent on an energy basis and that this has been relatively stable since 2006. The report also describes a distribution between household waste and industry waste of 55 per cent and 45 per cent, respectively. The average energy volume of 10.5 GJ/tonne was provided by Statistics Norway.

Please use Table 7a to give an estimated contribution of biomass energy use in 2015 and 2020. (Following the categorisation used in Table 7.)

**Table 7a: Estimated biomass domestic supply in 2015 and 2020**

Sector of origin		2015		2020	
		Expected amount of domestic resource (Tonn TS)	Primary energy production (ktoe)	Expected amount of domestic resource (Tonn TS)	Primary energy production (ktoe)
A) Biomass from forestry:	1. direct supply of wood biomass from forests and other wooded land for energy generation	8 808	757	9 308	800
	2. indirect supply of wood biomass for energy generation				
B) Biomass from agriculture and fisheries:	1. agricultural crops and fishery products directly provided for energy generation	6 072	522	7 559	650
	2. Agricultural by-products / processed residues and fishery by-products for energy generation				
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	500	43	500	43
	2. Biodegradable fraction of industrial waste (including paper, cardboard, pallets)	409	35	409	35
	3. Sewage sludge				

**What is the estimated role of imported biomass up to 2020? Please specify the quantities expected (ktoe) and indicate possible import countries.**

**In addition to the information provided above, could you please describe the current situation of agricultural land used for dedicated energy production as follows:**

Table 8: Current agricultural land use for production of crops dedicated to energy in 2006

Agricultural land use for production of dedicated energy crops	Surface (ha)
1) Land used for short rotation trees (willows, poplars)	Ikke tilgjengelig/ Insignificant
2) Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum	Ikke tilgjengelig/ Insignificant

See discussion under Item 4.6.2 (c).

#### **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**

Such land is mainly considered to include acreage for industrial activity which is not foreseeable for production of biomass for energy purposes.

**(b) Please specify how much unused arable land there is**

The basis of figures mentioned below is reported based on relevant definitions in relation to “arable land” used in Commission Regulation (EC) No. 1200/2009 of 30 November 2009 implementing Regulation (EC) No 1166/2008 of the European Parliament and of the Council on farm structure surveys and the survey on agricultural production methods, as regards livestock unit coefficients and definitions of the characteristics.

The amount of “unused arable land” in Norway has been estimated at 410 000 decares. This is an estimate from different area statistics from the Norwegian Institute for Forests and Landscape and Statistics Norway, respectively. The figure is associated with some uncertainty.

**(c) Are any measures planned to encourage unused arable land, degraded land, etc. to be used for energy purposes?**

In Norway, owners of agricultural land, pursuant to the Act of 12 May 1995 No. 23 relating to land (the Land Act), are required to operate the farm or land to ensure the agricultural land is used for agricultural production. This obligation to operate can be fulfilled by the owner, or by renting under more specifically defined terms. The Ministry of Agriculture and Food can grant exemption from the obligation to operate, as well as grant exemption for re-allocation of agricultural land for other purposes than those indicated above, based on special terms. Due to the modest volume of agricultural land in Norway, it has been determined that this land should be prioritised for food production, cf. White Paper No. 9 (2011-2012) *Agricultural and food policy*. However, it is desirable to use waste products from agricultural production, e.g. straw, grain chaff and manure more actively for energy production, and where the bioenergy programme is a key financial instrument.

**(d) Is energy use of certain already available primary material (such as animal manure) planned?**

Cf. discussion under Item c). Use of manure for production of biogas and use of bioresidue as fertiliser is being developed, see discussion of biogas instruments under Item e). The scope is still limited, but on the rise. In several Norwegian cities, gas is used to run buses and garbage trucks, and some of these run on biogas where available.

**(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*)?**

Enova has several programmes that offer investment aid to biogas facilities. During the period 2009 to 2011, Enova has carried out thematic efforts to increase biogas production in Norway. Enova has continued its efforts for another three-year period (2012-2014). The biogas production programme targets companies which deliver biogas to the Norwegian energy market. The efforts are directed at companies that want to invest in industrial biogas production. Support is granted as investment subsidies for constructing biogas production facilities, as well as distribution in connection with production.

The Bio Energy Programme is managed by Innovation Norway and is intended to stimulate farmers and forest owners to produce, use and deliver bioenergy. Through the programme, investment support can e.g. be granted to small-scale biogas facilities.

The Government wants to contribute to biogas development in Norway, e.g. farm-based biogas facilities and major co-treatment plants for manure and waste, cf. White Paper No. 21 (2011-2012).

**(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?<sup>28</sup>: 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?**

It is assumed that the sustainable forestry principles, which safeguard financial, ecological and social functions, apply to all forestry and extraction of raw timber in Norway, regardless of end use. Norway currently logs about 40 per cent of annual increment.

Planned measures for increased extraction of biomass from forests are directed at elevating the level and activity within the framework of applicable forest policy. The global market prospects indicate increased demand for timber in the years to come. One of the Government's goals is facilitating increased use of wood, and facilitating increased use of forest raw materials for bioenergy. If the demand for raw material from Norwegian forests increases, increased sustainable logging and extraction of forest biomass must be facilitated. Furthermore, the Government will strengthen the development of forest resources within an environmentally acceptable framework.

The 2010 Norwegian red list for endangered species shows that for approx. 1,400 of the endangered and vulnerable species in forests, forestry is considered a negative impact, and logging is the activity assumed to impact most of these species negatively. There is nothing to indicate that there has been an overall worsening in the situation for our endangered and vulnerable species from 2006 to 2010. The 2011 Norwegian red list for nature types lists six nature types in forests that are considered to be endangered. If the forestry activity increases, it will be an important challenge to maintain nature diversity and other important environmental values. Therefore, increased forestry activity must be combined with improved

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• <sup>28</sup> Recommendations can be found in the report issued by the Standing Forestry Committee ad hoc Working Group II in July 2008 on Mobilisation and efficient use of wood and wood residues for energy generation. The report can be downloaded at:  
[http://ec.europa.eu/agriculture/fore/publi/sfc\\_wgii\\_final\\_report\\_072008\\_en.pdf](http://ec.europa.eu/agriculture/fore/publi/sfc_wgii_final_report_072008_en.pdf)

knowledge regarding environmental values in forests and strengthened environmental considerations in forestry in line with White Paper No. 39 (2008-2009) *Climate challenges – agriculture part of the solution*, and in such a manner that the condition and development can be documented and made available to the public.

The legal framework for forest policy is mainly provided through the Forestry Act. The Forestry Act with appurtenant regulations governs forestry activity in all forest acreage. The purpose of the Act is to promote sustainable management of forest resources for active local and national value creation, and to ensure biological diversity, landscape considerations, recreation and cultural values in forests, and in cooperation with other regulations. A number of regulations are connected to the Act, e.g. relating to sustainable forestry, forest funds, forest seed supply and subsidies for forestry. The Nature Diversity Act also contains rules that stipulate a framework for forest policy. This e.g. applies to general environmental principles, regulations relating to deployment of foreign types of trees and instruments such as prioritised species and selected nature types, as well as rules for area conservation. Beyond this, the Government and Storting have assumed that forestry complies with the voluntary standard for sustainable forestry which was developed through the collaborative project *Levende Skog* (Living Forest) and which is operationalised through forestry certification.

The subsidy programmes for forestry and environmental measures, in forestry, forestry planning with environmental registrations, the forest fund scheme and value creation programmes for wood and bioenergy, respectively, are key financial instruments for facilitating increased extraction of timber and forest biomass. Significant emphasis is also placed on measures for further development and building up forest resources. This is achieved through e.g. increased control of requirements for satisfactory regeneration following logging, recommendations for a higher number of plants per acreage unit, increased use of refined plant materials that yield increased production, as well as seedling forest care. Forest fertilisation of suitable vegetation types is also proposed as a relevant measure for increased forest production, but still has a relatively limited scope in Norway.

Forestry planning with environmental registrations and the National Forest Survey must be continued and developed to ensure good overviews of the condition and development in important forest resource parameters and environmental values in forests. This is essential to safeguarding the forest industry's environmental responsibility, and as a basis for increased sustainable extraction of timber and forest biomass if required due to increased demand.

Forest conservation is an important measure to ensure nature diversity. So far, approx. 2.5% of the productive forests in Norway are protected in natural reserves or national parks. The work for increased forest conservation will be continued. An important goal is ensuring protection of the forest areas with the greatest conservation value.

The energy chip scheme established in 2009 has contributed to increased activity and harvest of wood for chip and energy production. The scheme will be continued.

– **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?**

Use of biomass from agriculture for energy purposes is being mapped by a number of players and can be found in various databases. Statistics Norway (SSB) has general responsibility for

official statistics in Norway, decreed by law. SSB is e.g. responsible for the energy balance and the energy account. SSB also collects bioenergy-relevant statistics not included in the energy balance, such as statistics that directly or indirectly pertain to biofuels. SSB's primary industry statistics department publishes quarterly statistics for forest logging, and this contains information on logging of raw timber for sale at a municipal level. From 2006, information relating to wood production was omitted from the statistics. Consumption of wood is currently registered in SSB's household survey. A separate grade for extraction of biofuel has not yet been incorporated in the logging statistics. This volume is currently included as other grades, intended for other purposes. A reporting system that includes a bioenergy/biofuel grade is under development. SSB also carries out a district heating survey, which maps consumption in volume and price of bio energy, production and distribution of heating and customer groups, etc. from all district heating plants. Furthermore, figures are gathered from energy use in industry, which map production, procurement and consumption of biofuels, as well as district heating consumption on an annual basis. The Norwegian Bioenergy Association carries out non-official mapping of production, imports, exports and sales of pellets and briquettes in annual surveys directed at producers and importers.

Timber has mainly been sold as industrial wood for the lumber mill and wood processing industries, respectively. Bi-products from this production are considerable sources of bio energy, which are mainly used to cover the industry's internal needs. Sawmills use chips and bark for drying purposes. Chips, which are a good starting point for pellet and briquette production, are currently also used for production of building boards and paper. In connection with the production of paper pulp, etc., waste liquor is used to generate heat and electricity. Lumber, including low-quality round timber, is also used for wood production. Wood is still the most important bio energy source for private households in Norway. According to Statistics Norway, more than 1.5 million tonnes of wood was burned in Norwegian residences in 2010, as well as about 0.25 million tonnes in vacation homes.

The development of district heating plants, central heating and local heating, as well as bioenergy for power production and potential production of biofuel, contribute to increased demand for biofuels and increased competition for biomass. Furthermore, an increase in the demand for biomass for energy purposes is expected in Norway, in our neighbouring countries and Europe in the coming years, as a result of national and international goals.

The price development for bio energy compared with other energy carriers will impact the market for bio fuels from agriculture. For raw materials with alternative application in other and established industrial production, for instance, pulp wood in the wood processing and board industries, changes in the demand and prices for biofuels will be decisive in the flow of raw materials between sectors/types of production. This could also entail effects for investments, industry establishments and employment, etc. In addition to various information surveys and reporting relevant for bio energy for statistics purposes, etc., industry organisations will contribute to monitor the development.

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

Increased demand and willingness to pay for lumber and biomass from agriculture will be crucial drivers for increased activity and availability of raw materials in and from agriculture. Agriculture works continuously to reduce greenhouse gas emissions, and on energy-

conservation through efficiency measures, technology development and improved and more adapted operations. One result of increasing optimisation could be a reduced volume of residual products for energy production, e.g. use of thinner saw blades in the sawmill industry. Logging results in a considerable volume of forest residue (abbreviated GROT in Norwegian) which can be harvested for energy purposes and as a suitable climate measure. At the same time, increased harvesting and extraction of biomass resources from agriculture could in some circumstances have a negative impact on biological diversity and other environmental assets. Norwegian policy emphasises prioritising measures that have a positive effect to counteract climate changes and positive or acceptable effect for preservation of biological diversity and other important environmental assets, cf. White Paper No. 39 (2008-2009). The balance of different considerations in industry and environmental policy will impact how intensively agricultural resources can be utilised.

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

Through the agreement with Sweden regarding a joint electricity certificate market, Norway has utilised the collaboration mechanisms under the Renewables Directive. Pursuant to Article 11 of the Directive, Norway and Sweden have established a joint electricity certificate system with the objective of ensuring development of new power production based on renewable energy sources up to 2020. The Norwegian-Swedish electricity certificate system is the first example of a joint support system between member countries under the Renewables Directive.

Based on the existing document, it is expected that Norway, through national measures and the agreement with Sweden regarding a joint electricity certificate market, will fulfil its obligation to the effect that the percentage of renewable energy from renewable energy sources will constitute 67.5 per cent of total energy consumption in 2020. Norway is therefore not planning to utilise statistical transfers between member countries. Norway has not yet made a decision regarding use of joint projects with other member countries or non-EU countries. Up to 2020, the possibility of using statistical transfers and joint projects will be considered along with other measures to promote use of energy from renewable energy sources.

##### **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).**

Norway is not planning to utilise statistical transfers. Norway has not yet made a decision regarding use of joint projects. See Item 4.7.

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

Private units can propose joint projects, but there are no guidelines for how private units can propose and participate in joint projects with member countries or non-EU countries.



- (c) **Specify the criteria for determining when statistical transfers or joint projects shall be used.**

Norway has no plans to utilise statistical transfers and has not yet made a decision regarding use of joint projects. Up to 2020, the possibility of utilising statistical transfers and joint projects will be considered together with other measures to promote energy use from renewable energy sources.

- (d) **What mechanism will be used to involve other interested Member States in a joint project?**

Norway has not yet made a decision regarding use of joint projects and has consequently not assessed which mechanisms could be used to involve interested member countries in joint projects.

- (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?**

Norway has not yet made a decision regarding use of joint projects. See Item 4.7.

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

– *Please use Table 9 filling in the required information.*

See Table 9.

**4.7.3 *Estimated potential for joint projects***

Norway has not yet made a decision regarding use of joint projects and the potential for such projects has not been assessed. Items a through e have consequently not been assessed. In the event of a potential future assessment of the possibility to utilise joint projects, Items a through e will be included in the assessment.

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

See Item 4.7.3.

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

See Item 4.7.3.

- (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?)**

See Item 4.7.3.

- (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?)**

See Item 4.7.3.

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

See Item 4.7.3.

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

*Please use Table 9 filling in the required information.*

**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 Norway (ktoe)**

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

The calculations of total contributions from renewable technologies and the renewable share in the various sectors is e.g. based on analyses performed by the Norwegian Water Resources and Energy Directorate and available projections of the development in the transport sector. The calculations are associated with uncertainty, particularly as regards changes from year to year. This is due to the fact that temperature and inflow trends have significant impact on the values that are realised for energy use and normalised hydropower production.

The estimates in Tables **10 a** and **10 b** are based on actual figures for installed capacity and production up to and including 2011. From 2012, estimates of new production have been made.

For the period 2005-2011, renewable electricity production increased by 8 TWh. Parts of this increase are based on the normalisation rule for hydropower production, where hydropower is normalised based on the last 15 years using a sliding average.

From the period 2012-2020, Norway will be part of a joint electricity certificate market with Sweden. The agreement relating to an electricity certificate market entails an overall development of renewable electricity production equalling 26.4 TWh in the two countries during this period. The agreement will be part of a flexible cooperation mechanism under the Renewables Directive and entails that each country will be credited with a renewable production totalling 13.2 TWh up to 2020 in their respective action plans.

However, the actual production realised in each country up to 2020 is uncertain and depends on multiple factors. As a technical calculation assumption, Table 10 a and b assumes that half of the total production of 26.4 is realised in Norway, and furthermore that half of this volume is wind power and the other half hydropower. New production capacity from projects that are being realised, but that fall outside the electricity certificate market e.g. because they have received support from Enova, has also been added. With the exception of projects that are currently being realised, a somewhat even introduction of new production capacity is has been assumed. Calculation of annual production is based on the normalisation rules.

The increase in installed capacity is calculated based on the increase in production and a annual load factor for the various production technologies. Actual values for the installed capacity have been used for projects that are being realised.

The estimates of the renewable percentage in heating and cooling in **Table 11** are based on calculations of the useful energy demand for different energy end-user groups, cf. Chapter 2. Based on the estimates of useful energy demand in the three sectors, the TIMES model was used to calculate the final energy consumption by energy commodity (delivered energy). TIMES is a cost optimisation model which calculates the optimal consumption of different energy to cover the energy demand. For heating & cooling, the existing heating equipment is modelled for the basis year, which is 2006 in the model. Up to 2020, investments must be made in new equipment to cover increased demand, and to cover replacement of existing equipment. The calculations assume an increase in district heating production, increased use of bioenergy and increased use of heat pumps residential and service sectors and district heating both as a replacement for fossil energy carriers and to utilise ambient heat for energy purposes.

**Table 10.a: Estimation of total contribution (installed capacity, gross electricity generation) expected from each renewable energy technology in Norway to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity 2010-2014**

	2005		2010		2011		2012		2013		2014	
	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh
Hydro:	28 701	121 478	29 954	127 001	30 140	128 986	30 689	129 586	30 843	130 187	31 090	130 887
<1MW	152	693	155	725	166	736	168	745	174	768	180	793
1MW-10 MW	986	7 062	1 623	7 383	1 744	7 499	1 867	7 906	1 971	8 290	2 022	8 481
>10MW	27 563	113 722	28 176	118 893	28 230	120 752	28 653	120 936	28 699	121 129	28 889	121 613
<i>Of which pumping</i>	1 344	764	1 344	406	1 344	700	1 344	700	1 344	700	1 344	700
Geothermal												
Solar:	-	-	-	-	-	-	-	-	-	-	-	-
<i>photovoltaic</i>												
<i>concentrated solar power</i>		-		-								
Tide, wave, ocean		-		-		-		-		-		-
Wind:	265	448	288	576	512	1 177	580	1 357	1 062	2 040	1 447	3 118
<i>onshore</i>	265	448	288	576	512	1 177	580	1 357	1 062	2 040	1 447	3 118
<i>offshore</i>												
Biomass:	110	333	168	439	174	418	174	418	199	543	199	543
<i>solid</i>	110	333	152	369	158	348	158	348	168	373	168	373
<i>biogas</i>			16	70	16	70	16	70	31	170	31	170

<i>bioliquids</i> <sup>29</sup>												
<b>TOTAL</b>	27 732	121 495	29 066	127 610	29 482	129 881	30 099	130 661	30 760	132 070	31 392	133 848
<i>of which in CHP</i>												

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- <sup>29</sup> Take into account only those complying with the sustainability criteria, cf. Article 5(1) of Directive 2009/28/EC last subparagraph.

**Table 10.b: Estimation of total contribution (installed capacity, gross electricity generation) expected from each renewable energy technology in Norway to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity 2015-2020**

	2015		2016		2017		2018		2019		2020	
	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh	MW	GWh
Hydro:	31 302	131 667	31 516	132 447	31 726	133 227	31 919	133 947	32 113	134 667	32 307	135 387
<1MW	186	818	192	843	198	868	204	893	210	918	215	943
1MW-10 MW	2 133	8 891	2 243	9 301	2 354	9 711	2 445	10 046	2 535	10 381	2 626	10 716
>10MW	28 984	121 958	29 081	122 303	29 174	122 648	29 271	123 008	29 368	123 368	29 466	123 728
<i>Of which pumping</i>	1 344	700	1 344	700	1 344	700	1 344	700	1 344	700	1 344	700
Geothermal												
Solar:	-	-	-	-	-	-	-	-	-	-	-	-
<i>Photovoltaic</i>												
<i>Concentrated solar power</i>												
Tide, wave, ocean		-		-		-		-		-		-
Wind:	1 795	4 029	2 143	4 894	2 491	5 760	2 839	6 625	3 187	7 490	3 535	8 355
<i>Onshore</i>	1 795	4 029	2 143	4 894	2 491	5 760	2 839	6 625	3 187	7 490	3 535	8 355
<i>Offshore</i>												
Biomass	221	648	224	668	227	688	230	708	233	728	236	748
<i>solid</i>	190	478	193	498	196	518	199	538	202	558	205	578

<i>biogas</i>	31	170	31	170	31	170	31	170	31	170	31	170
<i>bioliquids<sup>30</sup></i>												
<b>TOTAL</b>	31 973	135 644	32 538	137 309	33 099	138 974	33 644	140 579	34 189	142 185	34 733	143 790
<i>of which in CHP</i>												

The estimates in Table 10 b) are based on actual figures for installed capacity and production up to and including 2011. From the period 2012-2020, Norway will be part of a joint electricity certificate market with Sweden. The agreement regarding the electricity certificate market entails a total development of a renewable electricity production totalling 26.4 TWh in the two countries during this period. The agreement will be part of the use of a flexible collaboration mechanism under the Renewables Directive and entails that the countries must achieve a renewable production totalling 13.2 TWh up to 2020 in their action plans. However, the production actually realised in each country up to 2020 is uncertain and depends on a number of factors. As a technical calculation precondition, Table 10 b) assumes half of the production is realised in Norway and furthermore that half of this volume is wind power and the other half is hydropower.

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• <sup>30</sup> See footnote 24.

**Table 11: Estimation of total contribution (final energy consumption<sup>31</sup>) expected from each renewable energy technology in Norway 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 (ktoe)**

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Geothermal (excluding low temperature geothermal heat in heat pump applications)	-	-	-	-	-	-	-	-	-	-	-	-
Solar	-	-	-	-	-	-	-	-	-	-	-	-
Biomass:	1 192	1 282	1 258	1 269	1 281	1 292	1 303	1 314	1 325	1 337	1 348	1 359
<i>solid</i>	1 192	1 282	1 258	1 269	1 281	1 292	1 303	1 314	1 325	1 337	1 348	1 359
<i>biogas</i>	-	-	-	-	-	-	-	-	-	-	-	-
<i>bioliquids</i> <sup>32</sup>	-	-	-	-	-	-	-	-	-	-	-	-
Renewable energy from heat pumps:	275	399	365	380	395	410	425	440	455	470	485	500
- of which aérothermal	-	-	-	-	-	-	-	-	-	-	-	-
- of which geothermal	-	-	292	304	316	328	340	352	364	376	388	400
- of which hydrothermal	-	-	73	76	79	82	85	88	91	94	97	100
<b>TOTAL</b>	<b>1 467</b>	<b>1 681</b>	<b>1 623</b>	<b>1 649</b>	<b>1 676</b>	<b>1 702</b>	<b>1 728</b>	<b>1 754</b>	<b>1 780</b>	<b>1 807</b>	<b>1 833</b>	<b>1 859</b>
<i>Of which DH</i> <sup>33</sup>	97	151	174	187	200	213	226	238	251	264	277	290
<i>Of which biomass in households</i> <sup>34</sup>	677	712	682	682	683	684	685	686	687	687	688	689

- <sup>31</sup> Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.
- <sup>32</sup> Take into account only those complying with the sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.
- <sup>33</sup> District heating and / or cooling from total renewable heating and cooling consumption. (RES- DH)
- <sup>34</sup> From the total renewable heating and cooling consumption.



**Table 12: Estimation of total contribution expected from each renewable energy technology in Norway 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 (ktoe)<sup>35</sup>**

	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Bioethanol/bio-ETBE												
<i>Of which Biofuels<sup>36</sup> Article 21.2</i>												
<i>Of which imported<sup>37</sup></i>												
Biodiesel	-	116	133	149	165	181	197	213	230	246	262	278
<i>Of which Biofuels<sup>38</sup> Article 21.2</i>												
<i>Of which imported<sup>39</sup></i>		116	133	149	165	181	197	213	230	246	262	278
Hydrogen from renewables	-	-	-	-	-	-	-	-	-	-	-	-
Renewable electricity	50	57	65	73	80	87	94	102	110	118	126	135
<i>Of which road transport</i>	0	0	5	10	14	19	24	29	34	39	44	50
<i>Of which non-road transport</i>	50	57	60	63	65	68	70	73	76	79	82	85
Others (as biogas, vegetable oils, etc.) – please specify												
<i>Of which Biofuels<sup>40</sup> Article 21.2</i>		-										
<b>Total</b>	50	174	198	221	245	268	292	315	340	364	388	413

- <sup>35</sup> For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.
- <sup>36</sup> Biofuels that are included in Article 21(2) of Directive 2009/28/EC.
- <sup>37</sup> From the whole amount of bioethanol / bio-ETBE
- <sup>38</sup> Biofuels that are included in Article 21(2) of Directive 2009/28/EC.
- <sup>39</sup> From the whole amount of biodiesel
- <sup>40</sup> Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

## **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**

The expected development in energy consumption is explained in more detail in Table 1. The estimate for energy consumption in Table 1 includes energy efficiency as a result of current technical regulations and other measures that contribute to more efficient energy use, cf. Chapter 4. The main trajectory presented for the projections therefore constitutes the energy efficiency trajectory, which includes measures both before and after 2009. Both the organisation of the support systems for energy efficiency and implementation of building standards entails that many of the measures determined before 2009 do not have an effect in energy use until after 2009. Therefore, only one trajectory is presented in Table 1.

## **5.3 Assessment of the impacts (Optional)**

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

#### **(a) How were regional and/or local authorities and/or cities involved in the preparation of this Action Plan? Were other stakeholders involved?**

The Norwegian Action Plan has been prepared at a ministry level, with involvement from the various ministries in their areas of responsibility. The different Ministries have considered the need for involvement of their respective underlying agencies and expert bodies in order to fill out the obligatory template which is the basis for the action plan in the best possible manner.

#### **(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 measures will ensure national target compliance?**

The overall policy design for development of renewable energy in Norway takes place at a national level. There are no plans for developing specific regional or local strategies for renewable energy in general.

#### **(c) Please explain the public consultation carried out for the preparation of this Action Plan.**

Preparation of the National Action Plan took place at a ministry level, with necessary involvement of relevant Ministries. Filling out the obligatory template is based on contributions from Ministries and relevant agencies and expert bodies. Further consultation has not been carried out.

#### **(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 Petroleum and Energy.

- (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.**

Statistics Norway (SSB) is responsible for the preparation of energy statistics. The energy authorities through the Norwegian Water Resources and Energy Directorate and the Ministry of Petroleum and Energy are, together with the transport authorities, responsible for the projections and assessment of development in relation to renewable goals.