

Annex: Rapport for 2017/2018

Template for Member State progress reports under Directive 2009/28/EC.

Article 22 of Directive 2009/28/EC requires Member States to submit a report to the Commission on progress in the promotion and use of energy from renewable sources by 31 December 2011, and every two years thereafter. The sixth report, to be submitted by 31 December 2021, shall be the last report required.

Member State reports will be important for monitoring overall renewable energy policy developments and Member State compliance with the measures set out in the Directive 2009/28/EC and the National Renewable Energy Action Plans of each Member State. The data included in these reports will also serve to measure the impacts referred to in Article 23 of Directive 2009/28/EC. Consistency in Member State data and reporting would be useful.

The purpose of the template is to help ensure that Member State reports are complete, cover all the requirements laid down in the Article 22 of Directive and are comparable with each other, over time and with National Renewable Energy Action Plans submitted by Member States in 2010. Much of the template draws on the template for the National Renewable Energy Action Plans¹.

When filling in the template, Member States should comply with the definitions, calculation rules and terminology laid down in Directive 2009/28/EC and those of Regulation (EC) No. 1099/2008 of the European Parliament and the Council².

Additional information can be provided either in the prescribed structure of the report or by including annexes.

Passages in italics aim to guide Member States in the preparation of their reports. Member States may delete these passages in the version of the report which they submit to the Commission.

¹ C(2009)5174.

² OJ L 304, 14.11.2008, p. 1.

1. Sectoral and overall shares and actual consumption of energy from renewable sources in the preceding 2 years (2018; 2017 e.g. 2010 and 2009) (Article 22 (1) a of Directive 2009/28/EC)).

Please fill in the actual shares and actual consumption of renewable energy for the preceding 2 years in the suggested tables.

Table 1: The sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources³

	Year 2017	Year 2018
RES-H&C ⁴ (%)	33.8	34.6
RES-E ⁵ (%)	104.9	106.8
RES-T ⁶ (%)	19.1	20.0
Overall RES share ⁷ (%)	71.5	72.8
Of which from cooperation mechanism ⁸ (%)	2.3	2.1
Surplus for cooperation mechanism ⁹ (%)	-	

The renewables share varies from year to year due to the particularities of the Norwegian energy system. Renewable power generation in Norway relies on hydropower, and production levels may therefore vary from one year to the next depending on the hydrological conditions. Similarly, the country's energy consumption reflects yearly variations in outdoor temperatures. This is described in points 3.1 and 3.2 of the Action Plan.

The renewables share in Norway increased between 2017 and 2018, in part due to the development of new production capacity for hydropower and wind power. Both the normalised production of renewable energy and final energy consumption increased between 2017 and 2018. As shown in Table 1, Norway's renewables share in 2018 was 72.8%.

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

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

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

⁶ Share of renewable energy in transport: final energy from renewable sources consumed in transport (cf. Article 5(1)c) and 5(5) of Directive 2009/28/EC divided by the consumption in transport of 1) petrol; 2) diesel; 3) biofuels used in road and rail transport and 4) electricity in land transport (as reflected in row 3 of Table 1). The same methodology as in Table 3 of NREAPs applies.

⁷ Share of renewable energy in gross final energy consumption. The same methodology as in Table 3 of NREAPs applies.

⁸ In percentage point of overall RES share.

⁹ In percentage point of overall RES share.

The renewables share is slightly above the estimated baseline set out in the National Action Plan. This is due, among other things, to lower energy use for transport and smaller growth in total energy consumption than forecast in the Action Plan.

Increased renewables share in the electricity sector

In 2018 the share of renewables in the electricity sector increased despite increased power consumption. In that year, the share of renewables in the electricity sector was 106.8, an increase of 1.9 percentage points on 2017. Increased production from hydropower and wind power contributed towards the increase in renewables in the energy sector.

2018 was a year of extreme variation in the inflow of water for power generation, with record levels of drought in the summer and historically high precipitation in the autumn. Viewed across the year as whole, however, the inflow was at normal levels. By contrast, 2017 was a mild, rainy year with a greater inflow than normal. Nonetheless, consumption reached record levels in both 2017 and again in 2018. Gross power consumption was 136.0 TWh at the end of 2018, an increase of 1.8 TWh on the previous year. Cold spring weather, increased electrification and a higher demand from energy-heavy industry were all factors in the increased demand for energy. In the petroleum sector in particular, electricity consumption has increased.

However, under the method used to calculate the hydropower and wind power contribution to the renewables share, generation is normalised over a period of 15 and 5 years, respectively. By adjusting for climate fluctuations, this method reduces the impact on the renewables share of the power generation in one single year. Normalised hydropower production was 0.5 TWh lower than gross hydropower production in 2018. The normalised and actual production figures for wind power in 2018 were very similar.

Increased renewables share in the heating and cooling sector

It is a stated aim of Norwegian energy and climate policy that energy generated from renewable sources should be used for various purposes in a broad range of sectors.

Renewable electricity for heating is not taken into account in the method recommended for calculating the renewables share in the heating and cooling sector. For Norway, which produces practically only renewable electricity and where electrical heating is the norm, this leads to an underestimation of the renewables share for heating.

The renewables share in the heating and cooling sector (RES-H&C) is lower than forecast in the Action Plan baseline. The renewables share in the heating and cooling sector was 34.6 in 2018, an increase of 0.8 percentage points on 2017. Since 2015, the annual renewables share in the sector has been around 34 per cent. Thanks to better construction, better wood burners and a mild climate, the use of biofuel in heating (firewood in households) has decreased since 2010. There has also been a decline in the use of fossil fuels as a result of the ban on oil-fired heating as from 2020.

Recent years have seen an increase in the number of heat pumps sold. Almost 100,000 heat pumps were sold in 2018, compared to approximately 80,000 in 2017 and 73,000 in 2016. This means a

significant increase in the number of heat pumps installed¹⁰. The installed capacity increased from around 6.7 GW in 2016 to around 7.1 GW in 2018. There was also an increase in the use of ambient heating from 5.4 TWh in 2016 to just over 6 TWh in 2018.

Renewables share in the transport sector

The renewables share in transport has increased considerably in the past three years, from 13.7% in 2016 to 20% in 2018. This is mainly due to a significant increase in the use of biofuels and to greater use of electricity in the transport sector as well as a new method used to calculate this.

The use of fossil fuels began to decrease as the blending of biofuels began to increase. There was a marked decrease in petrol and diesel consumption in 2017, due to record-high consumption of biofuels in that year. Some 660 million litres of biofuel were used in road transport in 2017, accounting for a substantial 18 per cent of fuel consumption in road transport. One consequence of this was a marked decrease in CO₂ emissions from road transport that year.

In 2018 the consumption of biofuel decreased by 26 per cent compared to 2017, accounting for 12 per cent of the total fuel volume sold. The share of biofuels produced from palm oil fell from 46 per cent in 2017 to 19 per cent in 2018. The share of advanced biofuels increased from 21 to nearly 40 per cent, measured as a proportion of the total volume of biofuels.

Biofuels are double-counted under the binding sales target for road transport. They are also double-counted under the calculations of the share of renewables in Norway. Taking into account double-counting of advanced biofuels, sales accounted for 16.9 per cent of all fuels in road transport in 2018.

Another reason for the fall in CO₂ emissions from transport is the significant increase in the share of electric vehicles. In 2018, there were just over 195,000 electric cars in Norway, accounting for 7.1 per cent of its passenger car fleet. Furthermore, we have noted an increasing share of other electric vehicles on the market, particularly light goods vehicles and urban buses.

However, the calculated energy consumption of electric vehicles is far lower than the total consumption of biofuels. Electric cars accounted for just one per cent of the total energy consumption of the road transport sector in 2017. This is partly linked to the greater efficiency of electric engines, which use a far greater share of the energy than petrol or diesel vehicles do.

Table 1a: Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)¹¹

	Year 2017	Year 2018
A) Gross final consumption of RES for heating and cooling	1,516.0	1,564.9
B) Gross final consumption of	11,963.5	12,402.6

¹⁰ The Norwegian Water Resources and Energy Directorate (NVE) has made some changes to its calculation methods since the previous report in 2016. The lifespan for air-air and ventilation-air pumps has been set slightly higher in agreement with the heating pump sector. This has led to an increase in the total number of pumps installed, installed capacity and heat production, thereby raising the entire curve for historical and forecast capacity.

¹¹ Facilitates comparison with Table 4a of the NREAPs.

electricity from RES		
(C) Gross final consumption of energy from RES in transport	578.8	456.7
(D) Gross total RES consumption ¹²	14,058.2	14,424.1
(E) Transfer of RES to other Member States	0.0	0.0
(F) Transfer of RES from other Member States and 3rd countries	461.1	431.6
G) RES consumption adjusted for target (D)-(E)+(F)	14,519.2	14,855.7

Table 1.b: Total actual contribution (installed capacity, gross electricity generation) 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 electricity¹³

	Year 2017		Year 2018	
	MW	GWh	MW	GWh
Hydro ¹⁴	31,930.0	137,045.4	32,530.0	141,198.7
Non-pumped	30,382.0	142,366.0	31,120.0	138,796.0
<1MW	1,2	2.9	5.6	28.4
1MW–10 MW	108,7	336.2	137.4	426.1
>10MW	52.7	168.2	306.0	562.8
pumped	0	746.0	0	712.7
mixed ¹⁵	1,548.0	2,496.3	1,410.0	2,300.9
Geothermal	0	0.0	0	0.0
Solar:	0	0.0	0	0.0
photovoltaic	0	0.0	0	0.0
Solar thermal	0	0.0	0	0.0
Tide, wave, ocean	0	0.0	0	0.0
Wind:	1,207.0	2,761.6	1,710.0	3,893.3
onshore				
offshore				
Biomass ¹⁶	37.0	27.0	37.0	32.8
Solid biomass	27.0	6.0	27.0	15.8

¹² 12According 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.

¹³ Facilitates comparison with Table 10a of the NREAPs.

¹⁴ Normalised in accordance with Directive2009/28/EC and Eurostat methodology.

¹⁵ In accordance with new Eurostat methodology.

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

biogas	10.0	21.0	10.0	17.0
bioliquids	0	0.0	0	0.0
TOTAL	33,174.0	139,834.1	34,277.0	145,132.2
Of which in CHP	-	0.0	-	15.8

Table 1c: Total actual contribution (final energy consumption¹⁷) 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 (ktoe)¹⁸

	Year 2017	Year 2018
Geothermal (excluding low temperature geothermal heat in heat pump applications)	0.0	0.0
Solar	0.0	0.0
Biomass ¹⁹	875.9	884.7
Solid biomass	854.9	867.2
biogas	21.0	17.5
bioliquids	0.0	0.0
Renewable energy from heat pumps	=490.5	=522.8
- of which aerothermal	+252.3	+268.0
- of which geothermal	+238.2	+254.9
- of which hydrothermal	+0.0	+0.0
TOTAL	1,366.4	1,407.5
Of which DH ²⁰		
Of which biomass in households ²¹	501.3	484.7

Table 1d: Total actual contribution 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 (ktoe)^{22,23}

¹⁷ Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.

¹⁸ Facilitates comparison with Table 11 of the NREAPs.

¹⁹ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

²⁰ District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

²¹ From the total renewable heating and cooling consumption.

²² For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.

²³ Facilitates comparison with Table 12 of the NREAPs.

	Year 2017	Year 2018
Bioethanol/ bio-ETBE	33.9	38.1
Of which biofuels ²⁴ Article 21.	4.5	7.1
Of which imported ²⁵	32.5	25.5
Biodiesel	458.4	332.7
Of which biofuels ²⁶ Article 21(2)	101.4	140.5
Of which imported ²⁷	458.4	332.5
Hydrogen from renewable	0	0
Renewable electricity	78.5	91.3
Of which road transport	28.9	40.8
Of which non-road transport	49.6	50.5
Others (as biogas, vegetable oils, etc.) - please specify	10 (biogas for road transport)	19 (biogas for road transport)
Of which biofuels ²⁸ Article 21(2)	n/a	n/a
TOTAL	580.8	481.1

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

(Article 22(1)a) of Directive 2009/28/EC)

Table 2: Overview of all policies and measures

Name and reference of the measure	Type of measure*	Expected result **	Targeted group and activity ***	Existing or planned****
Higher binding sales target for biofuels in road transport.	Regulatory	Increased use of biofuels	Transport sector (road transport)	Existing A minimum of 7% of fuels sold for road transport must be biofuels as from 1 January 2017. This target increased to 8% from 1 October 2017, making the total binding sales target for 2017 7.25%. Increased to 10% as from 1 January 2018.

²⁴ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²⁵ From the whole amount of bioethanol / bio-ETBE.

²⁶ Biofuels that are included in Article 21(2) of Directive 2009/28/EC.

²⁷ From the whole amount of biodiesel.

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

				<p>In a 2018 regulation the binding sales target was set at 12% as from 1 January 2019 and at 20% as from 1 January 2020.</p> <p>Planned</p> <p>The Storting has adopted an increase in the binding sales target for biofuels as from 1 July 2020 to maintain the share of biofuels sold in 2019. Since 1 October 2015, biofuels sold under the binding sales target have been subject to a road-use charge. The charge will be extended to apply to all biofuels as from 1 July 2020. In isolation, this extension will not provide sufficient incentive to exceed the binding sales target. Therefore the Storting has raised the binding sales target as from 1 July 2020 to maintain the 2019 volume.</p>
Sub-targets set for advanced biofuels under the binding sales target for biofuels in road transport.	Regulatory	Increased use of advanced biofuels	Transport sector (road transport)	<p>Existing</p> <p>As from 1 January 2017 sub-targets were introduced of a minimum of 0.75% by volume (no double-counting) for advanced biofuels in road transport. This sub-target was increased to 1.25% as</p>

				<p>from 1 October 2017 and to 1.75% as from 1 January 2018.</p> <p>A regulation of November 2018 increased this to 2.25% as from 1 January 2019 and to 4% as from 1 January 2020.</p>
Sub-targets set for sales of biofuels for petrol-driven road vehicles.	Regulatory	Ensuring that bioethanol sales are maintained at a certain level.	Transport sector (road transport)	<p>Existing</p> <p>A minimum of 4.0% by volume of fuels sold for petrol-driven road vehicles must be biofuels from 1 January 2017.</p> <p>Amended</p>
Amended definition of 'advanced biofuels' which may help meet the sub-target and where such fuels are double-counted in comparison with other biofuels.	Regulatory	Increased use of biofuels over and above the binding sales target.	Transport sector (road transport)	<p>Since double-counting was introduced in 2014, advanced biofuels have been defined as biofuels, with the exception of biogas, made from waste, residues, non-food cellulosic material, and ligno-cellulosic material.</p> <p>As from 21 November 2018, the raw materials eligible for the sub-target and for double counting were adjusted to biofuels with the exception of biogas made from raw materials on the list in parts A and B of Annex V to the Product Regulation. These lists correspond to parts A and B of Annex IX to the ILUC Directive (Directive (EU)</p>

				2015/1513). Norway's definition of advanced biofuels differs from the definitions of both the ILUC Directive and the Renewables Directive (Directive (EU) No 2018/2001) in that only raw materials from Part A are considered advanced.
Road-use charge on biofuels	Financial	Profitable to sell biofuel above the binding sales target.	Transport sector (road transport)	Since 1 October, biofuels that come under the binding sales target have been subject to a road-use charge, Biofuels sold over and above the target have not been subject to this charge. As from 1 July 2020 the road-use charge will be extended to all biofuels. In 2020, the charges are NOK 2.37/l bioethanol and NOK 3.62/l biodiesel.
Guidelines on biofuels	Guiding	Guidelines on the purchase of environment-friendly biofuels	Transport sector	In 2018, the Norwegian Government commissioned Difi to draw up guidelines on the purchase of biofuels with a low risk of deforestation and ILUC. The guidelines were completed in 2019.
Reforming the one-off tax	Financial	Incentives to select low-emission vehicles	Transport sector (road transport)	In the 2016-18 budgets, the one-off tax was reformed, with a higher charge for CO ₂ and NO _x emissions, a reduced charge for weight and a phase-out of the

				engine power charge.
Change to the one-off tax deduction for rechargeable hybrid vehicles.	Financial	Fewer and more targeted incentives for selection of low-emission vehicles.	Transport sector (road transport)	As from 1 January 2018, the deduction for rechargeable hybrid vehicles was reduced from 26 to 23%, and from 1 July 2018 a 50-km electric range is required to qualify for the maximum level of deduction.
Stronger CO ₂ component in the one-off tax for motorcycles.	Financial	More economical to buy motorcycles with lower emissions, potentially electric motorcycles.	Transport sector (road transport)	As from 1 January 2019.
VAT exemption for electric cars and hydrogen cars, batteries for electric cars and the leasing of electric cars and hydrogen cars.	Financial		Transport sector (road transport)	Continued after 1 January 2018 following notification.
Exemption from road insurance charge for electric cars and hydrogen cars.	Financial		Transport sector (road transport)	From 1 January 2018
Exemption from the re-registration charge for electric cars and hydrogen cars.	Financial		Transport sector (road transport)	From 1 January 2018
Reduced-rate electricity tax on commercial vessels.	Financial	Increased use of land-based electricity.	Transport sector (shipping)	Electricity tax on commercial vessels reduced from NOK 0.1632 to NOK 0.048 per kWh on 1 January 2017.
Adjustment of the road-use charge for vehicle diesel and petrol.	Financial	More economical to use zero or low-emission cars.	Transport sector (road transport)	Diesel and petrol taxes raised by NOK 0.35 and NOK 0.15 per litre, respectively, from 1 January 2017. Diesel and petrol taxes

				lowered by NOK 0.05 and NOK 0.02 per litre, respectively, from 1 January 2018.
Ban on oil-fired heating as from 1 January 2020.	Regulatory	Less combustion of mineral and fossil oil and paraffin for heating houses and commercial premises. Increased use of renewable heat.	Construction industry	A final regulation banning the use of mineral oil to heat buildings was adopted in 2018. The ban will come into effect from 2020. It has also been extended to cover buildings used in agriculture as from 2025 and temporary buildings as from 2020.
Planning and Building Act and Construction Technology Regulation (TEK). Requirements regarding energy needs and energy supply in new and renovated buildings.	Regulatory	More energy-effective buildings using more renewable energy.	Construction industry	Existing TEK energy requirements made more stringent (passive house standard) from 1 January 2016.
CO ₂ tax on mineral products.	Financial	Less use of fossil energy sources and potentially increased use of renewable alternatives.	Cross-sectoral	In the budget for 2018 several CO ₂ tax reductions and exemptions were removed.
Research and development	R&D	Research and development contributes, among other things, to technological advances that help reduce emissions from the transport sector. Programmes have been set up for this purpose, managed by the Research Council	Transport/cross-sector	Ongoing In the 2018-2019 National Transport Plan, the Norwegian Government launched a new research and development initiative, Pilot-T. Pilot-T, start 2018. Pilot-T is a cooperation between the Research Council of Norway and

		of Norway and Innovation Norway. Moreover, the Government plans to set up Pilot-T, a specific demonstration and pilot project to support new technologies in the transport sector.		Innovation Norway.
Depreciation rate for zero-emission light goods vehicles.	Financial	On 20 December 2016 the Storting adopted an amending bill setting a higher depreciation rate for electrically powered light goods vehicles. The amendment will enter into force once the EFTA Surveillance Authority (ESA) authorises it as lawful State aid.		A higher depreciation rate of 30% was set for electrically powered light goods vehicles.
Binding biofuels sales target for the aviation industry.	Regulatory	The binding sales target became law in 2019.	Transport (aviation)	From 1 January 2020 there is a binding sales target of 0.5% for advanced biofuels in aviation. The Government has set an objective of a 30% binding sales target in 2030, in line with the availability of certified bio jetfuel and where technically feasible.
New ferries forming part of the national road network must be zero or low-emission vessels.	Regulatory	The aim is to reduce climate gas emissions from ferry services	Transport sector (shipping)	Ongoing Tenders for new ferries forming part of the national road network issued by the

				Norwegian Public Roads Administration must require zero- or low-emission vessels. In 2018, ferries of this kind emitted 245,000 tonnes of CO ₂ .
Reduced tolls on public roads for zero-emission vehicles.	Financial	The aim is to promote the use of zero-emission vehicles to reduce pollution from the vehicle fleet.	Transport	<p>The applicable toll guidelines allow for a reduction in the toll for zero-emission vehicles.</p> <p>A charge for zero-emission vehicles can be set locally at all toll points. The charges may vary between 0 and 50% of the ordinary charge minus a discount for pass holders.</p>
Requirement for charging points at conditional-use carparks.	Regulatory	The aim is to facilitate the use of zero-emission vehicles.	Transport	<p>Existing</p> <p>According to Section 35 of the Parking Regulation, conditional-use car parks are required to provide charging points. The Regulation applies to all conditional-use parking provided to the public. 'Conditional-use' means that parking is available on certain conditions/with certain restrictions, such as payment or a time limit. The Regulation provides that there must be a sufficient number of parking spaces with a charging point, up to a limit of six per cent of</p>

				the total number of spaces.
Environmental requirements for taxis	Regulatory	The aim of the measure is to reduce climate gas emissions and improve urban air quality.	Transport	In force The legal basis for the measure is Section 9, fourth sentence of the Commercial Transport Act (yrkestransportlova) which allows regions to set environmental requirements for cars used as taxis.
'Klimasats' - climate campaign	Financial	The objective of Klimasats is to reduce emissions at local level and facilitate the transition to a low-emission society.	The aid scheme is to promote climate measures in municipalities and regions by supporting projects that help reduce climate gas emissions and the shift towards a low-emission society. Some of the funding may be used for planning and studying climate measures and for building networks and sharing experiences. The scheme is managed by the Norwegian Environmental Agency.	It was introduced in the budget settlement in 2016. The scheme is for five years and expires in 2021.

* 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)?

**** Does this measure replace or complement measures contained in Table 5 of the NREAP?

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

No new measures, please see the action plan.

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

No new measures, please see the action plan.

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

The Commission reminds Member States that all national support schemes must respect the state aid rules as foreseen in Articles 107 and 108 of the Treaty on the Functioning of the EU. The notification of the report in accordance with Article 22 of Directive 2009/28/EC does not replace a state aid notification in accordance with Articles 107 and 108 of the Treaty on the Functioning of the EU.

*It is suggested that **table 3** is used to provide more detailed information on the support schemes in place and the support levels applied to various renewable energy technologies. Member States are encouraged to provide information on the methodology used to determine the level and design of support schemes for renewable energy.*

Table3: Support schemes for renewable energy

RES support schemes year 2018		Per unit support	Total MNOK	Total (M€)*
Renewable electricity				
Electricity certification scheme*	Obligation/quota (%): electricity certificate quota 15.3%			
2018	Penalty/Buy out option/ Buy out price (€/unit)	200 NOK/electricity certificate This charge varies according to the price of electricity certificates****		
2018	Average certificate price	116 NOK/MWh This is the average, volume-weighted price of electricity certificates in	1,461.6 MNOK	142.6 MEUR

		Norway and Sweden in the 2018 calendar year. (Exchange rate: EUR 1 = SEK 10.25 = 9.95 NOK).		
	Tax exemption/refund	n/a	n/a	n/a
	Investment subsidies (capital grants or loans) (€/unit)	n/a	n/a	n/a
	Production incentives	n/a	n/a	n/a
	Feed-in tariff	n/a	n/a	n/a
	Feed-in premiums			
	Tendering			
Total annual estimated support in the electricity sector				
Total annual estimated support in the heating sector				
Total annual estimated support in the transport sector				

**Figures from the 2018 annual report on the electricity certification scheme:

https://www.nve.no/media/8124/et_2019_04_norsk_tilpublikasjon.pdf

***Failure to revoke electricity certificates is subject to a fee of 150% of the average, volume-weighted price of electricity certificates registered in Norway and Sweden in the period from 3 April 2018 to 31 March 2019.

Electricity certification scheme: The joint Norwegian-Swedish electricity certificate scheme supports new power generation from renewable energy sources. It was launched in Norway on 1 January 2012.

Additional information on the electricity certificate scheme can be found on the Norwegian Water Resources and Energy Directorate (Norges vassdrags- og energidirektorat, NVE) website:

<http://www.nve.no/no/Kraftmarked/Elsertifikater/>

Enova SF

Enova, a state enterprise, plays a key role in efforts to promote innovation and new energy and climate solutions. Based in Trondheim, Enova employed 77 full-time equivalents in 2018. Enova's tasks are set out in detail in a governance agreement with the Norwegian Ministry of Climate and the Environment on its management of the Climate and Energy Fund. The Agreement sets out the guiding principles for Enova's activity, the targets to be achieved and the reporting requirements.

Enova's and the Climate and Energy Fund's mission is to work for reduced climate gas emissions and better energy supply security, as well as to support technological development which, in the long term, also helps to reduce climate gas emissions.

The current four-year agreement was signed in December 2016. Under this agreement, Enova is to focus on innovation and the development of new energy and climate solutions for a low-emissions society. More emphasis is placed on efforts to reduce emissions in the transport sector and other sectors not subject to allowances. Enova's activities may target any sector. The agreement provides the enterprise with a long-term financial framework and a high degree of professional independence. Under this governance model, Enova will be able to efficiently exploit the resources made available to it.

In addition to Enova's main mission, the agreement sets out the following three objectives, under which Enova is to promote:

1. Reduced climate gas emissions with a view to Norway meeting its 2030 climate commitments;
2. Stepped-up energy and climate technology innovation to help bring about a low-emissions society;
3. Better security of supply through flexible and effective assets and energy use.

In June 2019, Enova was entrusted with the task of managing the zero-emission fund for commercial transport. 1 BNOK over a two-year period has been allocated to the promotion of zero-emission technology in commercial transport. Among other things, Enova has used this funding to set up an aid scheme for zero-emission goods vehicles.

Measures and programmes must be designed to contribute towards sustainable market changes.

Transport

In addition to Enova's aid schemes, there are several tax exemptions in Norway aimed at promoting the use of renewable energy in the transport sector, see Table 2.

A binding national sales target applied as from 1 January 2017 requiring the total annual sales of biofuels to account for at least 7% of the total fuel sales for road traffic. The target will be increased gradually up until 2020 as shown in Table 3b.

Table 3b: Binding biofuels sales target in Norway

	Current	Planned
From 1 January 2017	7%	-
From 1 October 2017	8%	-
From 1 January 2018	10%	-
From 1 January 2019	12%	Laid down in law November 2018
From 1 January 2020	20%	Laid down by regulation in November 2018

Furthermore, as part of this target, a sub-target of 0.75% was set for advanced biofuels as from 1 January 2017, and 1.5% (not double-counted) from 1 October 2017. The target increased to 1.75% as from 1 January 2018. A 2018 regulation raised the target to 2.25% as from 1 January 2019 and to 4% from 1 January 2020. Advanced biofuels are double-counted under the binding sales target.

The sustainability criteria for biofuels and bioliquids (Articles 17-21 of the Sustainability Directive) are laid down in a Norwegian regulation in force since 1 January 2014. Biofuels and other bioliquids must satisfy the sustainability criteria in order to be counted against the renewables target or the binding sales target.

3.1. Please provide the information on how supported electricity is allocated to final customers for purposes of Article 3(6) of Directive 2003/54/EC. (Article 22(1)(b) of Directive 2009/28/EC)).

Norwegian power producers may be issued with guarantees of origin under the Sustainability Directive and the relevant national regulation. Power suppliers must inform customers of the origin of their power supplies during the previous year in promotional material and invoices (product declaration). In Norway this requirement is laid down in an NVE metering and accounting regulation.

If a power supplier does not make use of guarantees of origin it must refer to the product declaration as calculated by the NVE or, as a minimum, to the NVE website.

End users requiring documented proof that they are buying power generated from renewable energy sources must buy guarantees of origin.

In accordance with Article 3(6) of Directive 2003/54/EC power generation for which electricity certificates are issued is not automatically attributed to the end user. Electricity, electricity certificates and guarantees of origin are traded in separate markets.

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

Enova may grant investment support to the setting-up of biogas and biofuels production plants in Norway. Support may only be granted to the production of advanced biofuels, i.e. biofuels based, inter alia, on waste, residues and new types of raw material. No support may be given to the production of food-based (first-generation) biogas and biofuels.

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

The guarantee of origin scheme is governed by the Guarantees of Origin Regulation (FOR-2007-12-14-1652). Norway participated in a concerted action under the Renewables Directive and helped draft a joint form with a detailed description of the scheme. The enclosed form describes Norway's guarantees of origins scheme. It has been submitted to CA-RES and is available on the NVE website (<https://www.nve.no/Media/6660/ca-res-wq-10-questionnaire-norway-oppdatert-februar-2018doc.pdf>). We therefore refer you to that form (enclosed).

6. Please describe the developments in the preceding 2 years in the availability and use of biomass resources for energy purposes. (Article 22(1)(g) of Directive 2009/28/EC)).

The main biofuels used for energy purposes in Norway are firewood, pellets and briquettes used by households. Woodchips, sawdust and bark are used in the wood processing industry. Woodchips, firewood and pellets are used on farms and in small district heating facilities. Wood waste and chips are used in large heating plants. There has been an increase in the demand for and use of forest biofuels for energy purposes. This is due to newly installed biomass boilers within Norway and increased timber exports. In 2017 and 2018, some 3.5 million cubic metres of timber were exported. Borregaard produces bioethanol based on cellulose from Norwegian spruce. In 2017 it produced around 9.2 million litres, and in 2018, 12 million litres. Some of this was used domestically, mixed with petrol.

Table 4: Biomass supply for energy use

	Amount of domestic raw material (*)		Primary energy in domestic raw material (ktoe)		Amount of imported raw material from EU (*)		Primary energy in amount of imported raw material from EU (ktoe)		Amount of imported raw material from non EU(*)		Primary energy in amount of imported raw material from non EU (ktoe)	
	Year 2017	Year 2018	Year 2017	Year 2018	Year 2017	Year 2018	Year 2017	Year 2018	Year 2017	Year 2018	Year 2017	Year 2018
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	3.3 mill. m ³	3.5 mill. m ³	697	722								
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**	0.57 m ³	0.59 m ³	61	63								
Energy crops (grasses, etc.) and short rotation trees (please specify)												
Agricultural by-products / processed residues and fishery by-products **												
Biomass from waste (municipal, industrial etc.) **												
Others (please specify)												
Biomass supply for transport:												
Common arable crops for biofuels (please specify main types)												
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)												

Others (byproducts forest industry - bioethanol) Biodiesel	1.5 mill liter bio-ethanol	1.5 mill liter bio-ethanol	0.86	0.86								
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* Amount of raw material if possible in m³ for biomass from forestry and in tonnes for biomass from agriculture and fishery and biomass from waste

** The definition of this biomass category should be understood in line with table 7 of part 4.6.1 of Commission Decision C (2009) 5174 final establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC

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

There is virtually no production of crops dedicated to energy production in Norway.

Land use	Surface (ha)	
	Year 2017	Year 2018
1. Land used for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) (Please specify main types)	0	0
2. Land used for short rotation trees (willows, poplars). (Please specify main types)	0	0
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum. (Please specify main types)	0	0

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

Official price statistics for various types of biofuels are currently not available.

The production and use of bioenergy has not affected the prices and the use of farming land in Norway.

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

Article 21(2) biofuels = Biofuels made from wastes, residues, non-food cellulosic material, and lignocellulosic material

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

Article 21(2) biofuels ^[10]	2017	2018
Production – Fuel type Bioethanol (ktoe)	4,7	6,1
Consumption – Fuel type bioethanol (ktoe)	4,5	7,1
Consumption – Fuel type biodiesel (ktoe)	101,4	140,5
Total production bioethanol (ktoe)	4,7	6,1
Total consumption biofuels (ktoe)	105,9	147,6
% share of 21.2. fuels from total RES-T in table 1a	18,3%	32,3 %

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

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

In Norway timber is harvested mainly to supply the mechanical wood and pulp and paper industries with raw materials. Firewood is extensively used in households and log cabins. Demand is increasing for timber as a fuel, due to the construction, installation and use of biofuel installations, both large and small. In practice, fuelwood is supplied as a residual raw material from other forestry activities. All production and harvesting of biomass from forests must be sustainable as required by the relevant legislation and standards. Any installations built should contribute to exploiting energy from farming and forestry, and use locally-produced fuel.

The EU's sustainability criteria for biofuels and bioliquids have been in force in Norway since 1 January 2014. Virtually all biofuels used in Norway are imported; see Table 1d.

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

For the calculation of net greenhouse gas emission savings from the use of renewable energy, the following methodology is suggested:

- *For biofuels: In accordance with Article 22(2) of Directive 2009/28/EC.*
- *For electricity and heat it is suggested to use the EU wide fossil fuel comparators for electricity and heat as set out in the report on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling²⁹, if no later estimates are available.*

If a Member State chooses not to use the suggested methodology for estimating the net greenhouse gas emission savings, please describe what other methodology has been used to estimate these savings.

Table 6: Estimated GHG emission savings from the use of renewable energy (t CO2eq)

Environmental aspects	Year 2017	Year 2018
Total estimated net GHG emission saving from using renewable energy ³⁰		
Estimated net GHG saving from the use of renewable electricity		
- Estimated net GHG saving from the use of renewable energy in heating and cooling		
Estimated net GHG saving from the use of renewable energy in transport		

Norway's stationary energy consumption is, for a large part, based on hydropower. Its climate gas emissions from domestic energy consumption are therefore relatively low in comparison to other countries.

Trade in electricity will grow as Norway becomes increasingly integrated with the European electricity market. Norway is likely, for example, to import electricity during periods when wind power generation is at a high level in Europe and to export hydropower in periods of still weather. This offers an opportunity to better exploit the flexibility associated with hydropower. As wind power and other

²⁹ Report available on:

http://ec.europa.eu/energy/renewables/transparency_platform/doc/2010_report/com_2010_0011_3_report.pdf.

³⁰ The contribution of gas, electricity and hydrogen from renewable energy sources should be reported depending on the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

variable renewable energy sources are phased in across Europe, the flexibility of the Norwegian hydropower system could help balance the energy supply in countries to which we are connected by a transmission grid.

In recent years there has been a decrease in energy consumption in the transport sector, from 57 TWh in 2012 to 53 TWh in 2018. The main reason for this is a decrease in shipping, while increased use of more energy-efficient electric vehicles has contributed to a decrease in energy consumption in road transport. There has been a decrease in the use of petrol, diesel and marine gasoil. Marine gasoil and petrol have decreased by 30 per cent between 2010 and 2018, while diesel has declined somewhat less. The use of biofuels, on the other hand, has tripled from 1.5 TWh in 2012 to 4.5 TWh in 2018. The use of electricity in transport has also doubled since 2012, but the quantities used are still small. The major consumers are trains, underground trains and trams, followed by road transport. The decreased use of fossil fuels and increased use of biofuels and electricity has raised the renewables share of transport, making a significant contribution to the overall renewables share in Norway.

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

Table 7: Actual and estimated excess and/or deficit (-) production of renewable energy compared to the indicative trajectory which could be transferred to/from other Member States and/or third countries in [Member State] (ktoe)^{31, 32}

	Year (2017)	Year (2018)	2017	2018	2019	2020
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)	0	0	0	0	0	0

Norway's renewables share was above the baseline estimated in the Action Plan in both 2017 and 2018 (see Question 1). Underlying uncertainties in the estimates, in particular yearly variations in temperature and inflow, may cause unforeseeable changes in both energy consumption and normalised hydropower generation from one year to the next. There are no plans to transfer excess production in 2017 and 2018 to other countries.

³¹ Please use actual figures to report on the excess production in the two years preceding submission of the report, and estimates for the following years up 2020. In each report Member State may correct the data of the previous reports.

³² When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).

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

Norway and Sweden are the first countries in Europe to have implemented a *joint support scheme* as a cooperation mechanism under Article 11 of the Renewables Directive. A common market for electricity certificates has been set up to encourage new power generation from renewable energy sources.

The two countries have established a distribution rule pursuant to Article 11(1)(b) of the Directive to determine how the renewable power generated is to be distributed between them in the electricity certificate market. In a letter dated 31 March 2016 the Ministry of Petroleum and Energy notified the EFTA Surveillance Authority of an amended distribution rule for the Norwegian-Swedish electricity certificate scheme.

In 2018, normalised production from utilities put on stream in Norway after 2012 and covered by the scheme was 4,807 GWh. The corresponding figure for Sweden was 14,846 GWh. For 2018, 5,019.5 GWh will be transferred from Sweden to Norway and reported under the Renewables Directive.

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

A calculation was made of the renewables share of waste delivered to Norwegian incineration plants in 2009. The project was an update of a project implemented in 2006. The calculation method used was the same as the one used in 2006 with some changes, such as a more detailed analysis of the renewable, fossil and inert content of each fraction of waste.

The project's renewables share was calculated in both weight and energy terms. The calculations were made on the basis of available waste statistics, sample analysis of household and industrial waste and data from relevant publications. The project involved new sample analyses of various types of industrial waste delivered to Norwegian incineration plants. The calculation of the renewables share in energy terms was based on a model developed by PROFU, which also helped assure the quality of the calculations. The renewables share was calculated as:

- 60% in weight terms
- 52% in energy terms.

According to the calculation made, the renewables share of the waste, based on actual net calorific value, was 52%. There was no significant change compared to the results obtained in 2006, when the renewables share was calculated at 50%.

Heat value (entire volume of waste): 11.5 MJ/kg (SSB: 10.5 MJ/kg);

Fossil energy share: 48%; renewable energy share: 52%.

The total energy content of waste delivered to Norwegian incineration plants was estimated at some 3.5 TWh/year.