



MINISTRY OF INDUSTRIES
AND INNOVATION

Progress report for Iceland under Directive 2009/28/EC

2017

Reykjavík, Iceland
May 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.

This template is an update including additional provisions following the amendments of the 2009 directive based on the directive 2015/1513 of 9 September 2015. Its use remains non-binding and fully voluntary.

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 (n-1; n-2 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.

The data in table 1 is based on calculations in the SHARES 2014 software provided by Eurostat for the member states to report national shares of renewable energy. This data is to be considered preliminary and is updated every year.

Electricity consumption has increased app. 1,8% annually since 2010. The new demand has been met with hydropower and geothermal energy as well as wind-energy, the first wind turbines were connected to the grid in 2013.

A trend in increased renewables share in transport can be observed. Use of renewables for transport has increased in the past few years. The increase has been because of a new law, enacted in 2013 and came into force in 2014, which mandated the oil companies to ensure that at least 3,5% of the total energy value of fuels for transport were renewable. In 2015 this percentage increased to 5,0%. The mandate has mostly been met by imported biofuels, biodiesel and bioethanol.

An increase in RES-H&C(%) for 2016 is observed. This is mainly due to higher quality data submitted for that year by the largest heat producer in Iceland, Reykjavík Energy. Orkustofnun is working on verifying past data in light of this. General heat use has also been increasing, and since heat is mainly produced from geothermal sources, this may raise the RES H&C percentage.

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

	Year 2015	Year 2016
RES-H&C ⁴ (%)	63,38%	71,06%
RES-E ⁵ (%)	93,11%	95,31%
RES-T ⁶ (%)	6,37%	6,84%
Overall RES share ⁷ (%)	70,20%	72,60%
<i>Of which from cooperation mechanism⁸ (%)</i>	0%	0%
<i>Surplus for cooperation mechanism⁹ (%)</i>	7,9%	7,9%

Table 1 has been reviewed with respect to previous progress reports as follows:

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 gross final consumption of energy from renewable sources for heating and cooling includes energy consumption for fisheries industry according to Art. 5. 4 of DIR 2009/28/EC. In previous reports the energy consumption for fisheries industry was accounted for in transport.

The electricity generated by hydropower and wind power is accounted for in accordance with the normalization rules set out in Annex II. of DIR 2009/28/EC. Over 99% of Iceland's electricity consumption is in fact produced by hydropower, geothermal power and wind power. Electricity generation with fossil fuel is only used as reserve power in situations of unexpected power outages.

The RES-T (%) denominator does not include energy consumption for fisheries industry as a result of the provision stated in art. 3.4 (a) of DIR 2009/28/EC, that the total amount of energy consumed in transport, only petrol, diesel, biofuels consumed in road and rail transport and electricity shall be taken into account.

The target for the overall RES share (%) 2020 has been adjusted to 67% to reflect the above mentioned review.

Surplus for cooperation mechanism is calculated as the difference between the actual overall RES share (%) and the calculated indicative trajectory value for the year in question (in previous reports the surplus for cooperation mechanism was calculated as the difference between the actual overall RES share (%) and the 2020 RES share (%) target).

Table 1a:
Calculation table for the renewable energy contribution of each sector to final energy consumption (ktoe)¹⁰

	Year 2015	Year 2016
(A) Gross final consumption of RES for heating and cooling	700,2	886,0
(B) Gross final consumption of electricity from RES	1503,5	1518,1
(C) Gross final consumption of energy from RES in transport	17,0	18,5
(D) Gross total RES consumption ¹¹	2020,7	2422,5
(E) Transfer of RES <u>to</u> other Member States	0	0
(F) Transfer of RES <u>from</u> other Member States and 3rd countries	0	0
(G) RES consumption adjusted for target (D)-(E)+(F)	2020,7	2422,5

¹⁰ Facilitates comparison with Table 4a of the NREAPs

¹¹ 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 1b:

Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in Iceland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity¹²

	2015		2016	
	MW	GWh	MW	GWh
Hydro ¹ :	1987	12491	1987	12603
non pumped	1987	12491	1987	12603
<1MW	12	50	12	56
1MW-10 MW	54	221	54	215
>10MW	1921	12220	1921	12322
pumped				
mixed ²				
Geothermal	665	5003	665	5067
Solar:				
photovoltaic				
concentrated solar power				
Tide, wave, ocean				
Wind:	3	11	3	9
onshore	3	11	3	9
offshore				
Biomass ³ :				
solid biomass	0	0	0	0
biogas	0	0	0	0
bioliquids	0	0	0	0
TOTAL				
of which in CHP		4516		4570

Table 1c:

Total actual contribution (final energy consumption¹³) from each renewable energy technology in Iceland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in heating and cooling (ktoe)¹⁴

	Year 2015	Year 2016
Geothermal (excluding low temperature geothermal heat in heat pump applications)	699,5	884,6
Solar	0	0
Biomass ¹⁵ :		
solid biomass	0,6	1,4
biogas	0	0
bioliquids	0	0
Renewable energy from heat pumps:	0	0
- of which aerothermal		
- of which geothermal		
- of which hydrothermal		
TOTAL	700,2	886,0
Of which DH ¹⁶	700,2	886,0
Of which biomass in households ¹⁷	0	0

¹² Facilitates comparison with Table 10a of the NREAPs.

¹³ Direct use and district heat as defined in Article 5.4 of Directive 2009/28/EC.

¹⁴ Facilitates comparison with Table 11 of the NREAPs.

¹⁵ Take into account only those complying with applicable sustainability criteria, cf. Article 5(1) last subparagraph of Directive 2009/28/EC.

¹⁶ District heating and / or cooling from total renewable heating and cooling consumption (RES- DH).

¹⁷ From the total renewable heating and cooling consumption.

Figure 1 shows the final heat consumption in 2016 grouped by utilization category. Direct use of geothermal resources account for 97% of the final heat use in Iceland. In areas where direct use of geothermal resources is not available heat is produced mainly with electricity, which is produced from hydro and geothermal, and in a few instances with oil.

Figure 1– Final heat consumption in Iceland 2016

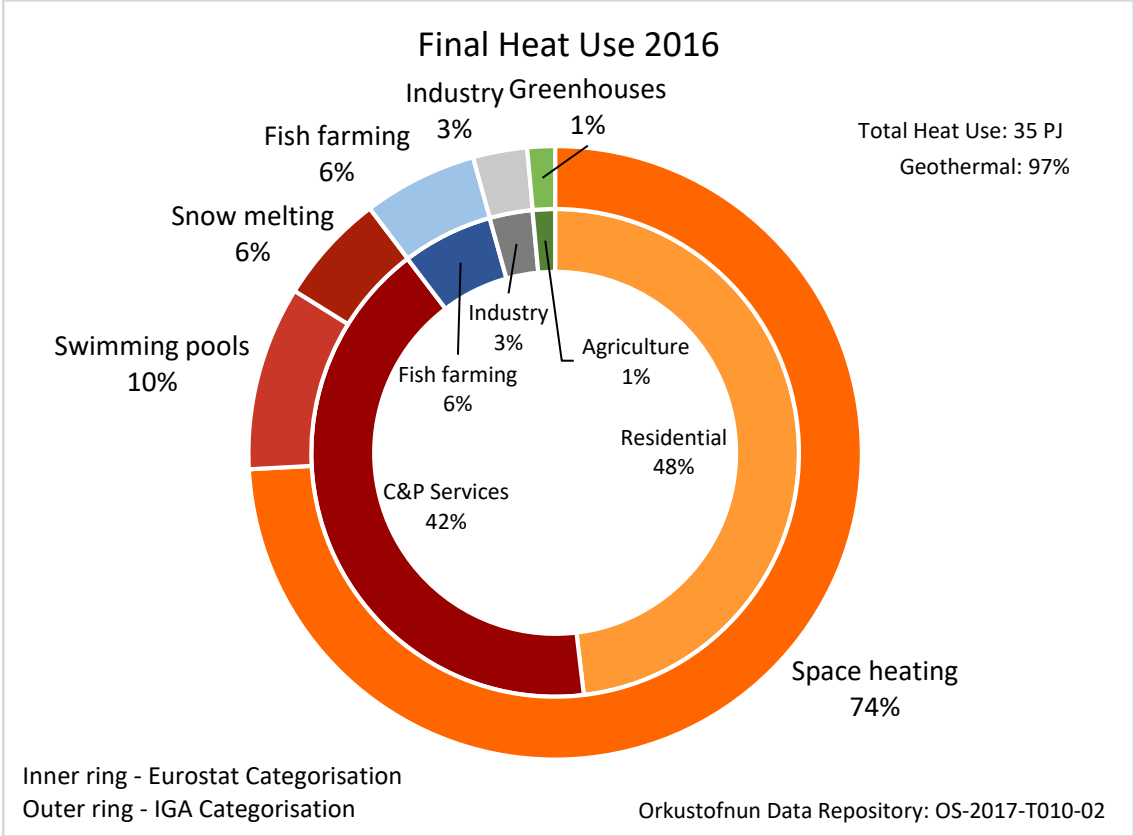


Table 1d:

Total actual contribution from each renewable energy technology in Iceland to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in the transport sector (ktoe)^{18, 19}

	2015	2016
- Bioethanol	1,29	3,22
- Biodiesel (FAME)	12,50	11,46
- Hydrotreated Vegetable Oil (HVO)	0	0
- Biomethane	1,65	1,70
- Fischer-Tropsch diesel	0	0
- Bio-ETBE	0	0
- Bio MTBE	0	0
- Bio-DME	0	0
- Bio-TAEE	0	0
Biobutanol	0	0
- Biomethanol	0	0
- Pure vegetable oil	0	0
Total sustainable biofuels	15,44	16,38
Of which		
sustainable biofuels produced from feedstock listed in Annex IX Part A	1,65	1,70
other sustainable biofuels eligible for the target set out in Article 3(4)e	0	0
sustainable biofuels produced from feedstock listed in Annex IX Part B	0	0
sustainable biofuels for which the contribution towards the renewable energy target is limited according to Article 3(4)d	13,79	14,68
Imported from third countries	13,79	14,68
Hydrogen from renewables	0	0
Renewable electricity	1,63	2,15
Of which		
consumed in road transport	0	0,42
consumed in rail transport	0	0
consumed in other transport sectors	1,58	1,67
others (Please specify)		
others (Please specify)		

¹⁸ For biofuels take into account only those compliant with the sustainability criteria, cf. Article 5(1) last subparagraph.

¹⁹ Facilitates comparison with Table 12 of the NREAPs.

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 or activity***	Existing or planned****	Start and end dates of the measure
1. Parliament resolution on energy transition in transport, aviation and marine operations.	24 measures of all types	Reaching a target of 40% renewables in transport in 2030 and 10% renewables in marine operations.	Sector of transport, marine and aviation	New measures	Start 1.6.2017 and renewed every 5 years.
2. Grants for infrastructure for electric vehicles	Financial	Installed capacity for chargers increased by 105.	Transport sector	New measure	Three year project 2016-2018

* 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).

Renewable energy development in Iceland is mainly focused on the transport sector as almost all electricity and heat already is of renewable origin. As part of Iceland's transposition of the Renewable Energy Directive 2009/28/EC, the Parliament, Althingi, passed a bill of law on renewable fuel for transport, act. no. 40/2013. The purpose of the legal act is to increase the share of renewable fuel for transport and to decrease CO₂ emissions and remove market barriers for producers of renewable fuel. The bill sets a requirement that at least 3,5% of the fuel sales of commercial agents be of renewable origins in 2014, this percentage is then increased to 5% in 2015 and onwards. In addition, the fuel must fulfil the sustainability criteria of the Directive.

The Icelandic parliament passed a resolution with an action plan in 2017 with measures that aid the development of renewable energy in transport, marine and air operations. New targets are set for the year 2030, 40% renewables in transport and 10% renewables in marine operations.

A three year program for infrastructure development for electric cars is ongoing.

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).

- Not applicable.

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.*

Not applicable. Support schemes for renewable electricity production have not been established in Iceland.

**Table 3:
Support schemes for renewable energy**

RES support schemes year n (e.g. 2011)		Per unit support	Total (M€)*
[(sub) category of specific technology or fuel]			
Instrument (provide data as relevant)	Obligation/quota (%)		
	Penalty/Buy out option/ Buy out price (€/unit)		
	Average certificate price		
	Tax exemption/refund		
	Investment subsidies (capital grants or loans) (€/unit)		
	Production incentives		
	Feed-in tariff		
	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			

* The quantity of energy supported by the per unit support gives an indication of the effectiveness of the support for each type of technology

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).

There is no need for support schemes in Iceland to ensure that renewable energy sources are given priority in the electricity market as the national production is 99% renewable energy in electricity.

- 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*).**

The sales obligation quota for transport in act no. 40/2013 allows for double counting of biofuels made from wastes, residues, non-food cellulosic material and ligno-cellulosic material.

- 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*).**

With the Act on the guarantee of origin of electricity produced from renewable energy sources, etc, with later amendments No. 30/2008., Iceland implemented the Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal energy market. With amendments to the Act No 30/2008 by law nr. 81/2012, Iceland implemented ART 15. of the RES directive, where reference is now made to Directive 28/2009/EC.

A regulation on disclosure of information regarding guarantees of origin was effective from September 13, 2012. The regulation is issued in accordance to paragraph 2 of Art. 5 and Art. 45 of the Electricity Act No. 65/2003, with later amendments. The regulation was set in accordance to the standards which are set forth in the RE-DISS project.

In order to facilitate the mutual recognition of guarantees of origin from different countries in the EU, a questionnaire on each Member State's management of guarantees of origin and the disclosure of electricity has been produced by the EU Programme CA-RES (Concerted Action on the Renewable Energy Sources Directive).

The questionnaire with the Icelandic responses indicated has been published and is available on the website of The National Energy Authority. The questionnaire gives a good overview on the legal framework for guarantees of origin and disclosure in Iceland.

- 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*).**

*It is suggested that **tables 4 and 4a** are used to provide more detailed information on the biomass supply.*

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 2015	Year 2016	Year 2015	Year 2016	Year 2015	Year 2016	Year 2015	Year 2016	Year 2015	Year 2016	Year 2015	Year 2016
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land energy generation (fellings etc.)**	2180	2260	0,18	0,18	0	0	0	0	0	0	0	0
Indirect supply of wood biomass (residues and co-products from wood industry etc.)**	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural by-products / processed residues and fishery by-products **	0	0	0	0	0	0	0	0	0	0	0	0
Biomass from waste (municipal, industrial etc.) **	0	0	0	0	0	0	0	0	0	0	0	0
Energy crops (grasses, etc.) and short rotation trees (please specify)	0	0	0	0	0	0	0	0	0	0	0	0
Others (please specify)	0	0	0	0	0	0	0	0	0	0	0	0
Biomass supply for transport:												
Common arable crops for biofuels (please specify main types)	0	0	0	0	0	0	0	0	0	0	0	0
Energy crops (grasses, etc.) and short rotation trees for biofuels (please specify main types)	0	0	0	0	0	0	0	0	0	0	0	0
Others (methane from municipal waste)	N/A	N/A	1,65	1,70								

* 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)

Land use	Surface (ha)	
	2015	2016
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).**

When assessing commodity price impacts, it is suggested to consider at least the following commodities: common food and feed crops, energy wood, pellets.

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

Table 5:

Development in Biofuels

Please provide the total amounts of biofuels made from the feedstocks listed in Annex IX of Directive 2009/28/EC (ktoe)

Feedstock as listed in Annex IX Part A of Directive 2009/28/EC	2015	2016
(a) Algae if cultivated on land in ponds or photobioreactors	0	0
(b) Biomass fraction of mixed municipal waste, but not separated household waste subject to recycling targets under point (a) of Article 11(2) of Directive 2008/98/EC	1,65	1,70
(c) Bio-waste as defined in Article 3(4) of Directive 2008/98/EC from private households subject to separate collection as defined in Article 3(11) of that Directive	0	0
(d) Biomass fraction of industrial waste not fit for use in the food or feed chain, including material from retail and wholesale and the agro-food and fish and aquaculture industry, and excluding feedstocks listed in part B of this Annex	0	0
(e) Straw	0	0
(f) Animal manure and sewage sludge	0	0
(g) Palm oil mill effluent and empty palm fruit bunches	0	0
(h) Tall oil pitch	0	0
(i) Crude glycerine	0	0
(j) Bagasse	0	0
(k) Grape marcs and wine lees	0	0
(l) Nut shells	0	0
(m) Husks	0	0
(n) Cobs cleaned of kernels of corn	0	0
(o) Biomass fraction of wastes and residues from forestry and forest-based industries, i.e. bark, branches, pre-commercial thinnings, leaves, needles, tree tops, saw dust, cutter shavings, black liquor, brown liquor, fibre sludge, lignin and tall oil	0	0
(p) Other non-food cellulosic material as defined in point (s) of the second paragraph of Article 2	0	0

(q) Other ligno-cellulosic material as defined in point (r) of the second paragraph of Article 2 except saw logs and veneer logs	0	0
Feedstock as listed in Annex IX Part B of Directive 2009/28/EC	Year 2015	Year 2016
(a) Used cooking oil	0	0
(b) Animal fats classified as categories 1 and 2 in accordance with Regulation (EC) No 1069/2009 of the European Parliament and of the Council	0	0

Resource assessment

Please provide a resource assessment of the feedstock listed in Annex IX of Directive 2009/28/EC focusing on the sustainability aspects relating to the effect of the replacement of food and feed products for biofuel production, taking due account of the principles of the waste hierarchy established in Directive 2008/98/EC and the biomass cascading principle, taking into consideration the regional and local economic and technological circumstances, the maintenance of the necessary carbon stock in the soil and the quality of the soil and the ecosystems.

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*).

All biofuel produced for land transport in Iceland has to meet the sustainability criteria of the Directive/28/EC from 1 January 2014. Furthermore, no biofuel producer in Iceland has reported production from locally grown energy plants. The biofuel which has been produced in Iceland in the past two years is mostly landfill gas (methane), with a little of biodiesel from waste.

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 cooling²⁰, 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.

For estimating the net greenhouse gas savings 817 g/kWh is the CO₂ emission factor used to reflect the average carbon content of fossil fuels for renewable electricity and 409 g/kWh for energy in heating and cooling. The estimated GHG savings for transport have not been reported for years 2015-2016 and are estimated by upscaling the figures from previous reports. The data is preliminary.

In 2016 the annual savings in CO₂ emissions by using renewable energy instead of oil amounted to 19 million tons, there of 58% due to hydro power, 20% due to geothermal district heating and

²⁰ Report available on: http://ec.europa.eu/energy/renewables/transparency_platform/doc/2010_report/com_2010_0011_3_report.pdf .

22% due to geothermal power²¹. For comparison the total anthropogenic emissions of CO₂ in Iceland were 4.5 tons of CO₂ in 2015²². The emissions would thus have been 23.5 million tons if Iceland used oil instead and even higher with coal.

The cumulative savings amount to more than 380 million tons of CO₂ from 1914 through 2016, thereof 59% due to hydro power and 41% due to geothermal district heating and power as can be seen in Figure 2.

Figure 2. Accumulative CO₂ savings using renewables instead of oil 1914-2016

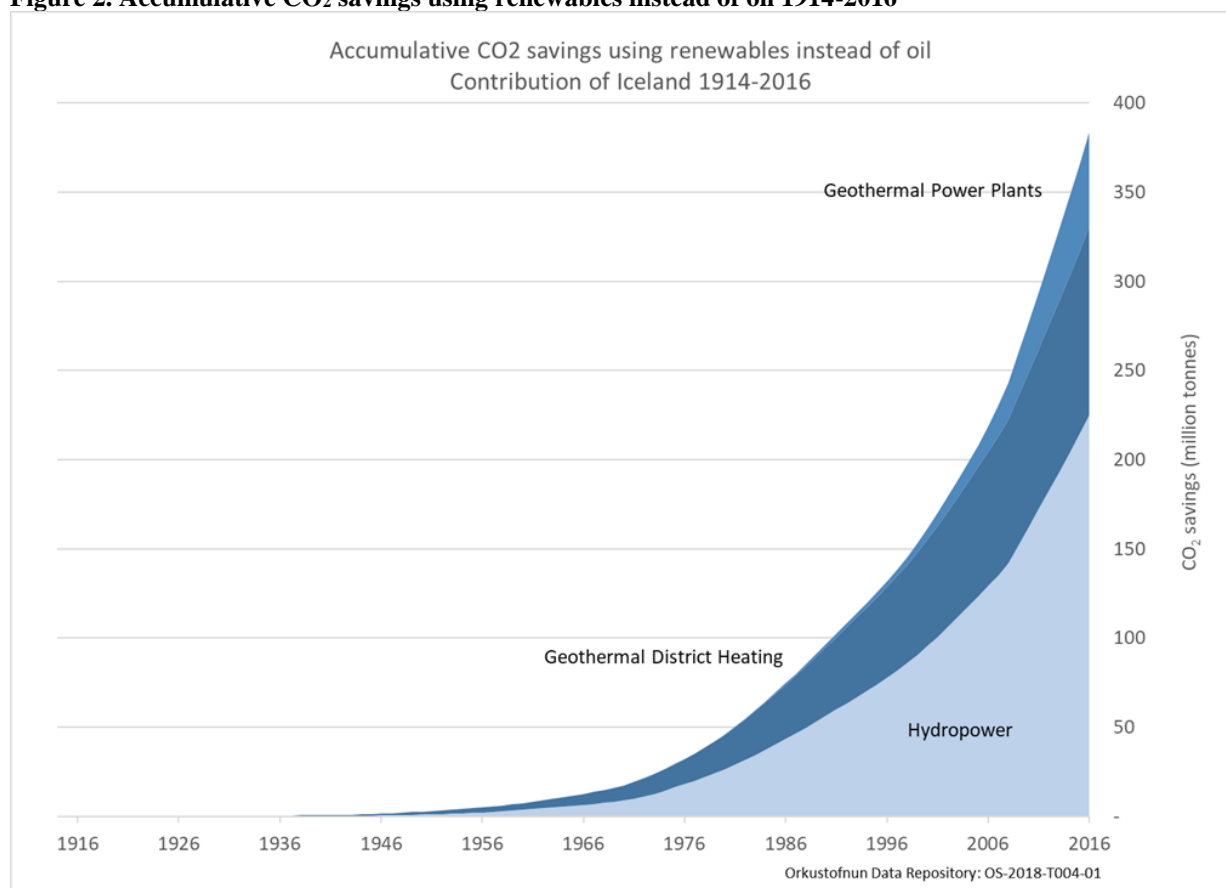


Table 6:
Estimated GHG emission savings from the use of renewable energy (t CO₂eq)

Environmental aspects	2015	2016
<i>Total estimated net GHG emission saving from using renewable energy²³</i>	18.531.089	19.007.258
- Estimated net GHG saving from the use of renewable electricity	15.346.343	15.144.628
- Estimated net GHG saving from the use of renewable energy in heating and cooling	3.145.017	3.820.480
- Estimated net GHG saving from the use of renewable energy in transport	39.730	42.150

²¹ Orkustofnun Data Repository 2018, OS-2018-T003-01: CO₂ savings using renewable energy instead of oil [data file].

²² National Inventory Report 2017:

https://ust.is/library/Skrar/Einstaklingar/Loftgaedi/NIR%20Iceland%202017%20submission_May%20resub.pdf

²³ 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.

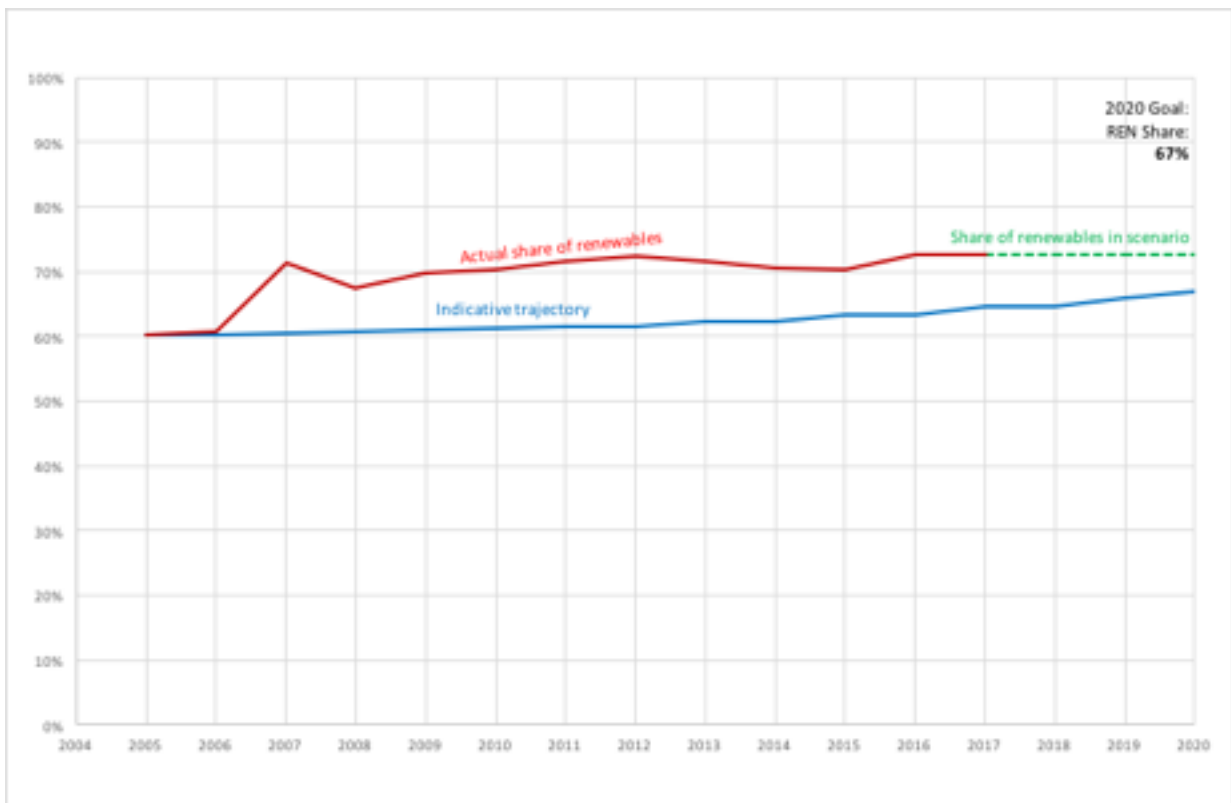
11. Please report on (for the preceding 2 years) and estimate (for the following years up to 2020) the excess/deficit production of energy from renewable sources compared to the indicative trajectory which could be transferred to/imported from other Member States and/or third countries, as well as estimated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

Iceland’s 2020 target for the overall RES share (%) is 67%. The indicative trajectory is calculated according to methodology in Annex 1B of DIR-2009/28 EC.

Figure 3 shows a graphical representation of the indicative trajectory and the actual share of renewable energy which is extrapolated constant from 2014 until 2020.

The actual and estimated excess production of renewable energy is calculated as the difference between the indicative trajectory and the actual and forecasted overall RES share (%). As can be seen from table 7 and figure 3, Iceland lies above the indicative trajectory the entire period. The reason for the high value of the actual overall RES share (%) in year 2007 results from the normalisation rule for hydro power accounting as a relatively large hydro plant was taken into operation that year²⁴ resulting in a 113% RES-E (%) share that year.

Figure 3 Actual share of renewable energy and indicative trajectory



²⁴ Fljótsdalur Hydro power station 690 MW.

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)^{25, 26}

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated excess or deficit production (Please distinguish per type of renewable energy and per origin/destination of import/export)	241	252	280	314	279	251	222	314	291	314	295	274

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

Not applicable.

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).

Please note that in the first progress report (2011 report) Member States are invited to outline their intentions with regard to the questions addressed in Article 22(3 a-c). In addition, Member States are also welcome to provide any other information considered relevant to the specific situation of developing renewable energy of each Member State.

13. Please provide the amounts of biofuels and bioliquids in energy units (ktoe) corresponding to each category of feedstock group listed in part A of Annex VIII taken into account by that Member State for the purpose of complying with the targets set out in Article 3(1) and (2), and in the first subparagraph of Article 3(4).

Feedstock group	2015	2016
Cereals and other starch-rich crops		
Sugars		
Oil crops		

²⁵ 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.

²⁶ When filling in the table, for deficit production please mark the shortage of production using negative numbers (e.g. -x ktoe).