

**Report on progress in the promotion and use of energy
from renewable sources**

(in accordance with Article 22 of Directive 2009/28/EC)

Slovak Republic

Bratislava 2018

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

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

| | Year 2015 | Year 2016 |
|--|-------------|-------------|
| RES-H&C ² (%) | 10.8 | 9.9 |
| RES-E ³ (%) | 22.7 | 22.5 |
| RES-T ⁴ (%) | 8.5 | 7.5 |
| Overall RES share ⁵ (%) | 12.9 | 12.0 |
| <i>Of which from cooperation mechanism⁶ (%)</i> | 0 | 0 |
| <i>Surplus for cooperation mechanism⁷ (%)</i> | 0 | 0 |

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

| | Year 2015 | Year 2016 |
|--|--------------|--------------|
| A. Gross final consumption of RES for heating and cooling | 625 | 571 |
| B. Gross final consumption of electricity from renewable sources | 552 | 556 |
| C. Gross final consumption of energy from renewable sources in transport | 157 | 153 |
| D. Gross total consumption of RES ⁹ | 1 333 | 1 280 |
| E. Transfer of RES to other Member States | 0 | 0 |
| F. Transfer of RES from other Member States and 3rd countries | 0 | 0 |
| G. RES consumption adjusted for target (D) - (E) + (F) | 1 333 | 1 280 |

¹ Facilitates comparison with Table 3 and Table 4a of the NREAP (National Renewable Energy Action Plans).

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

³ Share of renewable energy in electricity: gross final consumption of electricity from renewable sources (as defined in Articles 5(1)(a) and 5(3) of Directive 2009/28/EC) divided by total gross final consumption of electricity. The procedure is the same as that applied in Table 3 of the NREAP.

⁴ Share of energy from renewable sources 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 procedure is the same as that applied in Table 3 of the NREAP.

⁵ Share of renewable energy in gross final energy consumption. The procedure is the same as that applied in Table 3 of the NREAP.

⁶ In percentage points of overall RES share.

⁷ In percentage points of overall RES share.

⁸ Facilitates comparison with Table 4a of the NREAP

⁹ According to Directive 2009/28/EC gas, electricity and hydrogen from renewable energy sources is to be considered only once. No double counting is allowed.

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

| | Year 2015 | | Year 2016 | |
|--------------------------|--------------|--------------|--------------|--------------|
| | MW | GWh | MW | GWh |
| Hydro ¹¹ : | | | | |
| unpumped | 1 607 | 4 410 | 1 608 | 4 373 |
| <1MW | 28 | 77 | 28 | 76 |
| 11MW – 10MW | 48 | 132 | 49 | 133 |
| > 10MW | 1 531 | 4 201 | 1 531 | 4 164 |
| pumped | 916 | 271 | 916 | 247 |
| mixed ¹² | | | | |
| Geothermal | 0 | 0 | 0 | 0 |
| Solar: | | | | |
| photovoltaic | 533 | 506 | 533 | 533 |
| concentrated solar power | 0 | 0 | 0 | 0 |
| Tide, wave, ocean | 0 | | 0 | |
| Wind: | | | | |
| Onshore | 3 | 6 | 3 | 6 |
| At sea | 0 | 0 | 0 | 0 |
| Biomass ¹³ : | | | | |
| solid biomass | 167 | 1 121 | 179 | 1 155 |
| biogas | 91 | 541 | 93 | 576 |
| bioliquids | 0 | 0 | 0 | 0 |
| TOTAL | 2 401 | 6 584 | 2 416 | 6 643 |
| of which in CHP | 258 | 1 662 | 272 | 1 731 |

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

| | Year 2015 | Year 2016 |
|--|------------|------------|
| Geothermal (excluding low temperature geothermal heat in heat pump applications) | 4 | 5 |
| Solar: | 6 | 6 |
| Biomass ¹⁶ : | 615 | 560 |
| solid biomass | 564 | 516 |
| biogas | 51 | 44 |
| bioliquids | 0 | 0 |
| Renewable energy from heat pumps: | 0 | 0 |
| - of which aerothermal | 0 | 0 |
| - of which geothermal | 0 | 0 |
| - of which hydrothermal | 0 | 0 |
| TOTAL | 625 | 571 |
| Of which DH ¹⁷ | 174 | 143 |
| Of which biomass in households ¹⁸ | 24 | 33 |

¹⁰ Facilitates comparison with Table 10a of the NREAP.

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

¹² In accordance with the new Eurostat methodology.

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

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

¹⁵ Facilitates comparison with Table 11 of the NREAP.

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

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

¹⁸ Of total renewable heating and cooling consumption.

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

| | Year 2015 | Year 2016 |
|---|-----------|-----------|
| - Bioethanol | 11.0 | 9.6 |
| - Biodiesel (MERO) | 122.0 | 118.8 |
| - Hydrotreated vegetable oil (HVO) | - | - |
| - Biomethane | - | - |
| - Fischer-Tropsch diesel | - | - |
| - Bio-ETBE | 10.9 | 9.9 |
| - Bio-MTBE | - | - |
| - Bio-DME | - | - |
| - Bio-TAEE | - | - |
| - Biobutanol | - | - |
| - Biomethanol | - | - |
| - Pure vegetable oil | - | - |
| Sustainable biofuel total | 143.9 | 138.3 |
| of which | - | - |
| sustainable biofuel produced from feedstock listed in Annex IX Part A | - | - |
| other sustainable biofuels eligible for the target set out in Article 3(4)(e) | - | - |
| sustainable biofuel produced from feedstock listed in Annex IX Part B | - | - |
| sustainable biofuel for which there is a limited contribution for the target set out in Article 3(4)(d) | 143.9 | 138.3 |
| imported from third countries | - | - |
| Hydrogen from renewables | - | - |
| Electric power from renewables | 13.2 | 14.4 |
| of which | | |
| consumed in road transport | 0.6 | 0.6 |
| consumed in railway transport | 11.1 | 12.1 |
| consumed in other transport sectors | 1.5 | 1.7 |
| Others (please specify) | - | - |

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

²⁰ Facilitates comparison with Table 12 of the NREAP.

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

Table 2: Overview of all policies and measures

| Title and reference of measure | Type of measure* | Expected result** | Targeted group and or activity*** | Existing or planned**** | Start and end dates of the measure |
|---|------------------|--|-----------------------------------|-------------------------|------------------------------------|
| Support for household use of RES (AP RES Measure No 3) | financial | installation of biomass boilers, solar panels, PV and heat pumps | households | cont. | 2016-20 |
| Support for the renovation of heat distribution pipes (AP RES Measure No 14) | financial | energy saving, promotion of district heating | investors | E | 2016-20 |
| Support for business use of renewable energy (AP RES Measure No 15) | financial | RES heat production | investors | E | 2016-20 |
| Support for RES for heating and cooling in the public sector (AP RES Measure No 16) | financial | heating and cooling | government | E | 2016-20 |

* 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 Describe the progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of energy from renewable sources. (Article 22(1)(e) of Directive 2009/28/EC)

In 2013 and 2014 administrative procedures were simplified for plants with an output of 10 kW or less. Prior to this period the focus was on improving administrative procedures for plants with a capacity of 1 MW or less. The amendment to the legislation since the beginning of 2014 has made it much easier for households to connect small sources of 10 kW or less, which cover a large part of their energy consumption. For small producers, a simple notification procedure has been introduced, which consists of a one-off information obligation without further reporting obligations for the producer. Such a producer is entitled to free connection to the distribution system at a point where there is an existing take-off point, free installation of a meter calculating power produced and supplied between phases in real time and free installation of a cut-off device that mechanically separates the connection contacts in the event of a loss of voltage loss in the distribution system, where it is possible for the small source to operate during an outage of the electricity distribution system.

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

Priority for the transmission and distribution of electricity from RES is guaranteed by law. Similarly, the law guarantees the purchase of electricity from RES at a specified price for a period of 15 years from the commissioning of a plant. This guarantee applies to plants with an output of 125 MW or less (or 200 MW if certain conditions are met).

The question of developing and reinforcing the distribution network for RES is under assessment, and in particular the impact of intermittent-production RES on the electricity system is being analysed. The development of the distribution system on the basis of five-year development plans safeguards the long-term needs of its users. In 2015 and 2016 there was no restriction on the distribution and transmission of electricity which had guaranteed priority for transmission or distribution.

The transmission system operator's existing powers ensure the operational safety of the transmission and distribution system. The sharing of costs related to connecting and extending the system is governed by an act issued by the independent regulator (the Office for the Regulation of Network Industries). The rules are non-discriminatory and transparent, and they are applied to every applicant in the same way. The rules also form part of the operating rules for the transmission system operator and distribution system operators.

It is established in law that plants belonging to a producer of electricity are to be connected to the distribution system if the distribution system is technically capable of such a connection, if it is the closest to the location where the electricity production plant is located, and if no other system offers a better technical and economic connection. A distribution system is also considered technically capable when the purchase of electricity, without prejudice to the priority arrangement, is possible by means of an economically beneficial extension of the system; in such cases a distribution system operator is required to extend the system at the request of the electricity producer.

3. Describe the support schemes and other measures currently in place that are used to promote the use of energy from renewable sources and to provide information on developments in the measures used in connection with the measures set out in your National Renewable Energy Action Plan. (Article 22(1)(b) of Directive 2009/28/EC)

Support schemes

Feed-in tariffs

The objective is to guarantee electricity producers the same purchase price for 15 years. No limit is set on the overall amount of electricity produced. The right to this tariff applies to facilities whose total installed capacity is lower than 125 MW; for electricity produced by high-efficiency cogeneration where renewable energy sources account for more than 30 % of the energy in the fuel, this limit is 200 MW.

Tariffs are set by the independent regulatory office (the Office for the Regulation of Network Industries) on the basis of trends in technology prices. The purchase price for electricity from RES is made up of two elements. The first element is the price for losses, which reflects the market price of electricity and is defined as the arithmetic average of prices of electricity to cover the losses of all operators of regional distribution networks. The second element is an additional payment representing the difference between the electricity price and electricity price for losses, which is paid to producers of electricity from renewable energy sources or producers of electricity from high-efficiency cogeneration by the operator of the regional distribution network to which the electricity producer's plant is connected or on whose territory it is located.

Financial support:

The operational programmes under the Structural Funds are the main financial support instrument in the field of energy.

EU Structural Funds:

Period 2014-2020

Operational Programme Environmental Quality

Support for business use of renewable energy

Support is focused on promising and innovative RES technologies with a view to increasing the production of heat and power from RES. In particular, support is given to integrated projects for the construction of RES plants with smart management of energy production and consumption, at which local consumption of energy produced in real time or through accumulation will be prioritised.

In this period preference is being given to heating plants, including heat pumps using geothermal energy and CHP installations, in order to maximise the saving of primary energy sources. Eligible activities for the business sector are:

- A. The construction of plants using biomass by renovating and upgrading existing fossil-fuel energy installations with a maximum thermal input of 20 MW
- B. Construction of plants:
 - producing biomethane;
 - using hydropower;
 - using aerothermal, hydrothermal or geothermal energy using heat pumps;
 - using geothermal energy directly to produce heat, possibly in combination with a heat pump;
 - producing and using biogas, landfill gas and gas from sewage treatment plants.

Support for household use of RES

This support for households replaced a programme for greater use of biomass and solar energy, which in 2009 to 2012 was aimed at supporting the installation of biomass boilers and solar panels. Support for the installation of small-scale installations for electricity production represents a sustainable and innovative approach. The recipients of aid — households — have an incentive to consume most of the electricity themselves and to keep supplies to the grid to a minimum. This approach will address their energy self-sufficiency and reduce the impact of

variable RES in the electricity grid. Support for small sources includes support for the construction of heat plants using RES.

A national project funded by the Operational Programme Environmental Quality, the pilot project will dispose of EUR 45 million during its first phase, which is to end in 2018. The total amount of support for the installation of small renewable energy plants remains at its original level of EUR 115 million.

The installation of small plants using RES covers:

- small power plants with an output of 10 kW or less
 - photovoltaic panels
 - wind turbines
- heat plants covering the energy needs of a family home or residential building
 - solar panels
 - biomass boilers
 - heat pumps

Support for the renovation of heat distribution pipes

To maintain and increase the share of heat from renewable sources and high-efficiency cogeneration, support is provided for projects to renovate heat distribution pipes in district heating systems. The bulk of heat distribution pipes were installed 20-30 years ago, which is reflected in their technical condition. Owing to the sharp decline in heat demand over the last 10 years, some heat distribution pipes are overdimensioned, resulting in greater relative losses when heat is distributed.

Grants for this activity stabilise the price of heat and ensure the development of efficient district heating systems.

Support for RES for heating and cooling public buildings

Support for the installation of equipment using RES in public buildings is aimed at reducing energy consumption in buildings not just by using renewable energy sources but also by improving the thermal characteristics of structures or upgrading heating and air-conditioning systems. There will be a particular emphasis on ensuring that the various measures proposed complement each other in order to make the best possible use of energy saving potential. The priority is to reduce energy consumption and cover the unavoidable consumption with efficient district heating systems or by installing equipment using RES in or very near the building itself.

Table 3: Support schemes for energy from renewable sources

| RSE support schemes — 2016 | | Unitary support | Total (EUR million)* | |
|--|--|---|----------------------|--|
| [(sub)category of specific technology or fuel] | | | | |
| Instrument (Please provide the relevant data) | Obligation/quota (%) | 5.5 % of biofuel energy content in motor fuels | Not applicable | |
| | Penalty (biofuels) | EUR 2/litre | Not applicable | |
| | Average certificate price | | | |
| | Tax exemption/refund | | | |
| | Investment subsidy (capital grant) for households | EUR 344/MW | EUR 8.2 million | |
| | of which electric | EUR 931/MW | EUR 2.7 million | |
| | of which heating | EUR 260/MW | EUR 5.5 million | |
| | Production incentives | | | |
| | Feed-in tariff | Hydropower EUR 97.98-111.27/MWh Photovoltaics EUR 88.89/MWh Wind energy EUR 62.49/MWh Geothermal energy EUR 155.13/MWh Biomass EUR 92.09-107.21/MWh Biogas EUR 100.23-120.49/MWh | EUR 370 million | |
| | Feed-in premium | | | |
| Open tender | | | | |
| Estimated total annual support in the electricity sector | | Feed-in tariff additional payment - EUR 133/MWh | EUR 372.7 million | |
| Estimated total annual support in the heat production sector | | | EUR 5.5 million | |
| Estimated total annual support in the transport sector | | 0 | 0 | |

* The quantity of energy supported by unitary support provides an indication of the effectiveness of support for individual technologies

| RSE support schemes — 2015 | | Unitary support | Total (EUR million)* | |
|--|---|---|---|-----------------|
| [(sub)category of specific technology or fuel] | | | | |
| Instrument (Please provide the relevant data) | Obligation/quota (%) | 5.5 % of biofuel energy content in motor fuels | Not applicable | |
| | Penalty (biofuels) | EUR 2/litre | Not applicable | |
| | Average certificate price | | | |
| | Tax exemption/refund | | | |
| | Investment subsidies (capital grants or loans) (EUR/unit) | EUR 0/MW | 0 | |
| | Production incentives | | | |
| | Feed-in tariff | Hydropower EUR 97.98 – 111.27/MWh Photovoltaics EUR 88.89/MWh Wind energy EUR 62.49/MWh Geothermal energy EUR 155.13/MWh Biomass EUR 92.09 – 107.21/MWh Biogas EUR 100.23-120.49/MWh | EUR 290 million | |
| | Feed-in premium | | | |
| | Open tender | | | |
| | Estimated total annual support in the electricity sector | | Feed-in tariff additional payment - EUR 121/MWh | EUR 290 million |
| Estimated total annual support in the heat production sector | | 0 | 0 | |
| Estimated total annual support in the transport sector | | 0 | 0 | |

* The quantity of energy supported by unitary support provides an indication of the effectiveness of support for individual technologies

Regulatory measures

Mandatory blending of biocomponents into transport fuels

A requirement has been established in law for producers and sellers of motor fuels to place on the market fuels with a biofuel content corresponding to a reference value calculated from the energy content of the total amount of fuels placed on the market. Since 2011 sustainability criteria have been established for biofuels.

There are also targets for minimum biofuel content by volume for individual types of fuel (diesel and petrol). The biofuel reference values and the minimum biofuel content by volume for 2013 to 2020 have been laid down in law.

Facilitate access to the gas network for biomethane

In 2011 access to the gas network was simplified for biomethane. Time limits have been laid down in law for the distribution system operator to notify the terms and conditions for connection to its network. The law provided for connection costs to be shared as follows: on a 75%-25% basis, with 75% being borne by the distribution network operator.

Measures put in place

Establishment of a certification system for fitters

Since 2011 a system for the certification of installers has been introduced by law. Certificates are issued by the Ministry of the Economy, which also set up an examination board. An applicant may sit the test after completing accredited vocational training. The first certificates were issued in 2012. There are now accredited training courses for all equipment covered by the Directive.

Support for cultivation of fast-growing trees

In 2014 an act was adopted, which amends Act No 220/2004 on the protection and use of farmland and amending Act No 245/2003 on integrated pollution prevention and control and amending and supplementing certain acts by establishing conditions for the cultivation of fast-growing trees. It allows them to be cultivated on agricultural land and eliminates barriers to the removal of agricultural land for this purpose.

Grants are also available for establishing plantations of fast-growing trees. Government Regulation No 342/2014 laying down rules for the provision of support for agriculture under decoupled direct payment schemes also allows single-area payments for cultivating fast-growing trees under the SAPS.

Growth in production of woody feedstock — support for establishing energy crops

In 2014 legislation was adopted that defined the setting up of energy crops and forest plantations and creates conditions for the cultivation of reproductive material for this purpose. Act No 326/2005 on forests, as last amended, defines an energy crop as forest vegetation with a maximum production function generally in the first 15 years, from which yields are mainly used for energy production. The legislation governing forest management does not restrict the establishment of energy crops, which is left to the discretion of a forest's manager.

In the 2014-2020 programming period, the rural development programme is supporting the acquisition of technologies for the extraction and processing of woody biomass fuel. There is also support for improving the accessibility of forest stands, building and improving land for the production of fuel chips. The objective of the measure is to step up the production of woody feedstock on forest land with suitable conditions, in particular through the use of fast-growing trees and procedures for their management.

Postponed measures

The following measures set out in the Renewable Energy Action Plan, however, have not yet been carried out for the following reasons.

Introduction of a system of tenders for the construction of intermittent power generation sources

Given the reduction in support for solar and wind power plants and power stations and the overcapacity of solar power plants compared with the national renewable energy action plan, tenders for the construction of intermittent power generation sources were waived for 2013 and 2014. In the case of solar power plants, support is not provided for ground-based solar plants. Output from solar power plants is almost 600 MW and represents twice the output specified in the action plan for 2020.

Compulsory use of RES in new and renovated buildings

The use of RES in new and renovated buildings has yet to be made compulsory. In view of the requirements of Directive 2010/31/EC on the energy performance of buildings, all new public buildings built after 2019, and all other new buildings built after 2021, should meet the requirements for nearly zero energy buildings, in accordance with the technical standards. Since 2013 any new, rented or renovated building, including houses, has to have an energy performance certificate defining its energy class. All new buildings and, if this is technically, functionally and economically feasible, buildings that have undergone a major renovation should meet the minimum requirements, which should be regularly updated in 5-year cycles towards cost-optimal levels. There will be a shift towards greater use of renewable energies to cover buildings' energy consumption.

3.1. Please provide 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)

The electricity supplier is required to provide information to the electricity buyer on the shares of the different types of primary energy sources in the electricity produced and supplied in the previous year. The information must also be provided, upon request, to the relevant State authority. However, the electricity supplier is not required to demonstrate that his supply contains a specific share of electricity from renewable sources of energy.

4. Please provide information on how, where applicable, support schemes have been structured to take into account renewable energy applications that give additional benefits in relation to other, comparable applications, 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 support scheme for electricity from RES was designed to ensure effective use of biomass and biogas. Electricity linked to the production of heat is supported.

In the case of biomass and bioliquids, purchase price support is given only to electricity produced through high-efficiency cogeneration, where biomass meets requirements and quality parameters and bioliquids meet sustainability criteria. This condition does not apply to the combustion of municipal waste with a biodegradable waste content of up to 55 % inclusive. The purchase price for electricity produced from biogas is reduced by 30% where the supply of usable heat is less than 50% of the annual production of heat.

The option to double-count energy values was introduced for biofuels made from used cooking oil, used plant or animal fat (included in categories 1 and 2 of Regulation (EC) No 1069/2009 of the European Parliament and of the Council laying down health rules as regards animal by-products and derived products not intended for human consumption). No premiums had been established for biofuels made from non-food cellulosic material or ligno-cellulosic material by the end of 2016.

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

Pursuant to Act No 309/2009 guarantees of origin for electricity from renewable sources are issued by an independent regulatory body (the Office for the Regulation of Network Industries) upon request by the electricity producer.

Guarantees of origin are not issued for heating and cooling.

The reliability of guarantees of origin for electricity from RES is ensured by the regulatory body, which creates an electronic database in which it registers electricity producers before issuing a guarantee of origin. When applying for a guarantee of origin, the electricity producer must provide all the information necessary to complete the electronic database; the regulatory body then verifies this information.

The regulatory body also has the following powers:

- it maintains a record of guarantees of origin for electricity from RES in the electronic database;
- it cancels guarantees of origin for electricity from RES;
- it exercises supervision over the transfer of guarantees of origin for electricity from RES.

The guarantee of origin contains all particulars set out in Directive 2009/28/EC. Guarantees of origin for electricity from RES which were issued in a different Member State under a mechanism ensuring accuracy and reliability in the issuing of guarantees of origin are recognised for the purposes of this Act. The Office may refuse to recognise guarantees of origin for electricity from RES issued in a different Member State if there are reasonable grounds to doubt their accuracy, reliability or authenticity. When this happens, the regulatory body checks the correctness of the guarantee of origin and asks the applicant to address these concerns within a certain time limit. If the concerns are not removed within the time limit, the regulatory body does not recognise the certificate of origin and prohibits its transfer.

6. Please describe 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)

Interest in fuel wood and feedstock for producing wood chips from forest land has gradually increased. There is a growing mismatch between the location of the sources of biomass for wood fuel and the places where it is consumed. The planting of energy crops has not increased significantly. According to an inventory that was drawn up, 275 000 ha of agricultural land (so-called 'white areas') was under woodland plants, mainly as a result of natural succession. 300 000 ha of permanent grassland (11.3 % of agricultural land) is available for energy sector use.

It is suggested that Tables 4 and 4a be used to provide more detailed information on the biomass supply. Table 4: Supply of biomass for energy use

| | Quantity of domestic feedstock (*) | | Primary energy in domestic feedstock (ktoe) | | Quantity of feedstock imported from EU (*) | | Primary energy in quantity of feedstock imported from EU (ktoe) | | Quantity of feedstock imported from outside EU (*) | | Primary energy quantity of imported outside EU (ktoe) |
|--|--------------------------------------|---------------------------------------|---|------------|--|-----------------------|---|----------------|--|-----------------------|---|
| | Year 2015 | Year 2016 | Year 2015 | Year 2016 | Year 2015 | Year 2016 | Year 2015 | Year 2016 | Year 2015 | Year 2016 | Year 2015 |
| Supply of biomass for production of heat and electricity: | | | | | | | | | | | |
| Direct supply of wood biomass from forests and other wooded land for energy generation (felling, etc.) | 1 460 000 m ³ | 1 440 000 m ³ | 331.3 | 326.8 | 10 000 m ³ | 10 000 m ³ | 2.3 | 2.3 | 12 600 m ³ | 10 300 m ³ | 28.6 |
| Indirect supply of wood biomass (residues and by-products from timber industry etc.) ** | 1 025 000 t | 1 007 000 t | 536.0 | 526.6 | 0 | 0 | 0 | 0 | 25 000 t | 23 000 t | 6.8 |
| Energy crops (grasses, etc.) and short rotation trees (please specify) | 490 000 m ³ | 460 000 m ³ | 111.2 | 104.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Agricultural by-products/processed residues and fishery by-products for energy generation ** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Biomass from waste (municipal, industrial etc.) ** | 67 000 t | 64 000 t | 18.8 | 17.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other (please specify) | | | | | | | | | | | |
| Supply of biomass for transport | | | | | | | | | | | |
| Common arable crops for biofuels (please specify main types) | Rapeseed 209 655 t Maize 87 600 t | Rapeseed 220 090 t Maize 143 400 t | 65 8.4 | 68 13.7 | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable |
| 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 |
| Other (please specify) | | | | | | | | | | | |

* Quantity of feedstock, if possible in m³ for biomass from forestry and in tonnes for biomass from agriculture and fisheries 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 (ha)

| Land use | Surface (ha) | | | |
|---|--------------------------------|-----------|------------------------------------|--------|
| | Year 2015 | Year 2016 | | |
| 1. Land use for common arable crops (wheat, sugar beet etc.) and oilseeds (rapeseed, sunflower etc.) (please specify main types.) | Rapeseed ha | 119 302 | Rapeseed 489 ha | 124 |
| | of which, for energy use ha | 78 010 | of which, for energy use 636 ha | 63 |
| | Maize ha | 191 400 | Maize 800 ha | 184 |
| | of which, for energy use ha | 18 044 | of which, for energy use 495 ha | 15 |
| | Wheat ha | 377 900 | Wheat 416 600 ha | |
| | of which, for energy use ha | 31 254 | of which, for energy use 815 ha | 38 |
| 2. Land used for short rotation trees (willows, poplars) (Please specify main types.) | Short rotation trees | | Short rotation trees | |
| | Poplars | | | 510 ha |
| | | 470 ha | | 510 ha |
| | of which non-energy 470 ha | | | 140 ha |
| Willows | | | 140 ha | |
| | 120 ha | | | |
| | of which non-energy 120 ha | | | |
| 3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum (Please specify main types.) | - | | - | |

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. If possible, give 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 recommended to consider at least the following commodities: current uptake by food and feed crops, energy wood, pellets.

| Product | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------------------------|--------|--------|--------|--------|--------|--------|--------|
| Food-grade wheat | 147.84 | 196.83 | 205.40 | 174.40 | 155.26 | 152.74 | 126.24 |
| Industrial-grade wheat | 126.13 | 164.54 | 181.20 | 158.98 | 133.95 | 133.70 | 116.33 |
| Grain maize | 148.86 | 167.08 | 199.70 | 172.71 | 128.66 | 139.56 | 128.32 |
| Sunflower | 346.74 | 356.55 | 446.00 | 324.04 | 278.02 | 343.41 | 323.98 |
| Rapeseed | 319.24 | 460.62 | 484.00 | 369.81 | 335.00 | 359.53 | 356.73 |

Source: Slovak Statistical Office

In the years 2015 and 2016 the price of energy chips ranged from EUR 45 to 55/t. The reason there was no rise in chip prices compared with the last period is the growth in their production from wood harvested on non-forest land (e.g. volunteer plants on meadows and pastures, riparian formations) and the disposal of wood from recurrent disasters and feedstock derived from the mechanical processing of timber in the wood-processing industry, which reduces the competitiveness of fuel chips produced from the crowns of trees on forest land. On the other hand, the continuing stagnation of fibre wood prices means more can be used for energy purposes.

The price of wood fuel in 2015 and 2016 varied between EUR 40 and EUR 50/m³. Wood fuel prices are influenced by the trend in natural gas prices for households. The price of wood pellets on the domestic market in 2015 and 2016 ranged from EUR 140 to EUR 220/t (including VAT). In view of the high level of gas use in Slovakia and the limited attractiveness of pellet prices compared with natural gas prices, household consumption of pellets in Slovakia is increasing slowly. The warmer than usual winter of 2015/2016 brought about a temporary fall in the prices of wood pellets. In 2017 the price returned to its long-term average.

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)

In 2015 and 2016 biofuels made from waste, residues, non-food cellulosic material and ligno-cellulosic material were not mixed with motor fuels.

Table 5: Production and consumption of biofuels under Article 21(2) (ktoe)

| Adjustments referred to in Article 21(2) ²¹ | Year 2015 | Year 2016 |
|--|-----------|-----------|
| Production — Fuel type X (please specify) | 0 | 0 |
| Consumption — Fuel type X (please specify) | 0 | 0 |
| Of which Biofuels Article 21.2 | 0 | 0 |
| Of which Biofuels Article 21.2 | 0 | 0 |
| Share (%) of fuels referred to in Article 21(2) in total renewable energy sources in transport | 0 | 0 |

9. Please provide information on the estimated impact 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 in your country. (Article 22(1)(j) of Directive 2009/28/EEC).

Biofuels and bioliquids in Slovakia meeting sustainability criteria are produced from agricultural raw materials which are grown and produced in accordance with requirements and standards for good agricultural and environmental condition pursuant to Council Regulation (EC) No 73/2009. This is guaranteed by a declaration by the farmer or supplier of biomass stating that the requirement for good agricultural and environmental condition has been met.

At the moment there is no relevant data on the adverse impact of producing biofuels on biodiversity, water resources, water quality or soil quality. It is assumed that these impacts are

²¹ Biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material.

negligible, since the area of crops cultivated for biofuels in 2010 to 2016 did not increase significantly compared with the previous period.

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

The calculation of net greenhouse gas emissions savings due to the use of energy from renewable sources was done for eating using reference values for fossil fuels for the whole of the EU, in line with the report on sustainability criteria for the use of solid and gaseous biomass to produce electricity, heating, and cooling²². The value used to calculate net greenhouse gas emissions savings for electricity came from the voluntary international Biograce scheme, which uses the emission factor 128 gCO₂ekv/MJ to calculate greenhouse gas emission savings for biofuels.

Table 6: Estimated net greenhouse gas emission saving due to the use of energy from renewable sources (t CO₂eq)

| Environmental aspects | Year 2015 | Year 2016 |
|--|------------------|------------------|
| Total estimated net greenhouse gas emission saving due to the use of energy from renewable sources²³ | 5 466 200 | 5 303 200 |
| - Estimated net greenhouse gas emission saving due to the use of electricity from renewable sources | 3 020 000 | 3 040 000 |
| - Estimated net greenhouse gas emission saving due to the use of energy from renewable sources in heating and cooling | 2 198 000 | 2 008 000 |
| - Estimated net greenhouse gas emission saving due to the use of energy from renewable sources in transport | 248 200 | 255 200 |

11. Please provide (for the preceding 2 years) and estimate (for subsequent years up to 2020) the excess/deficit production of renewable energy compared to the indicative trajectory which could be transferred to/imported from other Member States and/or third countries, as well as the estimated potential for joint projects until 2020. (Article 22(1)(l) and (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 in the Slovak Republic (ktoe)^{24, 25}

| | Year N-1 (2015) | Year N-1 (2016) | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|-----------------|-----------------|------|------|------|------|-------|-------|------|------|------|------|
| Actual/estimated production surplus or deficit (please distinguish between different types of renewable energy and the origin/destination of import/export) | 300* | 213* | 302* | 254* | 142* | 222* | 305** | 364** | 90 | 110 | - | 0 |

***Actual:** surplus compared to the indicative trajectory

²² Available at the following address:

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

²³ The contribution of gas, electricity and hydrogen from renewable energy sources should be reported according to the final use (electricity, heating and cooling or transport) and only be counted once towards the total estimated net GHG savings.

²⁴ Please use actual figures which reflect the excess production in the two years preceding submission of the report, and estimates for the following years up to 2020. In each report the Member State may correct the data of the previous reports.

²⁵ When filling in the table, in the case of a production deficit, please express the production deficit in minus numbers (e.g. -x ktoe).

** estimate in the Renewable Energy Action Plan

The estimated surplus in subsequent years (2017 to 2020) is down on the Renewable Energy Action Plan. The estimate is down because use of RES is expected to fall on the basis of a comparison between actual uptake of RES and the Action Plan from 2013 to 2016.

11.1. Please provide details on the rules for deciding on statistical transfers, joint projects and joint support schemes.

The Slovak Ministry of the Economy is holding talks with other Member States on statistical transfers of energy from renewable sources. The rules, conditions and instructions relating to statistical transfers and planned participation in joint projects will be published on the Ministry's website. Slovakia is not currently planning any joint projects in its territory and does not give preference to joint support schemes.

12. Please provide information on how the share of 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/EEC).

The amount of biodegradable waste in municipal waste is determined directly by companies involved in recovering energy from waste. These data are recorded and sent to the Statistical Office. As regards the incineration of municipal waste, only the biological portion of waste in municipal waste is supported, up to a maximum biodegradable waste share of 55%. This also corresponds to analyses that have been done, in which the share of biodegradable waste has been estimated at 50%.

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 the Slovak Republic for the purpose of complying with the targets in Article 3(1) and (2), and in the first subparagraph of Article 3(4).

| Feedstock group | 2015 (ktoe) | 2016 (ktoe) |
|-------------------------------------|----------------|----------------|
| Cereals and other starch rich crops | 21.9 | 19.5 |
| Sugars | 0 | 0 |
| Oilseeds | 122.0 | 118.8 |