



**PROGRESS REPORT ON THE PROMOTION AND
USE OF ENERGY FROM RENEWABLE SOURCES
PURSUANT TO ARTICLE 22 OF DIRECTIVE
2009/28/EC
SPAIN
(2015 and 2016)**

10 January 2018

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INTRODUCTION

Spain's National Renewable Energy Action Plan (NREAP) for 2011-2020 dated 30 June 2010 was submitted to the European Commission on 6 July 2010 in accordance with the provisions of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources. This Plan was updated and later replaced by a new NREAP dated 20 December 2011, which was sent to the European Commission on 5 January 2012.

Due to this revision of the NREAP, and in accordance with Article 22 of the above Directive, the first progress report (for 2009 and 2010) was sent to the European Commission in June 2012.

Two further two-yearly reports were subsequently submitted, for 2011 and 2012 (dated 27 December 2013) and for 2013 and 2014, respectively.

The present report, the fourth of those drawn up in accordance with Article 22 of Directive 2009/28/EC, sets out the progress achieved in the promotion and use of energy from renewable sources in Spain during 2015 and 2016.

EXECUTIVE SUMMARY

During the period under review, renewable energy sources in Spain accounted for an overall share of gross final energy consumption of 16.2 % in 2015 and of 17.3 % in 2016. The renewable energy share in this latter year includes the contribution from biofuels in the transport sector, which has been counted for the first time. This trend continues the increase in the use of renewable energy compared to previous years, when percentages of 15.3 % and 16.1 % were achieved in 2013 and 2014, respectively.

The contribution of renewable resources in 2015 and 2016 significantly exceeded the minimum indicative trajectory of 13.79 % set for Spain for these years. This was achieved even though in 2015 the share represented by biofuel consumption was not taken into account.

Although during this period renewable energy consumption decreased slightly in the electricity sector, it was compensated for by greater growth in the heating and cooling and transport sectors.

In the regulatory sphere, promotion of renewable energy has continued through the support policy established in the legislative reform carried out in the previous period. In line with this, the remuneration received by renewable-energy, high-efficiency cogeneration and waste-to-energy plants has been updated and various public tenders have been held to assign rights to new facilities under the remuneration scheme. As a result of those public tenders, several procedures have been carried out to date to award rights under the specific remuneration scheme, assigning 9 292.4 MW of new renewable power (1 255.5 MW between 2015 and 2016 and the rest in 2017), which will meet the objectives set by Directive 2009/28/EC on the promotion of the use of energy from renewable sources.

As far as electricity grids are concerned, as a result of the planning procedure initiated at the end of 2012, in October 2015 a new plan to develop the electricity transmission network over the 2015-2020 period was approved. Among other things, the aim of this plan is to contribute to the integration of new electricity output from renewable sources.

It is worth noting that, in addition to the existing interconnections between the island of Mallorca and the mainland, the Mallorca-Ibiza interconnection has been in service (Torrente-Santa Ponsa 132-kV double power link) since February 2016. This project set out in the above-mentioned development plan connects the two existing electrical subsystems (Mallorca-Menorca and Ibiza-Formentera) and enables them to operate jointly, boosting the integration of renewable energy in the Balearic Islands system.

In relation to power grid interconnections, it should be emphasised that the work to extend grid interconnection with France included in 2015 the completion and commissioning of a new Eastern Pyrenees line, which doubled the electricity exchange capacity between Spain and France (increasing it from 1 400 MW to 2 800 MW), reinforced security of supply in the two electricity systems and promoted the integration of a greater volume of renewable energy, particularly wind power from the Iberian system. Even with this increase, however, the degree of grid interconnection between Spain and France is still below 3 % of Spain's installed electricity-generating capacity and well below the interconnection target of at least 10 % of installed electricity-generating capacity for all Member States by 2020 envisaged for the Energy Union, and even further from the 15 % target set for 2030. Furthermore, even with the interconnections planned to date, Spain

will be the only country in continental Europe below the 10 % target, necessitating the development of new interconnections.

On the matter of use of renewable energy in heating and cooling, and as regards financial aid for renewable energies in this sector, work continued during 2015 and 2016 on existing programmes to fund projects for heat production from renewable energy sources through energy service companies (ESCOs).

Implementation has likewise continued of the PAREER aid programme launched in 2013 to improve the energy efficiency of existing residential buildings (housing and hotel use). This programme includes actions intended to promote energy saving and improve the energy efficiency of existing buildings and others to promote the use of renewable energy (solar, biomass and geothermal) in the residential sector.

In relation to the use of biofuels, it should be noted that at the end of 2015 adoption of Royal Decree 1085/2015 of 4 December 2015 led to review and upward amendment of the existing targets, setting a new minimum mandatory annual overall target for the sale or consumption of biofuels of 4.3 % for 2016 and targets of 5 %, 6 %, 7 % and 8.5 % for 2017, 2018, 2019 and 2020 respectively.

At the same time, 1 January 2016 marked the end of the grace period for application of the transitional period for biofuel and bioliquid sustainability that had been set in late 2011 by Royal Decree 1597/2011 of 4 November 2011.

In short, Spain is on track to meet its renewable energy targets by 2020.

1. SECTORAL AND OVERALL SHARES AND ACTUAL CONSUMPTION OF ENERGY FROM RENEWABLE SOURCES IN 2015 AND 2016

Table 1 summarises for 2015 and 2016 the shares of gross final consumption accounted for by energy from renewable sources within the three main sectors, as laid down by Directive 2009/28/EC.

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

	2015	2016
Share of renewable energy in heating and cooling [RES-H&C ² (%)]	16.84 %	16.84 %
Share of renewable energy in electricity [RES-E ³ (%)]	36.95 %	36.61 %
Share of renewable energy in transport [RES-T ⁴ (%)]	1.23 %	5.28 %
Overall share of renewable sources [RES ⁵ (%)]	16.17 %	17.26 %
<i>Of which, from cooperation mechanism⁶ (%)</i>		
<i>Surplus for cooperation mechanisms⁷ (%)</i>		

¹ Facilitates comparison with Table 3 and Table 4a of the NREAPs.

² Share of energy from renewable sources 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 the NREAPs applies.

³ Share of energy from renewable sources 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 same methodology as in Table 3 of the NREAPs applies.

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. The same methodology as in Table 3 of the NREAPs applies.

⁵ Share of energy from renewable sources in gross final energy consumption. The same methodology as in Table 3 of the NREAPs applies.

⁶ In percentage point of overall RES share.

⁷ In percentage point of overall RES share.

Table 1(a) shows the calculation table for the renewable energy contribution of each sector to final energy consumption in 2015 and 2016.

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

	2015	2016
<i>a) Gross final consumption of renewable energy sources for heating and cooling</i>	4 662.5	4 774.2
<i>b) Gross final consumption of electricity from RES</i>	8 642.0	8 605.9
<i>c) Gross final consumption of energy from RES in transport</i>	176.3	1 334.5
<i>d) Gross total consumption of renewable energy sources⁹</i>	13 480.8	14 714.6
<i>e) Transfers of renewable energy sources to other Member States</i>	0.0	0.0
<i>f) Transfers of renewable energy sources from other Member States and third countries</i>	0.0	0.0
<i>g) RES consumption adjusted for target (d)-(e)+(f)</i>	13 480.8	14 714.6

⁸ Facilitates comparison with Table 4(a) of the NREAPs.

⁹ According to Article 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 1(b) shows power and production figures, respectively, for 2015 and 2016.

Table 1(b). Total actual contribution (installed capacity, gross electricity generation) from each renewable energy technology in Spain to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity ¹⁰

	2015		2016	
	MW	GWh	MW	GWh
<i>Hydro</i> ¹¹	20 053.0	31 877.8	20 056.0	31 270.5
<i>non-pumped</i>	14 086.0	29 887.3	14 040.0	29 357.3
<i>< 1 MW</i>	280.0	729.3	279.0	729.6
<i>1 MW-10 MW</i>	1 673.0	4 396.0	1 668.0	4 347.3
<i>> 10 MW</i>	12 133.0	27 106.7	12 093.0	26 459.9
<i>pumped (pure and mixed)</i>	5 967.0		6 016.0	
<i>mixed</i> ¹²	2 687.0	2 344.6	2 687.0	2 179.5
<i>Geothermal</i>	0.0	0.0	0.0	0.0
<i>Solar:</i>	7 156.0	13 859.9	7 273.0	13 648.5
<i>photovoltaic</i>	4 856.0	8 266.7	4 973.0	8 069.3
<i>concentrated solar power</i>	2 300.0	5 593.2	2 300.0	5 579.2
<i>Tide, wave, ocean</i>	0.0	0.0	0.0	0.0
<i>Wind:</i> ¹¹	22 943.0	51 055.1	23 003.0	51 513.7
<i>onshore</i>				
<i>offshore</i>				
<i>Biomass:</i> ¹³	901.0	4 995.6	901.0	4 954.4
<i>solid biomass</i>	677.0	4 013.8	677.0	4 048.4
<i>biogas</i>	224.0	981.7	224.0	906.0
<i>bioliquids</i>	0.0	0.0	0.0	0.0
<i>TOTAL (non-pumped)</i>	45 086	99 798	45 217	99 473.8
<i>of which in CHP</i>		1 126.5		1 016.2

¹⁰ Facilitates comparison with Table 10(a) of the NREAPs.

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

¹² In accordance with new Eurostat methodology.

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

Table 1(c) sets out the targets for heat/cooling generation technologies, which include geothermal (including heat pumps), solar thermal, biomass (solid-state or biogas) and aerothermal energy for 2015 and 2016.

Table 1(c). Total actual contribution (final energy consumption)¹⁴ from each renewable energy technology in Spain to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable sources in heating and cooling (ktoe)¹⁵

	2015	2016
Geothermal (excluding low temperature geothermal heat in heat pump applications)	18.8	18.8
Solar	276.8	293.3
Biomass: ¹⁶	4 011.6	4 081.3
<i>solid biomass</i>	3 952.5	4 008.0
<i>biogas</i>	59.1	51.7
<i>bioliquids</i>	0.0	21.6
Renewable energy from heat pumps:	352.9	375.2
of which aerothermal	0.0	0.0
of which geothermal	0.0	0.0
of which hydrothermal	0.0	0.0
TOTAL	4 660.1	4 768.6
<i>of which district heating¹⁷</i>		
<i>of which biomass in households¹⁸</i>	2 516.3	2 521.4

Table 1(d) details all renewable energy sources used in the transport sector in 2015 and 2016.

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

¹⁵ Facilitates comparison with Table 11 of the NREAPs.

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

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

¹⁸ From the total renewable heating and cooling consumption.

Table 1(d). Total actual contribution from each renewable energy technology in Spain 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}

	2015	2016
- Bioethanol		15.0
- Biodiesel (FAME)		739.4
- Hydrotreated vegetable oil (HVO)		292.7
- Biomethane		
- Fischer-Tropsch diesel		
- Bio-ETBE		112.3
- Bio-MTBE		
- Bio-DME		
- Bio-TAEE		
Biobutanol		
- Biomethanol		
- Pure vegetable oil		
Total sustainable biofuels [see NOTE 1]		1 159.4
Of which		
sustainable biofuels produced from feedstock listed in Annex IX Part A		
other sustainable biofuels eligible for the target set out in Article 3(4)e		
sustainable biofuels produced from feedstock listed in Annex IX Part B [see NOTE 2]		0.4
sustainable biofuels for which the contribution towards the renewable energy target is limited in accordance with Article 3(4)d		1 153.7
Imported from third countries		36
Hydrogen from renewable sources		
Electricity from renewable sources		
Of which		
used in road transport		
used in rail transport		
	2015	2016
used in other transport sectors		
Others (please specify)		
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 NREAPs.

[NOTE 1]

Law 11/2013 of 26 July 2013 on measures to support entrepreneurs and encourage employment growth and creation established a grace period with regard to verifying the sustainability of biofuels and bioliquids. Secretariat of State for Energy Decision of 29 April 2015 setting the end date of the grace period for the implementation of the transitional period for verifying the sustainability of biofuels and bioliquids set 1 January 2016 as that date, after which the transitional period for verifying sustainability came into effect. As indicated in Note 1, Table 1(d) must set out quantities of biofuels for which compliance with the sustainability criteria has been accredited. Application of the above-mentioned grace period during 2015 implies that compliance with these requirements was not accredited under the planned sustainability verification system. The column in Table 1(d) corresponding to 2015 has therefore been left blank. The column corresponding to 2016 includes the sales or consumption reported to the *Entidad de Certificación de Biocarburantes* (ECB [Biofuel Certification Entity]) and for which information on sustainability under the verification conditions established for the transitional period has been submitted. The amounts of biofuels consumed in Spain in 2015 according to ECB statistics are listed below:

	2015
- Bioethanol	22.1
- Biodiesel (FAME)	600.7
- Hydrotreated vegetable oil (HVO)	267.9
- Biomethane	
- Fischer-Tropsch diesel	
- Bio-ETBE	166.1
- Bio-MTBE	
- Bio-DME	
- Bio-TAEE	
Biobutanol	
- Biomethanol	
- Pure vegetable oil	
Total biofuels	1 056.9
Of which	
sustainable biofuels produced from feedstock listed in Annex IX Part A	8.7
other biofuels eligible for the target set out in Article 3(4)e	
biofuels produced from feedstock listed in Annex IX Part B [see NOTE 2]	71.4
	2015
biofuels for which the contribution towards the renewable energy target is limited in accordance with Article 3(4)d	952.8
Imported from third countries	57.4
Hydrogen from renewable sources	
Electricity from renewable sources	
Of which	
used in road transport	
used in rail transport	
used in other transport sectors	
Others (please specify)	
Others (please specify)	

[NOTE 2]

The information that the ECB collects on the type of feedstock used does not currently separate Category 1 and Category 2 animal fats from other animal fats. Consequently, all animal fats are included in the statistics under a single heading. Annex IX Part B, paragraph b only includes category 1 and category 2 animal fats. As disaggregated data are not available, it is not possible to accredit the amount of total animal fats accounted for in each category. In Table 1(d), therefore, only biofuels produced from used oils are included in Annex B. Those produced from animal fats are not included in the breakdown of the table as they are not listed under either Annex IX Part A nor Annex IX Part B. Likewise, the breakdown does not include those that make a limited contribution in accordance with Article 3(4)d (cereals and other starch-rich crops, sugars and oil crops and crops grown as main crops primarily for energy purposes on agricultural land) nor other crops eligible for the sub-target set in Article 3(4)e. Thus, for example in 2016 total biofuels (1 159.4) do not match the sum of the categories broken down in the table ($0.4 + 1\ 153.7 = 1\ 154.1$). The remainder (5.4) corresponds to the contribution made by the animal-fat biofuels referred to in Annex IX Part B that cannot be included. The quantities of biofuels produced from animal fats referred to in Annex IX Part B, which cannot be included, are as follows: 22.0 ktoe in 2015 and 5.4 ktoe in 2016.

2. MEASURES TAKEN IN 2015-2016 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

General measures

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. <u>Royal Legislative Decree 7/2015</u> of 30 October 2015 approving the revised text of the Law on land use and urban redevelopment.	Regulatory	Consideration of renewable energy in urban planning.	Renewables and construction sector	Completed	2015-

Measures targeting renewable energy in the electricity sector

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. 2015-2020 electricity transmission network development plan.	Soft	Main points: ensure demand can be met; maintain and improve the electricity system through rational structuring of grids, allowing the implementation of various activities intended for supply; contribute to the integration of new energy production from renewable sources.	Electricity system operations and energy project investments	Completed	2015-2020

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
2. Further development of international interconnections. ³	Soft	Increase security of supply, promote integration of more non-manageable renewable electricity and move away from Spain's current status as an energy island.	Electricity system operators, power plant operators and rights holders	Existing and planned	2012-2020 2016-

³ Completion of a new interconnection between Spain and France in 2015 (1 400 MW).

3. Order IET/1344/2015 of 2 July 2015 approving standard plants and the remuneration parameters thereof applicable to certain renewable-energy, cogeneration and waste-to-energy plants.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of plants generating electricity from renewable sources	Completed	2015-2016
4. Order IET/1345/2015 of 2 July 2015 establishing the methodology for updating remuneration for the operation of plants under the specific remuneration scheme.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of plants generating electricity from renewable sources	Completed	Jul 2015-2016
5. Order IET/1953/2015 of 24 September 2015 amending Order IET/1459/2014 of 1 August 2014 approving remuneration parameters and establishing the mechanism for the award of the specific remuneration scheme to new wind and photovoltaic plants in electricity systems in non-mainland territories.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of plants generating electricity from renewable sources	Completed	2015-

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
6. <u>Royal Decree 900/2015</u> of 9 October 2015 regulating the administrative, technical and economic conditions governing modes of electricity supply for own use and production for own use.	Regulatory	Set the administrative, technical and financial conditions for the supply and production of electricity for own use.	Developers of electricity-generating plants	Completed	2015-

<p>7. Royal Decree 947/2015 of 16 October 2015 establishing a public tender for the award of the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and for wind technology plants.</p>	<p>Regulatory</p>	<p>Increase security of supply and facilitate integration of more renewable electricity production.</p>	<p>Developers of electricity-generating plants</p>	<p>Completed</p>	<p>2015-</p>
<p>8. Order IET/2212/2015 of 23 October 2015 regulating the procedure for the award of the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and for wind technology plants put out to tender under Royal Decree 947/2015 of 16 October 2015 and approving the remuneration parameters thereof.</p>	<p>Regulatory</p>	<p>Increase security of supply and facilitate integration of more renewable electricity production.</p>	<p>Developers of electricity-generating plants</p>	<p>Completed</p>	<p>2015-</p>

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
9. Secretariat of State for Energy Decision of 30 November 2015 issuing a public tender for the award of the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and for wind technology plants, and establishing the procedure and rules therefor, in accordance with the provisions of Royal Decree 947/2015 of 16 October 2015 and of Order IET/2212/2015 of 23 October 2015.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2015-
10. Order IET/2735/2015 of 17 December 2015 establishing the charges for access to the electricity grid for 2016 and approving certain standard plants and the remuneration parameters applicable to renewable-energy, cogeneration and waste-to-energy plants.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of renewable-energy, cogeneration and waste-to-energy plants	Completed	2015-

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
11. Secretariat of State for Energy Decisions of 18 December 2015 and 9 February 2016 establishing the criteria for participating in system adjustment services and approving certain operating and testing procedures for adaptation thereof to Royal Decree 413/2014 of 6 June 2014 regulating electricity production by renewable-energy, cogeneration and waste-to-energy plants.	Regulatory	Enable the participation of renewable-energy, cogeneration and waste-to-power technologies in system adjustment services.	Rights holders of renewable-energy, cogeneration and waste-to-energy plants	Completed	2015 and 2016 -
12. Directorate-General for Energy Policy and Mines Decision of 18 January 2016 concluding the public tender for the award of the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and for wind technology plants, in accordance with the provisions of Royal Decree 947/2015 of 16 October 2015.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2016-

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
13. Directorate-General for Energy Policy and Mines Decision of 17 March 2016 entering as pre-allocated in the specific remuneration scheme register the winning bids in the public tender called under the Decision of 30 November 2015 to award rights under the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and to wind technology plants, in accordance with the provisions of Royal Decree 947/2015 of 16 October 2015.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2016-
14. Order IET/2735/2015 of 17 December 2015 establishing the charges for access to the electricity grid for 2016 and approving certain standard plants and the remuneration parameters applicable to renewable-energy, cogeneration and waste-to-energy plants.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of plants generating electricity from renewable sources	Completed	2015-
15. Order IET/1209/2016 of 20 July 2016 establishing the remuneration for operation in the second half of the 2016 calendar year and approving standard plants and their corresponding remuneration parameters.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of plants generating electricity from renewable sources	Completed	Jul 2016-

Measures targeting renewable energy for thermal use

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. BIOMCASA, GEOCASA and SOLCASA programmes.	Financial	Establish a system for financing projects submitted by ESCOs [1] and which, as well as promoting the latter, promotes high-quality systems using solar thermal, geothermal or biomass energy adapted to the needs of users of hot water and heating/cooling systems in buildings.	ESCOs, co-owners and other owners of buildings	Existing	2009-
2. Integration of renewable energies in public buildings.	Soft	Achieve the integration of renewable energies in public buildings.	Public administrations	Existing	2012-2020
3. GIT programme for large-scale thermal plants: funding for approved developers of large-scale thermal plants using energy from renewable sources in building and industry.	Financial	Promote the implementation of large-scale thermal energy production plants in buildings based on the use of renewable energy sources (biomass, solar thermal and geothermal). This new line of promotion is intended for projects that, due to their size and complexity, fall outside the limits set in the contract notices for the BIOMCASA, SOLCASA and GEOTCASA programmes and so establish a system for funding large-scale plants in such areas through ESCOs.	ESCOs, building sector and industry	Existing	2011-

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
4. Aid for improvement of the energy efficiency of existing buildings in the residential sector (housing and hotel use). PAREER programme	Financial	Encourage and promote integrated actions to foster energy saving, improved energy efficiency and use of renewable energy in existing residential buildings (housing and hotel use).	Natural and legal persons owning residential buildings, co-owners thereof, owners of single-family houses and energy service companies	Completed	2013-2015
5. Aid to improve the energy efficiency of existing buildings. PAREER-CRECE programme	Financial	Encourage and promote integrated actions to foster energy saving, improved energy efficiency and use of renewable energy in existing buildings.	Natural and legal persons owning buildings	Completed	2015-2016
6. Aid to improve the energy efficiency of existing buildings.	Financial	Encourage and promote integrated actions to foster energy saving, improved energy efficiency and use of renewable energy in existing buildings.	Natural and legal persons owning buildings	Under development	2015-

[1] Energy service companies (ESCOs).

Measures specific to the solar sector

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. Proposals to encourage professionalisation of the sector.	Information / Training	Improvement of overall plant quality. Change in attitudes to solar energy.	Installers, developers and end-users	Under development	2011-2020

2. Promotion of standardisation of solar thermal plant components and configurations.	Promotion	Optimisation of production processes, cost reduction and better market penetration by the technology.	Certifying entities, laboratories, technology centres, manufacturers and installers	Existing	2013-2020
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Measures specific to the wind sector

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. Implementation of 'labelling of small-scale wind turbines'.	Information / Training	National procedure that, in accordance with existing international standards and recommendations, promotes the orderly growth of small-scale wind power in Spain while guaranteeing the engineering quality and features of the wind turbines installed.	Rights holders of small-scale wind plants	Planned	2015-2017

Measures specific to the biomass, biogas and waste sectors

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. Implementation of regulation and standardisation of biomass fuels.	Regulatory	Standardisation of the various types of biomass for domestic use, including specific regulations and standards for pellets, etc.	Public administration, AENOR	Under development	2000-

2. Monitoring of national and international biomass markets.	Soft	Monitoring of and reaction to fluctuations in national and international markets.	All sector stakeholders	Under development	2016-2020
3. Law 21/2015 of 20 July 2015 amending Law 43/2003 of 21 November 2003 on woodland.	Regulatory	Improve the financial framework for the use of existing forest biomass.	Public administration and enterprise	Completed	2015
4. Setting of sectoral energy-recovery targets for certain flows of waste with fully or partially renewable content.	Regulatory	Reduce the current high volume of waste and increase energy recovery.	Public authorities, waste management companies, potential corporate consumers	Planned	2015

Measures specific to the biofuels sector

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. Design and implementation of a sustainability control scheme for biofuels and bioliquids. 2. Secretariat of State for Energy Decision of 29 April 2015 setting the end date of the grace period for the implementation of a transitional period for verifying the sustainability of biofuels and bioliquids.	Regulatory	The intention of opening the transitional period for verifying the sustainability of biofuels and bioliquids on 1 January 2016 is to achieve progress in monitoring the sustainability of biofuels and bioliquids produced and consumed in Spain, in accordance with European legislative requirements.	Entire biofuel value chain	Existing	2016-2020
3. Royal Decree 1085/2015 of 4 December 2015 on the promotion of biofuels.	Regulatory	Setting of biofuel sale and consumption targets for 2016-2020. The aim of this measure is to promote the use of biofuels.	Biofuel sector	Existing	2016-2020

4. Order IET/2786/2015 of 17 December 2015 amending Order ITC/2877/2008 of 9 October 2008 establishing a mechanism promoting the use of biofuels and other renewable fuels in transport.	Regulatory	Guarantee compliance with the biofuel sale and consumption obligations laid down in Royal Decree 1085/2015 of 4 December 2015.	Biofuel sector	Existing	2016-2020
5. Circular 1/2016 of 30 March 2016 issued by the <i>Comisión Nacional de los Mercados y la Competencia</i> (CNMC [National Commission on Markets and Competition]) regulating management of the mechanism promoting the use of biofuels and other renewable fuels in transport.	Regulatory	Regulation of management of the mechanism promoting the use of biofuels within the framework of the obligation to use such fuels in the transport sector, including aspects relating to verification of sustainability.	Entire biofuel value chain	Existing	2016-2020

Measures adopted since 1 January 2017

Measures targeting renewable energy in the electricity sector

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. Order ETU/130/2017 of 17 February 2017 updating the standard plant remuneration parameters applicable to certain renewable-energy, cogeneration and waste-to-energy plants with regard to their application to the regulatory half-period commencing on 1 January 2017.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of plants generating electricity from renewable sources	Existing	2017-

2. Royal Decree 359/2017 of 31 March 2017 establishing a public tender for the award of the specific remuneration scheme to new plants producing electricity from renewable energy sources located in the mainland electricity system.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-
3. Order ETU/315/2017 of 6 April 2017 regulating the procedure for awarding the specific remuneration scheme under the public tender to new plants producing electricity from renewable energy sources, as put out to tender under Royal Decree 359/2017 of 31 March 2017, and approving the remuneration parameters thereof.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
4. Secretariat of State for Energy Decision of 10 April 2017 establishing the procedure and rules of the public tender for the award of the specific remuneration scheme to new plants producing electricity from renewable energy sources, put out to tender under Royal Decree 359/2017 of 31 March 2017 and implemented by Order ETU/ 315/2017 of 6 April 2017.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-
5. Secretariat of State for Energy Decision of 10 April 2017 issuing the public tender for the award of the specific remuneration scheme to new plants producing electricity from renewable energy sources, in accordance with the provisions of Order ETU/315/2017 of 6 April 2017.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-

6. Directorate-General for Energy Policy and Mines Decision of 19 May 2017 concluding the public tender for the award of the specific remuneration scheme in accordance with the provisions of Royal Decree 315/2017 of 31 March 2017 and of Order ETU/315/2017 of 6 April 2017.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-
7. Royal Decree 650/2017 of 16 June 2017 establishing a quota of 3 000 MW of installed capacity for new plants producing electricity from renewable energy sources located in the mainland electricity system and eligible for award of the specific remuneration scheme.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
8. Order ETU/615/2017 of 27 June 2017 determining the procedure for awarding the specific remuneration scheme, the corresponding remuneration parameters and the other matters applicable to the quota of 3 000 MW of installed capacity put out to tender under Royal Decree 650/2017 of 16 June 2017.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-
9. Secretariat of State for Energy Decision of 30 June 2017 issuing the public tender for the award of the specific remuneration scheme to new plants producing electricity from renewable energy sources, in accordance with the provisions of Royal Decree 650/2017 of 16 June 2017.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-

10. Directorate-General for Energy Policy and Mines Decision of 27 July 2017 concluding the public tender for the award of the specific remuneration scheme in accordance with the provisions of Royal Decree 650/2017 of 16 June 2017 and of Order ETU/615/2017 of 27 June 2017.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-
11. Directorate-General for Energy Policy and Mines Decision of 10 October 2017 entering as pre-allocated in the specific remuneration scheme register the winning bids in the public tender for the award of the specific remuneration scheme in accordance with the provisions of Royal Decree 650/2017 of 16 June 2017 and of Order ETU/615/2017 of 27 June 2017.	Regulatory	Increase security of supply and facilitate integration of more renewable electricity production.	Developers of electricity-generating plants	Completed	2017-

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
12. Order ETU/1046/2017 of 27 October 2017 establishing the remuneration for operation in the second half of the 2017 calendar year, approving standard plants and establishing the corresponding remuneration parameters applicable to certain renewable-energy, cogeneration and waste-to-energy plants.	Regulatory	Improve the financial efficiency of the system according to the principle of reasonable return.	Rights holders of plants generating electricity from renewable sources	Existing	2017-

Measures targeting renewable energy for thermal use

Measure name and reference	Type of measure	Expected outcome	Group and/or activity targeted	Existing or planned	Start and end dates of the measure
1. Aid for improvement of the energy efficiency of existing buildings in the residential sector (housing and hotel use). PAREER II programme	Financial	Encourage and promote integrated actions to foster energy saving, improved energy efficiency and use of renewable energy in existing residential buildings (housing and hotel use).	Natural and legal persons owning residential buildings, co-owners thereof, owners of single-family houses and energy service companies	Completed	2017-

Measures specific to the biofuels sector

Measure name and reference	Type of measure (*)	Expected outcome (**)	Group and/or activity targeted (***)	Existing or planned	Start and end dates of the measure
<p>Draft of the royal decree establishing the calculation methodology and information requirements relating to the greenhouse-gas emissions intensity of fuels and energy used in transport, amending Royal Decree 1597/2011 of 4 November 2011 regulating the sustainability criteria applicable to biofuels and bioliquids, the national sustainability verification system and the double counting of certain biofuels and establishing an indicative target for sale and consumption of advanced biofuels.</p>	<p>Regulatory</p>	<p>In May 2017, in compliance with the public information and consultation procedures established, a draft royal decree was published on the website of the Ministry of Energy, Tourism and Digital Agenda. The object of this Royal decree included the following:</p> <ul style="list-style-type: none"> • Adaptation of the sustainability criteria for biofuels and bioliquids to those laid down in Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources. • Modification of the national sustainability verification system for biofuels and bioliquids, progressing from the transitional system currently in effect to a definitive system. 	<p>Biofuel sector</p>	<p>Planned</p>	

2(a) Description of progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of renewable energy

All the award procedures for the specific remuneration scheme for the production of electricity by renewable-energy, cogeneration and waste-to-energy plants, as well as all the communications and procedures throughout the service life of the plants, have been digitised.

In addition, since 2015 greater flexibility has been introduced in the design and development of new renewable-energy, cogeneration and waste-to-energy plants awarded the right to remuneration under the specific remuneration scheme. In particular, in the tenders held since 2016, the award of the specific remuneration scheme has been tied to a power quota, allowing developers of winning bids to meet that quota with one or more plants at their discretion. This increases flexibility for the developer and facilitates completion of the plants within the deadline. It represents a change in the previous procedure, in which the right to remuneration was assigned to a specific plant. These changes are included in the tenders regulated by Order IET/2212/2015 of 23 October 2015, Order ETU/315/2017 of 6 April 2017 and Order ETU/615/2017 of 27 June 2017.

Law 39/2015 of 1 October 2015 on the common administrative procedure governing public administrations updates administrative procedures and promotes electronic administration, which will reduce the administrative burden placed on rights holders in their relations with public administrations while regulating minimum guarantees and rights. The purpose of this new regulation is to strengthen public participation, legal certainty and review of the legal system.

This law was implemented alongside Law 40/2015 of 1 October 2015 on the legal framework applicable to the public sector, which aims to modernise the Spanish public sector, streamline administrative procedures, enhance efficiency in use of public resources and increase their productivity.

2(b) Description of measures intended to ensure the transmission and distribution of electricity produced from renewable energy sources and to improve the framework or rules for the bearing and sharing of the costs related to grid connections and grid reinforcements

A brief description is given below of the measures taken and/or planned during 2015-2016 to optimise the transmission and distribution of electricity produced from renewable sources:

- Connection of the mainland system to the Balearic Islands

Grid interconnection is essential to guaranteeing and improving the reliability of electricity supply in the Balearic system, as well as to enabling its integration into the Iberian electricity market and thus establishing a competitive generating market that also allows greater integration of renewable energy into the Balearic system.

Interconnections currently exist between the islands of Mallorca and Menorca, between Ibiza and Formentera and between Mallorca and the mainland. The

Mallorca-Ibiza interconnection (Torrente-Santa Ponsa 132-kV double electric link) has been in service since February 2016. This was set out in the above-mentioned development plan and connects the two existing electrical subsystems (Mallorca-Menorca and Ibiza-Formentera) and enables them to operate jointly, which will guarantee supply stability and quality in Ibiza and Formentera and will put an end to the islands' energy isolation.

This link is part of the infrastructure approved in the 2015-2020 Electricity Transmission Network Plan, which also provides for reinforcement of the connections between Mallorca and Menorca (planned to go into service in 2019) and between Ibiza and Formentera (planned to go into service in 2018).

- Further development of international interconnections

Furthermore, the construction of a new east Pyrenees line has doubled the capacity for the exchange of electricity between Spain and France (increasing it from 1 400 MW to 2 800 MW), reinforced the security of supply of the two electricity systems and promoted the integration of a greater volume of renewable energy, particularly wind power from the Iberian system. Apart from the section crossing the Pyrenees (which passes through an 8.5-km-long, 3.5-m diameter tunnel) the entire length of this 65-kilometre, 400-kV DC line is buried in a concrete trench. Work on the line was completed in February 2015 and it began commercial operation in October 2015.

The project, which commenced in 2008, was carried out for Red Eléctrica de España (REE) and Réseau de Transport d'Électricité (RTE) and represented a technological challenge, as it was the first time that a 2 000-MW underground link – based on the latest available DC transmission technology – of this length had been achieved. In addition to this interconnection, a further interconnection between the Basque Country and France (underwater, via the Bay of Biscay) is under development. Even with the 2015 increase, however, the degree of grid interconnection between Spain and France is below 3 % of Spain's installed electricity-generating capacity and is well below the interconnection target of at least 10 % of installed electricity-generating capacity for all Member States by 2020 envisaged for the Energy Union, and even further from the 15 % set for 2030. Furthermore, even with the interconnections planned to date, Spain will be the only country in continental Europe below the 10 % target, necessitating development of new interconnections.

- 2015-2020 electricity transmission network development plan

On 16 October 2015, the Council of Ministers approved the 2015-2020 electricity transmission network development plan.

Because no specific regulation existed previously governing the procedure for planning infrastructure for transmitting natural gas and storing strategic reserves of oil products, the traditional approach was to follow the procedure for the electricity transmission network, which meant that the electricity and hydrocarbon infrastructures were planned jointly. However, following the criterion established by the National High Court in its judgments of 31 October 2012, the binding part of the energy planning document titled 2015-2020 electricity transmission network development plan only included a plan to

develop the electricity transmission network. The Plan primarily aims to ensure the security of electricity supply while introducing environmental and financial efficiency criteria. The document includes the infrastructure necessary to guarantee security of supply within the 2015-2020 planning horizon.

The factors taken into account in the plan were as follows:

- Compliance with electricity grid security and reliability requirements and, consequently, with security of supply criteria.
- Minimisation of the overall environmental impact. Electricity transmission network planning underwent strategic environmental assessment. Environmental objectives have been part of the planning process from the outset through the participation of the Ministry of Agriculture, Fisheries, Food and Environment.
- Increase of international connection capacity as a means of increasing Spain's integration into the single energy market, thus encouraging lower electricity prices.
- Integration of renewable energies into the grid in order to help achieve the targets set for this area for 2020.
- Meeting of demand arising from new industrial activity.
- Network planning in response to analysis of possible alternatives and costs, which made it possible to prioritise the urgency of investments, adding this financial criterion to the previous ones.

Estimated investment associated with the electrical infrastructure planned for 2020 stands at EUR 4.554 billion, which breaks down as average annual investment of EUR 759 million. Of this sum, EUR 143 million are expected to be recovered from ERDF funds over the period.

With regard to **connection costs**, current legislation provides that connection costs be charged to the developer while the carrier and distributor will bear the cost of reinforcing or extending the transmission or distribution grid. This is in application of what Decision 2009/548/EC calls the 'shallow' connection cost approach. These entities are guaranteed recovery of their investment through a remuneration scheme regulated by Royal Decree 1047/2013 of 27 December 2013 establishing the methodology for calculating remuneration of electricity transmission, and Royal Decree 1048/2013 of 27 December 2013 establishing the methodology for calculating remuneration of electricity distribution.

The remuneration paid to the rights holders of transmission and distribution facilities is governed by the following orders:

- Order IET/981/2016 of 15 June 2016 establishing the remuneration paid to rights holders of electricity transmission facilities in 2016.
- Order IET/980/2016 of 10 June 2016 establishing the remuneration paid to electricity distribution companies in 2016.

3. Description of 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 applied with respect to those set out in your National Renewable Energy Action Plan.

a) Support systems established by Spain to promote the use of energy from renewable sources in the electricity sector

During the previous period (2013-2014), the electricity sector underwent a major legislative overhaul. This adapted the legal framework regulating the generation of electricity from renewable energy sources to developments in the area and to current conditions, maintaining the goal of creating support systems for electricity generation from renewable sources. This resulted in reform of the aid awarded to renewable-energy, cogeneration and waste-to-energy electricity-generating plants, awarding rights to existing plants under the specific remuneration scheme and establishing the procedure to award such rights to new plants.

This Spanish scheme to support the production of electricity by renewable-energy, high-efficiency cogeneration and waste-to-energy plants was recently considered by the European Commission to comply with EU regulations governing state aid (as indicated in a press release dated 10 November 2017).

In accordance with Law 24/2013 of 26 December 2013 on the electricity sector, which lays down that the award of rights the specific remuneration scheme to new renewable-energy plants will be determined by competitive public tender, in 2015, 2016 and 2017 various public tenders were called with the intention of increasing renewable generation capacity and meeting the binding target set for Spain for 2020.

In July 2015, the Directorate-General for Energy Policy and Mines Decision of 15 July 2015 was adopted, thereby entering in the specific remuneration scheme register as pre-allocated the plants included in the quota provided for in fourth additional provision of Royal Decree 413/2014 of 6 June 2014, resulting in the entry in the register of 119.2 MW of the 120 MW set in the quota.

The first public tender to incorporate new renewable energy in the electricity system was held in January 2016, awarding 500 MW of wind power and 200 MW of biomass power. The public tender revealed that, in the case of wind power, developers were willing to receive solely the market remuneration and no return on their investment. In the case of biomass power, however, developers will receive the market remuneration plus variable remuneration to cover the difference between operating costs and the revenue generated by the sale of the energy on the market (known as remuneration for plant operation).

In addition, on 1 July 2016 the decision announcing the award of rights under the specific remuneration scheme to wind power plants in the Canary Islands was published. The public tender was held for a maximum of 450 MW under the sixth additional provision of Order IET/1459/2014 of 1 August 2014, drafted in accordance with Order IET/1953/2015 of 24 September 2015. A total capacity of 436.3 MW was awarded for commissioning by 31 December 2018. As an extraordinary measure, and implementing the twelfth additional provision of Law 24/2013 on the electricity sector, the award of this specific remuneration scheme solely to plants in the Canary Islands was granted exemption from the competitive tender mechanism since its introduction would mean a significant reduction in the generation costs of the electricity system.

In 2017, several tenders were held for renewable capacity, in which the various technologies competed with the aim of incorporating into the electricity system those projects that represented the lowest additional unit cost for the electricity system. Wind and photovoltaic technologies showed greatest capacity to compete in the market with conventional technologies, not only on price but also on the high volume of capacity offered.

- In May 2017, the second public tender was held, the outcome of which was the award of the specific remuneration scheme to a total of 3000 MW of new renewable capacity. Most of the new capacity (2 979.7 MW) was awarded to wind power, while 1 MW was awarded to photovoltaics and 19.3 MW were assigned to the other participating technologies.
- In July 2017, the third public tender was held, in which 5 036.9 MW were awarded, of which 1 127.8 MW were awarded to wind power and 3 909.1 MW were awarded to photovoltaics.

The initiatives carried out to date have resulted in an overall increase in renewable capacity of 9 292.4 MW, which will contribute to meeting the targets set by Directive 2009/28/EC on the promotion of the use of energy from renewable sources.

In accordance with Article 12 of Royal Decree 413/2014 of 6 June 2014 on the award of the specific remuneration scheme, the conditions, technologies or group of plants eligible to participate in the public tender will be established by royal decree, as will the assumptions on which the public tender is based.

The legislation below was drafted between 2015 and 2016 to increase the renewable capacity to which the specific remuneration scheme is awarded, as well as to introduce the necessary updates in remuneration of operation, as laid down in the legislation currently in force.

- Order IET/1344/2015 of 2 July 2015 approving standard plants and the remuneration parameters thereof applicable to certain renewable-energy, cogeneration and waste-to-energy plants.
- Order IET/1345/2015 of 2 July 2015 establishing the methodology for updating remuneration of operation of plants awarded a specific remuneration scheme.
- Directorate-General for Energy Policy and Mines Decision of 15 July 2015 entering in the specific remuneration scheme register as pre-allocated the plants included in the quota provided for in fourth additional provision of Royal Decree 413/2014 of 6 June 2014 regulating the activity of electricity generation by renewable-energy, cogeneration and waste-to-energy plants and declaring as not registered or not admitted the other plants that applied for inclusion in that quota.
- Order IET/1953/2015 of 24 September 2015 amending Order IET/1459/2014 of 1 August 2014 approving remuneration parameters and establishing the mechanism for the award of the specific remuneration scheme to new wind and photovoltaic plants in electricity systems in non-mainland territories.
- Royal Decree 947/2015 of 16 October 2015 establishing a public tender for the award of the specific remuneration scheme to new plants producing electricity

from biomass located in the mainland electricity system and for wind technology plants. In BOE No 249, 17/10/2015, pp. 97340-97342.

- Order IET/2212/2015 of 23 October 2015 regulating the procedure for the award of the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and for wind technology plants put out to tender under Royal Decree 947/2015 of 16 October 2015 and approving the remuneration parameters thereof. In BOE No 255, 24/10/2015, pp. 100337-100350.
- Secretariat of State for Energy Decision of 30 November 2015 issuing a public tender for the award of the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and for wind technology plants, and establishing the procedure and rules therefor, in accordance with the provisions of Royal Decree 947/2015 of 16 October 2015 and of Order IET/2212/2015 of 23 October 2015. In BOE No 289, 03/12/2015, pp. 114625-114651.
- Order IET/2735/2015 of 17 December 2015 establishing the charges for access to the electricity grid for 2016 and approving certain standard plants and the remuneration parameters applicable to renewable-energy, cogeneration and waste-to-energy plants. In BOE No 302, 18/12/2015, pp. 119084-119135.
- Directorate-General for Energy Policy and Mines Decision of 18 January 2016 concluding the public tender for the award of the specific remuneration scheme to new plants producing energy from biomass located in the mainland electricity system and for wind technology plants, in accordance with the provisions of Royal Decree 947/2015 of 16 October 2015. In BOE No 18, 21/01/2016, pp. 5615-5618.
- Directorate-General for Energy Policy and Mines Decision of 17 March 2016 entering as pre-allocated in the specific remuneration scheme register the winning bids in the public tender issued under the Decision of 30 November 2015 for the award of the specific remuneration scheme to new plants producing electricity from biomass located in the mainland electricity system and for wind technology plants, in accordance with the provisions of Royal Decree 947/2015 of 16 October 2015. In BOE No 75, 28/03/2016, pp. 22330-22332.
- Order IET/1209/2016 of 20 July 2016 establishing the remuneration for operation in the second half of the 2016 calendar year and approving standard plants and their corresponding remuneration parameters. In BOE No 175, 21/07/2016, pp. 51111-51134.

Legislation governing own use of electricity generated from renewable energy sources has also been implemented: Royal Decree 900/2015 of 9 October 2015 regulating the administrative, technical and economic conditions governing modes of electricity supply for own use and production for own use.

In accordance with the provisions of Royal Decree 413/2014 of 6 June 2014, the criteria under which the various renewable, high-efficiency cogeneration and waste-to-energy technologies are deemed fully or partially eligible to participate in adjustment services (taking into account the various options regarding hybridisation, integrated plant operation and storage system usage, among others) must be established by means of a Secretariat of State decision. In 2015 and 2016, the following decisions were issued adopting the testing and operating procedures for plants of this type with the objective of allowing them to participate in electricity system adjustment services.

- Secretariat of State for Energy Decision of 18 December 2015 establishing the **criteria for participating in system adjustment services** and approving certain testing and operating procedures to adapt them to Royal Decree 413/2014 of 6 June 2014 regulating electricity production by renewable-energy, cogeneration and waste-to-energy plants.
- Secretariat of State for Energy Decision of 9 February 2016 amending the Decision of 18 December 2015 establishing the **criteria for participating in system adjustment services** and approving certain testing and operating procedures to adapt them to Royal Decree 413/2014 of 6 June 2014 regulating electricity production by renewable-energy, cogeneration and waste-to-energy plants.

b) Support systems established by Spain to promote the use of energy from renewable sources in heating and cooling

Financial support

▪ *Funding programmes*

In 2009, a system was introduced to fund ESCO projects to generate heat from renewable sources. It had two specific aims: on the one hand, to promote the development of this type of company, and on the other, to increase the use of biomass, geothermal and solar energy while guaranteeing system quality and offering products adapted to the needs of users of hot water and heating/cooling systems in buildings.

Table 3(b) Support systems for thermal renewable energy, 2015

Programme	Installed capacity (kW)	Programme funding (loan amount in EUR)	Final energy consumption (kWh)	Aid per unit (EUR/kWh)
BIOMASS GIT	3 900	1 087 565	7 442 282	0.146
SOLAR GIT	0	0	0	0.000
GEOTHERMAL GIT	724	1 274 240	1 365 464	0.933
BIOMCASA II	1 710	518 721	3 844 965	0.135
SOLCASA	157	156 355	280 471	0.557
GEOTCASA	573	350 000	570 000	0.614
TOTAL	7 064	3 386 881	13 503 182	

Table 3(b) Support systems for thermal renewable energy, 2016

Programme	Installed capacity (kW)	Programme funding (loan amount in EUR)	Final energy consumption (kWh)	Aid per unit (EUR/kWh)
SOLCASA	412	315 100	530 828	0.594
TOTAL	412	315 100	530 828	

These programmes (BIOMCASA, GEOCASA, SOLCASA) have certain limitations with regard to the amount per project and are supplemented by the large-scale thermal plant (GIT) programme for the three renewable energy sources mentioned above.

The GIT programme applies to projects requiring significant investment and has a different system of technical and financial guarantees. This new line of promotion is intended for projects that, due to their size and complexity, fall outside the limits set in the contract notices for the BIOMCASA, SOLCASA and GEOTCASA programmes and so establishes a system for funding large-scale plants in such cases.

These programmes lay down certain technical guarantees applicable to plant development and establish commitments to supply a certain quantity of energy, to deliver cost savings to end-users and to run promotional information campaigns targeting both sectors involved in developing the projects and end-users.

The tenders for these programmes remained open in 2015 and 2016.

These programmes make total or partial funding available to ESCOs that have previously been authorised by the *Instituto para la Diversificación y Ahorro de la Energía* (IDAE [Institute for Energy Diversification and Saving]) to receive it. A number of requirements regarding supply capacity and technical and financial capacity and solvency must be met to obtain this authorisation. These requirements can be met through agreements with other undertakings operating in the sector that specialise in specific aspects of the energy management process. Authorisation gives an undertaking access to the line of funding and also allows it to use the logos of the programme for which it has been authorised and to take part in the promotional activities carried out under that programme.

Users are given a long-term supply contract at an energy price below what they would have had to pay had they opted for a system using conventional fuels, and the price assures amortisation of the system as well as operation and maintenance of it. Also, the interest rates set are among the lowest on the market. This financing is therefore attractive to ESCOs, which then pass these savings on to users.

While the BIOMCASA programme was in force, 97 ESCOs applied for authorisation and 64 were authorised. A total of 71 thermal biomass projects were financed under the energy sales model, amounting to funding of EUR 8 000 000 (100 %), thermal installed capacity of 23 MW, primary energy consumption of 48.2 GWh/year and avoidance of 11 960 tCO₂.

For the BIOMCASA II programme, at 31 December 2016 a total of 57 ESCOs had applied for authorisation, of which 5 were authorised. Up to that date, 31 thermal biomass projects had been financed under the energy sales model, amounting to funding of EUR 4 151 771 (83 % of the available budget), thermal installed capacity of 11.4 MW, energy consumption of 21.8 GWh/year and avoidance of 6 761 tCO₂.

For the SOLCASA programme, at 31 December 2016 a total of 59 energy service companies had applied for authorisation, of which 39 were authorised. Up to that date, 24 solar thermal projects had been financed under the energy sales model, amounting to funding of EUR 2 493 125 (50 % of the available budget), thermal installed capacity 2.82 MW, a final energy consumption saving of 742 179 GWh/year and avoidance of 1 395 tCO₂.

For the GEOCASA programme, a total of 36 companies applied for authorisation, of which 23 were authorised. Overall, 13 geothermal energy projects were financed under the energy sales model, amounting to funding of EUR 1.9m, thermal installed capacity 1.9 MW, energy demand of 5.7 GWh/year and avoidance of 1 092 tCO₂.

As regards the GIT Programme, in 2015 the first geothermal project, with a capacity of 724 kW, was financed via a loan of EUR 1 274 240. Forecast energy consumption amounted to 1 365 464 kWh.

For the GIT programme, at that same date a total of 39 ESCOs had applied for authorisation, of which 12 were authorised. Overall, 14 projects were financed under the energy sales model, amounting to funding of EUR 9 126 480 (53.6 % of the available budget). Thermal installed capacity using biomass as a fuel amounted to 34.7 MW, energy consumption of 50.6 GWh/year and avoidance of 12 374 tCO₂.

The PAREER-CRECE aid programme, the call for applications for which was issued in May 2015, is applicable to improvements in the energy efficiency of existing buildings put to any use. The programme comprises four differentiated actions, two of which target the improvement of energy efficiency in buildings while the other two specifically target the promotion of renewable energy. Of these, one focuses on replacing use of conventional energy with biomass in heating systems and the other on replacing use of conventional energy with geothermal energy in heating systems. All typologies and beneficiaries have the right to receive a grant supplemented by a reimbursable loan. The budget allocated to this programme amounts to EUR 200 000 000 for all four actions.

In 2015 and 2016, Measure 3 'Biomass' received 88 applications resulting in direct aid of EUR 2 270 341 and funding of EUR 3 834 601. Measure 4 'Geothermal' received 29 applications, in which EUR 1 655 249 of direct aid and EUR 1 020 381 of funding were requested. These figures represent the applications approved or being processed and do not include applications that were not admitted.

c) Support systems established by Spain to promote the use of energy from renewable sources in transport

Regulations

- ***Mandatory use of biofuels***

Sixteenth additional provision of Law 34/1998 of 7 October 1998 on the hydrocarbons sector sets annual targets – mandatory as of 2009 – for biofuels and other renewable fuels used in transport. It also authorises the Ministry of Energy, Tourism and Digital Agenda to lay down the provisions needed to regulate a mechanism to promote the use of biofuels

and other renewable fuels used in transport. It likewise authorises the Government to amend these targets and to set additional ones.

Recently, Royal Decree 1085/2015 of 4 December 2015 set a minimum mandatory annual overall target for the sale or consumption of biofuels of 4.3 % for 2016 and of 5 %, 6 %, 7 % and 8.5 % for 2017, 2018, 2019 and 2020, respectively, in terms of energy content. These targets represent a significant upward revision of the targets previously set in Article 41 of Law 11/2013 of 26 July 2013, which set them at 4.1 % both for diesel and overall and at 3.9 % for petrol. This Royal Decree also repealed the individual targets per product, establishing only an overall target for mandatory minimum biofuel consumption. This means that entities bound by the Decree have the flexibility of using biofuel certificates for both diesel and petrol to achieve this target.

Royal Decree 1085/2015 of 4 December 2015 limits the contribution of first-generation biofuels, establishing that the percentage of biofuels produced from cereals and other starch-rich crops, sugar, oilseed or other crops planted on farmland as main crops primarily for energy purposes may not exceed 7 %.

At present, differential support by type of fuel or technology does not exist within this framework. Neither does the framework establish specific support for biofuels that meet the criteria laid down in Article 21(2) (article in force during the period covered by this report) or for the advanced biofuels referred to in the Directive following the amendment made through the publication of Directive (EU) No 2015/1513 of the European Parliament and of the Council of 9 September 2015 (this amendment repeals the above-mentioned Article 21).

The entities bound by Spain's mandatory scheme on the use of biofuels are as follows:

- a) Wholesalers, regulated in Article 42 of Law 34/1998 of 7 October 1998 on the hydrocarbons sector, for annual sales on the Spanish market, excluding sales to other wholesalers.
- b) Retail distributors of oil products, regulated in Article 43 of Law 34/1998 of 7 October 1998, for that portion of their annual sales on the Spanish market not supplied by wholesalers or other retail distributors.
- c) Consumers of oil products, for that portion of their annual consumption not supplied by wholesalers or by retail distributors of oil products.

In order to achieve the mandatory biofuel sale or consumption targets in the most efficient manner possible, Order ITC/2877/2008 of 9 October 2008 establishing a mechanism for promoting the use of biofuels and other renewable fuels in transport provides temporary flexibility mechanisms for counting the quantities of biofuel sold or consumed and provides a system of certification and compensatory payments that allows entities bound by the system to transfer certificates. It also acts as a mechanism for monitoring fulfilment of the obligation.

In the context of the biofuel sale or consumption obligation, a document issued at the request of an entity stating that the entity accredited sale or consumption of one toe of biofuel within a given year is understood to constitute a certificate (in accordance with Article 2(3) of Order ITC/2877/2008 of 9 October 2008 establishing a mechanism for promoting the use of biofuels and other renewable fuels in transport).

Entities subject to this scheme that lack the certificates needed to comply with their obligations are required to make compensatory payments. The Secretariat of State for Energy Decision of 8 July 2013 updated the amount of these payments, which is set at EUR 763/certificate (one certificate is equivalent to one toe).

The revenue generated by this requirement each calendar year is paid into a single compensatory payment fund that the certification entity distributes among those entities that have a certified surplus over and above their obligation.

If the compensatory payments are made, the obligations established are deemed to have been met, provided at least 50 % of the regulatory target has been achieved. Otherwise, the obligations laid down for achievement of the annual targets set for minimum biofuel and other renewable fuel content will not be deemed to have been met, which constitutes a very serious infringement of Law 34/1998. The imposition of administrative penalties arising from the above-mentioned infringement will be without prejudice to the compensatory payments that must be paid in all cases.

As a flexibility mechanism, Article 9 of the above Order also allows certification account holders to transfer, after notifying the Certification Entity, the biofuel certificates they hold to the accounts of other entities, maintaining in all cases the distinction between petrol and diesel biofuel certificates.

Order IET/2786/2015 of 17 December 2015 amends the above Order ITC/2877/2008 of 9 October 2008 to adapt it to the provisions of Royal Decree 1085/2015 of 4 December 2015. In particular, previous references to individual diesel and petrol biofuel obligations have been removed both with regard to consumption targets and to compliance with those targets through compensatory payments.

Order ITC/2877/2008 appoints the *Comisión Nacional de Energía* (CNE [National Energy Commission]) – now the CNMC – as the entity responsible for issuing biofuel certificates, for managing the certification mechanism and for overseeing the biofuel marketing obligation.

[Circular 1/2016](#) of 30 March 2016 issued by the CNE regulating management of the mechanism promoting the use of biofuels and other renewable fuels in transport lays down the organisational and operational rules governing that mechanism. In particular, it sets out the procedures, standards and rules pertaining to applications to open Certification Accounts, to applications for the issue of biofuel certificates and to the transfer of certificates and lays down the management procedures for the Book-Entry System maintained by the CNE.

It must be stressed that this obligation is the mechanism used to achieve the energy targets – as refers to the contribution of biofuels – for the introduction of renewable energies in transport.

Financial support

- ***Tax exemption for biofuel pilot projects***

Law 38/1992 on excise duties provides that the manufacture or import of biofuels intended for use as fuel either directly or mixed with conventional fuels are exempt from the excise duty on hydrocarbons for purposes of pilot projects for the technological development of more environmentally-friendly products.

'Pilot projects for the technological development of more environmentally-friendly products' means experimental and time-limited projects addressing the production or use of such products whose aim is to demonstrate the technical or technological feasibility of their production or use, excluding the subsequent industrial exploitation of the results of such projects.

This scheme is managed by the Department of Customs and Excise Duties at the Spanish Tax Office. The Regulation on Excise Duties provides that, once the exemption application is approved, the management centre will issue the requisite decision recognising the exemption for the period requested by the parties concerned, which may not exceed five years.

A limit is set in the Regulation on Excise Duties for the purposes of accrediting the experimental nature of the project, i.e. that it is limited to demonstrating the technical or technological feasibility of manufacture or use of the product. This condition will be deemed to have been accredited when the quantity of biofuel produced does not exceed 5 000 litres/year.

- *Allocation of biodiesel production quantities*

The aim of Order IET/822/2012 of 20 April 2012 regulating the allocation of biodiesel production quantities for calculating compliance with mandatory biofuel targets (amended by Order IET/2736/2012 of 20 December 2012) is to promote the production of biofuels for use in transport, thereby contributing to the development of biofuels as a substantial component of environmental protection and greenhouse-gas emission reduction policies as well as to meeting mandatory targets relating to the use of energy from renewable sources.

It also aims to contribute to the security of the energy supply, increase energy independence and reduce the cost of oil imports, as well as to stimulate the Spanish and EU biofuels production sector.

The Secretariat of State for Energy Decision of 24 January 2014 approved the definitive list of biodiesel production units or plants allocated quantities included when calculating fulfilment of the mandatory targets for biofuels.

The two-year period during which the biodiesel production quantity allocation was in force concluded in May 2016.

3.1. Information on how the supported electricity is allocated to final customers in accordance with Article 3(6) of Directive 2003/54/EC (Article 22(1)(b) of Directive 2009/28/EC)

The breakdown of the guarantees of origin in the bills that retailers submit to end customers are governed by the additional provision of Order ITC/2914/2011 of 27 October 2011 in accordance with Article 110(a) of Royal Decree 1955/2000 of 1 December 2000 regulating transmission, distribution, sale and supply and the authorisation of electricity plants.

4. Information on how the support schemes have been structured to take into account renewable energy source 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

Royal Decree 1597/2011 of 4 November 2011 regulating the sustainability criteria applicable to biofuels and bioliquids, the national sustainability verification system and the double counting of certain biofuels for the purpose of determining compliance incorporated into Spanish law the provisions of Article 21(2) of Directive 2009/28/EC with regard to the double counting of certain biofuels for the purposes of demonstrating compliance with the mandatory targets and also transposed Articles 17, 18, 19, 20 and Annex V of the above Directive.

The Secretariat of State for Energy Decision of 2 April 2014 approved the list of feedstocks (including used vegetable or animal oils and category 1 and category 2 animal fats) used for the manufacture of biofuels counted twice for the purposes of compliance with obligations relating to the consumption and sale of biofuels for transport purposes, with obligations imposed on entities bound by renewable energy requirements and with the target set for the use of energy from renewable sources in all forms of transport.

Annex IX of Directive (EU) No 2015/1513 of the European Parliament and of the Council of 9 September 2015 on waste includes a new list of feedstocks for the manufacture of biofuels counted twice for the purposes of compliance. This annex is planned to be transposed into Spanish law in the draft of the royal decree establishing the calculation methodology and information requirements relating to the greenhouse-gas emissions intensity of fuels and energy used in transport, amending Royal Decree 1597/2011 of 4 November 2011 regulating the sustainability criteria applicable to biofuels and bioliquids, the national sustainability verification system and the double counting of certain biofuels and establishing an indicative target for sale or consumption of advanced biofuels. The parliamentary passage of this royal decree, which was published in May 2016 in compliance with the requirement for public consultation, has not yet concluded.

5. 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

Guarantees of origin are electronic certificates issued at the request of the party concerned that prove that a certain number of megawatt-hours of the electricity produced in a plant over a specific period of time has been generated from renewable sources or by high-efficiency cogeneration.

In Spain, Order ITC/1522/2007 of 24 May 2007 regulates the guarantee of origin of electricity and heating and cooling from renewable sources and high-efficiency cogeneration. It was amended by Order ITC/2914/2011 of 27 October 2011 that, in particular, partially transposed Directive 2009/28/EC.

Circular 6/2012 of 27 September 2012 issued by the CNE (now the CNMC) established the rules governing the organisation and operation of the system guaranteeing the origin of electricity from renewable sources and high-efficiency cogeneration.

In 2015, Order IET/931/2015 adapted the existing rules to the changes to the system of aid applicable to renewable energy, cogeneration and waste (the specific remuneration scheme), as well as adapting it to the new directives. This new Order introduced the following fundamental changes:

- It modified the definitions to align them with those of Directive 2012/27/EU of 25 October 2012.
- It established the obligation for cogeneration plants to provide data on the thermal capacity, as well as on the nominal electric and thermal efficiency, of the plant.
- It included a unique identification number for each guarantee of origin, thereby removing decimal numbers from the administrative documents.
- It adapted the text and replaced repealed directives with those currently in force.
- It removed the distinction between production under the ordinary and special schemes and adapted the premiums (equivalent premiums, incentives or supplements) to the new terms employed in the legal and financial framework (specific remuneration) applicable to the plants subject to the Order following reform of the aid scheme.

On 4 March 2016, the General Assembly of the AIB (Association of Issuing Bodies) accepted CNMC's application to become a member of that association. The corresponding formal agreement between the CNMC and the AIB was signed on 26 July 2016. Therefore, since March 2016 it has been possible to export and import guarantees of origin for energy via the AIB hub. This new option is compatible with exports to and imports from systems not forming part of the AIB.

Guarantees of origin must be of the standard size of 1 MWh. As a minimum requirement, guarantees of origin must also include data relating to identification, location, commissioning date, energy type, plant capacity, operating period and support system, as well as the date, the country of issue and a unique identification number.

Currently, the CNMC is the body responsible throughout Spain for issuing guarantees of origin for electricity generated from renewable energy sources and by high-efficiency cogeneration, as well as for managing those guarantees. It may carry out these tasks either directly or through a third party, following authorisation by the Secretariat of State for Energy at the Ministry of Energy, Tourism and Digital Agenda. This third party must be independent of the generation, distribution and sales activities and must be designated pursuant to the relevant legislation on public sector procurement.

Book-entry system for guarantees of origin

The CNMC has established a book-entry system for guarantees of origin for electricity generated from renewable energy sources and by high-efficiency cogeneration. The purpose of the system is to record information and manage the above-mentioned guarantees of origin.

It is mandatory for the system to be managed by electronic procedures and methods via the electronic register of the CNE in accordance with the provisions of Article 27(6) of Law

11/2007 of 22 June 2007 on public electronic access to public services and of Article 32 of Royal Decree 1671/2009 of 6 November 2009, which partially implements the above law. This book-entry system holds information on the number of guarantees of origin issued as well as transfers of them.

Revenue obtained from the sale of guarantees of origin must be accounted for separately. During the first quarter of each year, producers in whose name guarantees of origin are issued must send the CNMC a report on their plans for using this revenue, which may be allocated to the development – under a special scheme – of new plants for the production of electricity from renewable energy sources and cogeneration that are unprofitable under the current remuneration scheme or to general research and development (R&D) intended to improve the environment as a whole.

After verifying the information provided in the application, the CNMC issues the guarantee of origin, which takes the form of a note in the corresponding electricity production account.

The issue of guarantees of origin corresponding to production month m will take place before the last day of month $m+10$ and, in all cases, before 28 February each year for guarantees corresponding to the previous year and will be deemed to have been made out to the rights holder of the plant, who will be the initial holder of the guarantees.

Transfers of all guarantees of origin must be requested from the CNMC by the guarantee holder in order that the corresponding note may be made in the relevant account.

The import of guarantees of origin shall be treated in the same way as the issue of them.

Traders may submit accreditations of guarantees of origin issued in another Member States to the CNMC in order to obtain the same accreditation as issued by the guarantee of origin system in Spain, provided they are issued in accordance with the requirements laid down by Directives 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, and Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. The guarantee of origin must be issued by a body designated by a European Union Member State. When there are doubts as to the accuracy, reliability or veracity of a guarantee of origin issued by another Member State, the CNMC may refuse to recognise this guarantee, notifying the Secretariat of State for Energy so that it can notify the European Commission.

Guarantees of origin may only be exported by the rights holders of electricity generation plants.

Electricity producers entitled to receive payment under the specific remuneration scheme regulated by Royal Decree 413/2014 of 6 June 2014 regulating electricity production from renewable-energy, cogeneration and waste sources and applying for guarantees of origin for exports must waive the specific remuneration scheme applicable to each guarantee of origin exported. In accordance with the provisions of Article 11(6) of this Royal Decree, this specific remuneration scheme must include remuneration for the energy covered by the guarantee and remuneration for the investment corresponding to the period considered, as well as any other items covered by the specific remuneration scheme.

Amounts for items to be waived by the producer will be treated, where appropriate, as payable income under the payment system provided for by Royal Decree 2017/1997 of

26 December 1997 organising and regulating the procedure for paying tariff-based transmission, distribution and trading costs, permanent system costs and costs associated with diversification and security of supply.

Control, penalties and evaluation of the regulatory framework

- The CNMC will carry out the checks and inspections it deems necessary to perform its duties in issuing guarantees of origin for electricity generated from renewable energy sources and by high-efficiency cogeneration.
- Rights holders of plants subject to this order must guarantee appropriate physical access to the plants to allow performance of the required checks, verifications and, if applicable, inspections.
- Retailers must also facilitate access to their records and accounts to allow the checking and verification of transfers and cancellations of guarantees of origin, final consumer energy readings and revenue from the sale of guarantees of origin.
- Non-fulfilment of the obligations set out in this order will result in application of the penalties for infringement provided for under Title X of Law 24/2013 of 26 December 2013 on the electricity sector.

The CNMC shall periodically send a report to the Ministry of Energy, Tourism and Digital Agenda, on its request, on the evaluation of the existing legislative and regulatory framework with regard to the authorisation procedures applicable to facilities generating electricity from renewable energy sources and by high-efficiency cogeneration, indicating the actions taken where appropriate.

This assessment will be made with a view to reducing regulatory and non-regulatory obstacles to increasing the production of electricity from renewable energy sources and by high-efficiency cogeneration, streamlining and expediting procedures at the relevant administrative level, ensuring that the rules are objective, transparent and non-discriminatory and take into account the specificities of the various technologies, and promoting the design of cogeneration units that meet financially viable useful-heat requirements and avoid producing heat that is surplus to useful-heat requirements.

The report must also refer to measures planned to facilitate access to the grid of electricity generated from renewable energy sources, examining the feasibility of introducing two-way metering, among other things.

This report must be public and freely accessible.

6. Description of developments in 2015 and 2016 in the availability and use of biomass resources for energy purposes

Table 4:
Biomass supply for energy use

	Amount of domestic feedstock (*)		Primary energy in domestic feedstock (ktoe)		Amount of feedstock imported from EU (*)		Primary energy in amount of feedstock imported from EU (ktoe)		Amount of feedstock imported from outside EU (*)		Primary energy in amount of feedstock imported from outside EU (ktoe)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Biomass supply for heating and electricity:												
Direct supply of wood biomass from forests and other wooded land for energy generation (fellings etc.)**	5 924 730	5 969 581	1 701	1 714								
Indirect supply of wood biomass (waste and by-products from wood industry, etc.)**	5 239 238	5 278 900	1 581	1 593								
Agricultural by-products / processed residues and fishery by-products **	5 805 452	5 738 365	1 841	1 849								
Biomass from waste (municipal, industrial etc.) **	7 357 930	7 116 548	649	623								
Energy crops (grasses, etc.) and short-rotation trees (please specify)												
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)												
	Amount of domestic feedstock (*)		Primary energy in domestic feedstock (ktoe)		Amount of feedstock imported from EU (*)		Primary energy in amount of feedstock imported from EU (ktoe)		Amount of feedstock imported from outside EU (*)		Primary energy in amount of feedstock imported from outside EU (ktoe)	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Others (please specify)												

* Amount of feedstock in m³ (if possible) for biomass from forestry and in tonnes for biomass from agriculture and fisheries and for 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.

With regard to biofuels, data broken down by country or region of origin are not available for the feedstocks used for biofuels consumed in Spain. Table 4 does not therefore show figures for this sector. For information purposes, the following data obtained from the biofuel statistics compiled by the Biofuel Certification Entity of the CNMC are provided:

Biofuel	Origin of the feedstocks used in its manufacture	2015		2016	
Biodiesel	Spain		9.42 %		1.01 %
	Rest of EU		5.75 %		11.65 %
	Outside of EU		84.82 %		87.34 %
HVO	Spain		0.00 %		0.00 %
	Rest of EU		3.80 %		0.00 %
	Outside of EU		96.20 %		100.00 %
Bioethanol	Spain		16.24 %		12.70 %
	Rest of EU		27.54 %		50.36 %
	Outside of EU		56.22 %		36.94 %

The information needed to complete Table 4a is not available for biofuels either.

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

Land use	Area (ha)	
	2015	2016
1. Land used for common arable crops (wheat, sugar beet, etc.) and oilseeds (rapeseed, sunflower, etc.)		
Wheat (soft and hard)		
Barley		
Maize		
Sunflower and safflower		
Oilseed rape		
2. Land used for short-rotation trees (willows, poplars, etc.)		
Land use	Area (ha)	
	2015	2016
3. Land used for other energy crops such as grasses (reed canary grass, switch grass, Miscanthus), sorghum (please specify the main types).		

Law 21/2015 on woodland

Article 37 of the text of the new law on woodland (Law 21/2015 of 20 July 2015 amending Law 43/2003 of 21 November 2003 on woodland) provides that the woodland management

authority may dispose of forest products or services under the forestry use scheme, subject to the technical, management, financial and administrative clauses established and to the existing management tools. In exchange, in addition to or instead of the price, the implementation of certain forestry improvements may be established or accepted. These must be subject to corresponding management instruments under the specific conditions established and to approval of the woodland rights holder.

The contracts entered into by woodland management authorities or rights holders to make improvements to woodland that generate forestry products with market value may make those products available to the contractor to whom the work is awarded and their estimated sales price may form part of the operational budget.

Implementation of biomass fuel regulation and standardisation

Technical Committee for Standardisation CTN 164 'Solid Biofuels' has continued to transpose the EN-ISO standards on solid biofuels approved in recent years and has maintained a list of standards equivalent to European ones. It has added to this list Spanish standards UNE 164003 on olive stones and UNE 164004 on nut shells.

With regard to the certification of domestic wood pellets, the Spanish association AVEBIOM has been commissioned by the European Pellet Council to develop and issue the EN PLUS quality mark based on the ISO 17225-2 standard. As a result of this, it is estimated that of Spain's total 2016 pellet production of 490 000 tonnes, 403 000 tonnes were marketed bearing the EN PLUS A1 mark.

At the same time, the design and implementation of support mechanisms to aid the development of a sustainable solid biomass market is pursued through the European Biomass SOE2/P2/E414 Project under the Interreg IV B programme financed by the ERDF. This is a private quality and sustainability certification system for Mediterranean biofuels: wood pellets, olive stones, wood chips and nut shells.

In January 2016, the Biomass Plus project was launched with the aim of promoting a sustainable market for solid Mediterranean biofuels by developing and extending a quality and sustainability certification system. This was to be achieved by examining existing barriers, identifying solutions and emphasising control of system sustainability and quality.

Study of the biomass market in Spain

In 2014, a monitoring study was conducted into the thermal biomass market in Spain. The first results of this study were made available in mid-2015. The initiative stems from the growth that this market has undergone in this country in recent years and which made in-depth monitoring of its composition desirable. The aim was to characterise and classify the various fuel types placed on the market by the stakeholders identified and to estimate the biomass flows in the market and the prices of the various types of biomass. Factors worth highlighting in this study are the incorporation of a methodology with which to obtain quarterly prices for the various biomass types available on the market and comparison of the trend in those prices against other similar national and international indices. The findings of the study are intended to remedy the current lack of information about biomass reference prices, a factor that has been a barrier to development of relationships between sector stakeholders and, therefore, within the thermal biomass market.

In 2015 and 2016, the price of biomass for thermal purposes was characterised by a prolonged fall, which was strongly influenced by the low prices of alternative fossil fuels (heating oil and natural gas) and by unusually mild average temperatures. This prolonged downward trend in prices increased the competitiveness of pellets produced in Spain for the residential sector as compared with pellets of similar quality produced in other EU countries. This study is planned to continue until at least 2020.

7. Information on changes in commodity prices and land use in 2015 and 2016 associated with increased use of biomass and other forms of energy from renewable sources. References, where available, to relevant documentation on these impacts
 In the case of Spain, the limited use of domestic feedstocks means that the impact on land use within a global market such as the market for feedstocks used for biofuel manufacture is negligible. Feedstock prices followed the international market trend.

8. Description of the development and share of biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material
Biofuels under development

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

<i>Feedstocks listed in Annex IX Part A of Directive 2009/28/EC</i>	2015	2016
<i>(a) Algae if cultivated on land in ponds or photobioreactors.</i>		
<i>(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.</i>		
<i>(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,</i>		
<i>Feedstocks listed in Annex IX Part A of Directive 2009/28/EC</i>	2015	2016
<i>(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.</i>		
<i>(e) Straw.</i>		
<i>(f) Animal manure and sewage sludge.</i>		
<i>(g) Palm oil mill effluent and empty palm fruit bunches.</i>		
<i>(h) Tall oil pitch.</i>		
<i>(i) Crude glycerine.</i>		
<i>(j) Bagasse.</i>		
<i>(k) Grape marcs and wine lees.</i>		
<i>(l) Nut shells.</i>		

<i>(m) Husks.</i>		
<i>(n) Cobs cleaned of kernels of corn.</i>		
<i>(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.</i>		
<i>(p) Other non-food cellulosic material as defined in point (s) of the second paragraph of Article 2.</i>		
<i>(q) Other ligno-cellulosic material as defined in point (r) of the second paragraph of Article 2 except saw logs and veneer logs.</i>		
<i>Feedstocks listed in Annex IX Part A of Directive 2009/28/EC.</i>	<i>Year n-1</i>	<i>Year n-2</i>
<i>(a) Used cooking oil.</i>	70	0.5
<i>(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.</i>		

Resource assessment

No assessment is available of the feedstock resources listed in Annex IX of Directive 2009/28/EC as regards the sustainability issues related to the effect of replacing production of food and feed with production of biofuels.

Nevertheless, given the low use of this type of feedstock, particularly in 2016, the potential impact of replacement can be considered negligible.

9. Information on the estimated impacts of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality in 2015 and 2016

Royal Decree 1597/2011 of 4 November 2011 regulating the sustainability criteria applicable to biofuels and bioliquids, the national sustainability verification system and the double counting of certain biofuels does not yet include a definition of the data to be provided by economic operators for this purpose.

Irrespective of this, in the case of Spain the impacts referred to under point nine are negligible due to the limited use of domestic feedstocks for biofuel production.

10. Estimated net greenhouse-gas emission saving due to the use of energy from renewable sources

Table 6 shows the estimated greenhouse-gas emission savings attributable to the use of renewable energy for 2015 and 2016, differentiating between greenhouse gas emissions attributable to the use of renewable electricity, the use of renewable energy in heating and cooling and the use of renewable energy in transport.

Table 6. Estimated GHG emission savings due to the use of renewable energy (t CO₂eq)²⁷

Environmental aspects	2015	2016
<i>Total estimated GHG emissions savings due to the use of renewable energy</i> ²⁷	56 072 160	56 298 517
Estimated net GHG emissions savings due to the use of renewable electricity	40 401 086	40 232 388
Estimated net GHG emissions savings due to the use of renewable energy in heating and cooling	13 602 196	13 791 949
Estimated net GHG emissions savings due to the use of renewable energy in transport	2 068 878	2 274 181

11. Please report on 2015 and 2016 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 the estimated potential for joint projects until 2020

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)^{28, 29}

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Actual/estimated production excess/deficit	2 290	3 083	2 720	3 357	1 990	2 963	2 049	2 793		839

11.1 Provide details of statistical transfers, joint projects and decision-making procedures for joint support schemes

To date, no statistical transfers have been made.

²⁷ The contribution of gas, electricity and hydrogen produced from renewable energy sources should be reported according to end use (electricity, heating and cooling or transport) and should only be counted once in the total estimated net GHG savings.

⁽¹⁾ The data correspond solely to the estimated CO₂ emissions saving. In the electricity sector, this has been calculated based on actual, non-standardised renewable production as compared with emissions from a natural gas combined-cycle plant.

²⁸ Please use actual figures to report on the excess of 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.

²⁹ When filling in the table, please use negative numbers to indicate a production deficit. (e.g. -x ktoe).

12. 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

Information on the share of biofuels produced from waste comes from the Biofuel Statistics published by the Biofuel Certification Entity of the CNMC. As the body responsible for certifying compliance with the biofuel consumption obligation, the ECB obtains data via the SICBIOS IT application.

13. Indicate 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	144.5	119.8
Sugars	43.7	10.7
Oil crops	764.6	1 018.2