CEER

Council of European Energy Regulators

Fostering energy markets, empowering **consumers**.

Status Review of Renewable and Energy Efficiency Support Schemes in Europe in 2012 and 2013

Ref: C14-SDE-44-03
15 January 2015

Council of European Energy Regulators asbl
Cours Saint-Michel 30a, Box F – 1040 Brussels, Belgium
Arrondissement judiciaire de Bruxelles – RPM 0861.035.445

INFORMATION PAGE

Abstract

This document forms the latest update to the regular CEER Status Review of Renewable Energy and Energy Efficiency Support Schemes in Europe and builds on the previous CEER reports C10-SDE-19-04a and C12-SDE-33-03.

The purpose of CEER Status Review publications is to collect comparable data on RES support in Europe in order to provide policy-makers, regulators and industry participants with information on support schemes for electricity from renewable energy sources, by technology and type of instrument (e.g. Feed-in tariffs and Green Certificates). To collect this data, a survey was conducted among CEER members in May 2014, to explore the renewable electricity support schemes currently in place across Europe.

Target Audience

Energy suppliers, traders, gas/electricity customers, gas/electricity industry, consumer representative groups, network operators, Member States, academics and other interested parties.

Keywords

Electricity; Renewables; Energy efficiency & energy savings

If you have any queries relating to this paper please contact:
Ms Natalie McCoy
Tel. +32 2 788 73 30
Email: brussels@ceer.eu

Related Documents

CEER documents

- "CEER Status Review of Renewable and Energy Efficiency Support Schemes in Europe", CEER, 25 June 2013, Ref. C12-SDE-33-03

- "CEER report on Renewable Energy Support in Europe" Ref. C10-SDE-19-04a, 4 May 2011

External documents

- "Subsidies and costs of EU energy. An interim report" Ecofys October 2014

Table of Contents

Table of Tables

Table of Charts

EXECUTIVE SUMMARY

Background

One of the aims of the European Commission's 2020 Climate and Energy Package[1] is to reach a 20% share of renewable energy generation in EU energy consumption by 2020, in a cost-effective and economically efficient manner. Individual EU Member States have targets set in EU legislation[2] and some have set additional national objectives (see Annex 4).

In addition, in October 2014 EU leaders agreed the 2030 policy framework for climate and energy[3] which included a target to increase the share of renewable energy generation in EU energy consumption to 27%.

Schemes for renewable energy sources (RES) are a key mechanism to help achieve the renewables goal, but also attract high levels of interest in relation to the differences between EU Member States and the overall costs to consumers.

Objectives and Contents of the Document

The purpose of CEER Status Reviews is to collect comparable data on RES support in Europe in order to provide policy-makers, regulators and industry participants with information on support schemes for RES electricity, by technology and type of instrument (e.g. Feed-in tariffs (FITs) and Green Certificates (GCs)).

This document forms the latest update to the regular CEER Status Review of Renewable and Energy Efficiency Support Schemes in Europe and builds on the previous CEER reports (C10-SDE-19-04a and C12-SDE-33-03).

CEER members were asked to provide details on the type of support, the amount of supported RES and the related expenditure by technology. 23 countries provided responses that enabled analysis of data on MWh (Megawatt hour) receiving support and the expenditure to promote the schemes. Members were also asked for separate details on new installations receiving support (those installed in either 2012 or 2013), although not all countries were able to provide this data.

In addition to questions about direct financial support given to RES, members were asked about the indirect support, such as the level of priority granted for RES-sourced electricity plants when connecting and using the grid, as well as the charges these plants face when connecting and using the grid. New questions (compared to the last edition) explored whether RES is sold through different channels and the scale of auto-consumption by RES generators.

Members were also asked high-level questions about support for energy efficiency and renewable heating/cooling.

[1] http://ec.europa.eu/clima/policies/package/index_en.htm

[2] Directive 2009/28/EC http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0028&from=EN

[3] http://ec.europa.eu/clima/policies/2030/index_en.htm

The contents of the report are as follows:
Section 1: Introduction
Section 2: Electricity volumes receiving renewables support
Section 3: Expenditure on RES support schemes
Section 4: Market integration of renewables
Section 5: Other forms of support for RES electricity
Section 6: Support schemes for energy efficiency and renewable heating/cooling
Section 7: Conclusions

Summary of the conclusions

The aim of the analysis in this paper was to assess the impact of the expenditure to promote renewable energy through national support schemes at aggregate level for each country, on a comparable basis. Information and analysis provided in this document are based on the responses received from 23 CEER member countries.

Among the respondent countries, most RES support schemes are funded through non-tax levies or possible pass down of RES costs for the supplier to end users.

The proportion of gross electricity produced receiving RES support differs widely from one country to another ranging from 0.1% in Norway to 55.9% in Denmark, with an average across countries of 12.6% in 2012.

There are a wide range of instruments used to promote RES including investment grants, feed-in tariffs, feed-in premium, green certificates and calls for tender[4]. This report shows the unit support levels (cost per MWh of supported electricity) by the main renewable technologies in 2012 and 2013. There are wide differences across technologies and across countries. For 2013, the weighted average support ranged from a minimum of 10.56€/MWh (in Estonia) to 194.51€/MWh (in the Czech Republic) with a weighted average across 21 countries of 110.65€/MWh[5].

In terms of market integration, RES electricity is generally sold through the same channels as conventional electricity and in most countries, RES plants have the same financial responsibility as conventional plants for electricity balancing. In the majority of countries, RES plants are given priority in terms of network access and dispatching.

There are a range of support measures for both energy efficiency and renewable heating/cooling amongst respondents although the majority are funded through general taxation.

This report is considered timely given the European Commission's proposals for 2030, the current interest in ways to promote and finance renewable energy and the on-going debates in some countries on the cost, effectiveness and efficiency of their renewable policy support instruments.

[4] A call for tender is a quantity based policy instrument whereby a tender is announced by the Government for the supply of electricity from renewable energy sources, which is then supplied on a contractual basis at the price resulting from the tender. Tenders are often coupled with other forms of support e.g. feed-in-tariff or feed-in-premium.

[5] Average weighted by each country's supported RES electricity. The arithmetic average for the 21 countries is 81.41€/MWh

1 INTRODUCTION

One of the aims of the European Commission's 2020 Climate and Energy Package[6] is to reach a 20% share of renewable energy generation in EU energy consumption by 2020 in a cost-effective and economically efficient manner. Individual Member States have targets set in EU legislation[7] and some have set additional objectives nationally (see Annex 4).

In addition, in October 2014 EU leaders agreed the 2030 policy framework for climate and energy[8] which included a target to increase the share of renewable energy generation in EU energy consumption to 27%.

Schemes for renewable energy sources (RES) are a key mechanism to help achieve this goal, but also attract high levels of interest in relation to the differences between EU Member States and the overall costs to consumers.

Support for renewables can affect consumers in a number of ways. To the extent that support is either passed on through higher electricity prices or directly added to electricity bills, the costs of achieving the agreed objectives will ultimately be borne by end-users. There may be other implications as well, for example, an increase in domestic RES production may also bring security of supply benefits.

The purpose of support schemes is to encourage large scale take-up and deployment of renewable energy generation, energy efficiency and heating/cooling technologies amongst industrial, commercial and residential consumers. Large scale take-up of RES would help technologies to mature, learning rates to improve and integration of RES within traditional market arrangements to be tested and refined.

Understanding the different approaches to RES subsidies undertaken by EU Member States can help to inform future subsidy designs, ensure the benefits of harmonised approaches are maximised as well as equally distributed across consumer groups and help to provide decision-makers (both at Member State and European Commission ("Commission") level) with the comparative information needed to apply subsidies in a targeted and cost-effective manner.

This document forms the latest update to the regular CEER Status Review of Renewable and Energy Efficiency Support Schemes in Europe and builds on the previous CEER reports (C10-SDE-19-04a and C12-SDE-33-03).

The purpose of CEER Status Reviews is to collect comparable data on RES support in Europe in order to provide policy-makers, regulators and industry participants with information on support schemes for RES electricity, by technology and type of instrument (e.g. Feed-in tariffs (FITs) and Green Certificates (GCs)).

To collect this data, CEER members (national regulatory authorities for energy, NRAs) were asked questions about national RES support schemes in May 2014; the 2012 report was used as the basis for the 2014 edition. Members were asked to provide details on the type of support, the amount of supported RES and the related expenditure by technology.

[6] http://ec.europa.eu/clima/policies/package/index_en.htm

[7] Directive 2009/28/EC http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0028&from=EN

[8] http://ec.europa.eu/clima/policies/2030/index_en.htm

Members were also asked for separate details on new installations receiving support (those installed in either 2012 or 2013), although not all countries were able to provide this data.

In addition to questions about direct financial support given to RES, members were asked about the indirect support, such as the level of priority granted for RES-sourced electricity plants when connecting and using the grid, as well as the charges these plants face when connecting and using the grid. New questions in this edition explored whether RES is sold through different channels and the scale of 'auto-consumption' by RES generators.

Members were also asked high-level questions about support for energy efficiency and renewable heating/cooling.

A total of 23 European countries and members of the wider European Economic Area (EEA) responded (providing complete and partial responses)**.**

This report is considered timely given the Commission's proposals for 2030, the current interest in ways to promote and finance renewable energy and the on-going debates in some countries on the cost, effectiveness and efficiency of their renewable policy support instruments.

2 ELECTRICITY VOLUMES RECEIVING RENEWABLES SUPPORT

2.1 Support by technology

Tables 1 and 2 below show the supported renewable electricity production in 2012 and 2013 respectively, by country and categorised by the type of renewable technology. Results are shown in MWh (Megawatt hour). In these, and subsequent tables, bioenergy is a summary category that includes both biomass and biogas[9]. A full set of definitions used in the survey can be found in Annex 3.

In both 2012 and 2013, Germany had the highest level of renewable electricity receiving support with approximately 114 TWh (Terrawatt hour) in 2012 and 122 TWh in 2013. Norway had the lowest level in 2012 with approximately 0.2 TWh and Croatia had the lowest levels in 2013 with approximately 0.6TWh.

Charts 1 and 2 show these results graphically. Due to the large range of total renewable electricity receiving support, Chart 1 shows the total energy produced from renewables receiving support for those countries where the total is below 25TWh and Chart 2 shows those countries where the total is above 25TWh. The % figures show the percentage change in renewables receiving support between 2012 and 2013.

	Bioenergy	Geo-thermal	Hydro	Ocean	Other	Solar	Wind - onshore	Wind - offshore	Total (MWh)
Austria	2,568,369		1,495,400			134,736	2,386,003		6,584,508
Belgium	4,311,995		365,724			2,132,933	1,895,483	873,540	9,579,675
Croatia	73,629		2,001			2,343	301,020		378,993
Czech Republic	2,243,290		1,033,252			2,088,851	413,094		5,778,486
Denmark	3,274,500				4,206,600		6,627,000	3,073,700	17,181,800
Estonia	875,600		39,000				254,000		1,168,600
Finland	2,082,327						137,251		2,219,578
France[10]	2,113,374		5,573,285		2,967,940	3,784,110	15,011,969		29,450,678
Germany	34,962,327	25,370	4,604,159			25,393,372	48,617,446	721,650	114,324,325
Greece[11]	196,519		670,329			1,694,270	3,850,156		6,411,274
Hungary	915,572		203,145			331	742,509		1,861,557
Ireland	428,032		35,814		16,365		3,657,958		4,138,169
Italy	12,787,645	1,466,887	7,770,657			18,361,818	12,893,571		53,280,578
Lithuania	195,171		96,352			2,316		537,676	831,515
Nether-lands	5,088,135	15,401	75,127			49,004	3,732,663	789,257	9,749,587
Norway			201,844				2,507		204,351
Poland[12]	2,147,099		2,031,690		6,364,306	1,169	4,598,875		15,143,138
Portugal	1,338,680		619,349		1,788,873	221,080	10,014,466	2,925	13,985,372
Romania	157,241		559,909			8,010	2,639,875		3,365,035
Spain	5,137,279		4,634,224			10,140,058	48,332,390		68,243,951

[9] The creation of the category “bioenergy” was necessary to ensure comparability across countries as the categories “biomass” and “biogas” are defined differently. For example, Germany includes biogas under biomass and has a specific category covering “landfill gas”, ”sewage gas” and “mine gas”.

[10] Throughout the report, data for France relate to metropolitan France only.

[11] Figures for Greece in Table/Charts 1, 2 and 3 include RES electricity from non-interconnected islands as well as the mainland. However, because non-interconnected islands do not participate in the electricity market, data from these islands is not included in subsequent tables.

[12] Data for Poland may not be final due to on-going administrative proceedings regarding the issuance of certificates of origin for RES.

	Bioenergy	Geo-thermal	Hydro	Ocean	Other	Solar	Wind - onshore	Wind - offshore	Total (MWh)
Sweden	11,201,126		3,145,650			1,029	7,163,339[13]		21,511,144
UK	11,927,909		2,529,816	3,596		1,293,505	12,014,400	7,463,830	35,233,055
Total	**104,025,818**	**1,507,658**	**35,686,726**	**3,596**	**15,344,085**	**65,308,934**	**185,285,975**	**13,462,578**	**420,625,370**

Table 1: Total renewable electricity produced by technology in MWh that received support (2012)

	Bioenergy	Geo-thermal	Hydro	Ocean	Other	Solar	Wind - onshore	Wind - offshore	Total (MWh)
Austria	2,583,582		2,271,315			263,184	2,970,039		8,088,120
Belgium	4,288,061		374,692			2,607,141	2,058,355	1,539,699	10,867,947
Croatia	110,995		7,928			11,294	466,353		596,570
Czech Republic	3,084,254		1,216,800			2,009,257	472,816		6,783,126
Denmark	3,284,300				3,780,018		6,638,100	3,982,400	17,684,818
Estonia	559,500		22,300			113	409,000		990,913
Finland	2,292,924						508,872		2,801,796
France	2,733,889		5,796,462		2,865,365	4,424,273	15,971,510		31,791,499
Germany	36,997,747	79,863	5,447,413			28,784,199	49,358,602	904,818	121,572,642
Greece	209,670		771,563			3,648,261	4,139,136		8,768,630
Hungary	969,524		204,150			1,358	687,118		1,862,150
Italy	16,451,063	1,685,279	11,424,643			21,370,935	12,750,508		63,682,428
Lithuania	262,671		91,856			44,798		599,994	999,319
Nether-lands	4,010,800	333,977	78,073			61,501	3,939,718	771,086	9,195,155
Norway			882,265				38,686		920,951
Poland[14]	1,343,561		2,433,632		2,536,797	1,419		6,073,903	12,389,311
Portugal	1,392,736		1,327,669		1,861,423	257,907	11,749,961	3,919	16,593,615
Romania	443,975		905,771			409,508	4,520,210		6,279,464
Spain	5,520,262		7,033,387			11,218,918	54,536,963		78,309,530
Sweden	4,910,140		837,310			3,705	9,686,146[15]		15,437,301
UK	14,958,353		2,222,167	3,817		1,906,091	16,298,397	11,558,343	46,947,168
Total	**106,408,006**	**2,099,119**	**43,349,395**	**3,817**	**11,043,603**	**77,023,861**	**197,200,490**	**25,434,163**	**462,562,454**

Table 2: Total renewable electricity produced by technology in MWh that received support (2013)

[13] Figure for Sweden includes both onshore and offshore wind.

[14] Data for Poland may not be final due to on-going administrative proceedings regarding the issuance of certificates of origin for RES.

[15] Figure for Sweden includes both onshore and offshore wind.

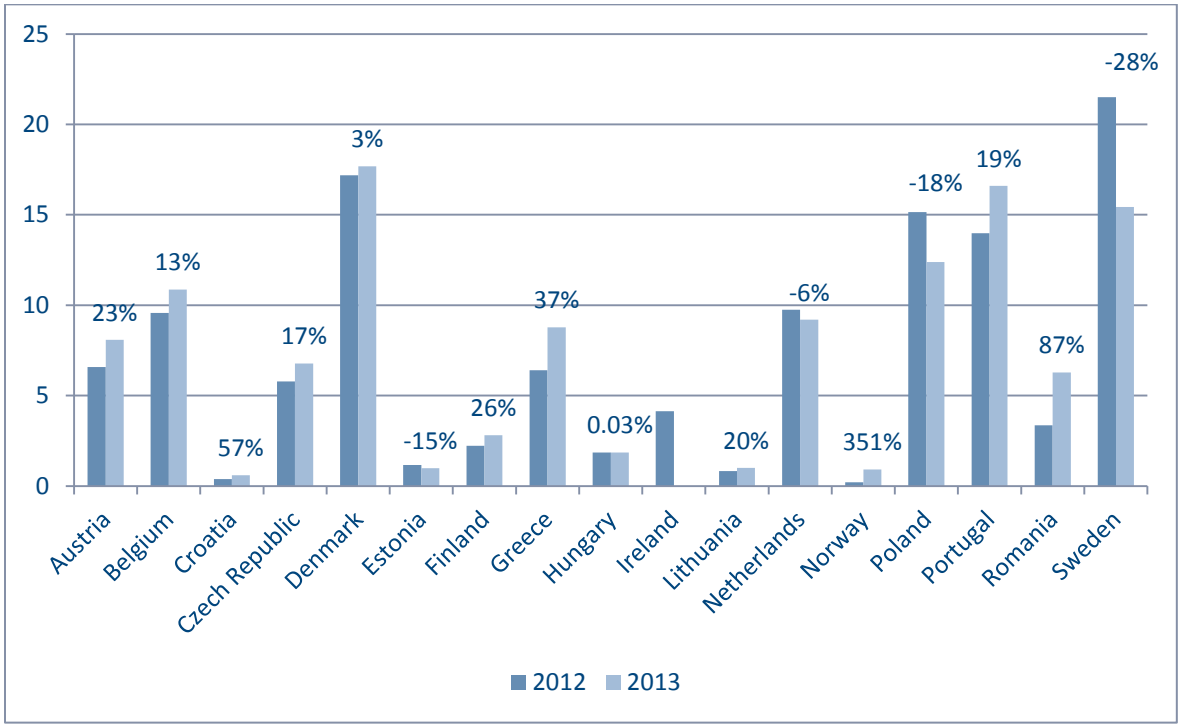

Chart 1: Total energy produced from renewables receiving support where the total receiving support is below 25 TWh (% figures show the percentage change in renewable receiving support between 2012 and 2013)[16]

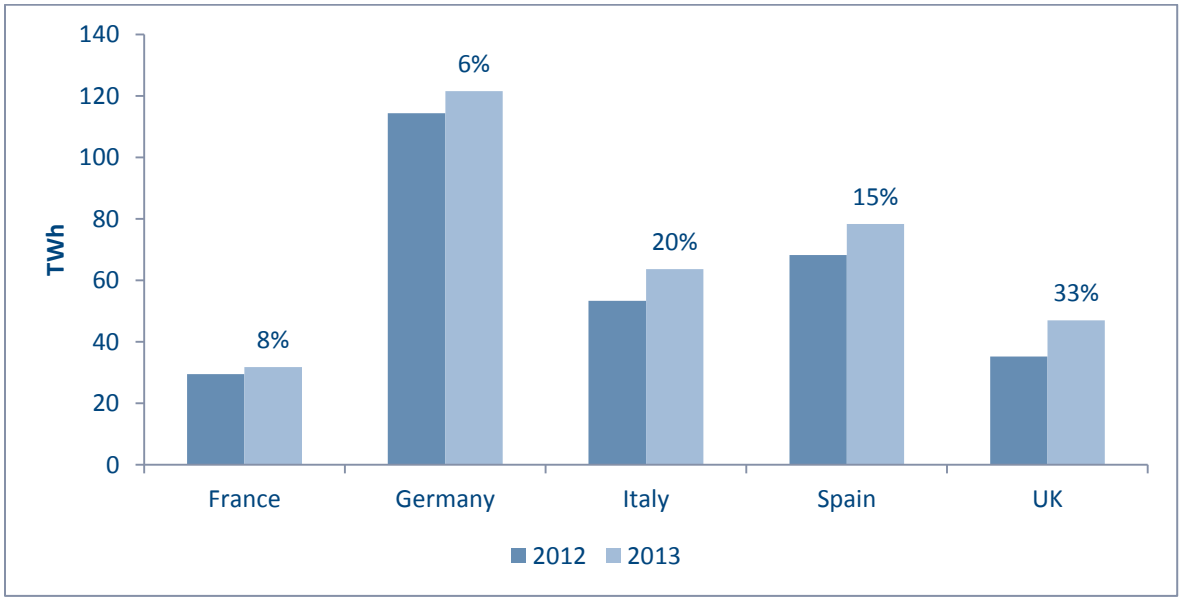

Chart 2: Total energy produced from renewables receiving support where the total receiving support is above 25TWh(% figures show the percentage change in renewables receiving support between 2012 and 2013)

[16] Data for Poland may not be final due to on-going administrative proceedings regarding the issuance of certificates of origin for RES.

2.2 Share of total electricity receiving RES support in 2012

Table 3 shows the proportion of total gross electricity produced[17] that received renewables support in 2012. For the countries analysed, the share of electricity produced receiving RES support accounted for 12.6% of the total overall electricity production. Norway had the smallest proportion at under 1%. Croatia and Finland also provided RES support to less than 5% of total electricity produced. Denmark had the highest share of electricity produced receiving RES support at 55.9%, followed by Portugal and Spain at 30% and 22.9% respectively.

Chart 3 shows these results graphically.

	Electricity receiving RES support (GWh)	Gross electricity produced (GWh)	% of gross electricity produced receiving RES support
Austria	6,585	72,616	9.1%
Belgium	9,580	82,874	11.6%
Croatia	379	10,557	3.6%
Czech Republic	5,778	87,573	6.6%
Denmark	17,182	30,727	55.9%
Estonia	1,169	11,967	9.8%
Finland	2,220	70,399	3.2%
France	29,451	564,275	5.2%
Germany	114,324	629,813	18.2%
Greece	6,411	60,959	10.5%
Hungary	1,862	34,590	5.4%
Ireland	4,138	27,592	15.0%
Italy	53,281	299,277	17.8%
Lithuania	832	5,043	16.5%
Netherlands	9,750	102,505	9.5%
Norway	204	147,845	0.1%
Poland[18]	15,143	162,139	9.3%
Portugal	13,985	46,614	30.0%
Romania	3,365	59,045	5.7%
Spain	68,244	297,559	22.9%
Sweden	21,511	166,562	12.9%
UK	35,233	363,837	9.7%
Total	**420,625**	**3,334,368**	**12.6%**

Table 3: Share of total electricity produced volumes receiving RES support (2012)

[17] Total gross electricity generated using figures from Eurostat http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/data/main_tables

[18] Data for Poland may not be final due to on-going administrative proceedings regarding the issuance of certificates of origin for RES.

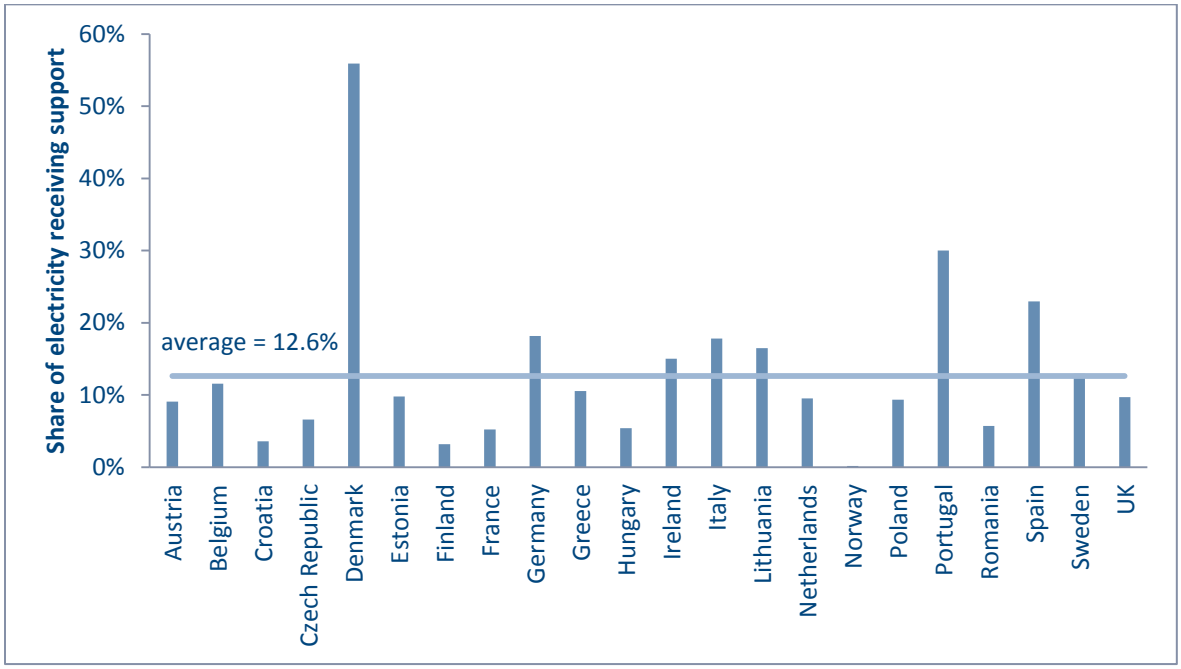

Chart 3: Share of total electricity produced receiving RES support (2012)[19]

[19] Data for Poland may not be final due to on-going administrative proceedings regarding the issuance of certificates of origin for RES.

3 EXPENDITURE ON RES SUPPORT SCHEMES

3.1 Financing of RES electricity support schemes 2012-2013

Table 4 shows that RES electricity support schemes are generally funded either through non-tax levies[20] and/or through 'possible pass down of suppliers' costs to end users'[21], which can lead to additional costs for end-consumers of electricity. Further detail (provided in survey responses) on the funding arrangements is shown in Annex 5. These results are also shown graphically in Chart 4.

In those countries with a non-tax levy, there are a number of different mechanisms for determining the levy: in Austria, Belgium, Croatia and Spain, the Government sets the non-tax levy; in the Czech Republic, France, Greece, Ireland, Italy and Luxembourg, the non-tax levy is set by the NRA; in Denmark[22], Estonia and Germany[23] it is set by the system operator.

	General taxes	Non-tax levies	Possible pass down to end users of supplier costs	Other
Austria		x		
Belgium		x	x	x
Croatia		x		x
Czech Republic	x	x		
Denmark		x		
Estonia		x		
Finland	x			
France		x		
Germany[24]		x	x	
Greece		x		
Hungary			x	
Ireland		x		
Italy		x		
Lithuania			x	
Luxembourg	x	x		
Netherland		x		
Norway			x	
Poland			x	
Portugal			x	
Romania			x	
Spain		x		
Sweden			x	
UK			x	

Table 4: Overview of ways of financing RES electricity support schemes (2012/2013)

[20] A non-tax levy is a surcharge paid by some or all electricity customers via their electricity bills. The levy is generally determined by the relevant Government, regulator or system operator.

[21] This refers to the situation where RES support costs are charged to end users by suppliers.

[22] In Denmark, the PSO tariff is set by the TSO that is owned by the State.

[23] The RES surcharge (EEG-Umlage) is determined yearly by the TSOs under the supervision of the NRA.

[24] The non-tax levy is a surcharge imposed on all energy suppliers, which are however entitled to pass it down to their customers via the electricity price charged for their electricity supply.

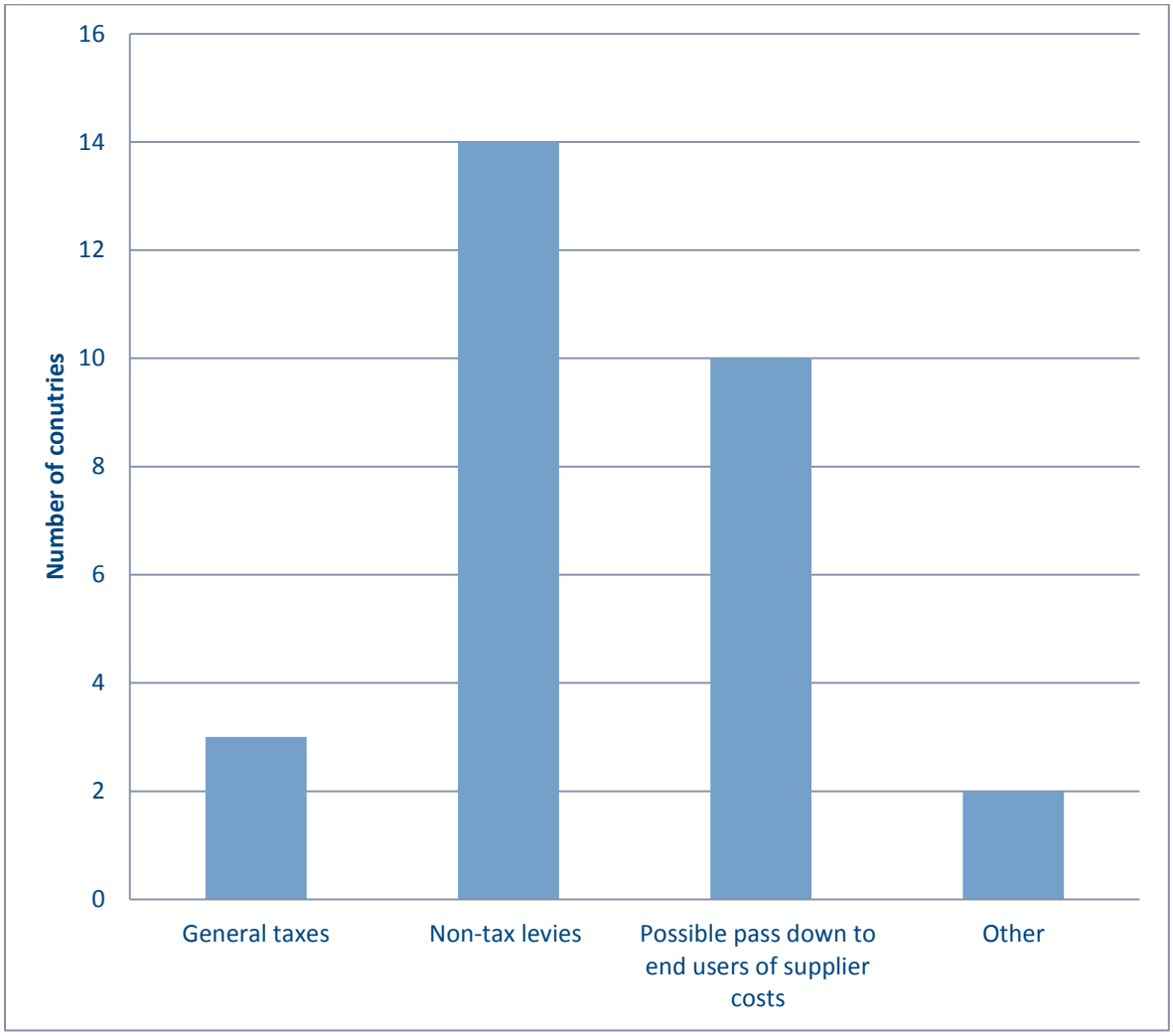

Chart 4: Overview of ways of financing RES electricity support schemes (2012/13)

Whilst in general RES electricity support schemes are financed in these ways, often there are exemptions (partial or full), which increases the costs of electricity for non-exempted consumers. This year's Status Review also asked whether there were any electricity customers or quantities that were exempt from contributing to the financing of RES support. 23 countries responded to this question.

The results are summarised in Chart 5 below. 9 countries had no exemptions; the other 14 countries had one or more exemption(s). These exemptions are described in more detail in Annex 6.

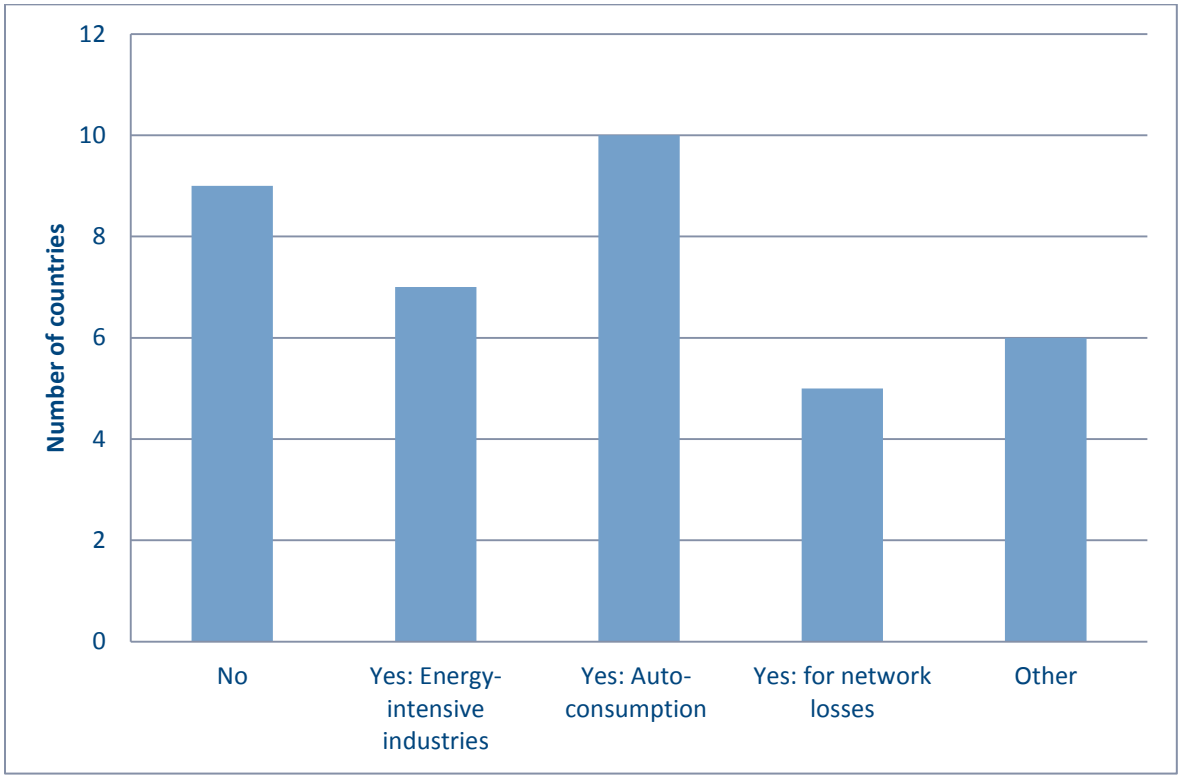

Chart 5: Exemptions from contribution to RES support financing (2012/13)

As can be seen from Chart 5, energy-intensive industries in a number of countries benefit from reduced payments in order to preserve their international competitiveness. Another area where exemptions have been observed is where self-generated electricity from RES or conventional power plants is auto-consumed. In this edition of the Status Review, CEER tried to assess the magnitude of auto-consumed self-generated electricity. For many countries, there is no data available on this; the data that was provided is shown in Annex 7. There is a wide range of estimates for auto-consumed electricity but this may be in part because measurement methods vary in different countries. It is recommended that this is an issue that should be examined in more detail in the future.

3.2 Support instruments for promoting RES deployment

Table 5 summarises the main support schemes which are in place by country and technology. Only the instruments which were detailed by CEER members are included here.

	Bioenergy	Geo-thermal	Hydro	Ocean	Other	Solar	Wind
Austria	Feed-in tariff		Feed-in tariff, investment grant			Feed-in tariff, investment grant	Feed-in tariff
Belgium	Green Certificates		Green Certificates			Green Certificates	Green Certificates, investment grant
Croatia	Feed-in tariff		Feed-in tariff			Feed-in tariff	Feed-in tariff
Czech	Feed-in		Feed-in			Feed-in	Feed-in

	Bioenergy	Geo-thermal	Hydro	Ocean	Other	Solar	Wind
Republic	tariff, Feed-in premium		tariff, Feed-in premium			tariff, Feed-in premium	tariff, Feed-in premium
Denmark	Feed-in tariff, Feed-in premium				Feed-in tariff		Feed-in tariff, Feed-in premium
Estonia	Feed-in tariff		Feed-in tariff			Feed-in tariff	Feed-in tariff
Finland	Feed-in tariff, Feed-in premium, Investment grant	Investment grant	Investment grant		Investment grant	Investment grant	Feed-in tariff
France	Feed-in tariff, Call for tender	Feed-in tariff	Feed-in tariff		Feed-in tariff	Feed-in tariff, Call for tender	Feed-in tariff, Call for tender
Germany	Feed-in tariff, Feed-in premium	Feed-in tariff, Feed-in premium	Feed-in tariff, Feed-in premium			Feed-in tariff, Feed-in premium	Feed-in tariff, Feed-in premium
Greece	Feed-in tariff		Feed-in tariff			Feed-in tariff	Feed-in tariff
Hungary	Feed-in tariff		Feed-in tariff			Feed-in tariff	Feed-in tariff
Ireland	Feed-in tariff		Feed-in tariff		Feed-in tariff		Feed-in tariff
Italy	Feed-in tariff, Feed-in premium, Green Certificates	Feed-in premium, Green Certificates	Feed-in tariff, Feed-in premium, Green Certificates			Feed-in tariff, Feed-in premium (up to July 2013)	Feed-in tariff, Feed-in premium, Green Certificates
Lithuania	Feed-in tariff		Feed-in tariff			Feed-in tariff	Feed-in tariff
Netherlands	Feed-in premium	Feed-in premium	Feed-in premium			Feed-in premium	Feed-in premium
Norway			Green Certificates				Green Certificates
Poland	Green Certificates		Green Certificates			Green Certificates	Green Certificates
Portugal	Feed-in tariff		Feed-in tariff		Feed-in tariff	Feed-in tariff	Feed-in tariff
Romania	Green Certificates		Green Certificates			Green Certificates	Green Certificates
Spain	Feed-in tariff		Feed-in tariff			Feed-in tariff	Feed-in tariff
Sweden	Green Certificates		Green Certificates			Green Certificates	Green Certificates
UK	Feed-in tariff, Green Certificates		Feed-in tariff, Green Certificates	Green Certificates		Feed-in tariff, Green Certificates	Feed-in tariff, Green Certificates

Table 5: Overview of RES electricity support instruments by country and technology (2012/2013)

Members also provided further detail on the schemes in place, focussing on more recent changes. Whilst the data within this report cover 2012 and 2013, some of the information below, which is based solely on the responses to the survey, highlights changes that will also affect RES support in the future.

Austria: On 1 July 2012, there was a change in the financing system of RES electricity support schemes due to a new law that entered into force. The new system is financed through network usage charges, metering point charges, network losses charges, costs for guarantees of origins and revenue from the allocation of green electricity at the day-ahead hourly spot market price. In the previous system, the renewable electricity bought by OeMAG (clearing house for green electricity) at the feed-in tariff (FIT) and allocated to electricity suppliers was financed by two price components; settlement prices and flat-rate metering point charges. There were no further changes after 1 July 2012.

Belgium: Green certificates (GCs) are issued in the three Belgian regions (Flanders, Brussels, Wallonia) and for offshore wind generation. At regional level the support system of green certificates is a market mechanism (with quotas and fines for suppliers) with minimum guaranteed prices for GCs. At the Federal level there are guaranteed minimum prices for GCs for offshore generation. As long as there is no market for these offshore GCs, it remains a kind of feed-in premium (FIP). For federal offshore electricity generation, there also exists financial support for the connection cost (max €25 million per wind farm). The federal support scheme was adapted in 2014.

Czech Republic: Operational support (FIT and FIP) for new installations was discontinued as of 1 January 2014. The way the support scheme is financed is going to change in order to reflect the Commission's concerns with a move from an energy-based to a capacity-based levy.

Denmark: RES support is delivered through a Public Service Obligation (PSO); generally FITs and FIPs.

France: RES support is based mostly on FITs that are differentiated by technology. Calls for tenders have also been used for medium (100-250 kWp) and large (over 250 kWp) scale PV installations, offshore wind farms and biomass installations.

Germany: The first Renewables Energy Act (EEG) dates from 2000 and has been overhauled several times since, in 2004, 2009, 2012, and most recently in August 2014**.** EEG 2014 is based on the following key pillars[25]:

a) **Direct marketing with sliding market premium**: For claiming financial support, electricity produced by new RES installations above 100 kW capacity (500 kW until the end of 2015) has to be sold directly in a market place (e.g. day-ahead/ intraday markets, balancing markets, forward market, OTC – over-the-counter). The support is conceived as a sliding (floating) market premium paid on top of the market price. It is calculated retroactively as the difference between a technology-specific reference value (set in EEG 2014) and the average monthly day-ahead technology-specific electricity market price. The concept of “direct marketing” ensures the market integration of RES electricity and a balanced risk sharing between RES and conventional producers.

b) **Appropriate rules for smaller RES producers (under 100 kW):** Financial support conceived as a fixed technology specific FIT.

c) **RES deployment corridors determined** for electricity produced based on biomass, wind and solar energy sources.

[25] For more information see: http://www.bmwi.de/DE/Themen/Energie/erneuerbare-energien.html

d) **Automatic adjustments of support levels (FITs, FIPs) for new RES installations** according to predetermined periodical degression factors and in accordance to the observed deployment path (breathing cap: support levels can be further reduced, reduced less or even increased depending on the extent to which the limits of the corridors are undercut or exceeded).

e) **RES support is financed through a RES surcharge** paid in principle by all domestic consumers and determined each year by the TSOs under the supervision of the NRA.

f) **Network aspects**: RES installations are granted priority connection to the network and RES electricity receives priority dispatch (physical collection and distribution). Grid operators are obliged to immediately optimise, strengthen and expand their networks when this is requested by RES producers seeking to feed in electricity into their grid. Curtailment of RES electricity only possible as a last option to ensure grid stability. RES operators affected by the measure are entitled to compensation payments. There are specific mandatory technical requirements (remote control devices) for installations above 100 kW.

Greece: The main support scheme is FITs for different renewable technologies. Moreover, RES investments, apart from photovoltaics (PV) and, onshore wind (since January 2014), are eligible for capital grants in the same manner as other non-energy related investments. Due to increased cost of RES payments, several reductions of PV tariffs were applied in 2012 and 2013. In addition, special taxes have also been applied: up to 34% for PVs and 10% for other renewable technologies. Most recently (April 2014) a new law was introduced (L4254/2014) that imposed the following changes:

a) Introduced FIT reductions for all RES for new and operating projects (~25% w.a.)
b) Enforced a discount from RES producers' 2013 remuneration (10-37.5%)
c) Set capacity caps for FIT eligible installations of PV, CSP, biomass and biogas
d) Removed annual inflation adjustment of FITs

Hungary: The role of investment grants is quite significant. They are linked to EU funds.

Operational support for renewable and waste based electricity production is granted in the framework of the FIT system ("KÁT"), which guarantees FITs higher than the actual market price.

FITs are set by a Government Decree. They are different for renewable electricity and waste-to-energy electricity, furthermore tariffs are differentiated by size (nominal capacity), time of licensing (before or after 1 January 2008), time zone (peak, valley and deep-valley period), as well as by technology (solar and wind energy get slightly different tariffs). The FIT is adjusted with the rate of Hungarian Consumer Price Index of the previous year for those renewable generators who were licensed before the 1 January 2008. For waste-to-energy producers and those renewable producers who were licensed after 1 January 2008, the price is indexed yearly with the consumer price index of the previous year reduced with one percentage point.

According to the Electricity Act (Act LXXXVI of 2007 on Electricity), the Hungarian Energy and Public Utility Regulatory Authority (MEHK) determines the feed-in quantity and feed-in period for each eligible electricity producer. The producers can sell in the KÁT system until the feed-in period expires or until the feed-in quantity is used up. The determination of the KÁT period and quantity is to ensure that the producer does not get more support than needed for their investment to be returned. In the case of biomass and biogas plants, the benchmark feed-in period is 15 years; for landfill gas plants it is 5 years. If there is any other kind of support then these periods are shortened proportionally. For other technologies the feed-in period and quantity is determined individually for each project.

According to the Electricity Act, the power plants which produce electricity eligible for KÁT support form a separate balance group, whose responsible party is the transmission system operator (TSO), MAVIR Ltd. This so-called KÁT balance group is the basis of the operation of the KÁT system and has been in place since January 2008.

The tasks of MAVIR are to operate the KÁT balance group, to balance the deviations from the schedule, to buy the electricity eligible for KÁT support and to distribute it to KÁT recipients. Electricity producers eligible for KÁT support have to join the KÁT balance group and contract with the responsible party (MAVIR). The MAVIR is the recipient of the electricity sold in the KÁT system and pays the feed-in tariffs to the generators. The generators in the KÁT system (except those below 0.5 MW) have to pay for their imbalances, but generally it is much less than the real cost.

From 1 January 2014, the KÁT system changed in respect of the obligated parties who have to take over the electricity sold into the KÁT system. The part of the received KÁT electricity which is more or less constant in time (so-called base load) is distributed among the obliged balance group operators in proportion to the consumption in their balance group which is not entitled to universal service. The remaining quantity of KÁT electricity (i.e. above base load) is, however sold on the organised power market (HUPX) by MAVIR. The cost of KÁT electricity above the HUPX price (i.e. the support element) and other additional costs of the KÁT balance group are also allocated to the obliged balance group operators. They can pass it through to their consumers via bilateral contracts, according to voluntary agreements between the parties.

Ireland: Ireland first began offering support for RES generation in 1996 through the Alternative Energy Requirement (AER) scheme. This scheme offered generators to opportunity to avail themselves of a power purchase agreement with the state electricity supplier (ESB) through a bidding process. There were 6 AER schemes to support the overall of target of 500 MW by 2005.

Currently, the main support scheme for RES-E is REFIT (Renewable Energy Feed-In Tariff.) REFIT I (launched 2006) and REFIT II (launched 2012) cover onshore wind (large and small scale), small scale hydro, biomass landfill gas and other biomass. REFIT III (launched 2012) covers anaerobic digestion, biomass combustion and high-efficiency combined heat and power (CHP).

The REFIT is a fixed price that the RES generator receives as a top up to the market price when the market price is lower than the reference price. When the market price rises about the reference price, the generator receives the market price only.

Italy: For RES power plants (other than PV) activated by 1 January 2013 and for PV power plants activated by 27 August 2012, the national subsidies relative to electricity are as follows:

- PV power plants up to 1 MW: FIT for electricity injected in the grid and FIP for electricity consumed on-site;

- PV power plants greater than 1 MW: FIP for electricity injected in the grid and for electricity consumed on-site;

- thermodynamic solar power plants: FIP for electricity produced (not applied);

- other RES power plants up to 1 MW: FIT for electricity injected in the grid; and

- other RES power plants greater than 1 MW: FIP for electricity injected in the grid.

From 6 July 2013, new PV power plants are no longer eligible for incentives. Since 2013, new power plants are no longer eligible for GCs (with some exceptions defined by law, up to 30 April 2013)[26].

Lithuania: Since 1 February 2013, maximum FITs for electricity from RES plant with installed capacity over 10 kW and FITs for RES producers with installed capacity up to 10 kW are set every quarter. RES producers with installed capacity up to 10 kW may get a different FIT every quarter. The producer gets the tariff which is valid for the day when the electricity is supplied to the grid. These producers receive FITs only for 50% of the electricity produced to the grid through the calendar year, meaning that producers must use electricity for their own needs. Guaranteed tariffs for electricity generated by RES plants with installed capacity over 10 kW are awarded by auctions. The FITs are guaranteed for 12 years after RES producers receive permission to produce electricity to the grid.

Until 1 February 2013, tariffs were set on an annual basis. RES producers with installed capacity up to 30 kW received a tariff which was in force on the day that they acquired a capacity development permit.

Luxembourg: Support is governed by the following laws: Production support (feed-in) Règlement grand-ducal of 8 February 2008, amended by Règlement grand-ducal of 15 November 2012 (lower PV feed-in)[27].

Netherlands: SDE+ is a subsidy scheme for RES generation. This scheme is financed through a levy on the energy bill for end consumers. This levy decreases when the volume of electricity consumed is increased (digressive). This is within the current rules of the energy tax, the Energy Tax Directive and the boundaries of EU State Aid regulation.
We do not foresee any future changes in the financing of the SDE+.

[26] Further information can be found at the following websites:
http://www.gse.it/en/feedintariff/Pages/default.aspx (on Conto Energia)
http://www.gse.it/en/ridssp/Pages/default.aspx (on Ritiro and Scambio sul Posto)
http://www.gse.it/en/qualificationandcertificates/Pages/default.aspx (on Green Certificates)
http://www.gse.it/en/White%20Certificates/Pages/default.aspx (on White Certificates)

[27] Details of investment support is provided at:
http://www.environnement.public.lu/energies_renouvelables/legislation/index.html

Norway: From 1 January 2012, Sweden and Norway have had a common electricity certificate market. Over the period until 2020, the two countries aim to increase their production of electricity from renewable energy sources by 26.4 TWh. The joint market will permit trading in both Swedish and Norwegian certificates, and receive certificates for renewable electricity production in either country.

Norway and Sweden both finance and benefit equally from the increase in new production in terms of the achievement of the countries' goals under the EU Renewables Directive.

Poland: The support of RES electricity in Poland is currently based on GCs issued by the President of the Energy Regulatory Office (URE). Their cost is passed down to end users via electricity bills. In the future, an auction system is planned.

Portugal: In 2013, Decree Law no 35/2013 introduced some flexibility mechanisms for the applicable remuneratory regime of some wind power facilities.

Also in 2013, Decree Law no 25/2013 introduced a different remuneratory regime for micro and mini-generation units under the designated general regime.

Romania: Since 2005, Romania has adopted a support system with mandatory quotas combined with transactions of GCs. The number of GCs received for each 1 MWh delivered is different depending on the type of renewable sources. In the last year, the number of GCs by type of renewable sources was reduced.

Spain: In January 2012, Royal Decree- Law 1/2012 suspended support schemes for future RES plants, but not for existing ones. Recent changes in the system were approved in June 2014. RES support has been recalculated for existing installations based on the concept of reasonable profitability and splitting the revenue in two components: remuneration for investment (depending on installed capacity) and remuneration for operation (depending on energy produced).

Sweden: The electricity certificate is a market-based support system for renewable electricity production. The system came in to force on the 1 May 2003 and is intended to increase the production of renewable electricity and also make the production more cost-efficient. The objective of the Swedish electricity certificate system is to increase the production of renewable electricity with 25 TWh by year 2020, compared to year 2002.

From 1 January 2012, Sweden and Norway have a common electricity certificate market. Over the period until 2020, the two countries aim to increase their production of electricity from renewable energy sources by 26.4 TWh. The joint market will permit trading in both Swedish and Norwegian certificates, and receive certificates for renewable electricity production in either country.

UK: The two main sources of RES support are the Renewables Obligation (RO) and FITs. Under the RO licensed UK electricity suppliers are required to source a specified proportion of the electricity they provide to customers from eligible renewable sources. The RO certificates (ROCs) are issued to generators per MWh, who then sell them to suppliers. Suppliers who do not present enough ROCs to meet their obligation must pay a penalty (buy-out price). This money is re-distributed to suppliers who presented ROCs. The RO will close to new generators on 31 March 2017.

Smaller generation (<5 MW) can receive a FIT. This is set for 20 years and is linked to inflation. The FIT scheme is available through licensed electricity suppliers and requires some of them to make tariff payments on both generation and export of renewable and low carbon electricity. In 2012, a degression mechanism was introduced so that tariffs change over time depending on deployment levels

The UK is currently undergoing a process of Electricity Market Reform. Part of this is the introduction of contracts for difference which will replace the RO. Large-scale renewable electricity sources will sell into the market as usual, but will receive a variable top up from the market price to a pre-agreed strike price. If the market price is higher than the strike price, the generator is required to pay back the difference[28].

3.3 Total expenditure on RES support schemes

In order to try to compare the burden of RES support across countries, Table 6 and Chart 6 highlight the support for RES schemes per unit of total gross electricity produced (i.e. both conventional and renewable electricity). The overall expenditure on RES electricity support was divided by the gross electricity produced to get an estimate of RES electricity support per unit of gross electricity produced in €/MWh and therefore show the scale of renewables support compared to the overall size of the electricity market. Table 6 does *not* show support levels for renewables; these are shown in Section 3.4.

In the case of FITs, the level of support was estimated by subtracting the average wholesale electricity price from the overall tariff and therefore is not the same as the full FIT granted to producers.

Generally, those countries with higher penetration of renewables (as shown in Table 3) have higher RES electricity support per unit of gross electricity produced. RES electricity support expenditure per unit of gross electricity produced ranged from 0.03 to 32.03 €/MWh, with a weighted average support of 13.7 €/MWh produced (2012)[29].

	RES electricity support expenditure (€ million)[30]	Gross electricity produced (GWh)	RES electricity support per unit of gross electricity produced (€/MWh)
Austria	361	72,616	4.97
Belgium	1,490	82,874	17.97
Croatia	22	10,557	2.13
Czech Republic	1,268	87,573	14.48
Denmark	568	30,727	18.48
Estonia	17	11,967	1.42
Finland	47	70,399	0.67
France	2,488	564,275	4.41
Germany	16,288	629,813	25.86
Greece	1,165	60,959	19.11
Hungary	99	34,590	2.86

[28] For more information on the Renewables Obligation and FIT schemes see www.ofgem.gov.uk. For further information about the Electricity Market Reform see https://www.gov.uk/government/policies/maintaining-uk-energy-security--2/supporting-pages/electricity-market-reform

[29] Average weighted by each country's gross electricity produced. The arithmetic average for the 22 countries is 10.02 €/MWh. Figures on gross electricity produced are from Eurostat; figures for 2013 are unavailable.

[30] For Austria, the total figure includes investment grant support.

	RES electricity support expenditure (€ million)[30]	Gross electricity produced (GWh)	RES electricity support per unit of gross electricity produced (€/MWh)
Ireland	56	27,592	2.03
Italy	9,585	299,277	32.03
Lithuania	49	5,043	9.78
Netherlands	686	102,505	6.70
Norway	4	147,845	0.03
Poland	1,038	162,139	6.40
Portugal	781	46,614	16.76
Romania	190	59,045	3.21
Spain	6,165	297,559	20.72
Sweden	495	166,562	2.97
UK	2,743	363,837	7.54
Total	**45,605**	**3,334,368**	**13.68**

Table 6: RES-electricity support per unit of gross electricity produced (€MWh 2012)

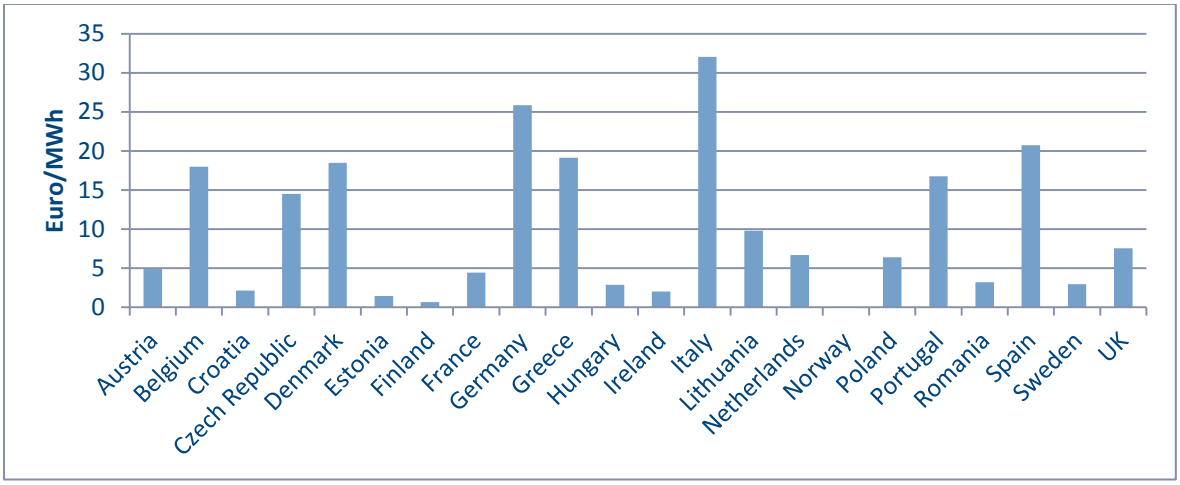

Chart 6: RES-electricity support per unit of gross electricity produced (2012)

3.4 Unit support levels for 2012 and 2013

Tables 7 - 8 present overall unit support levels (cost per MWh of supported electricity) and unit support levels by the main technologies.

For FITs, the level of subsidy was estimated by subtracting the average wholesale electricity price from the overall tariff[31] and therefore is not the same as the full FIT granted to producers.

[31] The French figures use a technology-specific wholesale price rather than an average wholesale price across all technologies. In the UK, feed-in-tariffs are paid for both generation and export to the grid. In general 50% of generated electricity is assumed to be exported, therefore 50% of the wholesale price has been subtracted from the tariff, reflecting the benefit to the supplier of the exported electricity. In addition, the FITs incentive has been estimated using the average €/MWh support cost, not differentiated by technology. See Annex 9 for more details.

In the case of investment grants for Austria, the effect of the grant was calculated over the volume of electricity that would be generated by the installation over the lifetime of the grant. For other countries that use investment grants to support renewables (e.g. Hungary, Belgium, Finland[32]) it was not possible to spread the costs across the relevant MWh in this way and therefore the effect of investment grants in these countries is not shown within Tables 7 - 8.

Where different support schemes are in place for the same technology in the same country and separate cost data was available, a weighted average incentive was calculated using the energy supported for each instrument as the weighting. A breakdown by both technology and scheme type can be found in Annex 9.

It should be noted that there are also administration costs associated with RES support schemes but these costs are not reflected in the data provided in this report. Thus total expenditures for RES support schemes are in general somewhat higher.

As can be seen in these tables, support levels vary widely across countries and across different technologies.

	Bioenergy	Geo-thermal	Hydro	Other	Solar	Wind - onshore	Wind - offshore	Total
Austria	96.56		3.50		251.87	30.85		54.79
Belgium	96.66		38.14		375.89	86.29	107.00	155.49
Croatia	109.62		35.73		379.99	44.53		59.20
Czech Republic	98.66		52.45		462.13	66.31		219.47
Denmark	26.29			47.96		24.98	37.21	33.04
Estonia	14.50		14.50		14.50	14.50		14.50
Finland	18.00					68.65		21.13
France	61.00		15.45	4.64	451.69	36.63		84.47
Germany	138.06	175.65	50.26		319.69	62.04	127.20	142.48
Greece[33]	20.77		5.67		361.13	7.03		103.95
Hungary	57.25		16.05		54.28	58.43		53.22
Ireland	26.40		28.91	103.65		11.44		13.50
Italy	126.05	76.72	87.64		335.55	78.98		179.90
Lithuania	88.90		29.45		367.82		52.62	59.33
Netherlands	67.47	7.95	96.43		245.40	65.68	99.45	70.39
Norway[34]			20.20			20.20		20.20
Poland	68.52		68.52	68.52	68.52	68.52		68.52
Portugal	60.54		47.97	53.77	300.37	50.67	123.74	55.85
Romania	56.06		56.06		56.06	56.06		56.06
Spain	75.01		40.31		349.08	42.48		90.34
Sweden	23.00		23.00		23.00	23.00		23.00
UK	65.67		64.70	110.59	291.72	59.31	94.57	77.86
Minimum support	**14.50**	**7.95**	**3.50**	**4.64**	**14.50**	**7.03**	**37.21**	**13.50**
Maximum support	**138.06**	**175.65**	**96.43**	**110.59**	**462.13**	**86.29**	**127.20**	**219.47**

[32] In Belgium, each offshore wind farm received a €5 million investment grant each year for the first 5 years. In Finland, investment grants totalled €25.86 million in 2012 and €21.73 million in 2013.

[33] Table 7 and Table 8 do not include data for the non-interconnected islands as these do not participate in the market, thus comparison with the System Marginal Price is not suitable. The actual production cost on the non-interconnected islands is substantially higher, since oil power plants are mainly used.

[34] From 1 January 2012, Norway and Sweden have had a joint RES electricity certificate market. Differences in the support levels between Norway and Sweden are due to exchange rate conversion issues.

	Bioenergy	Geo-thermal	Hydro	Other	Solar	Wind - onshore	Wind - offshore	Total
Weighted average across 22 countries								**107.24**[35]

Table 7: Weighted average support level by technology (€/MWh) 2012

	Bioenergy	Geo-thermal	Hydro	Other	Solar	Wind - onshore	Wind - offshore	Total
Austria	103.40		6.27		205.46	43.14		57.32
Belgium	94.38		24.11		369.07	84.19	104.89	157.41
Croatia	117.39		58.66		269.88	50.29		67.04
Czech Republic	101.90		57.04		448.04	74.95		194.51
Denmark	26.43			45.04		24.16	57.39	36.53
Estonia	10.56		10.56		10.56	10.56		10.56
Finland	13.19						64.14	22.44
France	72.62		22.22	8.42	433.94	40.18		91.63
Germany	147.25	201.31	56.29		291.54	65.63	135.50	144.15
Greece	36.63		19.52		341.35	20.81		161.52
Hungary	69.24		32.31		65.85	71.17		65.90
Italy	138.72	74.17	90.70		306.88	79.74		176.66
Lithuania	69.60		25.97		191.90		44.80	56.18
Netherlands	70.81	17.54	96.12		220.53	60.34	99.32	68.00
Norway			23.70			23.70		23.70
Poland	70.84		70.84	70.84	70.84		70.84	70.84
Portugal	65.48		54.89	58.69	293.69	53.49	131.40	58.94
Romania	57.71		57.71		57.71	57.71		57.71
Spain	73.34		43.07		327.75	43.98		86.62
Sweden	23.51		23.51		23.51			23.51
UK	65.09		67.03	113.30	256.94	59.22	95.71	78.48
Minimum support	**10.56**	**17.54**	**6.27**	**8.42**	**10.56**	**10.56**	**44.80**	**10.56**
Maximum support	**147.25**	**201.31**	**96.12**	**113.30**	**448.04**	**84.27**	**135.50**	**194.51**
Weighted average across 21 countries								**110.65**[36]

Table 8: Weighted average support level by technology (€/MWh) 2013

3.5 Support for new installations

In this year's edition of the Status Review, members were asked to provide data on support costs for new installations i.e. those that had been installed in either 2012 or 2013. Only 13 countries were able to provide this data and the methodologies used by different countries varied. Support costs (€/MWh) for new installations are shown in Annex 8. It is recommended that support costs for new installations is explored in more detail in the future to understand the future direction of RES subsidy costs.

[35] Average weighted by each country's supported RES electricity. The arithmetic average for the 22 countries is 75.31€/MWh

[36] Average weighted by each country's supported RES electricity. The arithmetic average for the 21 countries is 81.41€/MWh

4 MARKET INTEGRATION OF RENEWABLES

4.1 RES electricity channels to market

One of the new aspects considered in this year's exercise explored whether RES electricity is sold through different channels compared to other electricity. 15 of the countries responding to this question confirmed that RES electricity is sold through the same channels as non-RES electricity. For the other countries, a variety of different market arrangements were in place:

Austria: Suppliers have to take electricity from supported RES in proportion to their market share.

Czech Republic: There is mandatory purchase of FIP (Green Bonus) by the distribution system operator (DSO). Under the Green Bonus scheme, a premium for electricity produced from RES is paid by the Czech electricity and gas market operator (OTE), for all of its purposefully consumed electricity, including that consumed at the place of production, and the measured gauge is set with the exception of their own technological consumption of electricity. In support in the form of green bonuses, the producer has to find the customer electricity itself as it can negotiate the price.

Greece: The TSO and DSO are obliged to absorb RES electricity with priority.

Hungary: Under the feed-in system, the TSO buys all eligible electricity. Then the TSO redistributes the base load to obliged balance group operators (in proportion to the consumption not eligible for universal service in their group) and sells the rest on the organized market (HUPX).

Italy: RES electricity is sold both through the stock exchange and OTC, as non-RES electricity, as well as through two administrative schemes:

- for RES and non-RES power plants up to 10 MVA and for unpredictable RES > 10 MVA, the Gestore dei Servizi Energetici S.p.A. (GSE) may sell, in agreement with the producer, the electricity injected into the grid directly in the Italian electricity market. This mechanism is called "Ritiro dedicato";

- for RES and CHP power plants up to 200 kW (up to 500 kW from 2015) that are installed at a plant level, the Gestore dei Servizi Energetici S.p.A. (GSE – electricity services manager) may balance the economic value of the electricity delivered with the value of electricity injected into the grid. This mechanism is called "Scambio sul posto".

Portugal: In 2011, as an example of regulatory actions to promote competition, the NRA (ERSE) approved the existence of a mechanism for the fixed-term placement of energy produced under the so-called special regime aimed at providing traders with access to the forms of provisioning and/or the covering of the price risk appropriate to the contracting needs of their end customers. In 2013, a total volume of 5,694 TWh from this special regime (25% of the total produced) was auctioned (equivalent to 650 MW in base load) at a price of 51.04 €/MWh. The average day-ahead wholesale spot price verified in Portugal was 43.65 €/MWh. The profit obtained in order to reduce the renewables costs for end consumers was 7.39 €/MWh (savings of €42 million).

4.2 Financial responsibility for RES-sourced electricity plants imbalances

Integration of renewables into the energy market may also be affected by financial arrangements relating to the balancing of electricity supply and demand. Table 9 and Chart 7 show that in the majority of European countries (that took part in the Status Review), RES plants are responsible in exactly the same manner as any other conventional plant.

In those countries where only some RES plants are responsible for electricity plant imbalances, there are a variety of arrangements in place:

Belgium: For offshore wind generation, a more flexible mechanism has been set up.

Croatia: Only large hydro power plants (installed capacity > 10 MW) are responsible for imbalances.

Germany: Only RES plants under the direct marketing scheme bear balancing responsibility but they account for more than 50% of the RES electricity produced (see Section 3.2 for further details).

UK: Plants above 30 kW are responsible. Plants under 30kW and domestic premises are not.

For those countries who noted other arrangements were in place, further details were provided as follows:

Hungary: All RES generators selling in the feed-in system have to schedule their generation for every 15 minutes as any other power plant. Generators with at least 0.5 MW capacity have to pay for the imbalances; however, this fee is significantly smaller than in the case of other generators. Ultimately, the TSO is responsible for balancing the FIT plants but its schedule is based on the plan of generators (who are incentivised to reduce imbalances).

Italy: The NRA (AEEGSI), which is responsible for defining the rules for attributing costs related to imbalances to all power plants (RES and non-RES) is currently revising the procedures for allocating the costs of imbalances which will also be paid by RES power plants.

	All RES plants are treated the same as conventional plants	Only some RES plants are treated the same as conventional plants	Another institution (e.g. the TSO) has balancing responsibility but with no incentive to minimise costs	Another institution has balancing responsibility and is incentivised to minimise costs	Other
Austria			x		
Belgium		x			
Croatia		x			
Czech Republic	x				
Denmark			x		
Estonia	x				
Finland	x				
France				x	
Germany		x		x	
Greece			x		

	All RES plants are treated the same as conventional plants	Only some RES plants are treated the same as conventional plants	Another institution (e.g. the TSO) has balancing responsibility but with no incentive to minimise costs	Another institution has balancing responsibility and is incentivised to minimise costs	Other
Hungary					x
Ireland				x	
Italy					x
Lithuania			x		
Luxembourg	x				
Netherlands	x				
Norway	x				
Poland			x		
Portugal			x		
Romania	x				
Spain	x				
Sweden	x				
UK	>30kw	<30kw and domestic premises			

Table 9: Financial responsibility for RES-sources electricity plant imbalances

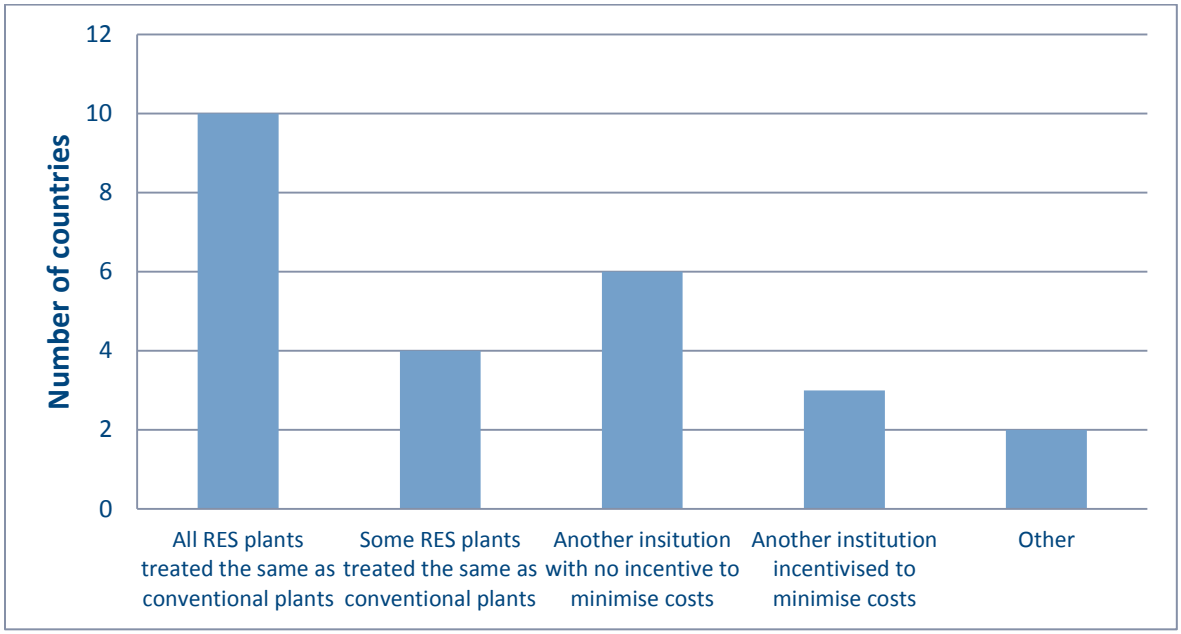

Chart 7: Financial responsibility for RES-sourced electricity plant imbalances

4.3 Level of priority granted for RES electricity when connecting and using the grid

Arrangements concerning connection, access and dispatching can also affect access to the market by renewable sources. Table 10 and Chart 8 show that in the majority of European countries (that took part in the Status Review), connection is non-discriminatory and RES electricity plants are granted priority or guaranteed access and priority dispatching.

	Connection			Access			Dispatching	
	Priority	Non-discriminatory	Other	Priority	Guaranteed	Other	Priority	Non-priority
Austria		x				x	x	
Belgium	x			x			x	
Croatia		x		x			x	
Czech Republic		x		x			x	
Denmark	x			x			x	
Estonia		x			x		x	
Finland		x			x			x
France		x		x			x	
Germany	x			x			x	
Greece		x			x		x	
Hungary	x			x			x	
Ireland		x			x		x	
Italy	x			x			x	
Lithuania	x			x			x	
Luxembourg	x				x		x	
Netherlands		x			x			x
Norway		x			x			x
Poland	x			x			x	
Portugal		x			x		x	
Romania		x			x		x	
Spain	x			x			x	
Sweden		x			x			x
UK		x			x		x	

Table 10: Overview of level of priority granted for RES electricity plants when connecting to and using the grid

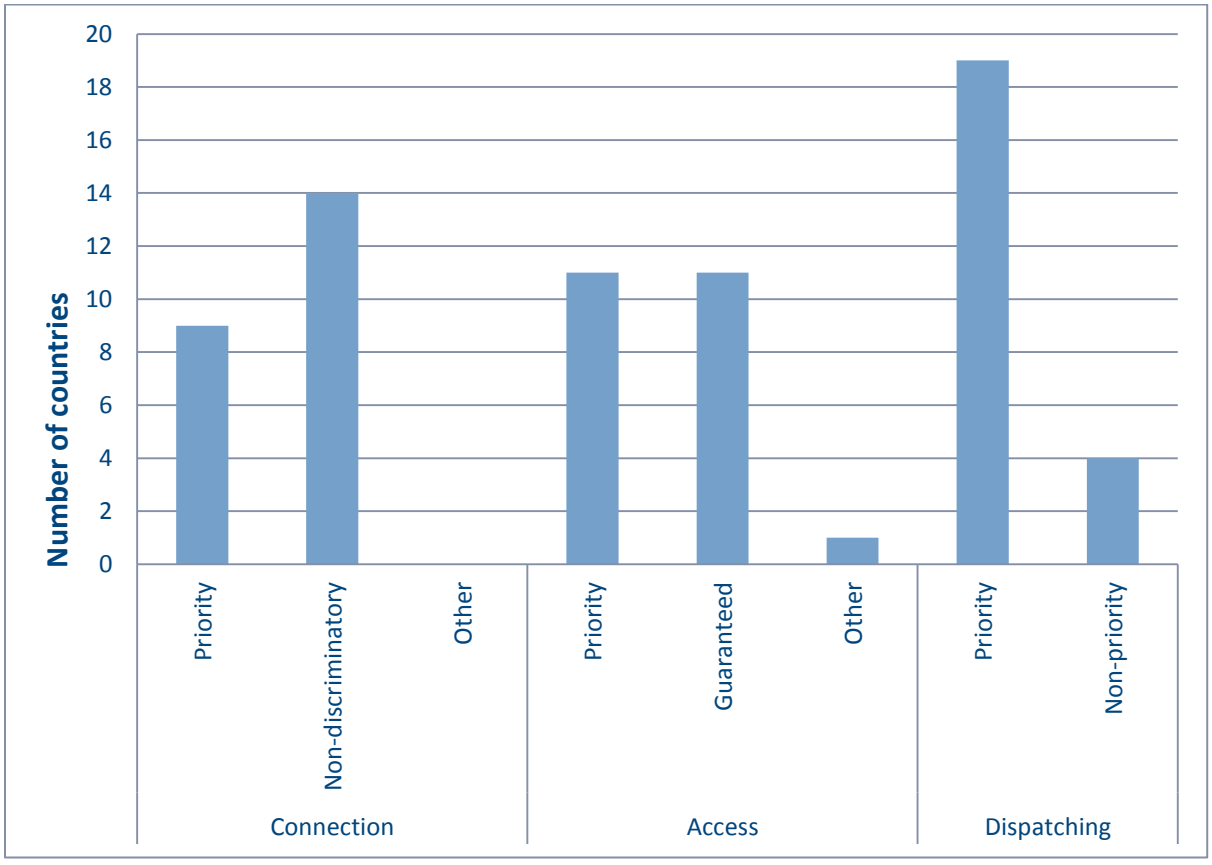

Chart 8: Overview of level of priority granted for RES electricity plants when connecting and using the grid

4.4 Charges for RES electricity when connecting and using the grid

Table 11 and Chart 9 give an overview of the connection regime that applies when RES generators connect to the transmission or distribution networks. It shows that deep (where the generator pays) and semi-deep (where generators and system operators share the costs) are the most common types of connection regimes. Semi-shallow was only used in Hungary, Italy and Poland.

For those countries who noted other arrangements were in place, further details were provided as follows:

Belgium: For offshore wind farms, financial support in the form of an investment grant is given (€25 million over a 5-year period).

Lithuania: RES generators who receive support have to pay the expenses of connection to the grid by following proportion: 1) 40% of the connection costs (for plants with a capacity above 350 kW) and 2) 20% of the connection costs (for plants with a capacity of up to 350 kW). RES generators who do not receive support have to pay 100% of the connection costs.

UK: For transmission connections, the costs of assets required to provide connection that are not shareable are recovered in full from the generator. The majority of assets are potentially shareable and the costs of these are recovered via access charges, so most generators do not pay a connection charge. The access charge contains a locational signal reflecting the incremental cost of transmission incurred by the generator. For assets local to a generator (typically a radial circuit and substation) this locational signal is particularly sharp and therefore has some similarities with connection charges whilst still being based on generic information. For the distribution connection regime, the connecting customer is only charged for works up to one voltage level above the voltage they are connecting to e.g. if they are connecting at low voltage and work is required at low voltage, high voltage and extra high voltage, the customer will only be charged for the work at low voltage and high voltage. The work at extra high voltage will be socialised (i.e. spread across all users).

In addition, in Ireland, the generator pays 100% of the construction of the Least Cost Connection physical connection to the transmission system i.e. the shallow connection works. Any deep reinforcements required to facilitate the connections are not charged to the generator.

	Deep - Generator pays.	Semi-deep - Generators and System Operators share costs.	Semi-shallow -RES Generators pay less than conventional generators.	Shallow - System Operator pays.	Other
Austria				x	
Belgium					x
Croatia	x				
Czech Republic				x	
Denmark				x	
Estonia	x				
Finland	x				
France		x			
Germany	x				
Greece				x	
Hungary			x		
Italy		x	x		

	Deep - Generator pays.	Semi-deep - Generators and System Operators share costs.	Semi-shallow -RES Generators pay less than conventional generators.	Shallow - System Operator pays.	Other
Ireland	x				
Lithuania					x
Luxembourg					
Netherlands					
Norway		x			
Poland			x		
Portugal		x			
Romania		x			
Spain	x				
Sweden					
UK					x

Table 11: Overview of type of connection regime for RES

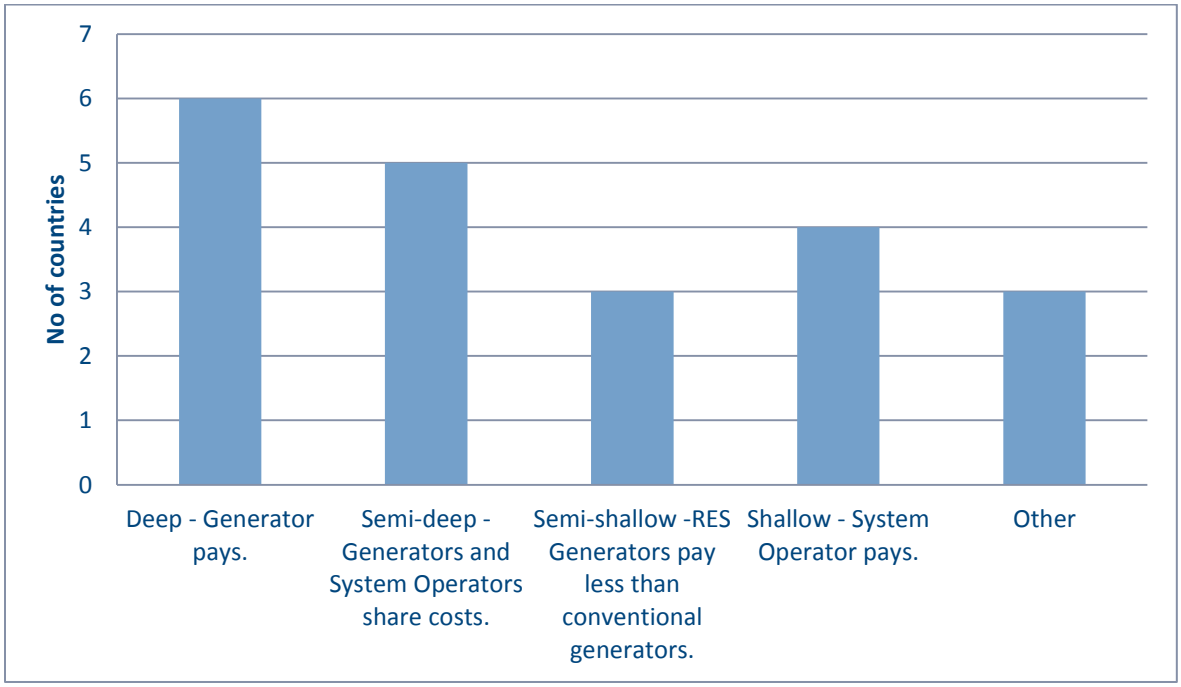

Chart 9: Overview of type of connection regime for RES

5 Other forms of support for RES electricity

Members were asked about any other forms of support for RES electricity that had not been covered elsewhere in the report. 7 countries identified additional support (although it is recognised that some of these may be relevant to other countries as well).

France: RES installations can benefit from local, state or EU level subsidies, which are not accounted for in the cost of support.

Germany: Other forms of indirect RES Support exist, e.g. in the form of

- preferential treatment for auto-consumption of electricity from self-generated RES installations, i.e. it is partially or fully exempted from the payment of the RES surcharge, the network charges and the electricity tax;

- possible electricity tax reduction for RES electricity sold under the direct marketing scheme in specific regional contexts;

- CHP-Bonus for the use of biomass.

In addition, there are indirect contributions to the funding of the RES support scheme through granted negative network charges for decentralised electricity generation (paid for both RES and conventional generation).

Ireland: there is an electricity tax for suppliers. There are two tax rates

- €0.50 per unit (MWh), for electricity supplied for business use;
- €1 per unit, for electricity supplied for non-business use (excluding domestic use).

Because supplies for domestic use are not subject to the tax, most of the taxable supplies will be liable at the business rate

Italy: For PV power plants only, fiscal deduction equal to 50% of the costs incurred up to a maximum cost of €96,000 is in place.

Poland: The following measures are also in place

- exemptions from stamp duties;
- exemption from excise duty;
- energy companies engaged in the trading and sale of electricity are required by law to purchase energy from renewable sources;
- investments in clean energy can be co-financed by the Fund for Environmental Protection and Water Management.

Portugal: The following measures are also in place

- tax incentive - until 2012 tax payers benefited from a tax incentive for renewable energy systems acquisition (PV panels, heat pumps etc.);
- credit lines - some banks have credit lines available for micro and mini-generation systems acquisition.

UK - the climate change levy is a tax on the supply of energy products such as electricity, gas, and coal for use as fuels by business consumers. There is an exemption from this tax for renewable electricity. The value of this exemption is estimated at £291m for 2012 and £396m in 2013.

6 Support schemes for energy efficiency and renewable heating/cooling

6.1 Energy efficiency support schemes

Table 12 and Chart 10 show that the majority of national energy efficiency support schemes are financed through general taxation which is paid by all citizens. Only one scheme was funded through interest free loans, and this was in Romania. Lithuania and Luxembourg have no support schemes in place.

Some countries provided further details as follows:

Austria: The financing of national energy efficiency (EE) support schemes varies. Some states, as well as some energy providers and interest groups, provide subsidies for EE. The amount and mode of funding vary in mechanism and volume. A new EE law was passed in July 2014. This law includes an EE obligation on suppliers.

Greece: Occasionally there are specific EE programmes and schemes mainly for buildings, funded primarily from EU cohesion funds and public investments (through taxes). Large EE investments in industry and tertiary sector may also be financed through investment grants (mainly EU Funds).

Hungary: There are EE support programmes from EU funds in the framework of the Environmental and Energy Efficiency Operational Programme 2014-2020 for businesses. There are still pending tenders from the previous EU financing period (2007-2013) in the framework of the Environment and Energy Operational Programme which were also available for municipalities (municipality EE investments are now financed through another OP).

For households, support is also provided for the energy efficient refurbishment of buildings and for the installation of energy efficient/renewable appliances (Green Investment Scheme) funded from CO2 quota income. Recently, there is a so called Green Economy Financing Scheme through which different EE measures can be supported (e.g. from September 2014, funds are available for modernisation of heating systems for private persons).

Italy: Three main incentive schemes are in place
- the tradable white certificate mechanism (TEE – energy efficiency certificates) covers all end-uses and is financed via a surcharge on electricity and natural gas rates defined by the NRA. It entered into force in January 2005 and is driven by an energy efficiency obligation on major electricity and natural gas DSOs (those serving at least 50,000 final customers. Measures to reduce electricity and natural gas network losses can count towards the target (but are not granted certificates). Since 2013, large infrastructural projects (in all end-use sectors) have been subject to a special regime;
- a tax rebate scheme provides tax credits to households for comprehensive or single retrofit energy efficiency measures. The amount of the tax rebate (55% or 65% of the energy-related cost, with a maximum threshold specific for each type of measure) depends on when the investment was made. Tax credits are reimbursed over 10 years, beginning with the completion of work;
- “Conto Termico” provides financial incentives on capital costs up to 40% on the eligible investment payable on yearly basis for a variable period of 2 to 5 years depending on the type of measure, technology, type and scale. Two types of projects are eligible: 1) small energy efficiency projects on existing buildings; and 2) small-scale projects concerning systems producing thermal energy from RES and high efficiency systems. It is open to

public administration (incentives under both 1) and 2) as well as to non-industrial private entities (only incentives under 2). A cumulative annual cap for incentives is set both for public administration and for private entities.

Measures eligible in more than one scheme cannot apply for more than one type of incentive.

Norway: The energy efficiency scheme in Norway is based on support from ENOVA, a public enterprise, with a goal to promote cost efficient energy efficiency measures. ENOVA is financed via funds allocated from the Energy Fund. The Fund is in part financed via a small additional charge to electricity bills and by proceeds from the Green Fund for Climate, Renewable Energy and Energy Efficiency Measures.

UK: In 2012, there were two energy efficiency schemes targeted at households (CERT - Carbon Emissions Reduction Target and CESP - Community Energy Savings Programme). These were both funded through possible pass down to end users of both gas and electricity suppliers. Under the Energy Companies Obligation, introduced in 2013, larger suppliers must provide energy efficiency support, focussed on vulnerable customers and harder to treat homes. The cost of this is passed down to gas and electricity end users through bills. Under the Green Deal, consumers can get a loan for energy efficiency measures which they then pay off through their energy bills. This loan is not interest free. There are also government funded projects in devolved areas (Scotland and Wales). In addition there are energy efficiency schemes targeted at the non-domestic sector:
- Climate Change Agreements are voluntary agreements that allow eligible energy-intensive sectors to receive up to a 90% reduction in the Climate Change Levy if they sign up to stretching energy efficiency targets agreed with government;
- The Carbon Reduction Commitment Energy Efficiency Scheme is designed to improve energy efficiency and cut carbon dioxide emissions in private and public sector organisations that are high energy users (but outside of the EU-ETS and Climate Change Agreements).

	No energy efficiency support schemes in place	General taxation paid by all citizens	Through specific non-tax levies like PSOs paid by all customers via electricity bills.	Through the possible pass down to end users of supplier costs	Interest-free loans, with costs recuperated through instalments on customer bills	Other
Austria						x
Belgium		x	x			
Czech Republic		x				
Denmark	x					
Estonia		x				
Finland		x				
France				x		
Germany		x				
Greece						x
Hungary						x
Ireland		x				
Italy			x			x
Lithuania	x					
Luxembourg	x					
Netherlands		x				
Norway			x			
Poland				x		
Portugal		x		x		

	No energy efficiency support schemes in place	General taxation paid by all citizens	Through specific non-tax levies like PSOs paid by all customers via electricity bills.	Through the possible pass down to end users of supplier costs	Interest-free loans, with costs recuperated through instalments on customer bills	Other
Romania					x	
Spain		x				
Sweden		x				
UK				x		x

Table 12: Overview of ways of financing national energy efficiency schemes 2013

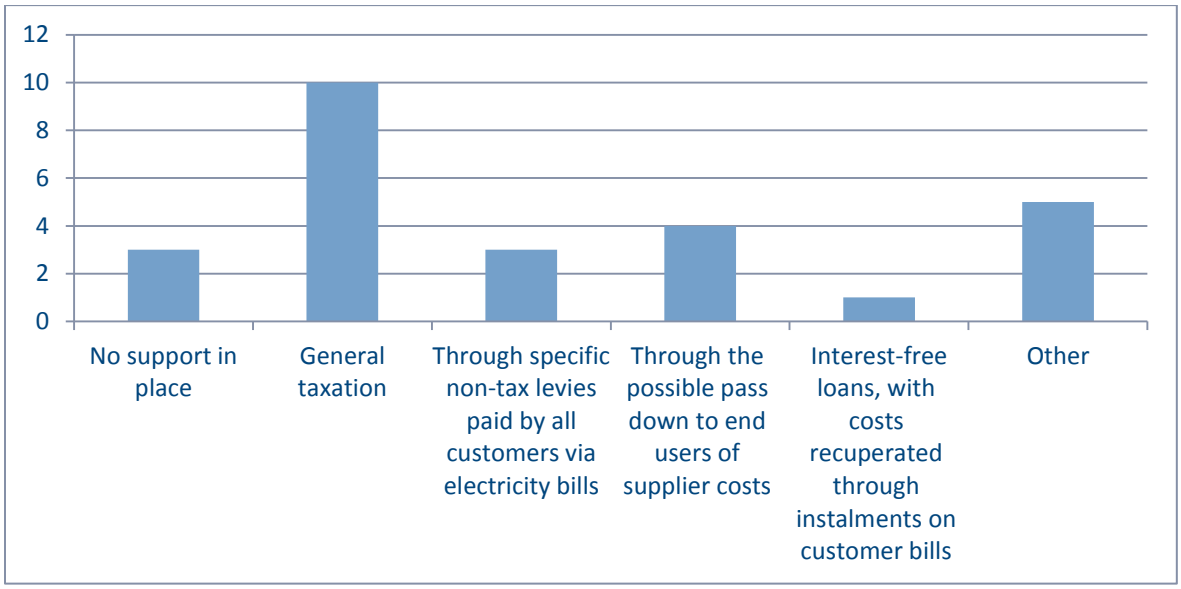

Chart 10: Overview of ways of financing national energy efficiency schemes 2013

6.2 Renewable heating/cooling support schemes

Table 13 and Chart 11 show that in the majority of European countries (that took part in the Status Review), national renewable heating/cooling support schemes are financed through general taxes. Of the countries analysed, 5 have no support scheme in place.

For those countries who noted other arrangements were in place, further details were provided as follows:

Czech Republic: Heat from renewable energy sources (biomass) supported through FIPs (so-called Green Bonus).
Finland: There is no direct support for district heating/cooling, however investment aids can be granted to small (<20 MW) installations that use renewable energy. This subsidy comes from the state budget. The taxation for the fuels used in heat production is smaller for renewable fuels than for fossil fuels. This can also be considered as a subsidy.

Greece: The same general schemes as for energy efficiency investments hold.

Hungary: There are support programmes from EU funds in the framework of the Environmental and Energy Efficiency Operational Programme 2014-2020 for businesses. In the previous EU financing period (2007-2013) funds from the Environment and Energy Operational Programme were also available for municipalities (municipality investments are now financed through another OP).

Since 2014, EA Grants are also available for geothermal district heating investments.

For households, support is provided for the installation of renewable heating appliances (Green Investment Scheme) funded from CO2 quota income. Recently, there is a so-called Green Economy Financing Scheme of which, from September 2014, funds are available for modernisation of heating systems for private persons.

Italy: White certificates, Conto Termico (see above) and tax rebate between 50% and 65% of the costs incurred (see above) are available. Measures eligible in more than one scheme cannot apply for more than one type of incentive.

Lithuania: The regulated price of heat includes additional costs related to RES. Heat pumps are promoted by a preferential tariff for electricity which is paid from National Renewable Energy Development Programme funding sources.

	No support schemes in place	General taxation paid by all citizens	Through specific non-tax levies like PSOs paid by all customers via electricity bills	Other
Austria	x			
Belgium		x		
Czech Republic				x
Denmark			x	
Estonia	x			
Finland				x
France		x		
Germany			x	
Greece				x
Hungary				x
Ireland		x		
Italy				x
Lithuania				x
Luxembourg		x	x	
Netherlands			x	
Norway			x	
Poland	x			
Portugal		x		
Romania	x			
Spain		x		
Sweden	x			
UK		x		

Table 13: Overview of ways of financing national renewable heating / cooling support 2013

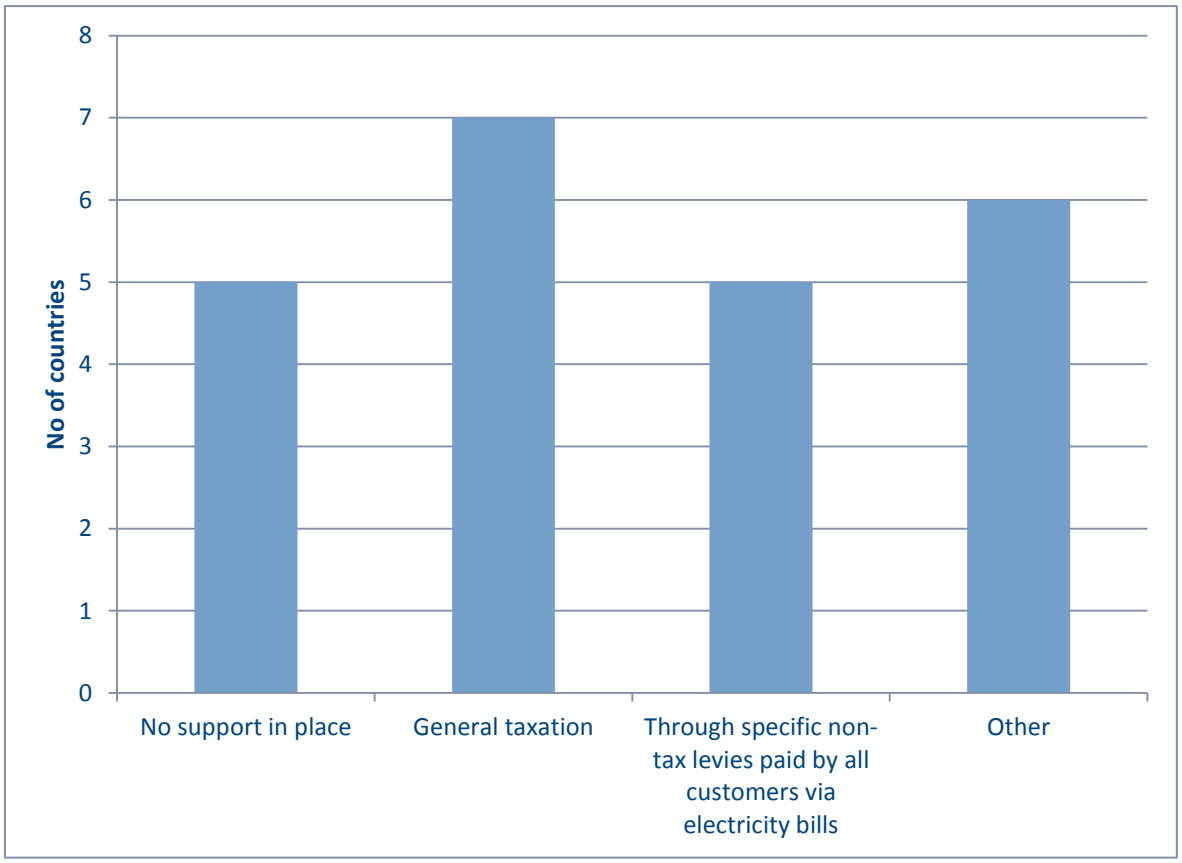

Chart 11: Overview of ways of financing national renewable heating/cooling support 2013

7 Conclusions

The aim of this analysis was to assess the impact of the expenditure to promote renewable energy through national support schemes at aggregate level for each country, on a comparable basis. Information and analysis provided in this document are based on the responses received from 23 CEER member countries who were asked a series of questions about national schemes.

Among respondent countries, most RES support schemes are funded through non-tax levies or possible pass down of RES costs for the supplier to end users.

The proportion of gross electricity produced receiving RES support differs widely from one country to another ranging from 0.1% in Norway to 55.9% in Denmark, with an average across countries of 12.6% in 2012.

There are a wide range of instruments used to promote RES including investment grants, feed-in tariffs, feed-in premium, green certificates and calls for tender[37]. This report shows the unit support levels (cost per MWh of supported electricity) by the main renewable technologies in 2012 and 2013. There are wide differences across technologies and across countries. For 2013, the weighted average support ranged from a minimum of 10.56€/MWh (in Estonia) to 194.51€/MWh (in the Czech Republic) with a weighted average across 21 countries of 110.65€/MWh[38].

In terms of market integration, RES electricity is generally sold through the same channels as conventional electricity and in most countries RES plants have the same financial responsibility as conventional plants for electricity balancing. In the majority of countries, RES plants are given priority in terms of network access and dispatching.

There are a range of support measures for both energy efficiency and renewable heating/cooling amongst respondents, although the majority are funded through general taxation.

This report is considered timely given the on-going interest in ways to promote and finance renewable energy, as well as the current studies on energy subsidies being undertaken by the Commission. With increasing shares of RES in the European electricity market, new challenges will arise and it will be useful to explore new aspects of RES support in future reviews. We have identified the issue of auto-consumption of self-produced RES electricity and support for new installations as possible topics for further future analysis.

[37] A call for tender is a quantity based policy instrument whereby a tender is announced by the Government for the supply of electricity from renewable energy sources, which is then supplied on a contractual basis at the price resulting from the tender. Tenders are often coupled with other forms of support e.g. FIT or FIP.

[38] Average weighted by each country's supported RES electricity. The arithmetic average for the 21 countries is 81.41€/MWh

Annex 1 – CEER

The Council of European Energy Regulators (CEER) is the voice of Europe's national regulators of electricity and gas at EU and international level. Through CEER, a not-for-profit association, the national regulators cooperate and exchange best practice within and beyond Europe's borders. CEER includes national regulatory authorities from 33 European countries (the EU-28, Iceland, Norway, Switzerland, FYROM, Montenegro and growing).

One of CEER's key objectives is to facilitate the creation of a single, competitive, efficient and sustainable EU internal energy market that works in the public interest. More specifically, CEER is committed to placing consumers at the core of EU energy policy. CEER believes that a competitive and secure EU single energy market is not a goal in itself, but should deliver benefits for energy consumers.

CEER works closely with (and supports) the Agency for the Cooperation of Energy Regulators (ACER). ACER, which has its seat in Ljubljana, is an EU Agency with its own staff and resources. CEER, based in Brussels, deals with many complementary (and not overlapping) issues to ACER's work such as international issues, smart grids, sustainability and customer issues. European energy regulators are committed to a complementary approach to energy regulation in Europe, with the Agency primarily focusing on its statutory tasks related to EU cross-border market development and oversight, with CEER pursuing several broader issues, including international and customer policies.

The work of CEER is structured according to a number of working groups and task forces, composed of staff members of the national energy regulatory authorities, and supported by the CEER Secretariat.

This report was prepared by the Sustainable Development Task Force of CEER's Electricity Working Group.

CEER wishes to thank in particular the following regulatory experts for their work in preparing this report: James LUGER, Marcella PAVAN, Emma POWELL, and Matthew BERRY.

Annex 2 – List of abbreviations

Term	Definition
ACER	The Agency for the Cooperation of Energy Regulators
AER	Alternative Energy Requirement Scheme
CEER	Council of European Energy Regulators
CHP	Combined Heat and Power (Cogeneration)
Commission	European Commission
CSP	Concentrated Solar Power
DNO	Distribution Network Operator
DSO	Distribution System Operator
EC	European Commission
EE	Energy efficiency
EEA	European Economic Area
EU	European Union
FIP	Feed-In-Premium
FIT	Feed-In Tariff
GGP	Guidelines of Good Practice
GCs	Green Certificates
GWh	Gigawatt hour is a unit of energy equal to 1,000 MWh or 1,000,000 kWh
kWp	Watts-peak and kilowatts-peak is a measure of the nominal power of photovoltaic device under laboratory conditions. Kilowatts-peak (kWp) is the most common unit in the domestic context.
kWh	The kilowatt is a unit of energy equal to 1,000 Watt hours or 3.6 megajoules. The kilowatt hour is the most common billing unit for energy delivered to consumers.
MWh	MegaWatt hour is a unit of energy equal to 1,000 kWh or 1,000,000 Watthours
NRA	National Regulatory Authority (for energy)
PSO	Public Service Obligation
PV	Photovoltaic
REFIT	Renewable Energy Feed-In-Tariff
RES	Renewable Energy Sources (also used in this report to mean renewable generation)
RES Directive	The Renewable Energy Directive (2009/28/EC)
RES-E	Electricity from Renewable Energy Sources
SDE+	The 'SDE+' ('Stimuleringsregelingduurzameenergieproductie') is the Dutch support mechanism for renewable energy, introduced in 2007.
TSO	Transmission System Operator
TWh	The terawatt hour is a measure of energy large enough to express annual electricity generation for whole countries

Annex 3 – Definitions

For the purposes of the questionnaire, the following definitions were used:

Term	Definition
Support for RES generation	The annual cost of **incentives** paid to RES generation as the result of national support schemes.
Technologies	
Energy from renewable sources	Energy from renewable non-fossil sources, namely aerothermal, bioenergy (including biogas and solid biomass), geothermal, hydropower, hydrothermal, ocean, solar and wind energy.
Aerothermal energy	Energy stored in the form of heat in the ambient air.
Biogas	A gas composed principally of methane and carbon dioxide produced by anaerobic digestion of biomass. The total biomass figures comprise: - landfill gas, formed by the digestion of landfilled wastes; - sewage sludge gas, produced from the anaerobic fermentation of sewage sludge; - other biogas such as biogas produced from the anaerobic fermentation of animal slurries and of wastes in abattoirs, breweries and other agro-food industries.
Bioenergy	This is a summary definition used to aggregate data for solid biomass and biogas.
Geothermal energy	Energy stored in the form of heat beneath the surface of solid earth.
Hydropower	Electricity generated from the potential and kinetic energy of water in hydroelectric plants.
Hydrothermal energy	Energy stored in the form of heat in the surface water.
Ocean energy	Forms of renewable energy derived from the sea including wave energy, tidal energy, river current, ocean current energy, salinity gradient energy and ocean thermal gradient energy. For the purposes of this survey, this excludes offshore wind.
Other	As specified.
Solar electricity	Solar radiation exploited for electricity production. Where possible, data for solar electricity is presented using the following sub-categories: - PV (photovoltaic); - CSP (concentrated solar power).
Solid biomass	The biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste. Where possible, data for solid biomass is presented using the following sub-categories: - biodegradable waste; - other solid biomass.
Wind energy	The kinetic energy of wind converted into electricity in wind turbines. This is comprised of off-shore and on-shore wind energy.
Categories of support	
Call for	A type of quantity based policy instrument whereby a tender is

tenders	announced by the Government for the supply of electricity from renewable energy sources, which is then supplied on a contractual basis at the price resulting from the tender. Where tenders are coupled with other forms of support e.g. FIT, FIP or GCs, these other forms of support will be considered the primary supporting policy.
Excise tax return	A taxation policy where renewable energy generators pay lower excise tax rates than conventional energy generators.
Feed in premium and contracts for difference	A type of price-based policy instrument whereby eligible renewable energy generators are paid a premium price which is a payment in addition to the wholesale price. This premium can be fixed of floating; a floating premium would be calculated as the difference between an average wholesale price and a previously defined guaranteed price. In addition, under contracts for difference, if the wholesale price rises above the guaranteed price, generators are required to pay back the difference between the guaranteed price and the wholesale price.
Feed in tariff	A type of price-based policy instrument whereby eligible renewable energy generators are paid a fixed price at a guaranteed level (irrespective of the wholesale price) for the RES electricity produced and fed into the grid.
Green certificates	A tradable commodity proving that certain electricity is generated using renewable energy sources. May have guaranteed minimum prices. The certificates can be traded separately from the energy produced.
Investment grants	Public money paid to provide direct support to investment that increases the generation of renewable energy.
Other	Other policy support mechanisms as specified by individual countries.
Other definitions	
Accrual basis accounting	Under the accrual basis accounting, costs are recognised with respect to the period when revenues are earned in contrast to the cash basis accounting, where costs are recognized when cash is actually paid.
Auto-consumption	Consumption of self-generated electricity.
Balancing responsibility	The financial responsibility for imbalances between their forecasts and the actual electricity feed-in (financial settlement).
Deep connection charge regime	The generator pays for all the costs related to the required connection.
Guaranteed access	There is the guarantee that all electricity sold and supported obtains access to the grid, allowing the use of a maximum amount of electricity from renewable energy sources from installations connected to the grid.
Lifetime of the grant	The expected lifetime of the capital that the investment grant has been used for. This could be estimated either by the expected lifetime over which the capital is being depreciated or the payment period for any related FIT support.
Priority access	The assurance given to connected generators of electricity from renewable energy sources that they will be able to transmit electricity in accordance with connection rules at all times, whenever the source becomes available.
Priority connection	That the physical connection (link) to the transmission and/or distribution networks of generators of electricity from renewable energy sources is considered a priority over connection to generators of electricity from other sources.
Priority dispatching	When transmission system operators give the priority to generating installations using renewable energy sources in so far as the secure operation of the national electricity system permits and based on

	transparent and non-discriminatory criteria. Member States shall ensure that appropriate grid and market-related operational measures are taken into account in order to minimize the curtailment of electricity produced from renewable energy sources.
Public Service Obligation	In this context, a Public Service Obligation (PSO) is a levy imposed by the Government on some or all final electricity customers to recover the additional costs associated with electricity from specified sources of generation- including sustainable, renewable and indigenous sources.
Semi-deep connection charge regime	The generators and system operators share the costs of connection.
Semi-shallow connection charge regime	RES generators pay less for connection than other conventional generators.
Shallow connection charge regime	The system operator pays for connection.

Annex 4 – Renewables targets by country

Country	EU Directive (2009/28/EC) objectives	National objectives
Austria	34% RES by 2020 (all RES, not only electricity)	Targets 2010-2015: + 700 MW hydro + 700 MW Wind (onshore) + 500 MW PV + 100 MW biomass and Biogas Targets 2010-2020: +1000 MW hydro + 2000 MW wind + 200 MW biomass and biogas + 1200 MW PV Source: Ökostromgesetz 2012, §4
Belgium	Global RES target of 13%; for electricity no binding RES target at national level	
Czech Republic	13,5% by 2020	
Denmark	30% by 2020	12% reduction of gross energy consumption in 2020 compared to 2012 35% RES in 2020 50% wind generation in 2020
Estonia	By 2020 Estonia must raise renewable energy as a share of total energy consumption to 25%, with 2005 as a reference year.	
Finland	38 % of energy to be produced from renewable sources by 2020.	Finland has set a more ambitious target of 20% bio-based fuels used in traffic (instead of the 10% EU objective).
France	23% of renewables in the final energy consumption by 2020 for France.	Break down of the EU 2020 objective by energy use : - 27% of renewables in the electricity consumption by 2020 - 33% of renewables in the heating & cooling energy consumption by 2020 - 10.5% of renewables in the transport energy consumption by 2020
Germany	Germany has to achieve a binding target of 18% RES share in its final energy consumption by 2020.	In addition to the 2020 EU target, Germany has defined the following binding targets in terms of RES share in gross electricity consumption: - 2025: 40-45% - 2035: 55-60% - 2050: 80%
Greece	18% in GFEC by 2020	20% in GFEC, 40% in Gross Electricity Consumption (Law 3851/2010) by 2020
Hungary	Overall target established by the EU for the share of energy from renewable sources in gross final consumption of energy in 2020 is 13%. No sectorial targets have been specified in the Directive.	According to the Hungarian Renewable Energy Action Plan, the national overall RES objective is 14.65% of gross final energy consumption by 2020. For RES electricity, the target is 10.9%, for renewable heating and cooling 18.9% and for RES in transport 10%.

Country	EU Directive (2009/28/EC) objectives	National objectives
Ireland	Ireland's overall target is to achieve 16% of energy from renewable sources by 2020 with a minimum of 10% in the transport sector. The 16% overall will be achieved by: around 40% of electricity consumed being from renewable sources, 12% of consumption in the heat sector and 10% consumption in the transport sector (including 10% electric vehicles).	
Italy	17% of gross final energy consumption from RES by 2020	National objectives: National Energy Strategy (Strategia Energetica Nazionale - SEN) sets a 19% RES target (19% of gross final energy consumption from RES by 2020
Lithuania	Increase the share of RES to 20 % in gross final consumption of electricity energy by 2020.	The National target is to increase the share of RES to 20 % in gross final consumption of electricity energy by 2020. To achieve this target the following are required: a) to increase installed capacity of solar energy plants to 10 MW; b) to increase installed capacity of wind energy plants to 500 MW; c) to increase installed capacity of hydro energy plants to 141 MW; d) to increase installed capacity of biofuel energy plants to 105 MW.
Luxembourg	11% RES in gross energy consumption 2020 as compared to 2005 Zielwert für den Anteil der Energie aus erneuerbaren Quellen am Bruttoendenergieverbrauch 2020 (S 2020) (%)	The same. See the following link to action plan for renewable energy http://www.eco.public.lu/documentation/rapports/Luxemburger_Aktionsplan_f__r_erneuerbare_Energie.pdf
Netherlands	14% in 2020 (share of energy from renewable sources in gross final consumption of energy)	16% in 2023 (share of renewable energy generation, which is considered the same as the EU definition for the target)
Norway	RES: 67.5%	Norway and Sweden has a combined goal to increase their electricity production by 26.4 TWh between 2012 and 2020.
Poland	20% of final energy consumption from RES by 2020	15% of final energy consumption from RES by 2020
Portugal	Share of energy from RES in gross final consumption of energy (2020): 31%	National Strategy for Energy (ENE) and Action Plan for RES (PNAER): share of RES generated electricity (2020): 60%
Romania	24% of final energy consumption by 2020	38% of final electricity consumption by 2020
Spain	20% of final energy	38,1% of final electricity consumption from RES-electricity

Country	EU Directive (2009/28/EC) objectives	National objectives
	consumption from RES by 2020	
Sweden	49% of energy should come from renewable energy sources by 2020	50% of energy should come from renewable energy sources by 2020. In addition there is a national target for wind power to reach an annual generation capacity of 30 TWh by 2020.
UK	Committed to meeting 15% of UK's energy demand from renewable sources by 2020	

Annex 5 – Further details on funding arrangements

The table below gives further details on funding arrangements where these were provided as part of the countries' responses.

Country	Heading
Belgium	GCs in the three Belgian regions are principally financed through a pass down to the end-user of the costs borne by the supplier. This cost which consist of the purchase cost for GCs (generally purchased in the GC market) and/or the fine in case the supplier does not succeed to reach the required quota, is usually separately indicated. In Flanders and Wallonia, minimum regional guaranteed prices for GCs for each technology are established (in Flanders, an additional condition is that the unit should be connected on the distribution grid). DSO's are obliged to purchase these green certificates at these minimum prices. The difference between the purchase price (minimum guaranteed price) and the selling price on the market is financed through the distribution tariffs. At the federal level there are also guaranteed minimum prices for green certificates for offshore generation. The TSO is obliged to buy the green certificates at federal guaranteed minimum prices. The difference between the minimum guaranteed price for offshore certificates and the selling price on the market is financed by a surcharge in the electricity bills. As long as there is no market for these offshore green certificates, the selling price for the TSO is zero and the entire cost for buying the offshore GCs is financed by this surcharge.
Croatia	Through all consumers via electricity bills. Suppliers are obligated to buy electricity produced by RES plants in the support scheme, in an amount dependent on their market share.
France	It is important to note that the levy which finances renewables in France (CSPE) also finances other public service obligation, such as tariff equalization in French overseas territories. The share of the levy which finances RES is around 58%.
Greece	A specific RES levy (ETMEAR) covers the difference between total RES FIT payments and the sum of the market price, special lignite taxes, CO2 permit auctions and other special taxes.
Italy	In particular, the costs of support schemes for promoting electricity production from RES are covered by the tariff component A3.
Netherland	The current SDE+ is financed through a levy on the energy bill. The former SDE and MEP are funded through general taxation.
Poland	The support of RES-sourced electricity in Poland is based on green certificates issued by the President of the Energy Regulatory Office (URE). Their cost is passed down to end users via electricity bills.

Annex 6 – Further details on exemption from contribution to RES funding

	Yes: Energy-intensive industries.	Yes: Auto-consumption	Yes: for network losses	Other	
Austria		X		X	Vulnerable customers might be partly exempted from contributing to the RES Support B: the support system relies on the electricity taken from the public grid.
Belgium	X	X	X		Depending on a combination of large quantities and the industry in which the consumer operates, there are exemptions (in % of the consumption) in the quota obligation and the financing of the support system. Auto-production sites (RES or other) pay only in function of the net offtake of energy.
Croatia	X				Industries that have the obligation to acquire a permit for greenhouse gas emissions have a smaller RES fee (HRK per kWh consumed).
Czech Republic		X	X	X	Exempted are hydro pump storage plants (consumption for pumping); island consumption; electricity used on works in power plants (consumption by power plants to produce electricity); and electricity used to cover losses in transmission and distribution networks.
Denmark	X	X			For energy-intensive industries: for customers with consumption of more than 100 GWh/year per place of consumption, a reduced PSO tariff is used for the part of their consumption that exceeds 100 GWh/year per place of consumption. The reduction corresponds to the costs relating to subsidies and balancing costs relating to renewable energy. For autoproducers, a reduced PSO tariff is used for the part of their consumption that they cover by their own production. The reduction corresponds to the costs relating to subsidies for renewable energy and local CHP units.
Finland				X	All RES subsidy schemes are financed from the state budget.
France	X	X			Three types of exemptions exist: - the total CSPE paid by a consumption cannot exceed €597,889 in 2014 (this figure is actualised every year); - the CSPE paid by industrial companies whose electricity consumption exceeds 7 GWh/year is capped to 0.5 % of their value added; - the electricity which is self-generated is exempted of CSPE.
Germany	X	X	X		Specific exemption rules from paying the full RES surcharge have been established for the energy-intensive industries for their consumption levels beyond 1 GWh provided certain conditions linked to their annual

	Yes: Energy-intensive industries.	Yes: Auto-consumption	Yes: for network losses	Other	
					electricity consumption, sector affiliation, level of energy intensity are met. A reduced RES surcharge will be applicable to auto-consumed self-generated electricity from new RES or high efficiency CHP installations (30% of the regular RES surcharge level in 2014 and progressively reaching 40% in 2017). Auto-consumption of self-generated electricity from all remaining electricity generating installations, e.g. conventional power plants will be charged the regular RES surcharge. Auto-consumption remains fully exempted under certain conditions such as when the auto-consumer is not connected to the public grid, the auto-consumed electricity has been self-generated by a small scale installation (capacity below 10 kW) or the self-generated electricity is used (i.e. auto-consumed) in the electricity generation process within a power plant (auto-consumption for the generation of electricity).
Greece				X	There is a maximum amount of levy payment by customer meter that is currently set to 991,000/year. This favours only a few energy intensive industries.
Hungary		X	X	X	Electricity consumers eligible for universal service (mainly households) are exempted from paying the feed-in tariff support.
Italy	X	X			The tariff component A3 is applied to electricity consumed by customers except: - customers connected in Medium Voltage (MV) with monthly consumption greater than 8 GWh (letter B); - customers connected in High Voltage (HV) and Extra High Voltage (EHV) with monthly consumption greater than 12 GWh (letter B); - efficient systems of user (Sistemi Efficienti di Utenza – SEU, systems with RES power plants or high efficiency CHP power plants up to 20 MW installed in a site of consumption) for which the tariff component A3 is applied to electricity delivered by public grid (letter C); - internal networks of users (Reti Interne di Utenza – RIU, High Voltage (HV) networks that connected industrial sites of consumption and power plants) for which the tariff component A3 is applied to electricity delivered by public grid (letter C).
Luxembourg	X	X	X		Fixed rate (0.75 €/MWh) for energy-

	Yes: Energy-intensive industries.	Yes: Auto-consumption	Yes: for network losses	Other	
					intensive industry fulfilling certain conditions.
Norway	X				In Norway the obligation to purchase and cancel electricity certificates follows the electricity consumption levy for end-users. Consequently electricity consumption in, for example, industrial processes is exempted. In 2013 the exempted volume was 37.1 TWh.
Portugal		X		X	Auto-consumption does not pay access tariffs and so it does not contribute to the RES support. Auto-consumption legislation is now being revised by the Government. In terms of other exemptions, every consumer pays but, since the distribution of RES support by each voltage level is made considering the number of consumers in each voltage level, the majority of RES support is paid by Low Voltage Normal (< 20.7 kVA contracted power).
Romania					The option to exempt the energy-intensive industry from contributing to the financing of RES support is under consideration.
UK		X			The costs of the renewables obligation and FITs scheme are passed through by suppliers onto customer bills. As customers are not billed for auto-consumption, the costs of the RES support cannot be spread across this part of the electricity use. In terms of energy-intensive industries, the Government announced its intention to provide compensation to energy-intensive industries to help with the costs of the renewables obligation, FITs and contracts for difference from 2016/17.

Annex 7 – Analysis of auto-consumption by country

	Total	Industry	Households	Power plants	Further information or source of data if given
Belgium	11.0 TWh (14% of total generation in 2012) 10.4 TWh (13% of total generation in 2013)				
Czech Republic				6.2 TWh p.a.	
Denmark	Auto-consumption 2012: 526 458 MWh Total (gross) consumption 2012: 34 244 063 MWh Auto-consumption 2013: 438 311 MWh Total (gross) consumption 2012: 34 072 203 MWh				
France	11 TWh (2% of total electricity consumption in 2013)	3 TWh		8 TWh (power consumption of EDF for pumped hydro storage)	
Germany	90 TWh (17% of final electricity consumption- 2012)	50.2 TWh (22% of final industrial electricity consumption -2012)	2 TWh (1.4% of final household electricity consumption - 2012) Note: Auto-consumption of self-generated electricity from PV	37.9 TWh (2013)	Estimates from Energy Brainpool: http://www.bund.net/fileadmin/bundnet/publikationen/energie/140425_bund_klima_energie_eeg_umlage_kraftwerkverbrauch_studie.pdf) http://www.bund.net/fileadmin/bundnet/publikationen/energie/140425_bund_klima_energie_eeg_umlage_kraftwerkverbrauch_studie.pdf)
Hungary		3.6% of total industrial consumption in 2012		Power plants above 50MW capacity: 7.8% of their total generation in 2013	Data for industry has been estimated by assuming that all power generation has been consumed by the industrial plant itself (no data on sold power from own generation). Data for power plants above 50 MW capacity has been estimated with the following formula: gross generation – electricity injected.
Italy	30 TWh				Estimate
Norway	0.3 TWh				Statistics Norway (http://www.ssb.no/energi-og-industri/statistikker/elektrisitetaar/aar/2014-03-28?fane=tabell&sort=nummer&tabell=167419)
Portugal				1.1TWh (2012) 1.0 TWh (2013) (from conventional power plants).	For RES generated electricity it is assumed it is all delivered to the distribution/transmission network and all the consumed electricity is supplied by the

	Total	Industry	Households	Power plants	Further information or source of data if given
					distribution/transmission network. RES auto-consumption is currently negligible.
UK	13.4 TWh (4.2% of final electricity consumption – 2012)	8.5 TWh (8.7% of industrial electricity consumption -2012)	0.54 TWh (0.5% domestic electricity consumption - 2012)		DECC DUKES (Table 5.3): https://www.gov.uk/government/publications/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes

Annex 8 – Unit support costs for new installations in 2012 and 2013

The following two tables show unit support costs for new installations i.e. those that were installed in 2012 or 2013. When compiling this data, different methodologies were used, in particular some countries reported the full FIT support payments rather than subtracting the wholesale price in order to demonstrate the incentive element of the FIT support (as has been done for the tables in the main body of the report). These differences are highlighted in the table.

	Bioenergy	Geothermal	Hydropower	Solar PV	Wind – onshore	Wind-offshore	Wholesale price subtracted from the total FiT payments?
Austria	180.67		47.25	277.02	87.98		No
Belgium[39]	177.32			440.37		107.00	
Czech Republic	122.04		85.09	201.99	88.59		No
Denmark					33.51	109.04	No
Germany[40]	39.8 - 253.0		34.0 -127.0	56.0 - 244.3	89.3 - 99.1	190.0	No
Hungary	52.25			48.34			Yes – have subtracted technology-specific wholesale price rather than average wholesale price
Ireland	31.93		34.15		16.39		Yes
Italy	150.23	72.31	81.55	244.80	80.72		Yes
Norway			20.20		20.20		
Portugal	105.96			459.18		169.57	No
Romania	52.91		56.24	56.48	56.06		
Spain				206.93	30.14		Yes
Sweden	22.98		22.98	22.98	22.98		

Table A8.1 – Support levels for installations that were new in 2012 (€/MWh)

	Bioenergy	Geothermal	Hydropower	Solar PV	Wind – onshore	Wind-offshore	Wholesale price subtracted from the total FiT payments?
Austria	174.91		50.00	267.08	87.63		No
Belgium[41]	79.93		75.40	458.07	74.86	92.36	
Czech Republic	74.36		87.67	93.34	52.83		No
Denmark					33.37	107.63	No
Germany	39.2 – 249.5		33.7 – 126.7	96.1 – 170.2	88.0-97.6	150.0-190.0	No
Hungary	68.25		62.17	61.05			Yes – have subtracted technology-specific wholesale price rather than average wholesale price
Italy	145.47	80.41	93.47	93.88	95.79		Yes
Portugal	113.04		78.63	254.55	73.01	171.73	No
Romania	57.74		57.73	57.70	57.71		
Spain[42]				116.04	38.01		Yes

[39] Figures for Belgium correspond to a relatively small amount of new installations and vary in function by the location of the installation.

[40] The ranges displayed in the table are valid for new installations in 2012. The level of support paid depends on e.g. the size of the installation, bonus payments, type of input used in the case of biomass, etc. Onshore support levels include repowering.

[41] Figures for Belgium correspond to a relatively small amount of new installations and vary in function by the location of the installation. Moreover figures for 2013 are only partially available.

	Bioenergy	Geothermal	Hydropower	Solar PV	Wind – onshore	Wind-offshore	Wholesale price subtracted from the total FiT payments?
Sweden	23.12		23.12	23.12	23.12		

Table A8.2 – Support levels for installations that were new in 2013 (€/MWh)

[42] Support data for 2013 for Spain is provisional. Only new plants that were registered before January 2012 receive support. This happened with some wind generators and some solar PV installations that became operational in 2012 and 2013. RES installations registered after January 2012 are not eligible to receive support.

Annex 9 – Full breakdown by technology in 2012 and 2013

RES support 2012

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
Austria	Landfill gas	FIT	30,734	0.41	13.23	48.68
	Other biogas	FIT	554,330	68.46	123.50	48.68
	Total solid biomass	FIT	1,983,304	179.13	90.32	48.68
	Hydropower	FIT	1,095,400	4.00	3.65	48.68
	Hydropower	Investment grant	400,000	1.23	3.08	
	Solar - PV	FIT	101,304	31.88	314.70	48.68
	Solar - PV	Investment grant	33,432	2.06	61.47	
	Wind - onshore	FIT	2,386,003	73.61	30.85	48.68
Belgium	Bioliquids	Green Certificates	1,512	0.31	202.00	
	Landfill gas	Green Certificates	122,880	11.13	90.58	
	Other biogas	Green Certificates	499,890	52.48	104.97	
	Sewage sludge	Green Certificates	33,043	3.71	112.42	
	Hydropower	Green Certificates	365,724	13.95	38.14	
	Solar - PV	Green Certificates	2,132,933	801.75	375.89	
	Biodegradable waste	Green Certificates	1,365,573	136.76	100.15	
	Other solid biomass	Green Certificates	2,289,097	212.38	92.78	
	Wind - offshore	Green Certificates	873,540	93.47	107.00	
	Wind - onshore	Green Certificates	1,895,477	163.57	86.29	
Croatia	Landfill gas	FIT	65	0.00	0.83	54.34
	Other biogas	FIT	41,667	4.89	117.36	54.34
	Hydropower	FIT	2,001	0.07	35.73	54.34
	Solar - PV	FIT	2,343	0.89	379.99	54.34
	Solid biomass	FIT	31,897	3.18	99.72	54.34
	Wind - onshore	FIT	301,020	13.40	44.53	54.34
Czech Republic	Landfill gas	FIP	172,209	12.89	74.87	
	Landfill gas	FIT	7,453	0.48	64.85	42.38
	Other biogas	FIP	1,069,496	129.53	121.12	
	Other biogas	FIT	101,749	12.31	121.01	42.38
	Hydropower	FIP	947,925	50.45	53.22	
	Hydropower	FIT	85,327	3.75	43.92	42.38
	Solar - PV	FIP	631,158	296.53	469.82	
	Solar - PV	FIT	1,457,693	668.80	458.81	42.38

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Solid biomass	FIP	892,229	66.08	74.06	
	Solid biomass	FIT	154	0.01	85.49	42.38
	Wind - onshore	FIP	22,304	2.20	98.80	
	Wind - onshore	FIT	390,789	25.19	64.45	42.38
Denmark	Biogas	FIT	349000	24.47	70.13	36.81
	Biogas	FIP	61500	3.82	62.04	36.81
	Solid biomass	FIT	937000	15.86	16.93	36.81
	Solid biomass	FIP	1927000	41.93	21.76	36.81
	Other	FIT	321400	7.99	24.85	36.81
	Other	Other	3885200	193.78	49.88	36.81
	Wind - offshore	FIT	3073700	114.38	37.21	36.81
	Wind - onshore	FIT	4747700	87.38	18.40	36.81
	Wind - onshore	FIP	1879300	78.15	41.58	36.81
Estonia	Total biogas	FIT	18,600	0.27	14.50	39.20
	Hydropower	FIT	39,000	0.57	14.50	39.20
	Solid biomass	FIT	857,000	12.43	14.50	39.20
	Wind - onshore	FIT	254,000	3.68	14.50	39.20
Finland	Bioenergy	FIP	2,082,327	37.48	18.00	
	Wind - onshore	FIT	137,251	9.42	68.65	36.65
France	Total biogas	FIT	933,866	49.02	52.49	49.37[43]
	Total biogas	Call for tender	103,496	6.17	59.58	48.30
	Hydropower	FIT	5,573,285	86.10	15.45	48.04
	Waste incineration	FIT	2,967,940	13.76	4.64	51.01
	Solar - PV	FIT	3,783,947	1709.03	451.65	48.89
	Solar - PV	Call for tender	163	0.02	152.58	47.42
	Solid biomass	FIT	5,777	0.24	41.06	52.45
	Solid biomass	Call for tender	1,070,235	73.50	68.68	50.89
	Wind - onshore	FIT	14,808,494	543.10	36.67	50.28
	Wind - onshore	Call for tender	203,475	6.90	33.89	51.42
Germany	Total biogas	FIP	139,465	4.59	32.95	
	Total biogas	FIT	578,282	17.16	29.68	42.60
	Geothermal energy	FIT	25,370	4.46	175.65	42.60
	Hydropower	FIP	1,879,748	76.97	40.94	

[43] Technology-specific wholesale prices were incorporated into the analysis of FIT incentives for France. This applies to both 2012 and 2013.

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Hydropower	FIT	2,724,411	154.42	56.68	42.60
	Solar - PV	FIP	1,024,522	252.42	246.38	
	Solar - PV	FIT	24,368,850	7865.53	322.77	42.60
	Total solid biomass	FIP	9,891,323	970.50	98.12	
	Total solid biomass	FIT	24,353,257	3834.42	157.45	42.60
	Wind - offshore	FIP	640,058	82.82	129.40	
	Wind - offshore	FIT	81,592	8.98	110.00	42.60
	Wind - onshore	FIP	34,315,345	2314.91	67.46	
	Wind - onshore	FIT	14,302,101	701.23	49.03	42.60
Greece[44]	Bioenergy	FIT	196,519	4.08	20.77	83.20
	Hydropower	FIT	669,384	3.79	5.67	83.20
	Solar - PV	FIT	1,510,615	545.53	361.13	83.20
	Wind - onshore	FIT	3,160,808	22.21	7.03	83.20
Hungary	Landfill gas	FIT	44,258	2.25	50.89	51.89
	Other biogas	FIT	118,291	6.74	56.96	51.89
	Sewage sludge	FIT	1,232	0.07	59.53	51.89
	Hydropower	FIT	203,145	3.26	16.05	51.89
	Solar - PV	FIT	331	0.02	54.28	51.89
	Total solid biomass	FIT	751,791	43.35	57.67	51.89
	Wind - offshore	FIT	742,509	43.39	58.43	51.89
Ireland	Landfill gas	FIT	298,273	7.56	25.35	63.20
	Hydropower	FIT	35,814	1.04	28.91	63.20
	High Efficiency CHP	FIT	16,365	1.70	103.65	63.20
	Total solid biomass	FIT	129,759	3.74	28.81	63.20
	Wind - onshore	FIT	3,657,958	41.85	11.44	63.20
Italy	Bioliquids	FIT	68,868	12.60	183.00	75.20
	Bioliquids	Green Certificates	2,176,239	242.35	111.36	
	Landfill gas	FIT	213,693	22.40	104.80	75.20
	Landfill gas	Green Certificates	628,859	48.75	77.52	
	Other biogas	FIT	2,670,645	546.95	204.80	75.20
	Other biogas	FIT - Cip 6/92	206,357	26.75	129.63	75.20
	Other biogas	Green Certificates	514,389	39.09	76.00	
	Geothermal energy	Green Certificates	1,466,887	112.54	76.72	
	Hydropower	FIT	916,927	132.77	144.80	75.20

[44] Data for non-interconnected islands is not included.

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Hydropower	FIT - Cip 6/92	397	0.02	50.38	75.20
	Hydropower	Green Certificates	6,853,333	548.27	80.00	
	Solar - PV	FIP	18,359,041	6161.09	335.59	
	Solar - PV	Green Certificates	2,777	0.22	80.00	
	Biodegradable waste	FIT	727	0.08	104.80	75.20
	Biodegradable waste	FIT - Cip 6/92	2,604,149	226.79	87.09	75.20
	Biodegradable waste	Green Certificates	631,214	60.34	95.60	
	Other solid biomass	FIT	339,843	68.28	200.93	75.20
	Other solid biomass	FIT - Cip 6/92	961,061	140.94	146.65	75.20
	Other solid biomass	Green Certificates	1,771,601	176.59	99.68	
	Wind - onshore	FIT	13,073	2.94	224.80	75.20
	Wind - onshore	FIT - Cip 6/92	328,483	11.22	34.16	75.20
	Wind-onshore	Green Certificates	12,552,015	1004.16	80.00	
Lithuania	Total biogas	FIT	33,306	3.99	119.78	44.89
	Hydropower	FIT	96,352	2.84	29.45	44.89
	Solar - PV	FIT	2,316	0.85	367.82	44.89
	Total solid biomass	FIT	161,865	13.36	82.54	44.89
	Wind - offshore	FIT	537,676	28.29	52.62	44.89
Netherlands	Geothermal energy	FIP	15,401	0.12	7.95	
	Hydropower	FIP	75,127	7.24	96.43	
	Solar - PV	FIP	49,004	12.03	245.40	
	Total solid biomass	FIP	5,088,135	343.29	67.47	
	Wind - offshore	FIP	789,257	78.49	99.45	
	Wind - onshore	FIP	3,732,663	245.15	65.68	
Norway	Hydropower	Green Certificates	201,844	4.08	20.20	
	Wind - onshore	Green Certificates	2,507	0.05	20.20	
Poland[45]	Total biogas	Green Certificates	529,384	36.27	68.52	
	Hydropower	Green Certificates	2,031,690	139.21	68.52	
	Co-firing biomass with fossil fuels	Green Certificates	6,364,306	436.09	68.52	
	Solar - PV	Green Certificates	1,169	0.08	68.52	
	Total solid biomass	Green Certificates	1,617,715	110.85	68.52	
	Wind - onshore	Green Certificates	4,598,875	315.12	68.52	
Portugal	Other biogas	FIT	202,338	13.27	65.57	45.93
	Hydropower	FIT	619,349	29.71	47.97	45.93

[45] Data for Poland may not be final due to on-going administrative proceedings regarding the issuance of certificates of origin for RES.

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Renewable CHP	FIT	1,788,873	96.19	53.77	45.93
	Solar - PV	FIT	221,080	66.41	300.37	45.93
	Biodegradable waste	FIT	741,791	52.05	70.17	45.93
	Other solid biomass	FIT	394,550	15.73	39.87	45.93
	Wind - offshore	FIT	2,925	0.36	123.74	45.93
	Wind - onshore	FIT	10,014,466	507.43	50.67	45.93
Romania	Landfill gas	Green Certificates	15,706	0.88	56.06	
	Hydropower	Green Certificates	559,909	31.39	56.06	
	Solar - PV	Green Certificates	8,010	0.45	56.06	
	Biodegradable waste	Green Certificates	140,238	7.86	56.06	
	Other solid biomass	Green Certificates	1,297	0.07	56.06	
	Wind - onshore	Green Certificates	2,639,875	148.00	56.06	
Spain	Total biogas	FIT	837,978	49.44	59.00	46.11
	Hydropower	FIT	4,634,224	186.82	40.31	46.11
	Solar - CSP	FIT	3,433,132	925.44	269.56	46.11
	Solar - PV	FIT	6,706,926	2614.28	389.79	46.11
	Total solid biomass	FIT	4,299,301	335.92	78.13	46.11
	Wind - onshore	FIT	48,332,390	2053.21	42.48	46.11
Sweden	Hydropower	Green Certificates	3,145,650	72.34	23.00	
	Solar - CSP and PV	Green Certificates	1,029	0.02	23.00	
	Bioenergy	Green Certificates	11,201,126	257.60	23.00	
	Wind - onshore and offshore	Green Certificates	7,163,339	164.74	23.00	
UK	Biomass with CHP	Green Certificates	298	0.02	61.08	
	Landfill gas	Green Certificates	4,975,497	268.64	53.99	
	Other biogas	Green Certificates	301,637	33.42	110.80	
	Sewage sludge	Green Certificates	644,241	34.54	53.61	
	Total biogas	FIT	169,559	49.81	293.78	27.87[46]
	Hydropower	FIT	111,149	32.65	293.78	27.87
	Hydropower	Green Certificates	2,418,667	131.04	54.18	
	Ocean Energy	Green Certificates	3,596	0.40	110.59	
	Solar - PV	FIT	1,281,019	376.34	293.78	27.87
	Solar - PV	Green Certificates	12,486	1.00	79.85	

[46] UK: FITs are paid for both generation and export to the grid. In general, 50% of generated electricity is assumed to be exported. Therefore 50% of the wholesale price (shown in the tables above) has been subtracted from the FIT, reflecting the benefit to the supplier of the exported electricity. In addition, the FITs incentive has been estimated using the average €/MWh support cost, not differentiated by technology. This applies to all FIT figures for both 2012 and 2013.

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Total solid biomass	Green Certificates	5,836,678	396.89	68.00	
	Wind - offshore	Green Certificates	7,463,830	705.84	94.57	
	Wind - onshore	FIT	256,133	75.25	293.78	27.87
	Wind - onshore	Green Certificates	11,758,267	637.35	54.20	

RES Support 2013

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
Austria	Landfill gas	FIT	26,036	0.36	13.95	40.24
	Other biogas	FIT	544,326	74.91	137.62	40.24
	Hydropower	FIT	1,371,315	11.46	8.36	40.24
	Hydropower	Investment grant	900,000	2.77	3.08	
	Solar - PV	FIT	215,242	53.05	246.46	40.24
	Solar - PV	Investment grant	47,942	1.03	21.39	
	Total solid biomass	FIT	2,013,220	191.86	95.30	40.24
	Wind - onshore	FIT	2,970,039	128.14	43.14	40.24
Belgium	Bioliquids	Green Certificates	2,263	0.44	192.40	
	Landfill gas	Green Certificates	108,884	9.33	85.65	
	Other biogas	Green Certificates	707,097	74.32	105.11	
	Sewage sludge	Green Certificates	28,723	3.14	109.45	
	Hydropower	Green Certificates	374,692	9.03	24.11	
	Solar - PV	Green Certificates	2,607,141	962.22	369.07	
	Biodegradable waste	Green Certificates	1,319,604	123.66	93.71	
	Other solid biomass	Green Certificates	2,121,490	193.82	91.36	
	Wind - offshore	Green Certificates	1,539,699	161.50	104.89	
	Wind - onshore	Green Certificates	2,058,355	173.29	84.19	
Croatia	Landfill gas	FIT	38	0.00	4.88	52.45
	Other biogas	FIT	63,230	7.89	124.81	52.45
	Hydropower	FIT	7,928	0.47	58.66	52.45
	Solar - PV	FIT	11,294	3.05	269.88	52.45
	Total solid biomass	FIT	47,727	5.14	107.64	52.45
	Wind - onshore	FIT	466,353	23.45	50.29	52.45
Czech Republic	Landfill gas	FIP	177,319	13.35	75.29	
	Landfill gas	FIT	7,901	0.53	67.61	36.74

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Other biogas	FIP	1,745,272	203.83	116.79	
	Other biogas	FIT	161,956	19.56	120.78	36.74
	Hydropower	FIP	1,112,164	63.93	57.48	
	Hydropower	FIT	104,636	5.48	52.38	36.74
	Solar - PV	FIP	616,306	266.63	432.62	
	Solar - PV	FIT	1,392,951	633.60	454.86	36.74
	Total solid biomass	FIP	959,465	73.56	76.67	
	Total solid biomass	FIT	32,341	3.46	107.04	36.74
	Wind - onshore	FIP	264,293	21.10	79.83	
	Wind - onshore	FIT	208,522	14.34	68.77	36.74
Denmark	Total biogas	FIT	381,200	26.17	68.65	39.29
	Total biogas	FIP	58,100	3.41	58.62	39.29
	Total solid biomass	FIT	515,500	9.68	18.77	39.29
	Total solid biomass	FIP	2,329,500	47.56	20.42	39.29
	Other	FIT	297,200	6.69	22.53	39.29
	Local CHP	Other	3,482,818	163.57	46.97	39.29
	Wind - offshore	FIT	3,982,400	228.54	57.39	39.29
	Wind - onshore	FIP	4,316,100	76.39	17.70	39.29
	Wind - onshore	FIP	2,322,000	83.98	36.17	39.29
Estonia	Total biogas	FIT	31,500	0.33	10.56	43.14
	Hydropower	FIT	22,300	0.24	10.56	43.14
	Solar - PV	FIT	113	0.00	10.56	43.14
	Total solid biomass	FIT	528,000	5.58	10.56	43.14
	Wind - onshore	FIT	409,000	4.32	10.56	43.14
Finland	Other biogas	FIT	1,736	0.16	92.34	41.16
	Bioenergy	FIP	2,291,188	30.08	13.13	
	Wind - onshore	FIT	508,872	32.64	64.14	
France	Total biogas	FIT	1,179,212	70.98	60.19	47.08
	Total biogas	Call for tender	93,433	5.64	60.33	43.56
	Hydropower	FIT	5,796,462	128.77	22.22	45.22
	Waste incineration	FIT	2,865,365	24.14	8.42	47.87
	Solar - PV	FIT	4,396,553	1916.87	435.99	44.28
	Solar - PV	Call for tender	27,720	3.01	108.71	48.84
	Total solid biomass	FIT	70,708	6.50	91.97	44.39
	Total solid biomass	Call for tender	1,390,536	115.41	83.00	47.06
	Wind - onshore	FIT	15,780,686	634.54	40.21	47.65
	Wind - onshore	Call for tender	190,824	7.27	40.69	48.04
Germany	Total biogas	FIP	272,765	10.29	37.74	

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Total biogas	FIT	528,877	17.89	33.83	37.78
	Geothermal energy	FIP	11,647	2.51	215.86	
	Geothermal energy	FIT	68,217	13.56	198.83	37.78
	Hydropower	FIP	2,440,049	117.51	48.16	
	Hydropower	FIT	3,007,363	189.11	62.88	37.78
	Solar - PV	FIP	3,525,504	758.69	215.20	
	Solar - PV	FIT	25,258,695	7633.08	302.20	37.78
	Total solid biomass	FIP	16,644,366	2099.19	126.12	
	Total solid biomass	FIT	19,551,739	3320.52	169.83	37.78
	Wind - offshore	FIP	904,818	122.60	135.50	
	Wind - onshore	FIP	41,844,464	2835.73	67.77	
	Wind - onshore	FIT	7,514,138	403.62	53.71	37.78
Greece[47]	Bioenergy	FIT	209,670	7.68	36.63	70.50
	Hydropower	FIT	771,036	15.05	19.52	70.50
	Solar - PV	FIT	3,408,573	1163.50	341.35	70.50
	Wind - onshore	FIT	3,391,800	70.58	20.81	70.50
Hungary	Landfill gas	FIT	47,708	2.97	62.34	42.55
	Other biogas	FIT	118,248	8.13	68.75	42.55
	Sewage sludge	FIT	980	0.07	71.95	42.55
	Hydropower	FIT	204,150	6.60	32.31	42.55
	Solar - PV	FIT	1,358	0.09	65.85	42.55
	Other solid biomass	FIT	802,588	55.95	69.72	42.55
	Wind - onshore	FIT	687,118	48.90	71.17	42.55
Italy	Bioliquids	FIP	1,250	0.06	48.00	
	Bioliquids	FIT	167,801	23.25	138.56	61.55
	Bioliquids	Green Certificates	3,738,204	527.24	141.04	
	Landfill gas	FIT	266,221	29.76	111.78	61.55
	Landfill gas	Green Certificates	769,795	58.32	75.76	
	Other biogas	FIT	5,252,341	1135.08	216.11	61.55
	Other biogas	FIT - Cip 6/92	161,612	16.59	102.65	61.55
	Other biogas	Green Certificates	501,232	44.83	89.44	
	Geothermal energy	FIP	33,000	1.01	30.61	
	Geothermal energy	Green Certificates	1,652,279	123.99	75.04	
	Hydropower	FIP	51,591	3.26	63.19	

[47] Data for non-interconnected islands are not included.

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Hydropower	FIT	1,623,401	253.04	155.87	61.55
	Hydropower	Green Certificates	9,749,651	779.97	80.00	
	Solar - PV	FIP	20,421,139	6513.73	318.97	
	Solar - PV	FIT	945,375	44.22	46.77	61.55
	Solar - PV	Green Certificates	4,421	0.35	80.00	
	Biodegradable waste	FIT	2,960	0.35	118.30	61.55
	Biodegradable waste	FIT - Cip 6/92	2,082,263	231.49	111.17	61.55
	Biodegradable waste	Green Certificates	675,301	56.35	83.44	
	Other solid biomass	FIP	79,830	7.77	97.33	
	Other solid biomass	FIT	561,877	107.91	192.05	61.55
	Other solid biomass	FIT - Cip 6/92	812,081	129.78	159.81	61.55
	Other solid biomass	Green Certificates	1,378,295	144.89	105.12	
	Wind - onshore	FIP	112,217	4.07	36.27	
	Wind - onshore	FIT	111,798	17.51	156.59	61.55
	Wind - onshore	FIT - Cip 6/92	198,374	8.90	44.86	61.55
	Wind - onshore	Green Certificates	12,328,119	986.25	80.00	
Lithuania	Total biogas	FIT	37,965	3.17	83.57	45.47
	Hydropower	FIT	91,856	2.39	25.97	45.47
	Solar - PV	FIT	44,798	8.60	191.90	45.47
	Total solid biomass	FIT	224,706	15.11	67.24	45.47
	Wind - offshore	FIT	599,994	26.88	44.80	45.47
Netherlands	Total solid biomass	FIP	4,010,800	284.02	70.81	
	Geothermal energy	FIP	333,977	5.86	17.54	
	Hydropower	FIP	78,073	7.50	96.12	
	Solar - PV	FIP	61,501	13.56	220.53	
	Wind - offshore	FIP	771,086	76.59	99.32	
	Wind - onshore	FIP	3,939,718	237.72	60.34	
Norway	Hydropower	Green Certificates	882,265	20.91	23.70	
	Wind - onshore	Green Certificates	38,686	0.92	23.70	
Poland[48]	Total biogas	Green Certificates	665,005	47.11	70.84	
	Total solid biomass	Green Certificates	678,556	48.07	70.84	
	Hydropower	Green Certificates	2,433,632	172.40	70.84	
	Solar - PV	Green Certificates	1,419	0.10	70.84	
	Wind - offshore	Green Certificates	6,073,903	430.28	70.84	

[48] Data for Poland may not be final due to on-going administrative proceedings regarding the issuance of certificates of origin for RES.

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Co-firing biomass with fossil fuels	Green Certificates	2,536,797	179.71	70.84	
Portugal	Other biogas	FIT	238,290	17.13	71.89	40.31
	Hydropower	FIT	1,327,669	72.88	54.89	40.31
	Renewable CHP	FIT	1,861,423	109.25	58.69	40.31
	Solar - PV	FIT	257,907	75.74	293.69	40.31
	Biodegradable waste	FIT	683,902	52.38	76.59	40.31
	Other solid biomass	FIT	470,544	21.69	46.09	40.31
	Wind - offshore	FIT	3,919	0.51	131.40	40.31
	Wind - onshore	FIT	11,749,961	628.51	53.49	40.31
Romania	Landfill gas	Green Certificates	16,580	0.96	57.71	
	Sewage sludge	Green Certificates	57	0.00	57.71	
	Hydropower	Green Certificates	905,771	52.27	57.71	
	Solar - PV	Green Certificates	409,508	23.63	57.71	
	Biodegradable waste	Green Certificates	420,616	24.27	57.71	
	Other solid biomass	Green Certificates	6,722	0.39	57.71	
	Wind - onshore	Green Certificates	4,520,210	260.84	57.71	
Spain	Total biogas	FIT	893,094	50.94	57.04	43.37
	Hydropower	FIT	7,033,387	302.91	43.07	43.37
	Solar - CSP	FIT	4,428,100	1113.16	251.39	43.37
	Solar - PV	FIT	6,790,818	2563.80	377.54	43.37
	Total solid biomass	FIT	4,627,168	353.90	76.48	43.37
	Wind - onshore	FIT	54,536,963	2398.29	43.98	43.37
Sweden	Bioenergy	Green Certificates	4,910,140	115.45	23.51	
	Hydropower	Green Certificates	837,310	19.69	23.51	
	Solar - CSP and PV	Green Certificates	3,705	0.09	23.51	
	Wind - onshore and offshore	Green Certificates	9,686,146	227.75	23.51	
UK	Biomass with CHP	Green Certificates	146,644	8.42	57.40	
	Landfill gas	Green Certificates	4,823,293	250.43	51.92	
	Other biogas	Green Certificates	346,361	38.43	110.94	
	Sewage sludge	Green Certificates	652,459	32.86	50.36	
	Total biogas	FIT	313,387	89.93	286.96	29.86
	Hydropower	FIT	138,848	39.84	286.96	29.86
	Hydropower	Green Certificates	2,083,319	109.11	52.37	
	Ocean energy	Green Certificates	3,817	0.43	113.30	
	Solar - PV	FIT	1,596,624	458.16	286.96	29.86
	Solar - PV	Green Certificates	309,467	31.59	102.07	
	Other solid biomass	Green Certificates	8,676,209	553.51	63.80	
	Wind - offshore	Green Certificates	11,558,343	1106.23	95.71	

Country	Technology detail	Type of support scheme	Energy receiving support (MWh)	RES incentive costs (million Euros)	Cost per MWh (Euros)	Wholesale price used to calculated FIT incentive
	Wind - onshore	FIT	467,374	134.12	286.96	29.86
	Wind - onshore	Green Certificates	15,831,023	831.13	52.50	