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Status Review of Renewable Support Schemes in Europe for 2020 and 2021

CEER report

Renewables Work Stream
of
Electricity Working Group

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INFORMATION PAGE

Abstract

This document (C22-RES-80-04) constitutes the latest update to the regular CEER Status Reviews of Renewable Energy Support Schemes in Europe and builds on the previous CEER reports C20-RES-69-04, C18-SDE-63-03, C16-SDE-56-03, C14-SDE-44-03, C12-SDE-33-03 and C10-SDE-19-04a.

The purpose of these CEER Status Review publications is to collect comparable data on support for Renewable Energy Sources (RES) in Europe in order to provide policymakers, regulators and industry participants with information on support schemes for electricity from RES. The data is provided by technology and type of instrument (e.g. Feed-in tariffs, Feed-in premium and Green Certificates). To collect this data, a survey was conducted among CEER Members and Observers in August 2022, to explore the renewable electricity support schemes currently in place across Europe.

Target Audience

European Commission, energy suppliers, traders, gas/electricity customers, gas/electricity industry, consumer representative groups, network operators, national regulatory authorities, Member States, academics and other interested parties.

Keywords

electricity; prices; contracts; tariffs; affordability; renewables, Renewable Energy Sources, RES, subsidies, support systems.

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Related Documents

CEER documents

- Status Review of Renewable Support Schemes in Europe for 2018 and 2019, June 2021, Ref: C22-RES-69-04
- 2nd CEER Report on Tendering Procedures for RES in Europe, November 2020, Ref: C20-RES-67-03.
- ACER-CEER Market Monitoring Report (MMR) – Energy Retail and Consumer Protection Volume 2019, September 2020.
- CEER Paper on Unsupported RES, May 2020, Ref: C19-RES-64-04a.
- Status Review of Renewables Support Schemes in Europe for 2016 and 2017, December 2018, Ref. C18-SD-63-03.
- Status Review of Renewables Support Schemes in Europe 2014 and 2015, April 2017, Ref. C16-SDE-56-03.
- Position Paper on Renewable Energy self-generation, September 2016, Ref: C16-SDE-55-03.
- Key support elements of RES in Europe: moving towards market integration, January 2016, Ref: C15-SDE-49-03.
- Status Review of Renewables and Energy Efficiency Support Schemes in Europe 2012 and 2013, January 2015, Ref. C14-SDE-44-03.
- Status Review of Renewable and Energy Efficiency Support Schemes in Europe, December 2012, Ref: C12-SDE-33-03.
- Status Review on Renewable Energy Support, May 2011, Ref: C10-SDE-19-04a.

External documents

- European Commission, Regulation on the internal market for electricity, 2019/943, 5 June 2019.
- European Commission, Directive on the promotion of the use of energy from renewable sources (recast), 2018/2001/EC, 11 December 2018.
- European Commission, EU energy in figures – Statistical Pocketbook 2021.
- European Commission, EU energy in figures – Statistical Pocketbook 2020.
- European Commission, Clean Energy for All Europeans, November 2016.
- Guidelines on State aid for environmental protection and energy 2014-2020, European Commission (EEAG), 2014/C 200/01, 28 June 2014.

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EXECUTIVE SUMMARY

Background

National support schemes for renewable energy sources (RES) have been subject to important changes since the adoption of the EU's Renewable Energy Directive in 2009[1]. From 2014 onwards, CEER Member Countries (MCs) have been progressively adapting their schemes to comply with the general conditions for support to energy from RES as set by the European Commission in its "Guidelines on State Aid for Environmental Protection and Energy" (EEAG)[2] and following such as the revised Guidelines on State aid for climate, environmental protection and energy (CEEAG)[3]. At this point it should be highlighted that this report focuses on the time period of 2020 and 2021 and some legal frameworks might have been updated in the meantime.

Relevant issues for the further promotion of RES across Europe, such as national RES targets, the type of support and the procedures to set the level of support, level of balancing responsibilities, and consumer empowerment notably through self-consumption, are subjects of this Status Review.

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 policymakers, regulators, industry participants and other stakeholders with information on support schemes for RES electricity by technology and type of instrument (e.g. Feed-in tariffs (FiTs), Feed-in premiums (FiPs) and Green Certificates (GCs)). This document forms the latest update to the regular CEER Status Review of Renewable Support Schemes in Europe and builds on the previous CEER reports[4].

CEER MCs were asked to provide details on the type of support, the amount of supported RES and the related expenditure by technology in their country. Information and analysis provided are based on the questionnaire responses received from 27 CEER MCs. These responses enabled analysis of data on installed capacity, on the amount of Megawatt hours (MWh) receiving support and the expenditure to promote the schemes. Regulators were also asked to provide details on new installations receiving support (those installed in either 2019 or 2020), although not all MCs were able to provide this data.

In addition to direct financial support given to RES, CEER MCs were also asked to provide information on RES objectives for 2030, support scheme financing mechanisms, balancing responsibility and indirect support. The questionnaire also enquired about recent and planned changes to the schemes.

[1] Directive (EU) 2009/28/EC Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources.
[2] European Commission Communication on Guidelines on State aid for environmental protection and energy 2014-2020, 2014/C 200/01
[3] Communication from the Commission – Guidelines on State aid for climate, environmental protection and energy 2022
[4] C10-SDE-19-04a, C12-SDE-33-03, C14-SDE-44-03, C16-SDE-56-03 and C20-RES-69-04; Previous reports also presented data on support schemes for energy efficiency measures. Since energy efficiency falls in the scope of responsibility of only a few National Regulatory Authorities, it has been convened to concentrate in this status review on the support for RES.

In this report "CEER Member Countries" is used as a term to mean all CEER Members and CEER Observers that provided data. There are varying sample sizes since not all CEER MCs provided a data set for every section.

Brief summary of the conclusions

National RES targets have been updated compared to the prior version of the report to comply with recent European legislation. Thus, 25 out of 27 MCs that answered the questionnaire indicated that they have 2030 targets on national level.

A wide range of instruments is used to promote RES, such as investment grants, FiTs, FiPs, and GCs. This report shows that throughout Europe, the transition towards support schemes that allow more market integration of RES and include more competitive elements in the way support levels are being determined is still ongoing. As such, the major changes observed remain related to the introduction of FiP schemes, where RES producers receive support (a fixed or variable premium) in addition to their market income, and the introduction of tendering procedures, as a means to determine levels of support.

This report also shows the unit support levels (i.e. direct cost per MWh of supported electricity) for the main renewable technologies in 2020 and 2021 for the whole support system in place. These unit support levels reflect a mixture of old and new installations and possibly old and new support systems. There are wide differences across technologies and across countries which are also driven by nearly decades of RES support systems.

The last report (C20-RES-69-04) stated that the weighted average support for RES, on top of the wholesale price, decreased from 110 €/MWh[5] in 2015 to an average of 96 €/MWh across 25 countries[6] for 2017. At the same time, the weighted average support ranged from a minimum of 13 €/MWh (in Norway) to a maximum of 198 €/MWh (in the Czech Republic). The weighted average support for RES decreased from 100 €/MWh in 2018 to 98 €/MWh in 2019, whereas the total expenditure rose from €60.08 billion to €63.593 billion. Based on the data provided for the current report, the weighted average support for RES decreased from 109 €/MWh in 2020 to 83 €/MWh in 2021. At the same time, the total expenditure decreased from €74.76 billion to €56.323 billion.

The proportion of gross electricity produced receiving RES support differs widely from one country to another, ranging from 4% in Slovenia to 43% in Ireland, with an average of 23% across CEER MCs in 2020. This is an increase from an average proportion of around 19% in 2018.

The information provided by CEER MCs shows that the number of tendering procedures to determine support levels increases whereas fewer MCs solely rely on administrative procedures. For more information on tendering procedures and their implementation, see also the CEER Report on Tendering Procedures for RES in Europe, C21-RES-79-03.

The report also brings forward that almost no changes have been made to central features such as the nature of funding, which is still mostly non-tax levies (21 out of 27 countries). Whereas most of these countries have some specific levies on electricity or sometimes energy which are directly used to support RES electricity, France and the Czech Republic use the state budget to support RES electricity.

[5] The weighted average support for 2015 was based on 26 CEER Member countries.
[6] For 2018, 27 and for 2019, 26 CEER member countries submitted full or partial data.

In terms of market integration, RES installations increasingly have the same financial responsibility as conventional plants for electricity balancing, at least above a certain threshold of capacity installed. The report shows that for 19 CEER MCs, balancing responsibility for RES producers is a feature in the respective national support schemes. In 11 of those 19 countries, the balancing responsibility counts for all RES producers, whereas in the other eight countries, only selected RES producers face such responsibilities.

1 Introduction

National support schemes for renewable energy sources (RES) have been subject to important changes since the adoption of the EU's Renewable Energy Directive in 2009[7]. From 2014 onwards, CEER member countries (MCs) have been progressively adapting their schemes to comply with the general conditions for support to energy from renewables as set by the European Commission in its "Guidelines on State Aid for Environmental Protection and Energy" (EEAG)[8] and following such as the revised Guidelines on State aid for climate, environmental protection and energy (CEEAG)[9]. At this point it should be highlighted that this report focuses on the time period of 2020 and 2021 and some legal frameworks might have been updated in the meantime.

RES policies, including support for renewables, can affect consumers in a number of ways, notably through overall impacts on the electrical system (e.g. grid development, market integration, etc.). In most cases, the costs for achieving the agreed renewable energy objectives will ultimately be borne by end-users, for example, if the RES support is directly added to electricity bills. It is therefore also in the interest of consumers to achieve RES deployment in the most cost-effective manner.

This report forms the latest update to the regular CEER Status Reviews of Renewable Energy Support Schemes in Europe and builds on the previous CEER reports.[10] The purpose of CEER Status Reviews is to collect comparable data on RES support in Europe in order to provide policymakers, regulators and industry participants with information on support schemes for RES electricity, by technology and type of instrument (e.g. Feed-in tariffs (FiTs), Feed-in premiums (FiPs) and Green Certificates (GCs)).

In August 2022, in CEER MCs the national regulatory authorities for energy (NRAs) were asked to complete a questionnaire on national RES support schemes. The questionnaire consisted of a short description of their support scheme (type of support granted, type of financing scheme, level of market integration of RES producers and treatment of self-consumption) and of any recent or upcoming changes since the last review. The NRAs were further asked to provide quantitative details on the amount of supported RES and the related expenditure by technology and support type. MCs were also asked for separate details on new installations receiving support (those installed in either 2019 or 2020), although not all countries were able to provide this data.

In this report "CEER member countries" is used as a term to indicate all CEER Members and CEER Observers that provided data. A total of 27 CEER MCs responded to the questionnaire, though there are varying sample sizes since not all countries provided a data set for every section.

[7] Directive (EU) 2009/28/EC Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources.
[8] European Commission Communication on Guidelines on State aid for environmental protection and energy 2014-2020, 2014/C 200/01
[9] Communication from the Commission – Guidelines on State aid for climate, environmental protection and energy 2022
[10] C10-SDE-19-04a, C12-SDE-33-03, C14-SDE-44-03, C16-SDE-56-03, C18-SD-63-03 and C20-RES-69-04.

2 National RES targets and key elements of national support schemes

In recent years, most CEER MCs have focused on the development of strategies for 2030 and beyond to set clear signals for investors. The RED II[11] requests EU Member States (MS) to contribute to a common European target of at least 32% renewable energy in final energy consumption by 2030. For this purpose, EU countries had to submit national energy and climate plans (NECPs) by end of 2019. As this report covers the years 2020 and 2021, updates of national RES targets carried out in 2022 could not be taken into account.

2.1 National renewable energy targets

This report does not evaluate the performance of specific CEER MCs but intends to provide an update on the status quo. For this reason, the MCs were asked whether, and if so, which targets they set for 2030. Out of the 27 respondents to the questionnaire, 25 countries have defined 2030 targets for renewable energy, either as an overall target, as a share of final energy consumption or as share in the electricity sector. Concerning the submitted 2030 targets, there is an average share of 32.84% within final energy consumption and an average share of 56.00% within electricity production for 2030.

For further details regarding the RES targets by CEER MCs, see Annex 3 of this report.

2.2 Support instruments for promoting RES deployment

For the review period of 2020-2021, mainly four types of support schemes[12] were in place in Europe, namely:

- Feed-in tariffs (FiTs);
- Feed-in premiums (FiPs);
- Green Certificates (GCs); and
- Investment grants.

For each support scheme, the level of support (or the quota obligation in the case of green certificates schemes) may be either set through administrative procedures or through tendering procedures[13].

Table 1 provides an overview of the support schemes by technology which are in place in CEER MCs. Only the instruments which were detailed by CEER MCs are included in the table.

[11] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources.
[12] The characteristics of the main support schemes implemented in Europe have been described in more details in the CEER report on key support elements of RES in Europe: moving towards market integration, Ref: C15-SDE-49-03, 26 January 2016.
[13] More on the tendering procedures is available in the 2nd CEER Report on Tendering Procedures for RES in Europe, November 2020, Ref: C20-RES-67-03.

Country	Type of support	Process determining the level of support or the quota	PV	Onshore wind	Offshore wind	Bio-energy	Hydro-power	Duration of support (years)
Austria	Feed-in Premium	Administrative & Tendering procedures	✓	✓		✓	✓	20
	Investment grant	Administrative procedures	✓	✓		✓	✓	N/A
Belgium	Feed-in Tariff	Tendering procedures	✓	✓	✓	✓	✓	10 to 20
Bulgaria	Feed-in-Tariff	Tendering procedures	✓	✓	✓	✓	✓	
Croatia	Feed-in Tariff	Tendering procedures	✓	✓		✓	✓	14
	Feed-in Premium	Tendering procedures	✓	✓		✓	✓	
Cyprus	Investment grant	Administrative procedures	✓					N/A
Czech Republic	Feed-in Tariff	Administrative procedures		✓[14]		✓[15/1413]	✓[16]	15 to 30
	Feed-in Premium	Administrative procedures		✓[14]		✓[14]	✓[16]	
Estonia	Feed-in Premium	Administrative procedures	✓	✓		✓	✓	12
France	Feed-in Tariff	Tendering procedures	✓					10 to 20
	Feed-in Premium	Tendering procedures	✓	✓	✓	✓	✓	
	Feed-in Tariff	Administrative procedures	✓			✓	✓	
	Feed-in Premium	Administrative procedures		✓		✓	✓	
Germany	Feed-in Premium	Administrative & Tendering procedures	✓	✓	✓	✓		20
	Feed-in Tariff	Administrative procedures	✓	✓		✓	✓	
	Feed-in Premium	Administrative procedures	✓	✓		✓	✓	
Greece	Feed-in Tariff	Tendering procedures	✓	✓				20 to 25
	Feed-in Premium	Tendering procedures	✓	✓				
	Feed-in Tariff	Administrative procedures	✓	✓		✓	✓	
	Feed-in Premium	Administrative procedures	✓	✓		✓	✓	
Hungary	Feed-in Premium	Tendering procedures	✓	✓		✓	✓	15

[14] Only residual power plants.
[15] Only for defined power plants.
[16] New/reconstructed small hydropower up to 10 MW.

Country	Type of support	Process determining the level of support or the quota	PV	Onshore wind	Offshore wind	Bio-energy	Hydro-power	Duration of support (years)
	Feed-in Tariff	Administrative procedures	✓	✓		✓	✓	5 to 25
	Feed-in Premium	Administrative procedures	✓			✓	✓	5 and 4 to 25[17]
Italy	Feed-in Premium	Tendering procedures	✓	✓	✓	✓	✓	15 to 30
	Feed-in Tariff	Administrative procedures	✓	✓	✓	✓	✓	
Ireland	Feed-in-Tariff	Administrative procedures	✓	✓		✓	✓	15
Latvia	Feed-in Tariff	Administrative procedures	✓	✓	✓	✓	✓	10 to 20
Lithuania	Feed-in Tariff	Tendering procedures	✓	✓		✓	✓	12 to 15
Luxembourg	Feed-in Premium	Tendering procedures	✓					15
	Feed-in Tariff	Administrative procedures	✓	✓		✓	✓	
	Feed-in Premium	Administrative procedures	✓	✓		✓	✓	
	Investment grant	Administrative procedures	✓					NAP
Malta	Feed-in Tariff	Tendering procedures	✓	✓	✓	✓	✓	max. 20
	Feed-in Tariff	Administrative procedures	✓					
	Investment grant	Administrative procedures	✓					N/A
Netherlands	Feed-in Premium	Tendering procedures	✓	✓	✓	✓	✓	12 to 15
North Macedonia	Feed-in Premium	Tendering procedures	✓					15 to 20
	Feed-in Tariff	Administrative procedures		✓		✓	✓	
Poland	Feed-in Premium	Tendering procedures	✓	✓	✓	✓	✓	15 to 25
	Feed-in Tariff	Tendering procedures	✓	✓	✓	✓	✓	15 to 25
	Feed-in Premium	Administrative procedures				✓	✓	15
	Feed-in Tariff	Administrative procedures				✓	✓	15
Portugal	Feed-in Tariff	Administrative procedures	✓	✓	✓	✓	✓	15 to 25
Romania	Green certificates	Administrative procedures	✓	✓		✓	✓	15
Slovakia	Feed-in Tariff	Administrative procedures				✓	✓	15

[17] Five years in case of brown premium; four to 25 years in case of green premium without tender.

Country	Type of support	Process determining the level of support or the quota	PV	Onshore wind	Offshore wind	Bio-energy	Hydro-power	Duration of support (years)
	Investment grant	Administrative procedures	✓					
Slovenia	Feed-in Tariff	Tendering procedures	✓	✓	✓	✓	✓	15
Spain	Investment grant	Tendering procedures	✓	✓		✓	✓	20 to 30
Sweden	Green certificates	Administrative procedures	✓	✓	✓	✓	✓	
	Investment grant	Administrative procedures	✓					
UK	Feed-in Tariff	Administrative procedures	✓	✓		✓	✓	10 to 25
	Feed-in Premium (contract for differences)	Tendering procedures	✓	✓	✓	✓	✓	

Table 1: Overview of national support schemes in place by RES technologies in 2020 and 2021

It must be highlighted that not all CEER MCs from the last report reported data for this report; some MCs that did not report data for the last report provided input for this version of the report. In the last review period, a significant increase in FiP schemes had been noticeable. In 2014–2015 six CEER MCs had had at least one FiP scheme in place and in 2016–2017 this number rose to 16 MCs. Then in 2018–2019, 17 MCs had a FiP-scheme in place. For the current period, only 15 MCs reported that they have implemented one. Compared to the last report, the number of MCs having at least one FiT-scheme in place has remained unchanged (19). Investment grants are still not common and are used in only six MCs. This number has not changed since the last report. Spain is the only country that is relying solely on investment grants, although with specific particularities. Furthermore, the use of GC schemes is still very limited. Only two countries had GC schemes in place. In the last report it was also highlighted that 15 out of 27 CEER MCs had two or more support systems in place. For this year's report 14 out of 27 CEER MCs documented two or more support schemes. A combination of support schemes (12 CEER MCs use a combination of FiT and FiP schemes) is more often used compared to only having one support system in place (10 MCs).

Eighteen out of 27 MCs use tendering procedures to determine the support level, of which six only use tendering procedures and do not have any administrative procedure in place. Nine solely rely on administrative procedures and 12 have implemented both procedures.

In terms of the technology supported, PV, onshore wind, bioenergy[18] and hydropower are the most widely supported RES. The support of other renewable energies such as offshore wind is limited to countries with a coastline and those who have developed the relevant regulatory framework.

[18] Bioenergy encompasses biogases and solid biomass.

As seen in Table 1, the support duration can vary between schemes and technologies. In total, 22 CEER MCs have a range of several years for the support duration. This is a strong increase compared to the last report, when only 13 MCs had a range of several years to limit the support duration. Nine CEER MCs have a support duration up to 20 years, whereas six MCs have a support duration of more than 20 years with three even reaching up to 30 years. The shortest duration of support starts at five years.

CEER MCs modify their renewable energy support schemes in order to achieve renewable energy deployment in a cost-effective way. In recent years, alterations in support schemes were very much motivated by the provisions of the (C)EEAG guidelines and RED II. Since the last RES Status Review, 17 MCs reported changes concerning their support schemes and 10 MCs reported no changes.

CEER MCs that reported changes to their support schemes mostly modified the way how support levels are being determined (seven MCs), which shows a trend from administratively determined tariffs towards support levels being determined in competitive procedures. Four countries also reported changes concerning the market integration of renewables, which is based on balancing responsibility for RES producers for example in FiP schemes. Six MCs reported changes in the financing system. Annex 5 provides a detailed overview of all the reported changes.

3 Renewable electricity volumes receiving financial support

3.1 Financial support by type of RES technology

The supported renewable electricity production for 2020 and 2021 is shown in *Table 2* and *Table 4*. As in previous RES Status Reviews, various sources of biomass and biogas are subsumed under the category of bioenergy to ensure comparability across countries.

Even though more and more supported installations reach the end of their support-time, and some new installations are built without receiving any support, total supported renewable electricity fell from 686 TWh in 2020 (642 TWh in 2019) to 663 TWh in 2021.

Table 3 and *Table 5* show the supported installed capacity for 2020 and 2021. Overall, the supported installed capacity rose from 334 GW to 356 GW in 2021.

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MWh]
Austria	1,665,246	-	1,455,703	826,934	5,590,820	-	9,802	**9,548,505**
Belgium	-	-	-	-	-	6,967,207	-	**6,967,207**
Bulgaria	294,493	-	581,486	614,206	1,212,237	-	-	**2,702,423**
Croatia	861,744	76,233	25,000	73,206	1,671,358	-	579,767	**3,287,308**
Cyprus	36,000	-	-	126,755	220,611	-	-	**383,366**
Czech Republic	4,499,063	-	1,206,489	2,185,303	690,534	-	-	**8,581,389**
Estonia	1,075,097	-	16,649	115,658	600,000	-	55,983	**1,863,386**
Finland	228,930	-	-	-	6,632,369	-	-	**6,861,299**
France	5,597,718	-	6,447,582	12,123,676	38,905,172	-	309,430	**63,383,579**
Germany	42,022,634	196,991	5,026,155	44,917,505	102,727,757	26,902,786	-	**221,793,828**
Greece	858,060	-	21,190	4,391,330	9,322,850	-	3,280	**14,596,710**
Hungary	1,559,055	8,242	230,549	1,573,830	427,530	-	-	**3,799,207**
Ireland	946,260	-	6,353	-	12,859,868	-	-	**13,812,481**
Italy	11,236,288	1,522,903	8,105,881	21,225,059	15,012,479	-	4,864,803	**61,967,414**
Latvia	675,398	-	67,904	-	147,620	-	-	**890,922**
Lithuania	368,005	-	58,797	71,206	1,489,141	-	-	**1,987,149**
Luxembourg	310,199	-	19,028	139,313	311,461	-	-	**780,000**
North Macedonia	57,297	-	195,887	23,618	116,884	-	-	**393,686**
Malta	-	-	-	202,825	-	-	-	**202,825**
Netherlands	12,522,058	1,718,133	391	3,737,268	6,616,816	4,906,366	1,195,832	**30,696,864**
Poland	7,023,315	-	357,758	91,181	14,649,207	-	-	**22,121,462**
Portugal	2,025,821	-	889,858	513,450	11,988,675	14,271	1,846,251	**17,278,327**
Slovakia	496,939	-	889,961	592,657	0	-	-	**1,979,557**
Slovenia	239,123	-	99,549	269,281	6,197	-	-	**614,150**
Spain	5,393,216	-	2,320,516	12,169,910	34,853,049	-	25,628	**54,762,318**
Sweden	5,391,246	-	2,024,981	290,334	26,720,394	596,008	-	**35,022,963**
United Kingdom	10,968,999	-	2,305,426	6,856,755	27,970,534	34,045,982	17,820,412	**99,968,109**
Total	**116,352,204**	**3,522,503**	**32,353,092**	**113,131,260**	**320,743,563**	**73,432,622**	**26,711,190**	**686,246,433**

Table 2: Total renewable electricity produced that received support in 2020, by MC and technology, in [MWh]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MW]
Austria	261	-	358	1,149	2,495	-	15	**4,279**
Belgium	-	-	-	-	-	2,266	-	**2,266**
Bulgaria	58	-	314	1,035	717	-	-	**2,124**
Croatia	135	10	6	53	718	-	113	**1,035**
Cyprus	10	-	-	224	158	-	-	**391**
Czech Republic	-	-	-	-	-	-	-	-
Estonia	-	-	8	210	320	-	-	**538**
Finland	4,284	-	-	-	2,325	-	-	**6,609**
France	1,265	-	2,054	11,015	16,580	-	159	**31,073**
Germany	9,125	47	1,625	53,721	54,414	7,787	-	**126,719**
Greece	195	-	20	3,235	4,119	-	3	**7,573**
Hungary	386	3	55	1,296	236	-	-	**1,975**
Ireland	180	-	3	-	3,683	-	-	**3,866**
Italy	3,158	473	3,921	17,610	8,746	-	956	**34,865**
Latvia	122	-	27	-	64	-	-	**213**
Lithuania	74	-	1	70	410	-	-	**555**
Luxembourg	46	-	8	157	129	-	-	**340**
North Macedonia	8	-	87	17	37	-	-	**149**
Malta	-	-	-	165	-	-	-	**165**
Netherlands	3,667	463	1	4,702	2,419	2,089	706	**14,046**
Poland	18	-	10	615	89	-	-	**732**
Portugal	435	-	366	296	5,718	25	504	**7,344**
Slovakia	96	-	703	550	0	-	-	**1,349**
Slovenia	38	-	21	258	3	-	-	**321**
Spain	1,131	-	769	6,908	17,059	-	5	**25,870**
Sweden	2,260	-	434	768	9,349	187	-	**12,998**
United Kingdom	2,397	-	972	11,003	13,668	9,971	9,010	**47,020**
Total	**29,346**	**996**	**11,764**	**115,057**	**143,456**	**22,325**	**11,471**	**334,415**

Table 3: Total renewable capacity that received support in 2020, by MC and technology, in [MW]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MWh]
Austria	1,381,482	-	1,093,499	933,507	4,948,046	-	6,874	**8,363,408**
Belgium	-	-	-	-	-	6,895,698	-	**6,895,698**
Bulgaria	298,191	-	370,866	1,242,282	239,111	-	257,056	**2,407,505**
Croatia	955,398	74,650	28,908	74,660	1,819,514	-	540,855	**3,493,985**
Cyprus	-	-	-	-	-	-	-	-
Czech Republic	4,489,669	-	1,273,881	2,092,595	593,808	-	-	**8,449,953**
Estonia	782,132	-	10,736	323,330	534,843	-	50,344	**1,701,385**
Finland	23,267	-	-	-	3,907,030	-	-	**3,930,297**
France	6,148,628	-	6,172,861	13,026,801	33,651,574	-	288,831	**59,288,694**
Germany	40,107,212	210,044	5,340,977	43,595,309	85,735,008	24,015,262	-	**199,003,813**
Greece	580,000	-	610,800	4,043,400	6,984,600	-	4,330	**12,223,130**
Hungary	1,329,596	5,624	184,995	2,262,856	410,925	-	-	**4,193,995**
Ireland	845,141	-	5,784	-	10,877,175	-	-	**11,728,100**
Italy	11,566,620	1,402,770	7,976,144	20,338,823	16,125,023	-	4,493,631	**61,903,012**
Latvia	543,111	-	64,763	-	126,381	-	-	**734,255**
Lithuania	334,395	-	3,802	67,682	1,135,928	-	-	**1,541,807**
Luxembourg	339,869	-	20,810	151,686	292,842	-	-	**805,208**
North Macedonia	53,818	-	227,268	25,579	-	103,336	-	**410,001**
Malta	-	-	-	232,322	-	-	-	**232,322**
Netherlands	16,647,642	1,758,443	1,546	5,735,970	7,497,503	7,494,669	1,223,227	**40,359,000**
Poland	5,675,637	-	47,625	83,052	12,707,228	-	-	**18,513,543**
Portugal	2,019,864	-	719,718	518,670	12,733,256	45,696	1,880,999	**17,918,202**
Slovakia	1,007,878	-	827,323	607,311	3	-	-	**2,442,515**
Slovenia	241,058	-	102,227	268,909	5,529	-	-	**617,723**
Spain	5,889,990	-	1,844,682	12,255,604	33,469,633	-	17,783	**53,477,693**
Sweden	6,233,593	-	2,066,222	255,484	31,023,906	596,008	-	**40,175,213**
United Kingdom	10,307,985	-	2,579,022	6,968,855	28,822,604	37,006,070	16,326,862	**102,011,397**
Total	**117,802,174**	**3,451,530**	**31,574,459**	**115,104,689**	**293,641,470**	**76,156,740**	**25,090,791**	**662,821,853**

Table 4: Total renewable electricity produced that received support in 2021, by MC and technology, in [MWh]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MW]
Austria	213	-	271	1.420	779	-	15	**2.698**
Belgium	-	-	-	-	-	2.266	-	**2.266**
Bulgaria	82	-	378	1.351	859	-	-	**2.670**
Croatia	146	10	6	56	718	-	113	**1.049**
Cyprus	-	-	-	240	-	-	-	**240**
Czech Republic	-	-	-	-	-	-	-	-
Estonia	-	-	8	406	320	-	-	**734**
Finland	4.284	-	-	-	2.325	-	-	**6.609**
France	1.295	-	2.048	13.507	17.319	-	181	**34.351**
Germany	9.258	54	1.627	59.423	56.046	7.787	-	**134.195**
Greece	218	-	251	4.035	4.456	-	3	**8.963**
Hungary	388	3	54	1.801	209	-	-	**2.455**
Ireland	137	-	2	-	3.574	-	-	**3.713**
Italy	3.155	474	3.962	17.630	8.791	-	960	**34.972**
Latvia	99	-	25	-	63	-	-	**187**
Lithuania	74	-	1	70	410	-	-	**555**
Luxembourg	46	-	8	241	133	-	-	**427**
North Macedonia	8	-	87	19	-	37	-	**151**
Malta	-	-	-	193	-	-	-	**193**
Netherlands	4.072	526	1	6.881	3.447	2.089	706	**17.722**
Poland	5.501	-	15	1.068	555	-	-	**7.139**
Portugal	450	-	327	313	5.881	25	228	**7.223**
Slovakia	288	-	711	532	0	-	-	**1.530**
Slovenia	40	-	21	264	3	-	-	**329**
Spain	1.131	-	746	6.895	14.938	-	5	**23.716**
Sweden	2.416	-	425	825	10.507	187	-	**14.360**
United Kingdom	2.423	-	986	10.909	13.657	10.788	8.976	**47.738**
Total	**35.723**	**1.066**	**11.963**	**128.081**	**144.989**	**23.178**	**11.186**	**356.186**

Table 5: Total renewable capacity that received support in 2021, by MC and technology, in [MW]

In Figure 1 and Figure 2, the development of the supported total renewable electricity is shown in TWh. Due to the broad range of total renewable electricity receiving support, Figure 1 covers countries with supported total renewable electricity above 8 TWh in 2021 and Figure 2 depicts countries below 8 TWh of supported total renewable electricity.

The amount of supported electricity rose from 2020 to 2021 in only 10 out of 27 MCs. The biggest rise could be seen in Sweden with additional 5.2 TWh. In Germany supported RES declined from 222 TWh to 199 TWh although Germany has still the largest share of supported total renewable electricity with 26% in 2021 (overall 777 TWh reported).

At this point, it should once more be highlighted that this report is based on a snapshot. For fluctuating renewables like wind, PV and hydropower, the output depends on varying meteorological and hydrological conditions. In general, a normalised production profile would provide a deeper insight, but this kind of analysis is beyond the scope of this report. Nevertheless, besides *Table 3* and *Table 5*, the installed capacity as provided by each MC can be found in a separately published Annex 14[19].

[19] Annex 14 : 2023 - ceer.eu

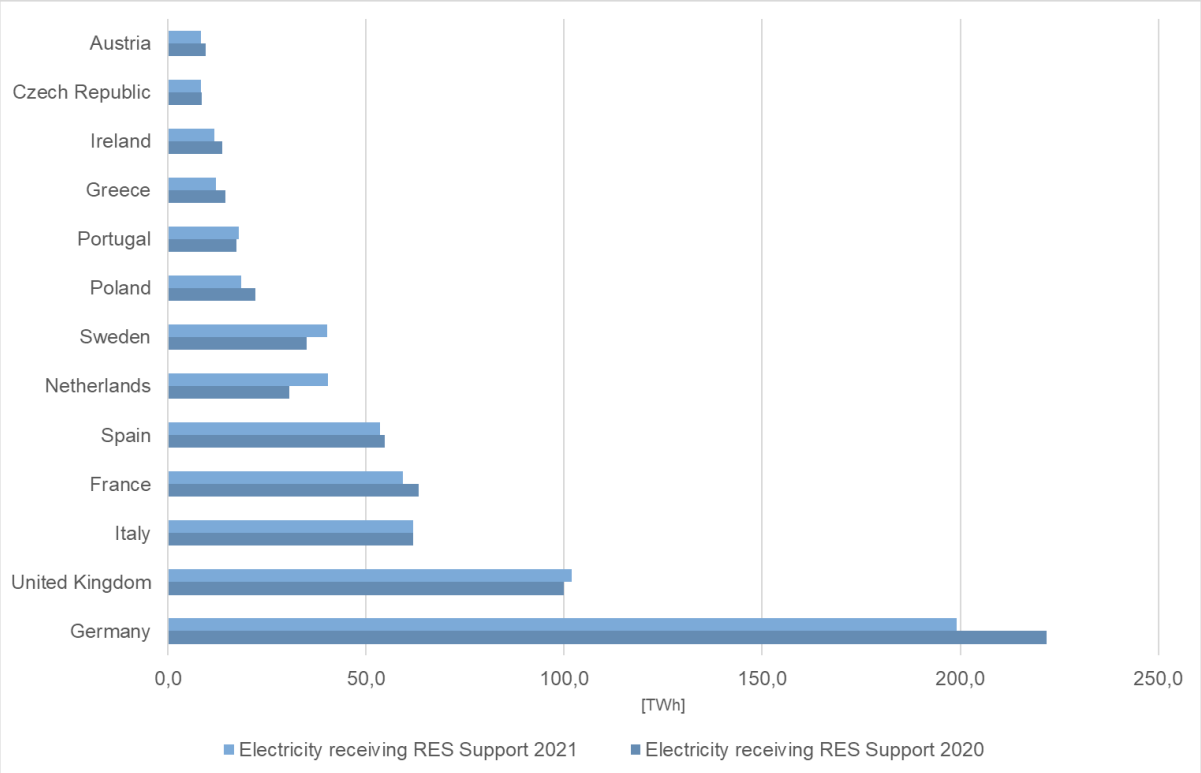

Figure 1: Total RES-originated electricity receiving support by MC, 2020 & 2021 (in [TWh] above 8 TWh)

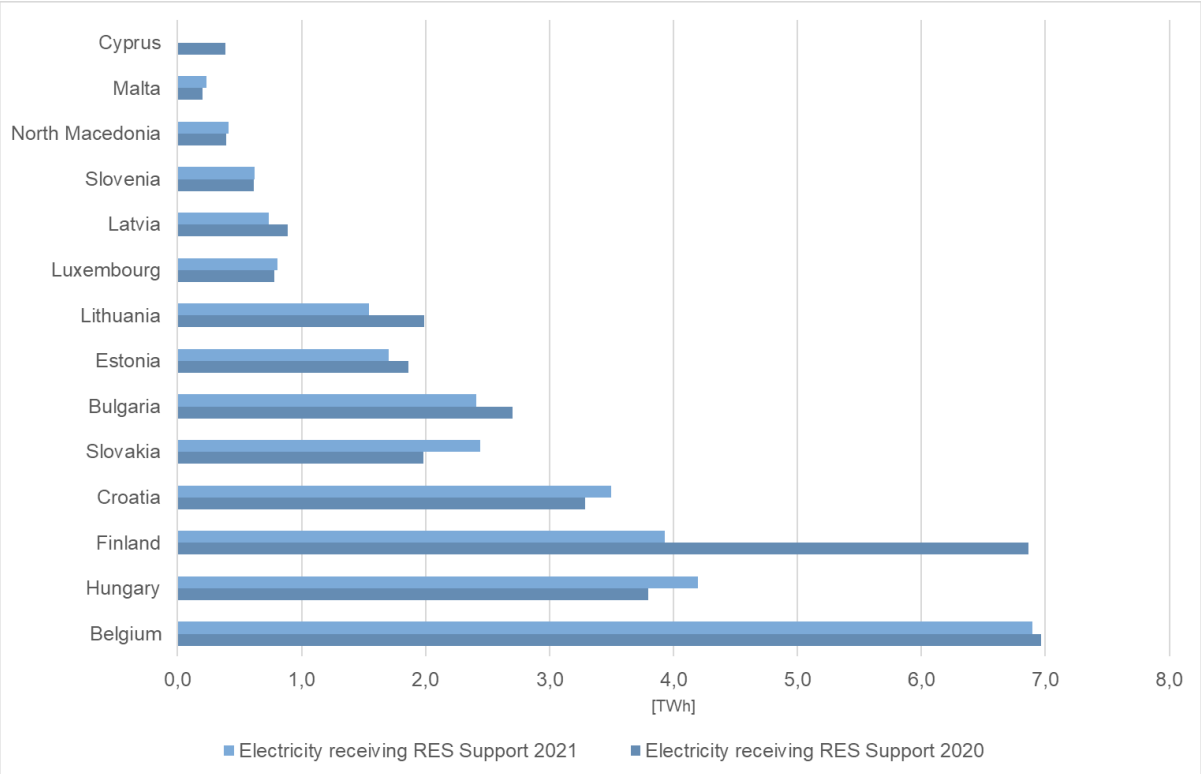

Figure 2: Total RES-originated electricity receiving support by MC, 2020 & 20121 (in [TWh] below 8 TWh)

3.2 Share of supported renewable electricity in 2020

Table 6 shows the proportion of total gross electricity produced that received RES support in 2020. Overall, the share of RES electricity receiving support increased from 16.7% in 2016 (15.5% in 2014) to 19.2% in 2018, to 22.7% in 2020.

Country	Electricity receiving RES Support 2020	Gross elec. produced 2020	Elec. receiving support over gross 2020
Austria	9.55	73	13.2%
Belgium	6.97	89	7.8%
Bulgaria	2.70	41	6.6%
Croatia	3.29	13	24.6%
Cyprus	0.38	5	7.9%
Czech Republic	8.58	82	10.5%
Estonia	1.86	6	31.3%
Finland	6.86	69	10.0%
France	63.38	532	11.9%
Germany	221.79	573	38.7%
Greece	14.60	48	30.3%
Hungary	3.80	35	10.9%
Ireland	13.81	32	42.8%
Italy	61.97	281	22.1%
Latvia	0.89	6	15.6%
Lithuania	1.99	6	36.0%
Luxembourg	0.78	2	34.9%
North Macedonia	0.39	5	7.4%
Malta	0.20	2	9.5%
Netherlands	30.70	124	24.8%
Poland	22.12	158	14.0%
Portugal	17.28	53	32.6%
Slovakia	1.98	29	6.9%
Slovenia	0.61	17	3.6%
Spain	54.76	263	20.8%
Sweden	35.02	164	21.4%
United Kingdom	99.97	321	31.1%
Total	**686.246**	**3,028**	**22.7%**

Table 6: Share of total electricity produced receiving RES support in 2020 (TWh)

Figure 3 is based on data from Table 6. From those countries providing data, Ireland has the biggest share (43%) of total gross electricity produced receiving support. On the other end, Slovenia, which was not included in the last report, had the smallest amount of RES-originated electricity receiving support compared to gross electricity produced, at 3.6%. Belgium only reported partial data due to different jurisdictions, therefore, the overall share is in fact higher than depicted.

It is important to note that the share of supported RES electricity is not an indicator for the overall share of RES electricity in a country, especially for countries such as Austria that have a high capacity of installed hydropower. Because of the long lifetime of this type of RES installations, they might have received support in the past for which support times have already expired. This type of installation does not show up in this review because the produced electricity is no longer supported. However, they still contribute to the overall RES electricity produced. Furthermore, new RES capacity may be installed without any support, which is also not covered in this report.

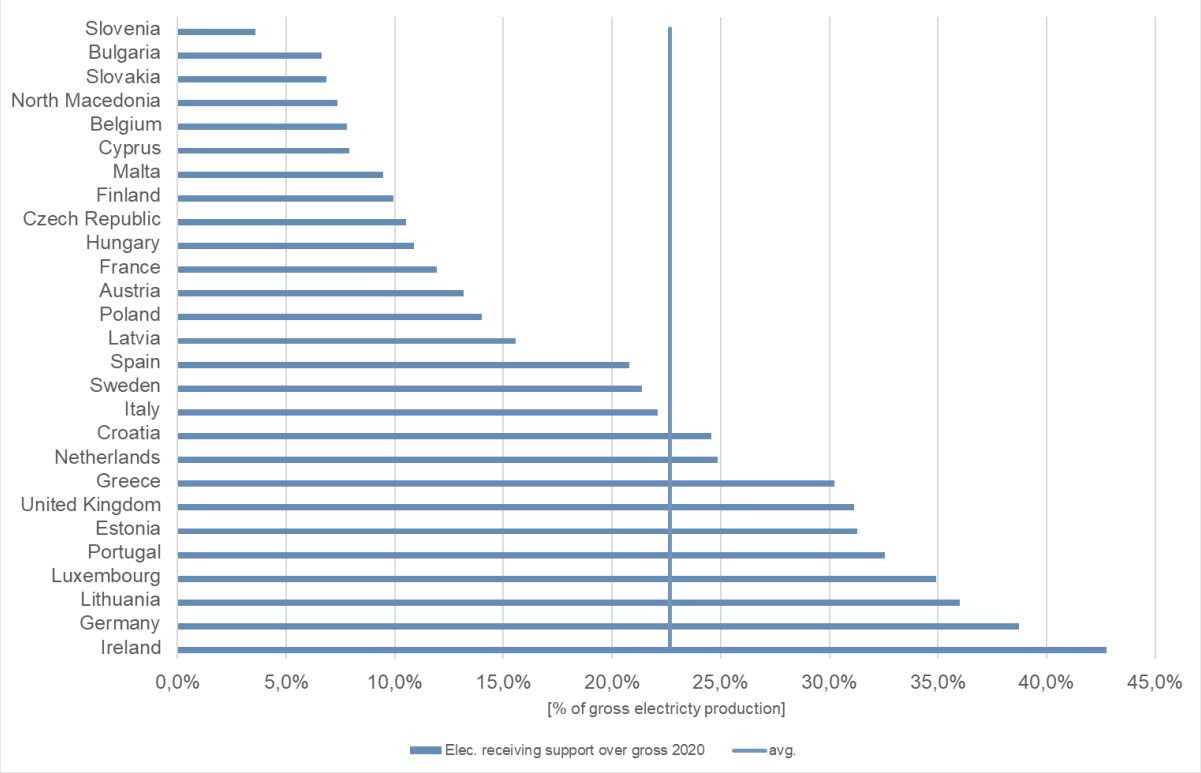

Figure 3: Share of total electricity receiving RES support in 2020

4 Expenditure on RES support schemes

4.1 Financing of RES support schemes 2020–2021

The two main approaches for funding RES support schemes have not changed i.e. most MCs still use either general taxation or non-tax levies paid via the electricity bill by some or all electricity consumers. According to our survey and as displayed in Table 7below, most countries fund their RES support schemes through non-tax levies (20 out of 27 MCs). In those countries with a non-tax levy, there are different mechanisms for determining the levy. In eight cases, the government determines the levy and in another nine cases, the regulator determines the value of the levy. In Hungary, levies are set by the transmission system operator (TSO). In Sweden, the electricity supplier includes the cost of the electricity certificate in the electricity bill.

Funds for the support costs can also be collected by general taxation paid by all citizens, as is the case in Denmark, Germany, Luxembourg, Malta, North Macedonia, and Romania. In Italy, the support costs are only covered for a transitional period. A total of 20 MCs reported that no changes in the way of financing RES support have occurred after 2017.

Country	Changes after 2019*	General taxation paid by all citizens	Non-tax levies paid by some or all customers via the electricity bill	Other
Austria	No	No	Yes	
Belgium	No	No	Yes	In the Brussels and Walloon region a non-tax levy is used. In Flemish region: green certificates: every year every access holder must gather and submit a number of green certificates. The number depends on the total electricity offtake on their access points. The certificates are granted to eligible RES installations. The access holders pass through the costs of collecting the certificates to their customers.
Bulgaria	No	No	Yes	
Croatia	No	No	Yes	
Cyprus	No	No	Yes	
Czech Republic	No (Set to 0)	No	Yes	Due to the extremely high energy costs for final consumers in 2022, there is a legislative adjustment as an emergency measure. From 1.10.2022 to 31.12.2022, the contribution of all end customers is set at 0 CZK, i.e. all end customers have their contribution to the support of the RES waived. It can be expected that this measure will be extended for the whole year 2023, but it is not yet legislated. Therefore, all support will be covered by the state budget only.
Denmark	Empty	Missing	Missing	

Country	Changes after 2019*	General taxation paid by all citizens	Non-tax levies paid by some or all customers via the electricity bill	Other
Estonia	No	No	Yes	
France	No	Yes	No	Since January 2016, renewables support falls under the general State budget, through a dedicated purpose fund – the financing of which being decided each year by the Parliament through a Finance Law.
Germany	Yes	Yes	No	
Greece	Yes	No	Yes	The Special RES account recorded a significant deficit due to the low electricity wholesale prices recorded during 2020 because of the lockdown measures imposed to tackle the COVID pandemic. The revenues of this account are used to finance all RES units that have old PPAs, FiT and FiP contracts. The Greek government introduced a package of financial and structural measures to address the existing deficit, provide financial support and ensure the sustainability of the RES financing account to achieve the desired targets of RES penetration in the country's energy mix. Briefly, the following measures were imposed: (a) a one-time special contribution amounted to 6% of the total electricity sales that were made by RES and CHP generators that started operating before 31 December 2015, (b) an additional charge of 2 €/MWh for the electricity supplied by the suppliers to their customers or generated by self-consumers for 2021 and (c) a "green levy" of 30 €/kl on diesel fuel, with the exemption of the diesel which is used for heating purposes. Part of the above diesel revenues were used to finance the RES account.
Hungary	No	No	Yes	
Ireland	No	No	Yes	
Italy	Yes	Yes (transitional)	Yes	Levy is paid by taxpayers for a transitional period from 1 October 2021 up to 31 March 2023.
Latvia	Yes	No	Yes	
Lithuania	No	No	Yes	
Luxembourg	No	Yes	Yes	
Malta	No	Yes	No	
Netherlands	No	No	Yes	

Country	Changes after 2019*	General taxation paid by all citizens	Non-tax levies paid by some or all customers via the electricity bill	Other
North Macedonia	No	Yes	No	
Poland	No	No	Yes	
Portugal	No	No	Yes	
Romania	No	Yes	No	
Slovakia	No	No	Yes	
Slovenia	No	No	Yes	Final customers of solid, liquid, gaseous fossil fuels or district heating end-users are also obliged to pay additional non-tax levies for financing the RES support scheme.
Spain	No	No	Yes	
Sweden	No	No	No	Electricity suppliers include the cost of electricity certificates as part of the electricity bill.
UK	Yes	No	Yes	Usually, the costs of the renewables obligations , FITs and CfD schemes are paid for by consumers via their electricity bills. As a measure to help reduce high energy costs for both domestic and non-domestic consumers, the UK Government will temporarily fund the costs of the three schemes for some consumers for a period, starting in 2022.

* The last Status Review covered all changes up to 2019. In this review, participants were asked to identify any changes since then.

Table 7: Overview of ways of financing RES electricity support schemes

Sometimes there are exemptions (partial or full) to the financing contributions, e.g. for energy-intensive industries (14 countries out of 22), for self-generated electricity from RES or conventional power plants consumed on site (14 out of 22 MCs). In nine countries, network losses are exempted. Other possibilities include the partial or full exemption of low-income households (Austria), electricity consumed by pumped storage hydropower plants, electrical or CHP generation (Czech Republic, Slovakia), industries that are obligated to obtain a permit for greenhouse gas emission (Croatia), households and small enterprises (Hungary), green electricity imported (UK) or vulnerable consumers (Latvia). These exemptions may increase the financial burden for non-exempted consumers. Exemptions are further described in Annex 9.

It must be highlighted that exemptions depend on the overall financing system itself. If the financing system is based on consumed electricity taken from the public grid, then self-consumption of self-generated electricity is not covered by the financing system in the first place. If the financing system is based on consumed electricity regardless of whether the public grid is used or not, self-consumption of self-generated electricity would be covered by that

system. An exception is therefore needed if no renewable energy levies are to be imposed on this consumption.

4.2 Costs for RES support by type of technologies

In *Table 8* and Figure 4 the costs of RES support across countries are compared. The methodology is the same as in the last review – the overall expenditure for supported renewable electricity is divided by gross electricity produced[20]. The intention is to show the scale of supported renewables compared to the overall size of the electricity market. *Table 8* does not show support levels for renewables; these are shown in Annex 14.

Generally, those countries with higher penetration of supported renewables (as shown in *Table 6*) have higher RES electricity support per unit of gross electricity produced. RES electricity support expenditure per unit of gross electricity produced ranged from 1.41 €/MWh for Sweden to 51.7 €/MWh for Germany, with a weighted average support of 24.69 €/MWh in 2020.

Country	RES elec. support expenditure 2020 [M€]	Gross elec. produced 2020 [TWh]	RES support per unit of gross elec. 2020 [€/MWh]
Austria	986	73	13.58
Belgium	638	89	7.13
Bulgaria	373	41	9.15
Croatia	276	13	20.58
Cyprus	67	5	13.92
Czech Republic	1,621	82	19.89
Estonia	97	6	16.29
Finland	349	69	5.06
France	5,781	532	10.87
Germany	29,605	573	51.70
Greece	1,346	48	27.90
Hungary	213	35	6.08
Ireland	521	32	16.14
Italy	11,497	281	40.98
Latvia	131	6	22.97
Lithuania	53	6	9.67
Luxembourg	79	2	35.16
North Macedonia	21	5	3.99
Malta	16	2	7.29
Netherlands	6,326	124	51.20
Poland	688	158	4.35
Portugal	1,154	53	21.73
Slovakia	299	29	10.36
Slovenia	95	17	5.54
Spain	5,331	263	20.24
Sweden	232	164	1.41
United Kingdom	6,966	321	21.70
Total	**74,760**	**3,028**	**24.69**

Table 8: RES electricity support per unit of gross electricity produced in 2020, in [€/MWh]

[20] Source Eurostat: https://ec.europa.eu/eurostat/databrowser/view/NRG_IND_PEH/default/table, May 2023.

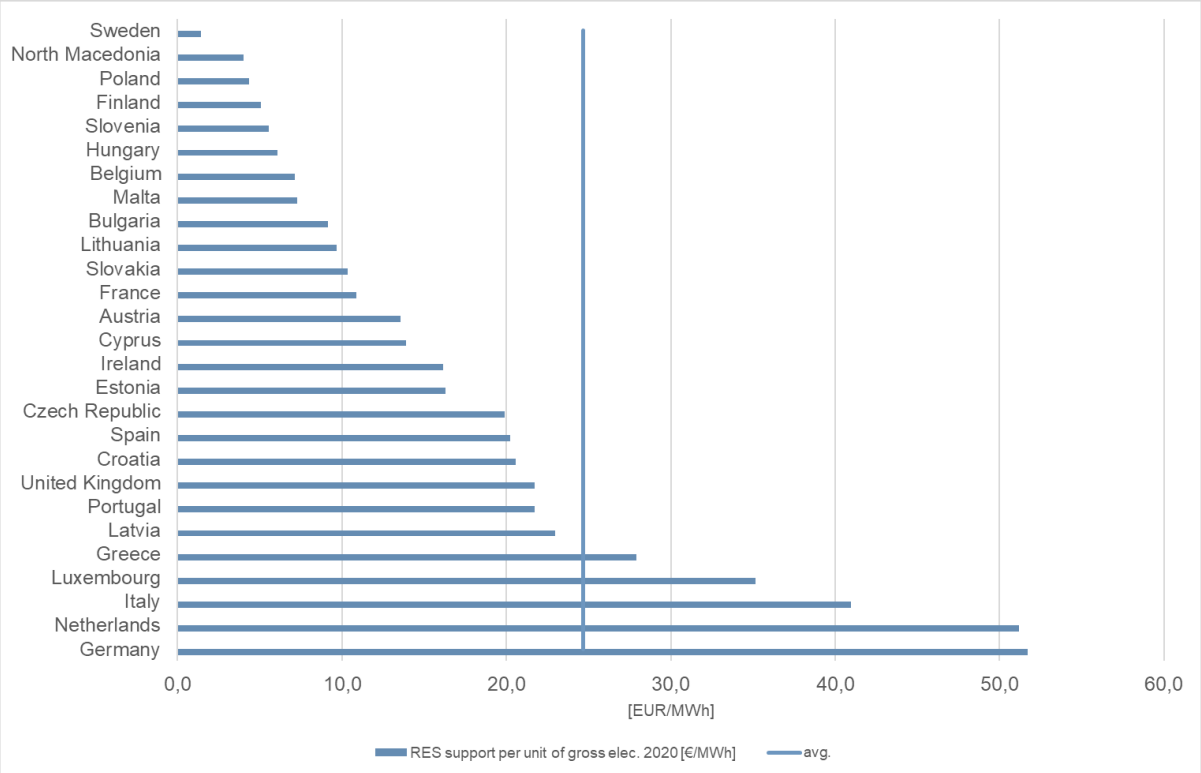

Figure 4: RES electricity support per unit of gross electricity produced in 2020, in [€/MWh]

Table 9 and *Table 10* present the latest available data regarding the overall support system for each country. One must take into account that they present not only the current (2020 and 2021) support system itself but also reflect all the changes up to 2020 and 2021. The tables show an average support level per country and unit support levels. For support systems with FiTs, the level of subsidy was calculated by subtracting the average wholesale electricity price from the paid-out tariff. In Figure 5, the average wholesale electricity price used for the calculations is shown. There are various options to calculate average market prices and there are various options to evaluate the market value of supported renewables. The values displayed are for transparency purpose only and on national levels different definitions and calculations for average wholesale electricity prices can exist.

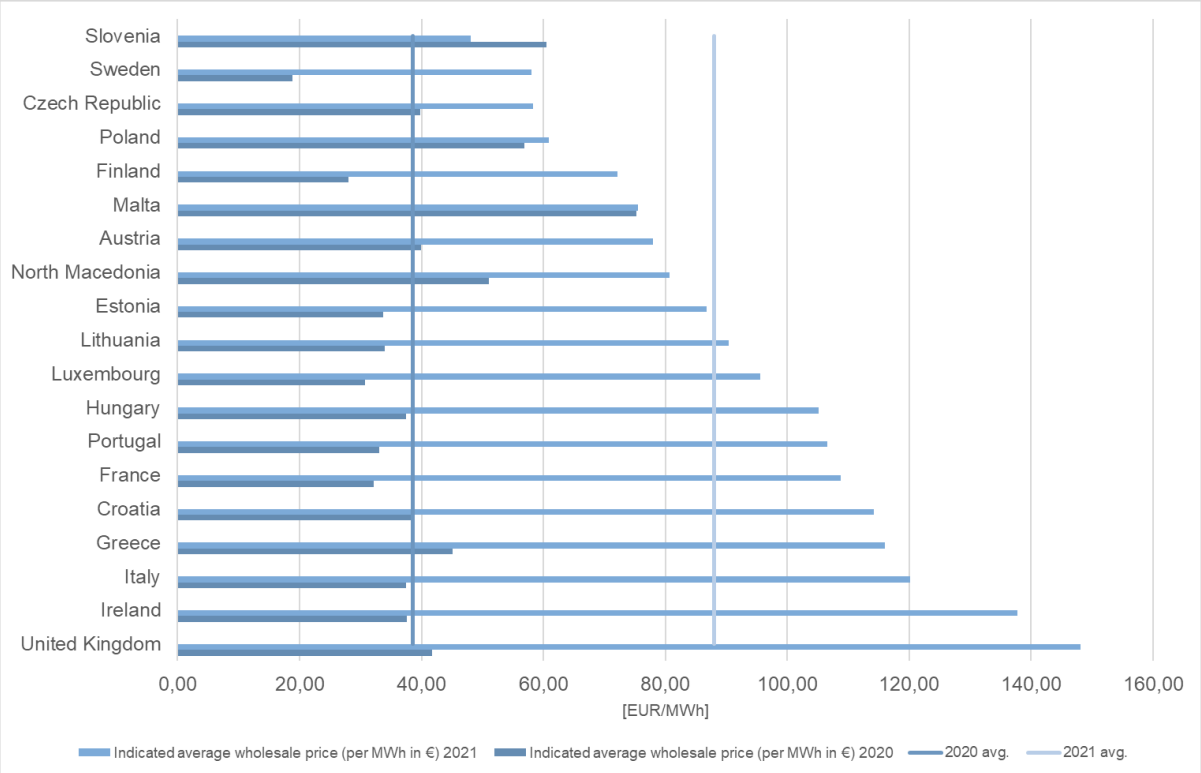

Figure 5: Average wholesale price used for calculations in 2020 and 2021, in [€/MWh]

In the case of investment grants, the RES electricity support per unit of gross electricity produced – if possible – was calculated by the volume of electricity that would be generated by the installation over the lifetime of the grant.

For countries that have different support schemes in place for the same technology and where 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 14.

It should be noted that there are also administrative costs associated with RES support schemes, however these costs are not reflected in the data provided in this report. Therefore, the total expenditures for RES support schemes are in general slightly higher.

Table 9 and *Table 10* show the weighted average support in 2020 and 2021. The weighted average support level declined from 109 €/MWh in 2020 to 83 €/MWh in 2021. In this analysis Solar PV still had the highest average support level in 2021 with around136 €/MWh followed by bioenergy with 69 €/MWh. In nine out of 26 MCs (Cyprus has variable support data only for 2020) support levels rose from 2020 to 2021. For 17 MCs the support levels declined, which is mainly connected to higher market values of RES electricity. It should be noted that the values in tables 9 and 10 are only calculated values based on average market values. Although it is very likely that some support systems generated income, in reality, the level of income could differ significantly from the calculated values.

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [€/MWh]
Austria	141.87	-	55.64	191.13	91.29	-	2.47	**103.23**
Belgium	-	-	-	-	-	91.52	-	**91.52**
Bulgaria	219.69	-	79.76	244.91	91.87	-	-	**137.98**
Croatia	140.82	171.12	96.84	218.88	62.35	-	31.84	**83.81**
Cyprus	125.00	-	-	208.00	166.00	-	-	**176.04**
Czech Republic	86.33	-	76.26	498.86	73.30	-	-	**188.92**
Estonia	50.90	-	53.46	53.69	53.67	-	53.77	**52.07**
Finland	12.49	-	-	-	52.17	-	-	**50.85**
France	114.56	-	42.43	238.56	50.09	-	82.68	**91.21**
Germany	161.82	218.03	76.86	255.05	64.97	157.82	-	**133.48**
Greece	92.28	-	-51.50	228.85	28.19	-	146.42	**92.23**
Hungary	55.33	52.72	26.24	57.44	68.64	-	-	**55.93**
Ireland	80.20	-	52.02	-	34.59	-	-	**37.72**
Italy	203.89	65.72	108.94	289.45	88.47	-	154.29	**185.53**
Latvia	157.39	-	138.90	-	106.78	-	-	**147.60**
Lithuania	29.74	-	9.90	297.52	13.87	-	-	**26.85**
Luxembourg	76.16	-	46.31	237.71	67.17	-	-	**100.70**
North Macedonia	128.88	-	30.34	151.75	37.88	-	-	**54.20**
Malta	-	-	-	76.98	-	-	-	**76.98**
Netherlands	173.28	112.63	588.71	161.63	208.94	348.95	220.75	**206.08**
Poland	31.11	-	31.11	31.11	31.11	-	-	**31.11**
Portugal	78.80	-	63.18	257.86	57.60	108.82	61.29	**66.76**
Slovakia	131.89	-	102.68	239.39	72.79	-	-	**150.94**
Slovenia	131.66	-	31.18	224.02	46.98	-	-	**155.02**
Spain	71.16	-	29.41	300.39	35.05	-	45.68	**97.34**
Sweden	6.62	-	6.62	6.62	6.62	6.62	-	**6.62**
United Kingdom	73.78	-	56.25	56.30	56.97	89.46	56.25	**69.69**
Max. support	**219.69**	**218.03**	**588.71**	**498.86**	**208.94**	**348.95**	**220.75**	**206.08**
Min. support	**6.62**	**52.72**	**6.62**	**6.62**	**6.62**	**6.62**	**2.47**	**6.62**
Weighted average across 27 Member States								**108.94**
Arithmetic average across 27 Member States								**98.90**

Table 9: Weighted average support level in 2020, in [€/MWh]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [€/MWh]
Austria	145.67	-	72.46	181.24	93.44	-	72.73	**109.11**
Belgium	-	-	-	-	-	96.26	-	**96.26**
Bulgaria	153.05	-	105.52	222.90	327.56	-	-	**182.76**
Croatia	68.42	95.51	17.25	137.96	-9.29	-	-43.78	**12.23**
Cyprus	-	-	-	-	-	-	-	-
Czech Republic	91.04	-	69.70	511.48	71.20	-	-	**190.55**
Estonia	53.70	-	53.74	53.69	53.70	-	53.70	**53.70**
Finland	59.06	-	-	-	26.55	-	-	**26.74**
France	81.85	-	0.05	174.48	5.67	-	-97.22	**49.57**
Germany	114.18	151.50	56.59	227.68	27.22	94.06	-	**97.64**
Greece	-	-	-59.31	115.87	-146.71	-	83.78	**-48.44**
Hungary	0.22	-15.14	-39.98	-10.79	2.93			**-7.28**
Ireland	-	-	-48.12	-	-65.55	-	-	**-60.82**
Italy	161.11	55.45	84.49	287.65	81.68	-	146.96	**168.31**
Latvia	151.00	-	137.16	-	103.56	-	-	**141.61**
Lithuania	-	-	-77.40	196.41	-76.88	-	-	**-48.21**
Luxembourg	27.02	-	-17.28	169.90	23.63	-	-	**51.56**
North Macedonia	99.36	-	-1.24	110.20	-	8.36	-	**21.34**
Malta	-	-	-	69.04	-	-	-	**69.04**
Netherlands	180.51	147.06	206.99	186.58	243.57	298.51	238.84	**215.31**
Poland	42.03	-	42.03	42.03	42.03	-	-	**42.03**
Portugal	6.11	-	-13.66	182.91	-18.87	39.85	-13.48	**-9.29**
Slovakia	157.98	-	102.68	239.39	72.79	-	-	**159.49**
Slovenia	137.75	-	41.55	231.60	56.95	-	-	**161.96**
Spain	59.30	-	34.36	288.88	33.73	-	61.56	**95.05**
Sweden	1.87	-	1.87	1.87	1.87	1.87	-	**1.87**
United Kingdom	67.50	-	59.10	58.83	55.38	56.53	58.91	**57.91**
Max. support	**180.51**	**151.50**	**206.99**	**511.48**	**327.56**	**298.51**	**238.84**	**215.31**
Min. support	**0.22**	**55.45**	**0.05**	**1.87**	**1.87**	**1.87**	**53.70**	**1.87**
Weighted average across 26 Member States								**82.72**
Arithmetic average across 26 Member States								**70.39**

Table 10: Weighted average support level in 2021, in [€/MWh]

Figure 6 shows the development of the weighted average support per country. As stated before, the weighted average support is declining. On a country-level, different developments can be observed, due to various effects that come into play. A higher average wholesale price will result in lower support levels in systems with FiTs or variable premiums. The rise of wholesale prices beginning around the end of 2021 also affected support systems insofar that on some occasions the prices were even higher than the initial support level. Fluctuating full load hours can also result in lower or higher overall support payments as can a fluctuating pace of development. One must also keep in mind that different support-times also influence the average support levels. The longer the support-times, the lower the annual average support levels are. However, this does not necessarily imply a lower total support volume over the full support period.

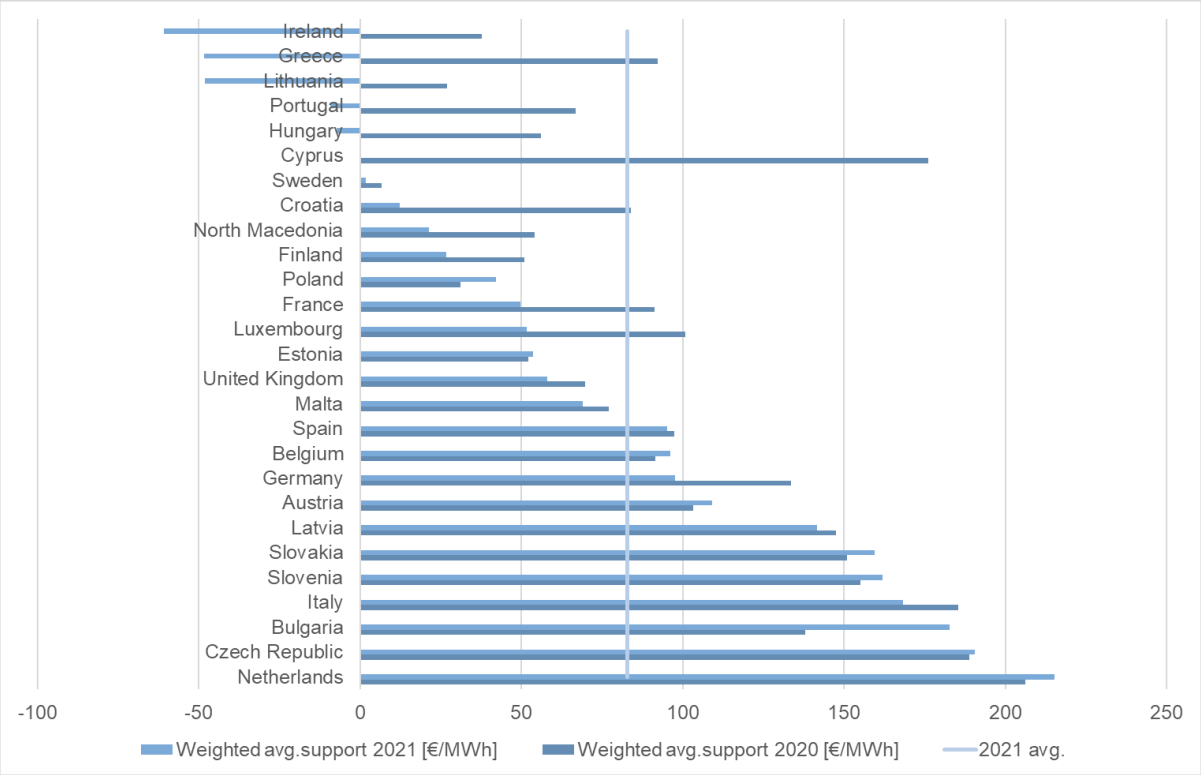

Figure 6: Weighted average support level in 2020 and 2021, by country, in [€/MWh]

4.3 Support costs for new installations

MCs were asked to provide data on new installations from 2019 producing in 2020 and from 2020 producing in 2021. Looking only at new installations, this temporal shift was chosen such that the installations had a full production year and possibly further analysis (e.g. full load hours of new installations) can be made by interested parties.

As in previous years, only a few MCs were able to provide this kind of data. There are various reasons for that, from some NRAs not being involved in RES support systems to other NRAs only having partial information.

Table 11 and *Table 12* depict how much electricity was produced in the new installations only and *Table 13* and *Table 14* show the newly installed capacities. New offshore wind installations from 2020 produced additional 9 TWh of electricity in 2021, followed by new onshore wind installations which produced 8 TWh of additional electricity supported in 2021. In the previous year most additional supported electricity originated from onshore wind (13 TWh) followed by bioenergy (6 TWh). Looking at the additional installed capacities, solar PV had the highest additional capacities of 7 GW in 2019. In 2020 onshore wind had the highest additions with 5 GW.

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MWh]
Austria	7,774	-	49,128	84,279	165,684	-	-	306,865
Belgium	-	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	-	-	-
Croatia	-	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-	-
Czech Republic	-	-	27,755	-	49,001	-	-	76,756
Estonia	-	-	-	-	-	-	-	-
Finland	-	-	-	-	-	-	-	-
France	717,477	-	189,559	1,179,759	3,190,988	-	-	5,277,783
Germany	-	-	-	-	-	-	-	-
Greece	39,558	-	2,260	212,768	1,506,972	-	1,469	1,763,027
Hungary	-	-	-	804,444	-	-	-	804,444
Ireland	-	-	-	-	-	-	-	-
Italy	50,679	93,669	118,851	-	1,329,293	-	-	1,592,493
Latvia	-	-	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-
North Macedonia	-	-	-	-	-	-	-	-
Malta	-	-	-	51,664	-	-	-	51,664
Netherlands	4,534,486	522,893	146	1,377,522	489,139	-	-	6,924,186
Poland	26,609	-	13,508	192,667	2,513	-	-	235,296
Portugal	327,087	-	3,303	-	104,323	50,242	-	484,954
Slovakia	-	-	1,349	-	-	-	-	1,349
Slovenia	13,417	-	4,571	1,533	-	-	-	19,521
Spain	-	-	-	-	-	-	-	-
Sweden	121,221	-	357,383	96,792	4,220,298	-	-	4,795,694
United Kingdom	13,540	-	3,970	26,008	1,320,453	4,134,130	-	5,498,100
Total	**5,851,849**	**616,562**	**771,781**	**4,027,435**	**12,378,663**	**4,184,372**	**1,469**	**27,832,132**

Table 11: Total supported RES electricity from installations new in 2019 for 2020, by MC and technology, in [MWh]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MWh]
Austria	494	-	585	164,607	1,149	-	-	166,835
Belgium	-	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	-	-	-
Croatia	-	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-	-
Czech Republic	-	-	30,492	-	-	-	-	30,492
Estonia	-	-	-	-	-	-	-	-
Finland	-	-	-	-	-	-	-	-
France	158,269	-	27,294	1,760,272	1,930,842	-	-	3,876,678
Germany	-	-	-	-	-	-	-	-
Greece	275,467	-	10,989	600,416	1,158,439	-	-	2,045,311
Hungary	-	-	6,071	619,404	-	-	-	625,475
Ireland	-	-	-	-	-	-	-	-
Italy	31,130	-	180,398	4,631	132,093	-	-	348,251
Latvia	-	-	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-
North Macedonia	-	-	-	-	-	-	-	-
Malta	-	-	-	38,830	-	-	-	38,830
Netherlands	1,196,969	22,149	1	2,161,359	1,782,450	4,728,438	-	9,891,366
Poland	61,395	-	5,228	382,281	132,774	-	-	581,678
Portugal	-	-	-	-	67,320	-	-	67,320
Slovakia	696	-	-	-	-	-	-	696
Slovenia	-	-	5,761	5,386	-	-	-	11,147
Spain	-	-	-	-	-	-	-	-
Sweden	284,683	-	147,425	82,364	3,000,283	-	-	3,514,755
United Kingdom	20,522	-	22,402	39,451	185,866	3,871,775	315,273	4,455,290
Total	**2,029,624**	**22,149**	**436,645**	**5,859,001**	**8,391,217**	**8,600,213**	**315,273**	**25,654,123**

Table 12: Total supported RES electricity from installations new in 2020 for 2021, by MC and technology, in [MWh]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MW]
Austria	2	-	11	144	137	-	-	**294**
Belgium	-	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	-	-	-
Croatia	17	10	582	1	30	-	-	**640**
Cyprus	-	-	-	-	-	-	-	-
Czech Republic	-	-	7	-	23	-	-	**29**
Estonia	-	-	-	-	-	-	-	-
Finland	-	-	-	-	-	-	-	-
France	163	-	58	1,202	1,519	-	-	**2,941**
Germany	-	-	-	-	-	-	-	-
Greece	9	-	1	148	747	-	3	**908**
Hungary	-	-	-	551	-	-	-	**551**
Ireland	-	-	-	-	-	-	-	-
Italy	9	16	18	-	770	-	-	**813**
Latvia	-	-	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-
North Macedonia	-	-	-	-	-	-	-	-
Malta	-	-	-	36	-	-	-	**36**
Netherlands	1,252	122	0	1,452	168	-	-	**2,995**
Poland	3	-	5	215	1	-	-	**224**
Portugal	-	-	-	-	-	-	-	-
Slovakia	-	-	0	-	-	-	-	**0**
Slovenia	2	-	1	1	-	-	-	**4**
Spain	-	-	-	-	-	-	-	-
Sweden	54	-	42	128	1,327	-	-	**1,551**
United Kingdom	76	-	21	504	690	1,587	25	**2,902**
Total	**1,588**	**148**	**746**	**4,381**	**5,411**	**1,587**	**28**	**13,889**

Table 13: Total new installed renewable capacity from 2019 that was in the support system in 2020, by MC and technology, in [MW]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others	Total [MW]
Austria	1	-	1	241	2	-	-	**244**
Belgium	-	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	-	-	-
Croatia	16	-	134	-	132	-	-	**282**
Cyprus	-	-	-	-	-	-	-	-
Czech Republic	-	-	20	-	-	-	-	**20**
Estonia	-	-	-	-	-	-	-	-
Finland	-	-	-	-	-	-	-	-
France	30	-	10	2,492	1,185	-	-	**3,717**
Germany	-	-	-	-	-	-	-	-
Greece	158	-	5	442	512	-	-	**1,117**
Hungary	-	-	1	390	-	-	-	**390**
Ireland	-	-	-	-	-	-	-	-
Italy	4	-	31	5	94	-	-	**135**
Latvia	-	-	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-
North Macedonia	-	-	-	-	-	-	-	-
Malta	-	-	-	29	-	-	-	**29**
Netherlands	290	6	0	2,414	726	1,370	-	**4,805**
Poland	14	-	3	273	86	-	-	**376**
Portugal	-	-	-	-	-	-	-	-
Slovakia	0	-	-	-	-	-	-	**0**
Slovenia	-	-	1	5	-	-	-	**7**
Spain	-	-	-	-	-	-	-	-
Sweden	62	-	11	151	1,117	-	-	**1,341**
United Kingdom	113	-	71	667	638	3,431	45	**4,964**
Total	**688**	**6**	**288**	**7,108**	**4,491**	**4,800**	**45**	**17,427**

Table 14: Total new installed renewable capacity from 2020 that was in the support system in 2021, by MC and technology, in [MW]

In *Table 15* and *Table 16*, the average support levels for those new installations from 2019 and 2020 are depicted. As in previous reports, the biggest difference to the analysis, taking into account all supported installations, can be seen for solar. The new installations have significantly lower support levels. As for overall supported installations, rising market values were responsible for support levels below zero.

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others
Austria	169.25	-	23.60	39.21	46.51	-	-
Belgium	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	-	-
Croatia	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-
Czech Republic	-	-	53.90	-	47.39	-	-
Estonia	-	-	-	-	-	-	-
Finland	-	-	-	-	-	-	-
France	98.04	-	53.41	146.27	50.89	-	-
Germany	-	-	-	-	-	-	-
Greece	102.57	-	43.44	248.73	45.92	-	118.32
Hungary	26.68	-	-	57.48	-	-	-
Ireland	-	-	-	-	-	-	-
Italy	179.89	18.79	90.27	-	31.89	-	-
Latvia	-	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-
North Macedonia	-	-	-	-	-	-	-
Malta	-	-	-	100.48	-	-	-
Netherlands	47.13	34.48	1.05	52.02	31.42	-	-
Poland	-	-	-	-	-	-	-
Portugal	82.02	-	59.36	-	34.00	112.95	-
Slovakia	-	-	34.11	-	-	-	-
Slovenia	106.00	-	18.91	13.20	-	-	-
Spain	-	-	-	-	-	-	-
Sweden	6.62	-	6.62	6.62	6.62	-	-
United Kingdom	-	-	-	-	59.62	128.94	-

Table 15: Support levels for installations new in 2019 producing in 2020, in [€/MWh]

Country	Bioenergy	Geothermal energy	Hydropower	Solar	Wind energy - Onshore	Wind energy - Offshore	Others
Austria	57.25	-	3.30	8.10	0.40	-	-
Belgium	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	-	-
Croatia	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-
Czech Republic	-	-	58.05	-	-	-	-
Estonia	-	-	-	-	-	-	-
Finland	-	-	-	-	-	-	-
France	61.24	-	20.65	89.27	-5.82	-	-
Germany	-	-	-	-	-	-	-
Greece	33.94	-	-30.48	160.59	-32.93	-	-
Hungary	-	-	-5.67	-90.69	-	-	-
Ireland	-	-	-	-	-	-	-
Italy	109.54	-	26.96	-12.29	-29.61	-	-
Latvia	-	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-
North Macedonia	-	-	-	-	-	-	-
Malta	-	-	-	155.99	-	-	-
Netherlands	47.04	30.70	59.35	72.86	52.00	30.67	-
Poland	-	-	-	-	-	-	-
Portugal	-	-	-	-	-45.20	-	-
Slovakia	28.75	-	-	-	-	-	-
Slovenia	-	-	40.06	17.04	-	-	-
Spain	-	-	-	-	-	-	-
Sweden	1.87	-	1.87	1.87	1.87	-	-
United Kingdom	-	-	-	-	-15.55	41.97	15.43

Table 16: Support levels for installations new in 2020 producing in 2021, in [€/MWh]

5 Market integration of renewables

As shown in *Table 17* below, balancing responsibility for RES producers was a feature of support schemes in 18 CEER MCs that participated in the survey. In eight of the above-mentioned MCs, RES producers face the same balancing responsibilities as conventional producers. In ten MCs, only selected RES producers bear full balancing responsibilities. In nine MCs, another institution (e.g. the TSO) is balancing responsible on behalf of supported RES producers.

Country	All RES plants without exception are responsible in exactly the same manner as any other conventional plant	Only some RES plants are responsible in exactly the same manner as any other conventional plant	Another institution (no incentive scheme in place to minimise the incurred balancing costs) has balancing responsibility on behalf of all or some of the RES electricity plants	Another institution (incentive scheme in place to minimise the incurred balancing costs) has balancing responsibility on behalf of all or some of the RES electricity plants	Other
Austria	Yes	No	No	No	No
Belgium	No	No	No	No	Yes
Bulgaria	Yes	No	No	No	No
Croatia	No	No	No	No	Yes
Cyprus	No	No	Yes	No	No
Czech Republic	Yes	No	No	No	No
Denmark	No	Yes	No	No	No
Estonia	Yes	No	No	No	No
France	No	Yes	No	No	No
Germany	No	Yes	No	No	Yes
Greece	No	No	No	No	Yes
Hungary	Yes	No	No	No	No
Italy	No	Yes	No	No	No
Latvia	No	No	Yes	No	No
Lithuania	No	Yes	No	No	No
Luxembourg	No	Yes	No	No	No
Malta	No	Yes	No	No	No
Netherlands	Yes	No	No	No	No
North Macedonia	No	No	No	No	Yes
Poland	No	No	No	Yes	No
Portugal	No	Yes	No	No	No
Romania	No	Yes	No	No	No
Slovakia	Yes	No	No	Yes	No
Slovenia	No	Yes	No	No	No
Spain	Yes	No	No	No	No
Sweden	Yes	No	No	No	No

Table 17: Balancing responsibilities for RES producers

In all cases where there is no balancing responsibility borne by RES producers, another institution is then usually responsible for balancing. This institution can be a network operator, a TSO or a distribution system operator (DSO) (e.g. in Germany, Poland and Luxembourg), a short-term market operator (e.g. in Slovakia, short-term market operator is only responsible for settlement and billing of balancing responsibility) or a specific company in charge for the operational handling of RES electricity (e.g. in Greece). Among those countries, some have introduced arrangements to ensure that the third party in charge of balancing has specific incentives to perform balancing as cost-efficient as possible (e.g. France, Germany). Since 2019 in three of the countries changes in law have taken place: E.g. since 1 April 2020 in Hungary RES power plant operators (except for household sized ones) are financially responsible for balancing also in the feed-in tariff system (but they get compensation until 2026). In Lithuania there was an amendment in law: RES power plants with capacities higher than 400 kW should be responsible for their imbalance.

6 Other forms of RES support

6.1 Overview of other forms of RES support

In the survey, CEER MCs were asked about any other forms of support for RES electricity that had not been covered elsewhere in this report. This aspect is of relevance to illustrate that RES are not only supported through direct operational support schemes (FiT or FiP chapter 2), but also indirectly. For example, RES can be supported through full or partial exemptions from specific financial contributions like taxes or levies, or through dedicated financing programs. Eleven MCs (out of 24) indicated that there are no additional forms of support in place in their countries. This has largely remained unchanged since the last report.

Where other forms of support exist, investment support from various providers or funds predominates. Other very frequently mentioned forms of support are tax reliefs or total tax exemption.

Some countries mention that RES support is provided by green certificates or guarantees of origin that the producer can sell. Some countries favour prosumers. Some countries also indicate that if another energy production is possible at the same time, these plants can be supported by operational support via this other energy (such as heat or biomethane production).

The following information has been provided by the participating MCs (see also Annex 14):

Country	Other forms of RES support
Belgium	Brussels region: Since 2017, the SolarClick program aims to install photovoltaic panels on the roofs of public buildings. The region owns the installation and is responsible for its financing, maintenance and dismantling. It benefits from the green certificates generated by the installation for 10 years. The occupant of the building benefits from the electricity produced.
Czech Republic	It is possible to provide investment subsidies for the new and refurbished RES plants. In the Czech Republic, there is also operational support through the "supply" of heat, where the type of heat supply is defined by law for each source, e.g. for biomass/geothermal it is district heat and for biogas plants, it is "useful heat" substitution. There is also new operational support for biomethane production.
Denmark	Different tax releases.
Croatia	State aid through other programs (e.g. support for industry/agriculture/etc. for building power plants for own consumption).
Italy	Tax exemptions are expected only for PV power plants. In particular: • A fiscal subtraction equal to 50% of the costs incurred up to a maximum cost of € 96,000; and • Only for PV power plants installed in the period 1 July 2020 - 31 December 2022, a fiscal subtraction equal to 110% of the costs incurred (so-called, “super bonus 110%”).
Latvia	In the Republic of Latvia, renewable electricity generation is stimulated through a complex support system based on a feed-in tariff. On 1 January 2014, net-metering was introduced. Access of renewable energy plants to the grid is subject to the general legislation on energy. Electricity from renewable sources is not given priority. Thus, the system operator ensures that all power plant operators have equal opportunities to connect their plants to the grid and transmit electricity in accordance with the principle of non-discrimination. In pursuance of the general legislation, the grid operator is obligated to expand the grid. There are two policy measures to promote RES development and use: system of guarantees of origin: electricity producers which use RES or high efficiency cogeneration for electricity generation

Country	Other forms of RES support
	may receive a guarantee of origin, and an obligation to consider usage of renewable heating and cooling systems in new and renovated buildings.
Lithuania	Support for investment in renewable energy technologies.
Luxembourg	Some municipalities provide additional investment support for PV installations. Producers (also small-scale PV) are eligible to request a VAT number. In that case, they do not pay VAT on the installation (17%), but a VAT payment is due on the energy they "sell" through the FiT/FiP. The VAT rate applicable on this sale of electricity is, however, only 8%. CHP plants (e.g. biomass) receive additional support for their heat production, which is not included in the numbers in chapter 3.
Poland	Electricity from RES is exempted from excise tax. There is also a tax release for owners of detached and semi-detached houses who completed thermomodernisation of the house, i.e. changed the source of energy to RES.
Romania	Small PV capacity prosumers, owning electricity generation capacities from renewable sources up to 100 kW/site (not enrolled in the green certificates support scheme) may sell the electricity produced by them and delivered into electrical networks to the electricity suppliers with which they, as final consumers, have concluded/conclude a contract for the supply of electricity, at the day-ahead market (DAM) weighted average price from the previous calendar year.
Sweden	There is a tax release for micro-producers of up to 30 MWh per year.
Slovakia	State aid scheme – supporting the investment in technologies for electricity generation from RES. Institute of “Local source” where some distribution fees are waived (connection, metering instruments…).

Table 18: Overview of other forms of RES Support

6.2 Support for self-consumption or sharing of RES electricity

Compared to the previous version of this report, this question has been extended to cover not only self-consumed energy but also shared energy. Self-consumption is defined as the use of power generated on-site by an energy consumer in order to reduce, at least in part, the purchase of electricity from the grid. Energy sharing can then be seen as sharing e.g. between tenants in the same apartment building without using the distribution network (intra-building sharing) or sharing between individual market participants through the distribution network.

Self-consumption and energy sharing can be relevant in the context of the drive towards greater consumer empowerment and engagement, and the realisation of Europe’s renewable energy targets – as long as the impacts of self-consumption on network financing, balancing and contribution to energy taxation are properly considered in the overall framework. With increasing amounts of small-scale electricity generation connected at distribution level, particularly rooftop solar and wind, self-consumption has the potential to have a significant impact on Europe’s future energy system.[21]

Similar to the last report, CEER MCs were asked to provide more details about the way self-consumption and energy sharing is addressed at the national level (for further details see Annex 12).

The following aspects can be derived from the answers provided:

[21] For more information, notably on the impact of self-consumption on individuals (consumers and prosumers), society, on system operation and costs, and the market, please see the CEER Position Paper on Renewable Energy Self-Generation (Ref: C16-SDE-55-03), 16 September 2016.

- Self-consumption is allowed in all countries, and in most MCs, it is fully or partially exempt from grid charges; and
- Most MCs mention the implementation of electricity sharing, either within a building (intra-building) or even within energy communities. When energy sharing is enabled through the public grid, the shared part of the electricity is then often subject to the same grid charges as any other generation/consumption connected at that level, e.g. LV grid charges, but not HV grid charges, and thus overall charges are reduced.

Country	Are there any charges on self-consumption i.e. consumption of self-generated RES and/or conventional electricity?
Austria	Renewable energy communities (RECs) can share electricity within on a 15min basis. For that shared electricity, the grid charges are lower.
Belgium	* Brussels region: Prosumers can either sell to local suppliers the excess or share it in a number of ways (intra-building sharing, peer-to-peer (P2P), energy communities - https://energysharing.brugel.brussels/). There are also reductions of the grid tariffs for sharing electricity. * Flemish region: Introduction of energy communities, energy sharing and P2P sales is in progress. Starting from 1 July 2022 the following is possible: energy sharing within a building (e.g. in an apartment building), energy sharing with yourself (secondary residence or branches of the same company) and P2P sales (selling energy between two different energy users). For now, all participants should have the same electricity supplier. Starting from 1 January 2023 energy sharing within an energy community should be possible as well. Additionally, the limitation of having the same electricity supplier is no longer in force. Interesting links: https://www.nieuwsblad.be/cnt/dmf20220907_95830512; https://www.vreg.be/nl/energiegemeenschappen; https://www.vreg.be/nl/energiedelen-en-persoon-aan-persoonverkoop; * Walloon region: Secondary legislation has recently been voted but not yet functional.
Bulgaria	No
Croatia	Energy sharing is possible for jointly acting renewables self-consumers (in the same building) and energy communities (citizen and renewable), but only for those consumers who have advanced meters and are connected to the same 10(20)/0.4 kV transformer station. The energy sharing "key" needs to be delivered to the DSO before the start of the settlement period, so the DSO knows how to allocate energy from different sources. They only pay distribution network costs and not transmission.
Cyprus	Yes, self-consumers connected to the grid have to pay grid charges. No grid charges are charged for the self-produced RES electricity.
Czech Republic	Electricity generated and consumed at the same point of consumption is not charged grid fees and if the installed capacity of the generating plant is less than 30 kWp, this consumption is exempt from electricity tax. This setting applies to all power plants regardless of whether they have received investment support, are registered in the operating support scheme (FIT or FIP) or are not supported at all. Until the end of 2022, only self-

Country	Are there any charges on self-consumption i.e. consumption of self-generated RES and/or conventional electricity?
	consumption has been allowed from 1 January 2023 onwards, but only "intra-building sharing" is allowed. Electricity sharing between market participants will be addressed in the amendment to the Energy Act, which is currently in the legislative process. .
Denmark	Some private producers have incentives to consume all production themselves and some to sell on the market. This depends on the support-tariff (there are many different).
Estonia	No
Greece	Although, there is no specific definition of "energy sharing" in the Greek legal framework, in Greece, self-produced energy sharing is practically done through virtual net-metering in energy communities. The virtual net-metering occurs by offsetting the electricity produced by a PV unit owned by an energy community with the electricity consumed in the facilities of the members of the energy community or in facilities of vulnerable consumers or citizens living below the poverty line. Basically, the electricity supplier (the same supplier has to supply electricity to all consumers of the energy community) allocates the electricity generated to each consumer according to specific percentages provided by the energy community and then offsets the RES electricity allocated with the electricity consumed by each consumer (and thus the self-produced energy is shared among the members of the energy community). As in normal net-metering, the energy nettings happen on a three-year basis and the time of generation does not necessarily have to coincide with the time of consumption. Each time the electricity retailer issues an electricity bill, the electricity fed into grid and the electricity consumed must be measured. After the allocation of electricity generated by the energy community based on the allocation percentages provided, if the difference for a specific consumer is positive, this surplus is credited to his next electricity bill and he does not pay for the competitive charges (any surpluses after the end of the three-year period will not be disbursed by the electricity supplier and will be annulled). If the difference is negative for the consumer, i.e. more electricity was consumed than produced, then the consumer is obliged to pay the difference. The consumers pay the regulated charges for all the energy they consume if their households are not connected with the electricity generation unit. Practically, in that case the consumers' benefit arises only from the reduced competitive charges as all regulated charges are paid in full. Alternatively, if their households are connected with the electricity generation unit, then the regulated charges are calculated as follows: • The charges for RES levy and grid access are calculated based on the energy absorbed from the network; and • The charge for public services obligations (PSOs) is based on the energy consumed (a sum of the absorbed energy from the network and the energy that was produced by the RES unit but was not injected into the network).

Country	Are there any charges on self-consumption i.e. consumption of self-generated RES and/or conventional electricity?
Hungary	No
Italy	The Italian Authority, with the resolution 318/2020/R/eel, defined the procedure to set up renewable energy communities and jointly acting renewables self-consumers and the economic regulation for the shared electricity among renewable energy communities and jointly acting renewables self-consumers. In particular, this resolution foresees that the Gestore dei Servizi Energetici S.p.A (GSE) calculates the shared electricity on an hourly basis (it is the minimum between electricity withdrawn from the grid by the members of the group/community and electricity injected into the grid by the same members). The GSE returns a fee equal to: • In case of RES energy communities: the product between the shared electricity and the variable part (in c€/kWh) of transmission and distribution network tariffs (defined for the low voltage final consumers); and • In case of jointly acting renewables self-consumers: the sum between i) the product between the shared electricity and the variable part (in c€/kWh) of transmission and distribution network tariffs (defined for the low voltage final consumers), and ii) the product between the shared electricity, the zonal energy price and the avoided network losses coefficient (this coefficient is defined according to the power plants voltage level: 1.2% in case of low-voltage plants, 2.6% in case of medium voltage plants). This economic regulation is not to be considered an incentive since it aims at considering the grid cost reduction deriving from self-consumption. Furthermore, the decree 16 September 2020 defined the incentive to promote the collective energy sharing and the RES energy communities, including through the use of storage systems. The incentive for self-consumed energy is respectively equal to: • 100 €/MWh for collective self-consumption configurations; and • 110 €MWh for RES energy communities. The incentives are recognized for a period of 20 years and are managed by GSE.
Latvia	On August 2022 amendments to Electricity Market Law entered into force, taking into account requirements of Directive (EU) 2019/944 on common rules for the internal market for electricity. Regulation about net-metering system and Regulation about electricity. These transferred amendments to the Electricity Market Law to determine the basic regulation of active users, energy communities, energy sharing, net-metering, net-settlement. Work is currently underway on the preparation of the Cabinet-level regulation for active users, energy communities, energy sharing, net-metering and net-settlement, which will determine the technical and practical aspects.

Country	Are there any charges on self-consumption i.e. consumption of self-generated RES and/or conventional electricity?
Lithuania	Since the implementation of the Clean Energy Package (CEP), Lithuania has introduced possibilities for renewable energy communities, citizen energy communities. Also, there are law amendments, that prosumers could use electricity in different objects which are not related to each other by the same owner - for such electricity there is no public service obligation charge.
Luxembourg	Since 1 January 2020, self-consumed renewable energy is not subject to any grid usage fee. Collective self-consumption and energy sharing within a community is also possible.
Malta	No
North Macedonia	Starting from July 2022, prosumers do not pay for the network charge for electricity injected to the grid.
Poland	As a rule, self-consumption of self-generated electricity is not subject to additional charges. Prosumers (new net-billing settlement system since April 1, 2022) do not pay VAT or Personal Income Tax on the energy fed into the grid. However, when drawing energy from the grid, they partially pay distribution fees, RES fees and cogeneration fees, as well as excise duty and VAT. Regulations concerning peer-to-peer trading and electricity sharing are currently subject of an ongoing legislative process.
Portugal	The fraction of energy consumption that comes from energy sharing (collective self-consumption) does not pay network access tariffs if the public network is not used to convey the shared energy. If the public network is used, then that fraction of energy consumption that is shared among self-consumers pays specific network access tariffs. These self-consumption network access tariffs result from convention network access tariffs deducted of network use tariffs of voltage levels above the production unit. Policy costs may also be deducted (for self-consumption projects licenced until the end of 2022, the government established a deduction of 50%, for individual self-consumption, or 100%, for collective self-consumption). Surplus energy (excess production, which is not shared among self-consumers) can be sold, through bilateral contracts, market participants or aggregators.
Romania	No
Slovakia	No
Slovenia	No
Spain	Since 2019, (Royal Decree 944/2019) it is possible to perform self-consumption without grid charges, even when generation and associated consumer are not in the same place, under some conditions such as a low voltage connection and distance under 500m.
Sweden	There is a tax release for self-produced RES energy that is fed into the public grid up to 30 MWh per year

Table 19: Charges on self-consumed electricity

7 Conclusions and way forward

This review is unique in terms of the number of countries covered and the level of information provided about support costs by RES technologies and other relevant issues related to the promotion of RES in Europe. As with previous reports, the gathering of this information remains challenging as NRAs are not equally responsible for or involved in the administration of the RES support process itself and have limited access to the relevant data. Especially support cost data on newly installed RES plants is still rarely available, which makes it difficult to analyse the cost development for newly installed RES capacities falling under the current support schemes (with lower support costs in general). Furthermore, the analysis of the overall system is more demanding since the support frameworks are getting more complex, notably in respect to the coexistence of various support frameworks. Indeed, many CEER MCs support RES installations under different support systems, and as previously predicted, most of the MCs already provided data for more than one support framework, with old plants still falling under a FiT system and new plants supported via more market-based systems such as premiums.

This report shows that the weighted average support level (all countries and support schemes taken into account) significantly declined from 109 €/MWh in 2020 to 83 €/MWh in 2021 (98 €/MWh in 2019 and 100 €/MWh in 2018). It is not possible to determine how a potential decrease in costs of newly constructed RES, evolutions in market value of the electricity produced (considering the variability of energy prices) or other multiple factors affecting the economic conditions of such installations (grid connection or access regimes, taxes, etc.) affected those calculated supported levels.

The indicated average wholesale electricity price used for calculation of subsidies for 2017 was 40 €/MWh and for 2019 it was 50 €/MWh. Although not exactly the same group of countries from the last report provided data for this one, the average wholesale electricity price for those which provided data for 2020 was 39 €/MWh. Comparing it to 2019, a declining market value would fit a higher weighted average support level in 2020. The rise of the indicated average wholesale price in 2021 to 88 €/MWh on the other hand indicates a declining need for support which is in line with the drop in the weighted average support level. Other above-mentioned factors cannot be evaluated; however it must be highlighted that the sample itself is not the same. This means that the countries that reported data for the last report and those that reported data for this report are not exactly the same.

Furthermore, this report as well as previous reports, do not reflect the overall electricity market system in which RES support is embedded and all the costs RES installations must bear. Different grid connection or access charge regimes lead to different cost structures for renewables. The report reflects a mixture of old, new, small, and large RES plants, and different support systems (FiT, FiP, GCs, investment grants) with varying support times. Hence, a comparison between the MCs is always based on simplifications and should be carried out with caution. With this in mind, the following observations can be derived from the review:

- A wide range of instruments are used to promote RES, such as investment grants, FiT, FiP, and GCs. Across Europe, the transition towards support schemes allowing for more market integration of RES and more competitive elements in the way support levels are being determined is still ongoing. As such, this report followed the path that was set during the last status review, i.e. the introduction of more FiP schemes, where RES producers receive support (a fixed or variable premium) in addition to their market income and the introduction of tendering procedures, as a means to determine levels of support;

- It is not uncommon that RES plants have the same financial responsibility as conventional plants for electricity balancing, at least above a certain threshold of capacity installed;
- No changes can be observed to other central features such as the nature of funding (mostly via non-tax levies);
- The proportion of gross electricity produced receiving RES support differs widely from one country to another ranging from 3.6% in Slovenia to 42.8% in Ireland, with a weighted average across countries of approximately 23% in 2020. This is an increase from a weighted average of around 19% in 2018; and
- In terms of support costs, there are wide differences across technologies and across countries. The weighted average support for RES, on top of the wholesale price, decreased from 109 €/MWh in 2020 to 83 €/MWh in 2021. In 2019, it ranged from a minimum of 1.87 €/MWh (in Sweden) to a maximum of 215.31 €/MWh (in the Netherlands).

Annex 1 – List of abbreviations

Term	Definition
ACER	The EU Agency for the Cooperation of Energy Regulators
EEAG	EU Guidelines on State aid for environmental protection and energy 2014-2020
AER	Alternative Energy Requirement Scheme
CEER	Council of European Energy Regulators
CHP	Combined heat and power
CSP	Concentrated Solar Power
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
HECHP	High-efficiency combined heat and power
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 hour 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.
LCOE	Levelised cost of energy
MC	CEER member country (including both Members and Observers that participated in this status review)
MS	Member State
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)
RED / RES Directive	The Renewable Energy Directive (2009/28/EC)
RES-E	Electricity from Renewable Energy Sources
RESS	Renewable energy support scheme

Term	Definition
SDE+	The 'SDE+' ('*Stimuleringsregeling duurzame energieproductie*') 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
XBID	Cross-Border Intraday Project

Annex 2 – Definitions

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; and - 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.
Solar electricity	Solar radiation exploited for electricity production. Where possible, the following sub-categories are used: PV (photovoltaic) and 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 and other solid biomass.
Wind energy	The kinetic energy of wind converted into electricity in wind turbines. This is comprised of offshore and onshore wind energy.
Categories of support	
Call for tenders	A type of 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. Where tenders are coupled with other forms of support e.g. Feed-in-Tariff, Feed-in-Premium or Green Certificates, 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 differences	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.

Term	Definition
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 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 recognised when cash is actually paid.
Auto-consumption	Consumption of self-generated electricity.
Balancing responsibility	Producers of electricity are bearing the financial responsibility for imbalances between their forecasts and the actual electricity feed-in (financial settlement).
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 minimise 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-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 3 – Overview of RES objectives for 2030

Country	National RES expansion objectives for 2030			Explanation
	Overall RES objective	Objective of RES electricity share	No objective defined yet	
Austria		100%		100% of electricity consumption should be RES electricity by 2030. The new draft of the renewables law estimates that +27 TWh until 2030 are needed with: +11 TWh PV +10 TWh Wind +5 TWh hydropower +1 TWh biomass
Belgium	17.5%			National Energy and Climate plan: 17.5% RES for BE (see page 15, https://www.nationaalenergieklimaatplan.be/admin/storage/nekp/nekp-deel-a.pdf).
Bulgaria	27%			
Croatia	37%			
Cyprus	23%	26%		Cyprus' national RES objectives for the period 2021-2030 in the context of EU policies are: • Share of RES in gross final energy consumption to reach 23% • Share of RES in gross final electricity consumption can reach at least 26%
Czech Republic		22%		RES share in the final energy consumption 22% Electricity 16.90% Transport 14.00% Heating and cooling 30.70%
Denmark				https://kefm.dk/Media/C/B/faktaark-klimaaftale%20(English%20august%2014).pdf
Estonia	42%			The share of renewable energy in total final consumption must be at least 42% by 2030: production of renewable energy will be 16 TWh, which is 50% of final energy consumption, (the share of renewable energy in the total final consumption of electricity is 40%).

Country	National RES expansion objectives for 2030			Explanation
	Overall RES objective	Objective of RES electricity share	No objective defined yet	
France	32%	40%		The French Energy Transition for Green Growth Law (or Energy Transition Law), adopted in August 2015 and updated in 2019 sets out the following objectives: increase the share of renewables to 32% of final energy consumption and 40% of electricity production by 2030. These objectives are translated into installed capacity targets per technology by ministerial decrees (French multiannual energy program (PPE)). The first multiannual energy program was published in April 2016 with targets for 2018 and 2023. The second one was released in January 2019 for the periods 2018-2023 and 2023-2028.
Germany		65%		2030: 65% share of RES based electricity in gross electricity consumption.
Greece	35%			35% (share of RES in gross final energy consumption based on NECP).
Hungary	21%	Min 20%		Hungary's goal for 2030 is to reach at least 21% of renewable energy in gross final energy consumption, at least 20% of RES in gross final electricity consumption and total climate neutrality until 2050.
Italy	30%	55%		According to Italian energy strategy defined in 2019 in compliance with the Clean Energy Package, Italy should reach an objective of 30% share of RES with respect to total final consumption and an objective of 55% RES electricity (defined as the ratio between RES gross electricity production and total gross electricity production) by 2030.
Latvia	50%			According to National Energy and Climate Plan for 2021-2030 the goal is to achieve 50% RES share in gross energy consumption by 2030.
Lithuania	45%			45% of final consumption (National Strategy for Energy Independence, https://enmin.lrv.lt/uploads/enmin/documents/files/Nacionaline%20energetines%20nepriklausomybes%20strategija_2018_LT.pdf)
Luxembourg	25%			25% of gross final energy consumption.
Malta		11.0%		The Malta's 2030 National Energy and Climate Plan indicates the target of 11% share of Renewable electricity in gross final electricity consumption in 2030.
Netherlands				In the climate agreement of 2019, it is stated that the objective for the electricity sector in the Netherlands is to reduce CO_2 emissions by 2030 by at least 20.2 megatons. This is part of the general 49% government's reduction target for the Netherlands compared to 1990. In order to reach this goal, the offshore wind sector has to grow to at least 49 TWh a year and the renewable on land (> 15 kW) sector to at least 35 TWh a year. In the coalition agreement of the Netherlands (2021) the government's reduction target is raised to 55% and the ambition is expressed to aim for a reduction of 60% in policy design. In accordance the target for the offshore wind sector has been raised from 11.5 GW to approximately 21 GW around 2030.

Country	National RES expansion objectives for 2030			Explanation
	Overall RES objective	Objective of RES electricity share	No objective defined yet	
North Macedonia				There are no national RES targets for 2030. It is expected that the Ministerial Council of Energy Community to adopt RES targets by the end of 2022.
Poland	23%	32%		According to Energy Policy of Poland until 2040, in 2030 the share of renewable energy in gross final energy consumption will be at least 23% − not less than 32% in electricity, 28% in heating, 14% in transport.
Portugal	47%	80%		Contribution of renewable energy production to gross final energy consumption: 31% in 2020; 38% in 2025, 47% in 2030. Gross final electricity consumption from renewable energy sources: 60% in 2020, 69% in 2025 and 80% in 2030. National Plan for Energy and Climate, 10 July 2020.
Romania	30.7%			24% - 2020. According to NECP (RO): 27.4% - 2025; 30.7 % - 2030
Slovakia	19.2%	27.3%		Totally 19.2% (for electricity production corresponding percentage is 27.3%)
Slovenia	27%	43%		27% of final energy consumption from RES, of which 43% share in the electricity sector.
Spain	42%	74%		42% of final energy consumption from RES by 2030. 74% of final electricity consumption from RES by 2030.
Sweden	23%			The expansion objective of the certificate system has been to construct 33.2 TWh RES between 2012-2030. This corresponds to 23% of the total expected energy use in Sweden 2030.
UK				The UK has a legally binding target to reduce all greenhouse gas (GHG) emissions to net zero by 2050. In addition, the UK has committed to accelerating low-carbon electricity generation to achieve a fully decarbonised electricity system by 2035, subject to security of supply. The government sets carbon budgets which place a restriction on the total amount of GHGs the UK can emit over successive 5-year periods. The British Energy Security Strategy, published in April 2022, set an ambition for up to 50 GW of offshore wind capacity by 2030, with 5 GW of that total coming from floating offshore wind in deeper seas, and a fivefold increase in solar PV capacity by 2035 (in Q4 of 2021, the UK had 11 GW of offshore wind installed, and 14 GW of solar PV).

Annex 4 – Overview of support scheme and changes

		Type of changes		
Country	**Changes after 2019**	**Financing the RES support scheme**	**Way support levels are being determined**	**Market integration of RES**
Austria	No	No	No	No
Croatia	Yes	Yes	Yes	Yes
Cyprus	Yes	No	No	No
Czech Republic	Yes	No	Yes	No
Denmark	Yes	Yes	Yes	No
Estonia	Yes	No	Yes	No
France	No	No	No	No
Germany	Yes	Yes	Yes	N/A
Greece	Yes	Yes	Yes	Yes
Hungary	Yes	No	Yes	Yes
Ireland	Yes	No	Yes	Yes
Italy	No	No	No	No
Latvia	No	No	No	No
Lithuania	No	Yes	No	No
Luxembourg	No	No	No	No
Malta	Yes	No	Yes	No
Netherlands	Yes	No	No	No
North Macedonia	No	No	Yes	No
Poland	Yes	No	No	No
Portugal	No	No	Yes	Yes
Romania	Yes	Yes	Yes	Yes
Slovakia	No	No	No	No
Slovenia	No	No	No	Yes
Spain	No	No	No	No
Sweden	Yes	No	No	No
UK	No	No	No	No

Annex 5 – Description of changes since the last status review

Country	Changes after 2019
Austria	Tendering scheme was introduced in 2022.
Belgium	Walloon region: A revision of the support scheme has been decided in April 2019 and should be implemented in January 2023. This revision is composed by a new regime based on the weighted average cost of capital and by two new mechanisms "Prolongation" & "Extension". Prolongation is designed to support powerplants arrived at the end of the 15 years (initial grant period) for all RES technology except PV. It will replace the current mechanism of "significant modification". Extension aims to allow an increase of existing powerplants.
Czech Republic	On 1 January 2022, an amendment (No. 382/2021 Coll.) to the Act on Supported Sources 165/2012 Coll. came into force, among many other changes, it contains e.g. new support schemes for new/upgraded/maintained plants. It defines operational support for RES, Mine Gas and CHP electricity production, operational support for RES heat and operational support for biomethane. In the case of support for electricity, it introduces auction support (generating plants above 1 MW/6 MW WP). In order to activate these supports, other legalistic steps must be fulfilled. Compatibility with the EU market (GBER or NTF) + government regulation (determining how much installed capacity can be in new or upgraded plants for the next 3 years) + securing financing + determining the amount of support - administratively or by auction. For existing schemes, the duration of the right to support is defined (if not already established by decree). B - The financing of the support is enshrined in § 28 of the amendment to Act on Supported Sources 165/2012 Coll. which, among other things, extends the funds/sources from which operating support is paid to include e.g. proceeds from guarantees of origin or proceeds from repayments from contracts for difference (CFDs). C - The amendment to Act on Supported Sources 165/2012 Coll., for the operational support of new electricity generation schemes, provides for 2 approaches for determining the amount of operational support. For sources above 1 MW or 6 MW for WP, the amount of support will be determined by auction. D - For electricity support under the new schemes see above, support in the form of FIT is no longer possible. This support is only FIP, for RES in the hourly green bonus scheme with the introduction of CFD contracts and claw-back mechanism.
Denmark	At the end of 2021, the RES were fully financed by the state budget. Previously it was taxed as a public service obligation via the electricity bill.
Estonia	Changed the principles of the Electricity Subsidy Scheme of Renewable Energy and the Efficiency of a Cogeneration. The amount of support paid to new renewable electricity producers for each unit of energy produced was abolished and replaced by an auction-based support system. An exception was granted to small producers –- subsidies paid to producers with an electrical capacity less than 50 kW (the exception is valid until the end of 2020). The new scheme started on 1 January 2019. The conditions of and procedure for the aforementioned reverse auction is described in the regulation "*Taastuvast energiaallikast ja tõhusa koostootmise režiimil energia tootmiseks korraldatava vähempakkumise tingimused ja kord*" (https://www.riigiteataja.ee/akt/108112019004). The first reverse auction was organized in 2019. The second reverse auction was organized in 2020. The third reverse auction was organized in 2021. The fourth reverse auction was organized in 2022 and resulted in the market receiving 540 GWh of renewable energy in the near future.

Country	Changes after 2019
	The next renewable energy reverse auction for 650 gigawatt-hours a year will be declared in the beginning of 2023. Likewise, new renewable energy reverse auctions are being planned for 2024 and 2025 in a total volume of at least 1 terawatt-hour.
Germany	Since 2021 the RES surcharge that consumers have to pay in order to finance the national RES support scheme is partly replaced by the use of subsidies from the federal budget. In addition to that the renewable law 2021 (EEG 2021) introduces separate tendering procedures for ground mounted PV and rooftop PV. The renewable law 2021 also introduces a subsequent support regime for some RES installations, whose original 20-year financial support has expired.
Greece	Currently RES and HECHP units up to 400kW can be remunerated under a FiT scheme (The tariffs/reference prices for these stations are determined through administrative procedures). Onshore wind parks with installed capacity between 60 kW and 6 MW, PV stations with installed capacity up to 500 kW and other technologies (biomass, biogas, small hydro, HECHP, CSP etc) are remunerated under FiP contracts, the tariffs of which are established through administrative procedures. PV stations with installed capacity higher than 500 kW (excluding those with installed capacity up to 1 MW, which owned by energy communities and farmers) and wind parks with installed capacity higher than 6 MW must participate in competitive tenders for the determination of their FiP tariffs. Regarding the FiP contracts, the new framework, which was adopted in 2016, supports RES based on differential incremental status, in which the new RES plants are participating in the wholesale energy market and are given a variable premium, on top of the standard market price for the generated power. The total compensation cannot exceed an upper threshold, the reference price (RP) or strike price. Hence, if the market price is higher than this RP threshold, the producers will have to return their excess income to the system. B) Changes regarding the financing of the RES support scheme: The Special RES account recorded a significant deficit due to the low electricity wholesale prices recorded during 2020 because of the lockdown measures imposed to tackle the COVID pandemic. The revenues of this account are used to finance all RES units that have old PPAs, FiT and FiP contracts. The Greek government introduced a package of financial and structural measures to address the existing deficit, provide financial support and ensure the sustainability of the RES financing account to achieve the desired targets of RES penetration in the country's energy mix. Briefly, the following measures were imposed: (a) a one-time special contribution amounted to 6% of the total electricity sales that were made by RES and CHP generators that started operating before 31 December 2015, (b) an additional charge of 2 €/MWh for the electricity supplied by the suppliers to their customers or generated by self-consumers for 2021 and (c) a "green levy" of 30 €/kl on diesel fuel, with the exemption of the diesel which is used for heating purposes. Part of the above diesel revenues were used to finance the RES account. D) Changes related to the market integration of RES: balancing responsibilities have been introduced for RES power stations under FiT agreements that started operating from 4 July 2019. RES generators still do not have full balancing responsibilities but are responsible for any imbalances caused in the system under the temporary forecasting mechanism (ΜΜΒΑΠ). In addition, a legislative framework has been introduced for RES aggregators. As of July 2022 PAE has licensed 31 RES aggregators.
Hungary	Since 1 May 2019, new green premium support entitlement can be only granted through a competitive tendering procedure (so called 'METÁR tender'), but support is also granted in the framework of old support entitlements (see the so called 'KÁT' and 'METÁR-KÁT' feed-in tariff and green premium without tendering). Existing solid biomass and biogas power plants can apply for a so-called 'brown premium' at MEKH in order to ensure their further operation. For further information please visit https://www.mekh.hu/information-on-the-renewable-energy-support-system Since 1 April 2020, RES power plant operators are financially responsible for balancing also in the feed-in tariff system (but they get a compensation for that until 2026).
Italy	The Ministerial Decree 4 July 2019 updates the mechanisms for supporting electricity generation by some types of RES-E plants (wind, hydroelectric, waste gas treatment and PV plants), reviewing the unitary value of the tariff, different for each source and size. The unitary value

Country	Changes after 2019
	of the tariff is defined through descending-bid auctions in the case of largest plants (more than 1 MW). The Ministerial Decree of 4 July 2019, reviews the support scheme, re-defining the plant capacity threshold: a) Feed in tariff (different for each source) for plants with a capacity up to 250 kW; b) Feed in premium for plants with a capacity over 250 kW. The premium is calculated, on hourly basis, as the difference between a total tariff, different for each source and size, and the hourly zonal energy price. As the premium may be positive or negative, this mechanism is a contract for difference. Due to the strong growth in the wholesale price of electricity, the Italian government, from 1 October 2021, decided to finance incentives for renewable sources through general taxation instead of through electricity bills: this is a transitional provision that applied until 31 March 2023.
Lithuania	Introduced new tender scheme to support offshore wind.
Malta	Up until the end of 2019, competitive bidding process was the method applied to determine the fixed price per kWh to be paid for electricity generated and sold to the distribution system operator from approved solar photovoltaic installation or new wind energy installation with capacity greater than 1 MWp as per legislation SL 545.31. In the year 2020, this competitive bidding process was extended to include capacities greater than 400 kWp and less than 1 MWp as per legislation SL 545.32. In 2021, legislation SL 545.32 was amended to cater for RES technologies in general (with no particular reference to PVs/wind energy) with capacities of at least 40 kWp up to and less than 1 MWp. ITBs are classified by capacity with a call for capacities greater than 40 kWp and less than 200 kWp and a separate call for capacities greater than 200 kWp and less than 1 MWp.
Netherlands	The Stimulation of Sustainable Energy Production and Climate Transition (SDE++) scheme focuses on the large-scale rollout of technologies for renewable energy production and other technologies that reduce carbon dioxide (CO_2) emissions. The SDE++ is an operating subsidy. In other words, you may receive a subsidy during the operating period of your project. An SDE++ subsidy compensates for the difference between the cost price of the renewable energy or the reduction in CO_2 emissions and the revenue (if any). Subsidies are allocated for periods of 12 or 15 years. The duration of the subsidy depends on the technology that is used. In the fall of 2020, the approach of the scheme has changed. Projects now compete within the scheme based on the amount of CO_2 they reduce per euro of subsidy. In the 'old' scheme (the SDE+) only renewable electricity, renewable heat (CHP) and renewable gas technologies could apply for the scheme. The modification to the scheme enabled that low-carbon heat and low-carbon production techniques now may also be eligible for subsidy.
Poland	Offshore wind energy support scheme (contract for difference) was launched in February 2021 - producer may exercise the right to cover the negative balance with regard to the electricity generated in a given offshore wind farm or its part and fed into the grid, over the period of 25 years from the first day of generating and feeding this electricity into the grid, on the basis of a license granted for electricity generation. The amount of electricity in MWh with respect to which the producer has the right to apply for coverage of the negative balance is the product of 100,000 hours and the installed electric capacity of the offshore wind farm or its part under the license for electricity generation. Auctions for offshore will be conducted in 2025 and 2027, and in a specified case also in 2028.
Portugal	The Portuguese RES electricity support scheme is based upon feed-in tariffs that are differentiated by technology. In 2020 PV auctions introduced one additional scheme in addition to the two schemes for new capacity, FIT and a payment to the system (while also receiving wholesale market prices, i.e. a FIP with a negative premium). The new scheme is a reference capacity payment in €/MW/year. In all schemes imbalances are supported by the producers.
Slovakia	Incentive scheme for support for electricity generation from renewables - URSO determines the purchase price of produced electricity according to Decree.

Country	Changes after 2019
	Since 2020, the Ministry of Economy can choose the single guaranteed buyer of RES electricity by tender or directly. All RES operators are free to set up a contract with the single buyer through NEMO, where single buyers will guarantee the price at the level of URSO support and single buyer also takes on the responsibility for balancing. The single buyer claims rent for this service based on the tender and law. Windfall profits above this rent are fed into the tariffs for system services and system operation covering parts of these costs for the consumers and producers. All RES operators can also enter into this arrangement with any private entity (get paid above the support level set by URSO) or they can also directly participate in the market but will have to take on the balancing responsibilities. In 2019, the Institute of "local source" was defined as an unsupported usually smaller installation of RES which were freed from some of the distribution charges (connection, metering), have grid priority and are freed from tariffs for system services and system operation. There were also limitations introduced: installed capacity should only cover their own maximum consumption up to 500 kW installed capacity and they could only provide up to 10% of this installed capacity into the grid to participate in electricity trade. These RES also cannot participate in FiT scheme. For state aid scheme: allocated funds are also intended for the construction of new resources (more than 100 million EUR). This type of support for new (PV) renewables is direct investment support - costs of the construction of the facilities, where green energy is produced (in competence of Ministry of Economy of Slovak Republic).
Slovenia	On the basis of the public call for tenders of the Slovenian Energy Agency
Sweden	In 2020, the Swedish council decided to introduce a stop rule and to end the electricity certificate system at the end of 2035 (previously 2045). The decision means that facilities that are commissioned after the end of 2021 will not be approved for the allocation of electricity certificates. Plants commissioned before the end of 2021 but approved after the end of 2020 will have an allocation period of less than 15 years.
Spain	There is a capacity payment in €/MW, in a monthly basis, for all supported plants. Additionally, for all technologies, except hydro and wind, there is an operational aid in €/MWh. No changes since 2019.
United Kingdom	No major changes have been made to the UK-wide renewables obligation scheme and the GB-wide Feed-in Tariffs (FIT) scheme, both of which are now closed to new capacity but continue to support existing generating stations. Response C - The Contracts for Difference (CfD) scheme is now the main mechanism for supporting new renewable electricity generation projects in Great Britain. In 2022, onshore wind and solar PV projects were able to apply for contracts for the first time since 2015. From 2023, the CfD scheme will run allocation rounds annually, instead of every two years.

Country	Changes in the financing mechanism
Croatia	Added other sources of financing - until December 2021 there were only levies paid by consumers, electricity sold to suppliers (regulated price), electricity sold on the market, guarantees of origin and ECO balancing group income. Minor changes to the FIP scheme.
Czech Republic	In principle, there is no change. However, there is a change in the amount of the fee, which is set at CZK 0 for a limited period of time. Thus, due to the extremely high energy costs, end customers will not contribute to RES in their invoices for a fixed period of time.

Country	Changes in the financing mechanism
Greece	Yes. Mainly changes regarding the remuneration and/or imbalances penalties of RES aggregators that have been introduced in the Greek market in 2020.
Latvia	Yes. Additional information: The Cabinet of Ministers on 30 August 2022 examined the Conceptual Report "Complex measures to address the problem of the mandatory procurement component and the development of the electricity market" prepared by the Ministry of Economics, and the Cabinet of Ministers conceptually supported the Ministry of Economics' offer from 1 September 2022 to 31 December 2025 on the average of the mandatory electricity procurement component ("OIK") set the rate at EUR 0/MWh, covering the costs of the compulsory procurement aid from the dividend income of JSC "Latvenergo". At the same time, the Cabinet of Ministers instructed the Ministry of Economics to develop amendments to the Electricity Market Law by proposing a solution within which the costs of mandatory procurement will not be covered by the electricity end-users of in Latvia until 2025 or in the future. On 20 December 2022 amendments to the Electricity Market Law were approved, stipulating that electricity consumers will no longer have to cover the costs of mandatory procurement (mandatory procurement component will no longer appear in electricity bills).
Netherlands	From 2020 onwards, companies contribute more to the non-tax levy than households, namely 2/3 instead of half. Thus, households are partly exempted. The following are also exempted from the non-tax levy: • self-generated electricity with renewable energy sources; • self-generated electricity with an emergency installation in the event of supply failures from the distribution network; • self-extracted landfill gas, sewage treatment gas or biogas; and • self-generated electricity that you generate with a combined heat and power installation.

Annex 6 – Description of recent and future changes of the support scheme

Country	Recent major changes of the support scheme
France	Support schemes and market integration: Since the adoption of the Energy Transition Law in 2015, and in line with European Commission guidelines on State aid for environmental protection and energy, renewables support in France combines feed-in-tariffs (FiT) for small & medium scale installations (below 500 kW) and feed-in-premiums (FiP) – along with balancing responsibility – for medium & large sale installations (over 500 kW). The level of support is set either through administrative procedures (government orders defining the amount of remuneration) or, for medium & large-scale installation through bidding procedures (call for tenders, competitive dialogue procedure). Financing of RES support: Since January 2016, renewables support falls under the general State budget, through a dedicated purpose fund – the financing of which being decided each year by the Parliament through a Finance Law (currently, internal taxes on fossil fuels).
Hungary	Since 26 April 2018, producers can apply only for premium type support where producers shall sell their electricity on the market. Since 1 May 2019, premium support shall be granted only via competitive tendering procedures (except for brown premium). Since 1 April 2020, RES power plant operators are financially responsible for balancing also in the feed-in tariff system.
Ireland	The Renewable Energy Feed-in Tariff (REFIT) schemes closed to new projects in 2015. They were replaced by the Renewable Electricity Support Scheme (RESS), the first round of which opened in 2020 and was extended to cover offshore renewables in 2023.
Luxembourg	FiT amounts were adapted for solar PV and eligibility criteria were adapted in some cases.
UK	The Feed-in Tariffs (FiT) scheme was closed in 2019 and was succeeded by the Smart Export Guarantee (SEG) – this was in order to lower the impact of the FiT scheme on consumer bills that was paid through levies onto electricity suppliers which are then passed onto electricity consumers. The SEG is an obligation for licensed electricity suppliers to offer a tariff and make payment to small-scale low-carbon generators for electricity exported to the National Grid, providing certain criteria are met. No major changes have been made or are planned for the CfD or Renewables Obligation.

Country	Major changes of the support scheme that are planned in the near future
Czech Republic	The Amendment of the Act on promoted energy sources (APES) should enter into force. It is currently in the approval phase. The new APES should regulate the new conditions for the support of electricity, heat and biomethane from RES. The operation support for the new plants, refurbished plants and maintenance support will be applied via the principle of the green bonus (FiP) or auction bonus. The tendering through auction should be newly introduced.
France	No major changes are expected; the number of installations under the feed-in-premium mechanism will continue to increase.
Germany	The renewable law (EEG) will be recast by the end of 2020 and new provisions will enter into force starting 2021. The recasting process is not finalised yet. Additional tendering procedures will be introduced for rooftop solar installations.
Greece	Currently there is a transitional mechanism in place for RES power plants. RES will assume full balancing responsibilities, same as the other conventional power plants, as soon as XBID is introduced in the Greek ID market.
Hungary	No major changes are planned.
Ireland	No major changes are planned.
Latvia	RES support scheme has been suspended for new generators since 2012. Currently there are no plans on new RES support scheme. Nevertheless, there is ongoing work to reduce entry barriers and obstacles for RES generators to compete in open market.
Lithuania	Additional legal basis to allow for auctioning offshore starting in 2023; planning to apply the Contracts for Difference (CfD) scheme.
Luxembourg	No major changes planned.
Malta	No information available.

Country	Major changes of the support scheme that are planned in the near future
Poland	A significant change in the RES support systems in Poland was the entry into force (on February 18, 2021) of the Act of December 17, 2020, on the promotion of electricity generation in offshore wind farms, which specifies: 1) the terms and conditions of providing support for electricity generated in offshore wind farms; 2) rules and conditions for the preparation and implementation of investments in the construction of offshore wind farms; 3) rules for management of an offshore wind farm and its power output; and 4) requirements for the construction, operation and decommissioning of offshore wind farms.
Romania	Romania will continue to support the promotion of RES-E production, especially by supporting prosumers, that is, the local electricity distributed generation of RES-E to meet the local consumption. Particular attention shall be paid to the transposition of the European provisions in the sense of promotion of the concepts of prosumer, aggregator and local energy community or flexibility facilities of RES-E production through aggregation and/or storage of electricity. The possibility to promote and stimulate the production of small RES-E capacities through premium feed-in-type schemes is under discussion.
Slovakia	New separate decree for RES FiT is being prepared by URSO.
Slovenia	No major changes until the end of 2025.
Spain	In June 2020, there was a change in the Electricity Act, opening the possibility to tenders in order to set a long-term price for the energy for new RES plants. First tender took place on the 26 January 2021.
Sweden	The government has issued a proposition to cancel the *elcertifikat* system by 2035. They have also suggested that no new generation facilities are to be admitted to the *elcertifikat* system after 2021. The investment grant for solar PV is suggested to be replaced by a tax reduction.
UK	None.

Annex 7 – Institution in charge of determining the non-tax levy as financing instrument for the national RES support scheme

Country	Changes after 2019	Government	NRA	Other
Austria	No	Yes	No	
Belgium	No	Yes	No	
Bulgaria	No	N/A	N/A	
Croatia	No	Yes	No	
Cyprus	Missing	Missing	Missing	
Czech Republic	No	No	Yes	Due to the high energy prices for final consumers in 2022, there is a legislative adjustment. From 1.10.2022 to 31.12.2022, the contribution of all end customers is set at 0 CZK, i.e. all end customers have their contribution to the support of the RES waived. It can be expected that this measure will be extended for the whole year 2023, but it is not yet legislated. therefore, all support will be covered by the state budget only.
Denmark	N/A	N/A	N/A	From 2017 and onwards the PSO-tariff were gradually phased out as a tariff paid via the electricity bill and is now fully financed by the state budget.
Estonia	N/A	N/A	N/A	TSO
France	N/A	N/A	N/A	
Germany	No	No	No	TSOs
Greece	Yes	Yes	Yes	NRA until 2019, 2019 and 2020 Government, from 2021 onward again NRA
Hungary	No	No	No	TSO (MAVIR Zrt.)
Ireland	No	No	Yes	
Italy	No	no	Yes	
Latvia	N/A	N/A	N/A	
Lithuania	No	No	Yes	
Luxembourg	No	No	Yes	
Malta	N/A	N/A	N/A	
Netherlands	No	Yes	No	

Country	Changes after 2019	Government	NRA	Other
North Macedonia	No	Yes	No	
Poland	No	No	Yes	
Portugal	No	Yes	No	
Romania	N/A	N/A	N/A	
Slovakia	No	No	Yes	
Slovenia	No	Yes	Yes	
Spain	N/A	N/A	N/A	
Sweden	N/A	N/A	N/A	The price for *elcertifikaten* is market-based. The electricity supplier.
UK	Yes	Yes	No	

Annex 8 – Electricity being partially or fully exempted from contributing to the financing of RES support

Country	Changes after 2019	Which changes?	No exemptions for electricity from contributing to RES financing	Comment
Austria	No		Yes	The charges are determined based on grid connection level and consumed electricity from the public grid.
Belgium	N/A		No	Applies only to Brussels Region.
Bulgaria	Yes		No	
Croatia	Yes	Reduction of RES levy for energy-intensive consumers (in force since 2020).	No	
Cyprus	No		Yes	
Czech Republic	No	A notification process is currently underway that would allow for the remission of the contribution to the RES for rail transport as well.	Yes	
Denmark	Yes	Previously large and energy intensive consumers had the opportunity of reductions. Now everybody pays via the state bill.	Yes	
Estonia	No		No	
France	No		Yes	
Germany	N/A		N/A	
Greece	No		No	Some industries can benefit from a reduced RES levy under certain conditions. Electricity being partially or fully exempted from contributing to the financing of RES support.
Hungary	No		No	
Ireland	No		Yes	

Country	Changes after 2019	Which changes?	No exemptions for electricity from contributing to RES financing	Comment
Italy	No		Yes	The Ministerial Decree of 21 December 2017 updates the system of concessions for energy-intensive industries. In particular, the Asos tariff component (used to collect money for the incentive of renewables), for consumers with a yearly consumption of at least 1 GWh and an electro-intensity of at least 20%, is progressively reduced on the basis of electro-intensity (electro-intensity is an index computed with respect to the company's annual turnover).
Latvia	No		No	
Lithuania	No		No	
Luxembourg	No		No	Energy-intensive industries can, under certain conditions, benefit from a lower rate for the Renewable Energy levy (*taux de la catégorie C*). To be eligible, companies have to either be connected to the 65 kV grid or higher or have a consumption of over 20 GWh per year. Companies consuming more than 2.5 GWh, whose electricity consumption accounts for a large share of the value of their activities can also be eligible, if they fulfil certain criteria. To be eligible for the Category C levy, companies have to engage in an agreement with the government through which they commit to substantial improvement of their overall energy efficiency.
Malta	No		N/A	RES support is funded through general taxation paid by all citizens.
Netherlands	Yes	From 2020 onwards, companies contribute more to the non-tax levy than households, namely 2/3 instead of half. Thus households are partly exempted. The following is also exempted from the non-tax levy: • self-generated electricity with renewable energy sources; • self-generated electricity with an emergency installation in the event of supply failures from the distribution network; • self-extracted landfill gas, sewage treatment gas or biogas;	No	

Country	Changes after 2019	Which changes?	No exemptions for electricity from contributing to RES financing	Comment
		• self-generated electricity that you generate with a combined heat and power installation.		
North Macedonia	No		Yes	
Poland	No		No	
Portugal	No		No	
Romania	No		Yes	
Slovakia	No	So called extension of RES support was introduced in the RES law recast, from 1.8.2021. Newly define conditions are mentioned in article 1.5. and 1.4.	No	
Slovenia	No		Yes	Energy-intensive companies can partly be exempted from contributing to the financing of RES support if they fulfil certain requirements regarding energy intensity and energy consumption.
Spain	No		No	
Sweden	No		Yes	
UK	Yes	In 2020, the manufacture of grain mill products was added to the list of sectors eligible for the exemption. Following a consultation in 2022 the decision had been taken to remove the availability of the green import exemptions for the CfD and FIT schemes. The changes came into force on 1 April 2023.	No	

Country	Energy-intensive industries	Comment	Self-consumption	Comment
Austria	No		Yes	There are no RES charges for self-consumption. The system is built on electricity taken from the public grid.

Country	Energy-intensive industries	Comment	Self-consumption	Comment
Belgium	Yes	* Flemish region: For green certificates, the following exemption rates apply: - Exemption of 47% for specific sectors in the category 1 - 20 GWh: industry, mining, cold and freezing warehouses, cargo handling. - Exemption of 80% for all sectors in the category 100 - 250 GWh. - Exemption of 98% for all sectors in the category >250 GWh. In 2018 the Flemish Government introduced also a “supercap” mechanism for specific sectors (NACE-code). The supercap mechanism comes on top of the already foreseen exemptions and is granted subject to conditions. The supercap means that the contribution to RES-support at enterprise or establishment level is capped to 4% of the gross added value of the enterprise/establishment. For electro-intensive industries (min 20%), the contribution is capped at 0.5% of the gross added value. The Flemish Government decides on the procedures, terms and conditions to receive this type of exemption (Vlaams Energiebesluit: art. 6.6.1-6.6.4.). Conditions for the Supercap mechanisms relate to certain agreements on energy efficiency, having an energy plan and the specific industry sector (NACE-code). * Walloon region: The partial exemption is applied for final clients with a voltage level < 70 kV: - Exemption of 85% for industries with a sector deal; (see: https://energie.wallonie.be/fr/l-exoneration-partielle-de-la-surcharge-des-certificats-verts-d-elia.html?IDC=9824&IDD=136266); - Exemption of 50% for industries without a sector deal but with a voltage level higher than 1,5 kV in the culture & animal production industries; - Exemption of 50% for industries without a sector deal but with a voltage level higher than 1,5 kV and an annual consumption higher than 1 GWh in the sectors of education, hospital, medical & social and manufacturer industries. However, these exemptions have been reduced and modified to agree with the guidelines on State Aid.	Yes	* Flemish region: certificates only need to be submitted for the electricity taken off the grid, when electricity locally produced and consumed, no certificates have to be submitted.
Bulgaria	N/A		N/A	
Croatia	Yes	Three categories of energy intensity (R1 - 40% reduced levy, R2 - 60% reduced levy, R3 - 80% reduced levy), determined case by case basis, in line with categorization provided by state aid guidelines.	Yes	For self-consumption households under 500 kW, the RES levy is calculated on the difference of withdrawn and injected electricity within a month.

Country	Energy-intensive industries	Comment	Self-consumption	Comment
Cyprus	N/A		N/A	
Czech Republic	N/A		Yes	Exemptions for energy consumed by the customer in island operations in the Czech Republic demonstrably separated from the electricity system or supplied through the distribution system abroad
Denmark	N/A		N/A	
Estonia	N/A		Yes	For self-generated electricity that does not go to the network grid.
France	No		No	
Germany	Yes	The exemption applies only to electricity-intensive companies in sectors that compete internationally. In concrete terms, the Special Equalisation Scheme works as follows: beneficiaries pay the full EEG surcharge for the first gigawatt hour and in principle 15% of the EEG surcharge for every kilowatt hour of electricity they consume above and beyond this. This burden is limited to a maximum of 0.5% (cost intensity >= 20%) or 4% (cost intensity < 20%) of the respective enterprise's gross value added.	Yes	
Greece	Yes	From 01.01.2019 and until 31.12.2028 there is a base charge of 17 €/MWh for all consumers. Business organizations with activities in a sector which is included in Annex 3 of the Guidelines on State aid for environmental protection and energy 2014-2020 (hereinafter EEAG) and business organizations with activities in a sector which is included in Annex 5 of the EEAG, with electro-intensity ≥ 20% pay 15% of the base charge (2.55 €/MWh). Business organizations with activities in a sector which is included in Annex 5 of the EEAG, with electro-intensity ≥ 10% and electro-intensity < 20% pay 20% of the base charge (3.40 €/MWh). Business organizations with activities in a sector which is NOT included in Annexes 3 & 5 of the EEAG, with electro-intensity ≥ 20% pay 20% of the base charge (3.40 €/MWh). Lignite mines and pumping stations with HV connections and rail transit with MV or HV connections pay 20% of the base charge (3.40 €/MWh). Business organisations that use electricity for agriculture (LV or MV) pay 53% of the base charge (9.01 €/MWh). All consumers except for those that use electricity for agriculture must pay the full base charge of 17 €/MWh for the first 250 MWh consumed annually.	Yes	Self-producers of energy from RES and HECHP are not included among those subject to the RES Levy (ETMEAR), especially and exclusively for the part of self-generated energy.
Hungary	No		Yes	

Country	Energy-intensive industries	Comment	Self-consumption	Comment
Ireland	No		Yes	There are no RES charges for self-consumption. The system is built on electricity taken from the public grid.
Italy	Yes	The Ministerial Decree December 21, 2017 updates the system of concessions for energy-intensive industries. In particular, the Asos tariff component (used to collect money for the incentive of renewables), for consumers with a yearly consumption of at least 1 GWh and an electro-intensity of at least 20%, is progressively reduced on the basis of electro-intensity (electro-intensity is an index computed with respect to the company's annual turnover).	Yes	In Italy, the variable part of Asos tariff component (i.e. the part in c€/kWh) is applied only to the electricity withdrawn from the grid; therefore, it is not applied to self-consumed electricity. But, due to the strong growth in the wholesale price of electricity, the Italian government, from 1 October 2021 up to 31 March 2023, decided to finance incentives for renewable sources through general taxation instead of through electricity bills: this is a transitional provision.
Latvia	Yes	The European Commission has approved, under EU State aid rules, a Latvian scheme to partially compensate energy-intensive users for charges paid to support the financing of renewable energy production. Under the previous scheme, companies active in Latvia in sectors that were particularly electro-intensive and more exposed to international trade were entitled to a reduction of up to a maximum of 85% of the electricity surcharge financing support for renewable electricity production.	Yes	
Lithuania	Yes	If industry company consume more than 1 GWh/year, it can redeem 85% of paid public service obligation fee.	Yes	Prosumers do not pay public service obligation for the self-generated and consumed energy.
Luxembourg	Yes	Energy intensive industries can, under certain conditions, benefit from a lower rate for the Renewable Energy levy (taux de la catégorie C). To be eligible, companies have to either be connected to the 65 kV grid or higher or have a consumption of over 20 GWh per year. Companies consuming more than 2.5 GWh, whose electricity consumption accounts for a large share of the value of their activities can also be eligible, if they fulfil certain criteria. To be eligible for the Category C levy, companies have to engage in an agreement with the government through which they commit to substantial improvement of their overall energy efficiency. Contribution to RES support is only due on final consumption of electricity that was delivered through the grid. Self-consumed electricity is not subject to volume related grid fees. This disposition also applies to self-consumed electricity used for storage purpose, under any form, in view of further retransformation and use at a later stage.	N/A	Self-consumed electricity is not subject to volume related grid fees, taxes nor levies. This disposition also applies to self-consumed electricity used for storage purpose, under any form, in view of further retransformation and use at a later stage.
Malta	N/A		N/A	

Country	Energy-intensive industries	Comment	Self-consumption	Comment
Netherlands	No		Yes	
North Macedonia	N/A		N/A	
Poland	Yes	Energy-intensive industries (in particular, industries that can - after meeting certain statutory conditions - enter the list of industrial recipients published annually by the President of the ERO. Depending on the amount of the intensity of electricity consumption, such enterprises are entitled to three different levels of relief in the amount of the obligation The catalogue of eligible industries is wide and includes economic activities in the mining, food, textile, clothing, paper, wood, petroleum, chemical, pharmaceutical, metallurgical, raw materials, electronic, or related sectors.	N/A	
Portugal	Yes	The spreading of RES costs is based upon number of consumers per voltage level. Therefore, the majority of the costs falls upon low voltage consumers.	N/A	
Romania	Yes	The beneficiaries, energy-intensive industries, are paying at least 15% from the number of green certificates related to the mandatory quota.	Yes	Staring with 2020, the consumption of self-generated RES, other than the own technological consumption of the power plant, are exempted from the obligation of annual and quarterly acquisition of green certificates, according to the mandatory quota.
Slovakia	Yes	Energy intensive industries can get a discounted price if they can prove a certain level of energy efficiency.	Yes	Consumption with no connection to distribution or transmission network is exempted.
Slovenia	Yes	Energy-intensive companies can partly be exempted from contributing to the financing of RES support if they fulfil certain requirements regarding energy intensity and energy consumption.	Yes	Producers of electricity with devices, that are included in the support scheme, contribute to the financing of RES support only on the basis of the billing power at measuring or delivery point of a device (a point on the transmission or distribution system, where the acceptance and delivery of electricity are carried out and where measurements or other means of determining realized quantities of electricity supply and consumption are carried out).
Spain	N/A		Yes	Consumption of self-generated electricity does not pay RES support or grid costs.
Sweden	N/A		N/A	
UK	Yes	Energy intensive businesses in manufacturing sectors such as steel, chemicals, paper, cement and glass benefit from an exemption of up	No	

Country	Energy-intensive industries	Comment	Self-consumption	Comment
		to 85% of the costs of the renewables obligations, FITs and CfD schemes.		

Country	For network losses	Comment	Other	Comment
Austria	No		Yes	Low-income households can be partially exempted from contributing to the financing of RES support.
Belgium	Yes	Flemish region	Yes	Flemish region: the electricity delivered by the distribution system operator as the supplier is fully exempted from the certificate obligation.
Bulgaria	N/A		N/A	
Croatia	Yes		Yes	Consumers with the greenhouse gas emission permit pay 80% lower levy.
Cyprus	N/A		N/A	
Czech Republic	Yes		Yes	Electricity consumed by pumped storage hydropower plants and the amount of electricity consumed for technological own electricity consumption for electricity and heat generation are being exempted from contributing to the financing of RES support.
Denmark	N/A		N/A	
Estonia	Yes		No	
France	No		No	
Germany	Yes		N/A	
Greece	No		No	
Hungary	No		Yes	The universal service system guarantees regulated electricity prices for households and small consumers, who are exempted from financing the costs of the operational support. Therefore, consumers not eligible for universal service – mainly industrial consumers – bear the costs of the operational support based on the quantity of electricity bought from the grid.
Ireland	No		N/A	
Italy	No		No	
Latvia	N/A		N/A	
Lithuania	Yes		No	
Luxembourg	Yes		No	
Malta	No		N/A	

Country	For network losses	Comment	Other	Comment
Netherlands	No		Yes	From 2020 onwards, companies contribute more to the non-tax levy than households, namely 2/3 instead of half. Thus, households are partly exempted.
North Macedonia	Yes		No	
Poland	No		No	
Portugal	No		No	
Romania	N/A		N/A	
Slovakia	Yes		Yes	The tariff for operating the system does not apply to the consumption of electricity for pumping in pumped hydropower plants. The tariff for operating the system does not apply to electricity consumption during tests after the completion of the construction of the electricity production facility before its commissioning, if such tests are carried out through the withdrawal of electricity from the transmission system. The tariff for operating the system is not applied to electricity produced in a combined production facility and consumed for the purposes of heat production from renewable energy sources used in centralized heat supply, if it is a facility with a total installed capacity of up to 1 MW, from which at least 60% of the producer of heat for the supply of heat by centralised heat supply and the saving of primary energy reaches at least 10%, the electricity produced in the combined production facility and consumed for the purpose of heat production from renewable energy sources used in the centralized heat supply, if the total installed capacity before the reconstruction or modernization of the technological part of the facility of the electricity producer is less than 125 MW and electricity produced in a local source and consumed in a collection point identical to the transfer point of the local source.
Slovenia	No		No	
Spain	No		No	
Sweden	No		No	
UK	No		Yes	A separate exemption was in place until 1 April 2023 under the FIT and CfD schemes for green electricity imported from EU Member States and supplied to consumers in Great Britain if it was generated in power stations commissioned after 1 April 2015 and is evidenced by Guarantees of Origin certificates; this exemption applies up to a pre-determined quantitative limit.

Annex 9 – Costs covered by the support level

Country	Changes after 2019	Full LCOE (e.g. Investment costs, operational costs, connection costs of the installation to the grid, etc.) as basis for calculating a FiT, a FiP or a fixed capacity payment	Only selected costs	Cost coverage
Austria	No	No	Yes	In general, full LCOE but costs arising from the purchase of land are not covered.
Croatia	No	Yes	Yes	For the "old" FiT scheme (which is only active for existing contracts) there was a calculation because the tariffs were pre-determined. With the new FiT and FiP schemes there is a tendering procedure and ultimately the investors determine the costs for their specific projects.
Cyprus	No	No	No	N/A – No financial support for RES systems is applied.
Czech Republic	No	Yes	No	No changes have been made since the last review. Full LCOE (e.g. Investment costs, operational costs, connection costs of the installation to the grid, etc.) as a basis for calculating is only for the FiT.
Denmark	No	Yes	No	
Estonia	No	Yes	No	
France	No	Yes	No	
Germany	No	Yes	N/A	
Greece	No	Yes	No	
Hungary	Yes	Yes	Yes	As of 1 May 2019, new green premium support entitlement can only be granted through a competitive tendering procedure (so called 'METÁR tender'). Green premium support may be granted for renewable based electricity production related to a new investment, provided that the investment had not started before the support entitlement has been granted at the time of applying for the support. Existing power plant units that are subject to major renovation or upgrade with costs exceeding 50% of the initial investment cost may also be eligible for support. The winners will be granted green premium support at the initial supported price in the winning bid (pay-as-bid), which is indexed yearly with inflation minus 1 percentage point. The green premium is the difference between the supported price and the reference market price.

Country	Changes after 2019	Full LCOE (e.g. Investment costs, operational costs, connection costs of the installation to the grid, etc.) as basis for calculating a FiT, a FiP or a fixed capacity payment	Only selected costs	Cost coverage
				Existing solid biomass and biogas power plants can apply for a so-called 'brown premium' at MEKH in order to ensure their further operation. The brown premium can be a fix premium on top of the market price or a floating premium depending on the level of the market price. In the latter case, the supported price is calculated based on the costs of biomass or biogas-based power production. The amount of the brown premium to be paid is determined as the difference between the supported price and the reference market price. In case of biomass/biogas power plants which can be fired also with fossil energy sources, the so called 'alternative brown premium' aims at preventing the switch to fossil fuels and is determined as the difference between biomass/biogas and fossil-based power production costs. Thus, the alternative brown premium is a fixed value, independent of the reference market price.
Ireland	Yes	Yes	No	The RESS process uses a competitive procurement process that allows participants to reflect their costs through their bid.
Italy	No	Yes	No	
Latvia	No	Yes	No	There is specific calculation for each type of RES plant, payment depends on resource type and might be different according to installed capacity (divided in two levels – large- and small-scale generation). Furthermore, setting a ceiling for RES support internal rate of return (IRR) is being considered. If IRR exceeds the ceiling, the support provided is reduced.
Lithuania	No	No	Yes	If the plant is < 500 kW producer do not need to pay for grid balancing. Prosumers do not pay Public Service Obligations tax for surplus electricity which is delivered to the grid and consumed later.
Luxembourg	No	Yes	No	No changes after 2017.
Malta	No	Yes	No	
Netherlands	No	Yes	No	
North Macedonia	Yes	Yes	No	
Poland	No	Yes	No	
Portugal	No	Yes	No	
Romania	No	No	Yes	GC in Romania does not cover the entire LCOE.
Slovakia	No	Yes	No	

Country	Changes after 2019	Full LCOE (e.g. Investment costs, operational costs, connection costs of the installation to the grid, etc.) as basis for calculating a FiT, a FiP or a fixed capacity payment	Only selected costs	Cost coverage
Slovenia	No	Yes	No	
Spain	No	No	Yes	Connection costs of the installation to the grid are not considered by the support scheme. No changes after 2017.
Sweden	No	Yes	No	There is a support scheme for PV in Sweden in the form of a 20% return on the initial investment. Returns from the *elcertifikat* system is not based on LCOE, and revenue is dependent on the market value of *elcertifikaten*.
UK	No	Yes	No	

Annex 10 – Market integration: balancing responsibilities

Country	Changes after 2019	Comment	All RES plants without exception are responsible in exactly the same manner as any other conventional plant	Comment	Only some RES plants are responsible in exactly the same manner as any other conventional plant	Comment
Austria	No		Yes		No	
Belgian	No		No		No	
Bulgarian	No		Yes		No	
Croatia	No		No		No	
Cyprus	No		No		No	
Czech Republic	No		Yes	All RES plants without exception are responsible for the balancing in exactly the same manner as any other conventional plant, however in most cases they transfer their responsibility to a trader who buys electricity or another clearing member.	No	
Denmark	No		No		Yes	
Estonia	No		Yes		No	
France	No		No		Yes	Under the FiT scheme, public operators in charge of purchasing the electricity generated from renewable sources (Electricité de France (EDF), local distribution companies or other approved bodies) have the balancing responsibility – of which they are

Country	Changes after 2019	Comment	All RES plants without exception are responsible in exactly the same manner as any other conventional plant	Comment	Only some RES plants are responsible in exactly the same manner as any other conventional plant	Comment
						incentivised to minimise the costs – for all RES plants.
Germany	N/A		No		Yes	Since 2016: all new installations > 100 KW are balancing responsible. Only existing installations before the introduction of this rule can still be exempted from balancing responsibility (FiT scheme)
Greece	Yes	Introduction of legislative framework for RES aggregators in 2019.	No		No	
Hungary	Yes	Since 1 April 2020, RES power plant operators are financially responsible for balancing also in the feed-in tariff system (but they get a compensation for that until 2026).	Yes		No	
Ireland	No		Yes	The TSO is responsible for balancing decisions. RES have priority dispatch but may be curtailed/constrained similar to conventional plants.	No	
Italy	No		No		Yes	RES-E plants supported by CIP 6/92 or feed in tariff referred to Law 244/2007 are not responsible for imbalances.
Latvia	No		No		No	There is another institution (e.g. the TSO) that has balancing responsibility on behalf of all or some of the RES electricity

Country	Changes after 2019	Comment	All RES plants without exception are responsible in exactly the same manner as any other conventional plant	Comment	Only some RES plants are responsible in exactly the same manner as any other conventional plant	Comment
						plants. However, there is not an incentive scheme in place for this institution to minimise the incurred balancing costs.
Lithuania	No	There was an amendment in the law that says that RES power plants over400 kW should be responsible for imbalance. From 1 January 2026, all RES power plants over 200 kW should be responsible for the imbalance.	No		Yes	
Luxembourg	No	The DSO is obliged for the offtake of energy subsidised through FiT, and delegates the balance responsibility for this energy to a supplier. Non-subsidised RES plants are responsible in the same way as non-RES plants, and can delegate their balancing responsibility, for example to a supplier.	No		Yes	
Malta	No		No		Yes	
Netherlands	No	Every plant is required to assign a balancing responsible party.	Yes		No	No changes since 2019. Every plant is required to assign a balancing responsible party.
North Macedonia	No		No		No	

Country	Changes after 2019	Comment	All RES plants without exception are responsible in exactly the same manner as any other conventional plant	Comment	Only some RES plants are responsible in exactly the same manner as any other conventional plant	Comment
Poland	No		No		No	
Portugal	No	All FiT RES energy is purchased by the last resort supplier. The last resort supplier offers that energy on the wholesale market and is responsible for aggregate imbalances. PV under tendering process including FiT is responsible for their imbalances. Other PV support schemes also responsible for imbalances. Non-subsidised RES energy makes its offers directly on the market and is responsible for imbalances. These producers can use an aggregator to maximise efficiency.	No		Yes	.
Romania	No		No		Yes	

Country	Changes after 2019	Comment	All RES plants without exception are responsible in exactly the same manner as any other conventional plant	Comment	Only some RES plants are responsible in exactly the same manner as any other conventional plant	Comment
Slovakia	No	There was always the possibility to transfer the obligation of imbalances settlement by a third entity; The entity/buyer of produced electricity (take over the responsibility for imbalances in case of feed in tariff scheme).	Yes	There was always the possibility to transfer the obligation of imbalances settlement by a third entity; The entity/buyer of produced electricity (take over the responsibility for imbalances in case of feed in tariff scheme).	No	
Slovenia	No	If the producer sells the electricity itself, it is financially responsible for imbalance. But if it sells it directly to the support centre, the support centre is financially responsible for the imbalance.	No		Yes	If the producer sells the electricity itself (in case of FiP), he is financially responsible for imbalance. But if it sells it directly to the support centre, the support centre is financially responsible for the imbalance.
Spain	No		Yes	All RES are responsible in the same manner as other plants since 2007.	No	
Sweden	No		Yes		No	
UK	No answer		No answer		No answer	

Country	There is another institution that has balancing responsibility on behalf of all or some of the RES electricity plants. However, there is not an incentive scheme in place for this institution to minimise the incurred balancing costs.	Comment	There is another institution that has balancing responsibility on behalf of all of some or the RES electricity plants. This institution is incentivised to minimise those balancing costs.	Comment	Other	Comment
Austria	No		No		No	
Belgian	No		No		Yes	
Croatia	No		No		Yes	
Cyprus	Yes	During the transitory regulation in Cyprus (prior the full implementation of the new electricity market model), the Electricity Authority of Cyprus is responsible for the imbalances caused by RES electricity. With the introduction of the competitive electricity market, all RES plants without exception will be responsible for the imbalances in exactly the same manner as any other conventional plant.	No		No	
Czech Republic	No		No		No	
Denmark	No		No		No	
Estonia	No		No		No	
France	No		No		No	
Germany	No		Yes	TSOs are balancing responsible for all RES electricity generated under the FiT-scheme.	N/A	
Greece	No		No		Yes	
Hungary	No		No		No	

Country	There is another institution that has balancing responsibility on behalf of all or some of the RES electricity plants. However, there is not an incentive scheme in place for this institution to minimise the incurred balancing costs.	Comment	There is another institution that has balancing responsibility on behalf of all of some or the RES electricity plants. This institution is incentivised to minimise those balancing costs.	Comment	Other	Comment
Ireland	No		Yes	The TSO is responsible for balancing. There are incentives for it to reduce compensation payments to generators who are constrained/curtailed to maintain system balance.	No	
Italy	No		No		No	
Latvia	Yes		No		No	
Lithuania	No		No		No	.
Luxembourg	No		No		No	
Malta	No		No		No	
Netherlands	No		No		No	
North Macedonia	No		No		Yes	
Poland	No		Yes	PSE S.A. (Polskie Sieci Elektroenergetyczne S.A.), the state-owned transmission system operator in Poland, is the entity responsible for balancing the network. In performing its duties, it is based on the Transmission Network Code.	No	
Portugal	No		No		No	
Romania	Yes	Electricity suppliers have balancing responsibility on behalf of some of the RES electricity plants (prosumers).	Yes	Electricity suppliers have balancing responsibility on behalf of some of the RES electricity plants, but those are not incentivised to minimise balancing costs.	No	

Country	There is another institution that has balancing responsibility on behalf of all or some of the RES electricity plants. However, there is not an incentive scheme in place for this institution to minimise the incurred balancing costs.	Comment	There is another institution that has balancing responsibility on behalf of all of some or the RES electricity plants. This institution is incentivised to minimise those balancing costs.	Comment	Other	Comment
Slovakia	Yes	OKTE, a.s. (short-term electricity market operator).	No		No	
Slovenia	No		No		No	
Spain	No		No		No	
Sweden	No		No		No	
UK	No answer		No answer		No answer	

Annex 11 – Net-metering framework

Country	Net-metering in place?	What does it look like?
Austria	No	
Croatia	Yes	Household consumers that have a RES installation for self-consumption pay electricity, network use and taxes/levies only for the difference between electricity taken from the grid and excess electricity they inject into the grid (determined every month). All consumers (household and non-household) with RES installations for self-consumption can get compensation from their electricity supplier for excess energy injected into the grid. They can also find someone else to sell the energy to, but cannot inject energy into the grid without having a buyer.
Cyprus	Yes	Under the current support scheme, the net-metering category is applied for small-scale PV systems with capacity up to 10 kW, for all consumers (residential and non-residential). The PV systems can be installed (a) on the roof of legally constructed buildings or on the ground within the same plot where the legal estate is located and (b) on land where there is a permit for the extraction or construction of a well (refers only to farmers). The cost of installing the PV system, including the cost of purchasing and installing the electricity meter, is borne entirely by the beneficiaries (except in the case of vulnerable consumers). Under this support scheme, PV systems with a total installed capacity of 20 MW in the following two (2) subcategories of investment can be installed using the method of net-metering: (a) PV systems for household consumers – 15 MW and (b) PV systems for non-household consumers – 5 MW. The clearing of the electricity is calculated by the respective supplier with whom the consumer has contracted (currently only one supplier in Cyprus), either every two months or per month (depending on the consumer's category) for a period of twelve months. Any surpluses will be transferred to the next pricing period while any deficits will be priced normally, within the specific pricing period. The last account of the twelve months will be the final settlement of the surpluses (if any). The last bill of the period of twelve months is the February or March bill, unless any relevant decision is issued by CERA for a different regulation, based on the actual data to select the optimal clearing period for the majority of producers-consumers. Any surpluses cannot be transferred from one twelve-month period to the next. The generated RES electricity is subtracted from the building's overall electricity consumption. Consumers pay only for the difference between the energy consumed and energy generated (net electricity used) plus a cost that reflects the cost of the electricity grid to support continuous supply and taxes (VAT, RES levy).
Czech Republic	No	
Denmark	N/A	
Estonia	Yes	All have two-way meters.
France	No	
Germany	No	

Country	Net-metering in place?	What does it look like?
Greece	Yes	According to Greek Law 4414/2016 (article 13, par. 7) PV, small wind power plants up to 60 kW, biomass, biogas, small hydro and CHP for self-production, are eligible. The Greek net-metering scheme (active as of the beginning of year 2015) is applicable to all solar PV systems that aim for self-consumption, and thus extends to both rooftop and ground-mounted systems. There are special limits regarding the installed capacity. In any case, the installed capacity of net-metering systems can reach up to 1,000 kWp, in the Interconnected System. Furthermore, the Ministerial Decision ΑΠΕΗΛ/Α/Φ1/οικ.175067 (FEK B' 1547/5.5.2017) introduced the virtual net metering applications for specific investors. Thus, legal entities governed by public or private law pursuing public or other public interest purposes of general or local scope and farmers or farming associations are allowed to develop RES projects up to 1,000 kWp in the same prefecture located a considerable distance away from the place of the actual power consumption. By virtual net metering it is possible to offset the energy produced (from a RES station) to the energy consumed by one or more auto-producer's consumption facilities and the production facility does not have to be in the same (or adjacent) space with the electrical installation and connected to it (network connection through the same supply), as is it had to with the simple net metering. The energy nettings happen on a three-year basis and the time of generation does not necessarily need to coincide with the time of consumption. Each time the electricity retailer issues an electricity bill, the electricity fed into grid and the electricity consumed has to be measured. If the difference is positive, this surplus is credited to the next electricity bill and the consumer does not pay for the competitive charges. However, any surpluses after the end of the three-year period will not be disbursed by the electricity retailer to the self-producing electricity consumer and will be annulled. If the difference is negative, i.e. more electricity was consumed than produced, and then the plant/installation operator is obliged to pay the difference. In addition, the Ministerial Decision ΥΠΕΝ/ΔΑΠΕΕΚ/15084/382 (FEK B' 759/5.3.2019) set the institutional framework for the participation of small wind power plants, biomass/biogas/bioliquids, small hydro, geothermal and CHP in the net-metering scheme (previously the institutional framework was specified only for PV stations even though more technologies were eligible to participate in the net-metering scheme under law 4414/2016). The Ministerial Decision also permitted the participation of RES technologies with an electricity storage system (up to 30 kVA) in the net-metering scheme. In case of a MV connection, the Ministerial Decision also introduced the mixing of two of the above technologies (previously the self-consumer could participate only with one technology in the net-metering scheme) and the ability for virtual net-metering between MV self-consumer connections and consumers connected to the LV grid. As far as the regulated charges are concerned (i.e. grid access charges, RES Levy and public services charges), the latter are calculated as follows: • The charges for RES Levy and grid access are calculated based on the energy absorbed; and • The charge for Public Services Obligations (PSOs) is based on the energy consumed.
Hungary	Yes	Household-sized power installations (HMKE) with a capacity of 50 kVA or below are eligible for net metering in case that the power plant connects to the low-voltage grid. Connection to the public grid is only possible with an operational approval. If the approval is given, the local electricity trader or the universal supplier is obliged to take over the electricity fed into the public grid upon request of the producer. The electricity surplus injected to the grid is remunerated by the electricity supplier at the average electricity product price (without system usage costs and other surcharges). The current net metering scheme will be phased out for new entrants from 1 January 2024 at the latest (complying with EU rules).
Ireland	No	

Country	Net-metering in place?	What does it look like?
Italy	Yes	Net-metering can be applied to final customers with RES plant up to 500 kW or high efficiency CHP plants up to 200 kW. It is not a physical compensation between electricity withdrawn from the grid and electricity injected into the grid, but an economic compensation between their market values. Moreover, the Gestore dei Servizi Energetici S.p.A. (GSE) recognises a financial contribution, equal to the variable part (in €/kWh) of network charges and of general system charges for the minimum between electricity withdrawn from the grid and electricity injected into the grid, just as if that energy had not used the grid. This economic "net-metering" mechanism is called "*Scambio sul posto*".
Latvia	Yes	Net-metering is available for households only. The electricity feed-in network and withdrawn from network is netted when calculating levies.
Lithuania	Yes	Smart metering systems are connected to RES plants and collects data about produced energy quantity.
Luxembourg	No	
Malta	No	
Netherlands	N/A	
North Macedonia	No	
Poland	Yes	In Poland prosumers had the right to sell surplus electricity on the basis of net-metering till 31 March 2022 (the old support system). Since 1 April 2022 the new support system for prosumers is based on net-billing.
Portugal	No	
Romania	No	
Slovakia	No	Partly covered by institution although this is not true metering policy.
Slovenia	Yes	In Slovenia, for households and small business customers self-consumption is also possible on a yearly compensation basis outside the support scheme (http://www.pisrs.si/Pis.web/pregledPredpisa?id=URED7867).
Spain	Yes	In some self-consumption configurations, it is possible to get a value over the electricity injected to the grid. The value is related to the value of the energy in the wholesale market.
Sweden	No	
UK	No	

Annex 12 – Energy sharing

Country	Is there any system in place that incentivises the sharing of self-produced RES electricity (i.e. although using the public grid, no or lower grid charges are charged for the consumed (shared, self-produced) RES electricity)?	How do you define "energy sharing", i.e. describe the implemented scheme?
Austria	Yes	Sharing within the same building is already possible. In this case, the RES plant can be connected directly to the mainline within the building, which is seen as public grid, but production and consumption are netted on a 15-minute basis. And the electricity consumed via that scheme is seen as self-produced and self-consumed.
Croatia	No	
Cyprus	Yes	No grid charges are charged for the self-produced RES electricity.
Czech Republic	Yes	There is no special scheme for sharing of self-produced RES electricity, with the exception of self-consumption. These market participants must be in the green bonus regime (FiP). The amount of own electricity consumption (produced and consumed at the same time), i.e. consumed without the use of the transmission or distribution network, is not charged for network fees, system services, payment for support of electricity from supported energy sources or payment for market operator activities. Electricity tax is not even paid on the own electricity consumption.
Denmark	N/A	
Estonia	No	
France	Yes	The law defines the collective self-consumption rules, where one or more consumers partner with one or more producers to exchange electricity, either within one and the same building or in “geographic proximity” to each other. The "geographic proximity" criteria require that the production and consumption sites are within a distance of 2 km and that the total power does not excess 3 MW. Since August 2018, consumers engaged in collective self-consumption operations are free to opt for a dedicated network tariffication including a rebate on self-consumed electricity (and a markup on electricity purchased from the network). The economic incentive of this tariffication option depends on the self-consumption project.
Germany	No	
Greece	No	
Hungary	No	
Ireland	No	
Italy	Yes	The Italian Authority, with the resolution 318/2020/R/eel, defined the procedure to set up renewable energy communities and jointly acting renewables self-consumers and the

Country	Is there any system in place that incentivises the sharing of self-produced RES electricity (i.e. although using the public grid, no or lower grid charges are charged for the consumed (shared, self-produced) RES electricity)?	How do you define "energy sharing", i.e. describe the implemented scheme?
		economic regulation for the shared electricity among renewable energy communities and jointly acting renewables self-consumers. In particular, such a resolution foresees that the GSE returns a fee once a year; this fee is equal to: - in case of RES energy communities: the product between the shared electricity and the variable part (in €/kWh) of transmission and distribution network tariffs (defined for the low voltage final consumers); - in case of jointly acting renewables self-consumers: the sum between i) the product between the shared electricity and the variable part (in €/kWh) of transmission and distribution network tariffs (defined for the low voltage final consumers), and ii) the product between the shared electricity, the zonal energy price and the avoided network losses coefficient (this coefficient is defined according to the power plants voltage level: 1.2% in case of low-voltage plants, 2.6% in case of medium voltage plants). This economic regulation is not to be considered an incentive since it aims at considering the grid cost reduction deriving from self-consumption. Furthermore, the Decree 16 September 2020 defined the incentive to promote the collective energy sharing and the RES energy communities, including through the use of storage systems. The incentive for self-consumed energy will be respectively equal to: - 100 €/MWh for collective self-consumption configurations; - 110 €MWh for RES energy communities. The incentives are recognized for a period of 20 years and are managed by the Gestore dei Servizi Energetici S.p.A. (GSE).
Latvia	Yes	According to the net-metering system, the RES electricity is partly exempted for levies – the self-consumption and the part of electricity feed in network is not subject for levies related to the RES support scheme, which are paid by all users.
Lithuania	Yes	A remote RES energy plant can be linked to only one point of consumption. Although, there are RES producing communities which share produced electricity among community members.
Luxembourg	Yes	Electricity produced by members of a Local Renewable Energy Community, meeting the criteria set by law, and shared with consumption by other members of the same community within a 15-minute period, is not subject to any grid fee, tax or levies.
Malta	No	
Netherlands	Yes	A *PostCodeRoos* is a demarcated area within which a local energy cooperative can recruit its participants because they are entitled to a refund of the energy tax when they participate. The condition is that these participants are connected to the grid via a small consumer connection (max. 3 x 80 Ampere). This *PostCodeRoos* area is determined by the place (zip code) where

Country	Is there any system in place that incentivises the sharing of self-produced RES electricity (i.e. although using the public grid, no or lower grid charges are charged for the consumed (shared, self-produced) RES electricity)?	How do you define "energy sharing", i.e. describe the implemented scheme?
		the production installation for the generation is located. This 4-digit area is the heart of the rose. The *PostCodeRoos* area is formed by this heart together with all adjacent 4-digit postcode areas (which form the petals of the rose). Even if an adjacent postcode area is adjacent to the heart with a small dot, the area can be counted as a bullseye.
North Macedonia	No	
Poland	Yes	The Act on Renewable Energy Sources provides for support for RES prosumers introducing electricity to the grid through preferential settlement of electricity sales. In addition, the aforementioned Act also introduces the institution of an energy cooperative, i.e. – a cooperative within the meaning of the Act of 16 September 1982 – Cooperative Law or the Act of October 4, 2018 on farmers' cooperatives, the object of which is the production of electricity or biogas or heat in RES installations and balancing the demand for electricity or biogas or heat, only for the own needs of an energy cooperative and its members, connected to an area-defined electricity distribution network with a rated voltage lower than 110 kV or a gas distribution network, or a heating network. However, it should be emphasised that in 2018-2019, to which this report relates, there were no active energy cooperatives in Poland.
Portugal	Yes	The 2019 law decree (162/2019) defines individual and collective self-consumption and as such allows energy sharing. It determines a special network tariff for self-consumption energy using the grid (regular network tariff deducted of upper voltage network tariffs and policy costs). It also establishes energy communities.
Romania	No	
Slovakia	Yes	With the local source, if its generation exceeds consumption, up to 10 % of installed capacity may be provided as reserved capacity.
Slovenia	No	
Spain	No	
Sweden	Yes	There is a tax release for self-produced RES energy that is fed into the public grid up to 30 MWh per year.
UK	No	

Annex 13 – About CEER

The Council of European Energy Regulators (CEER) is the voice of Europe's national energy regulators. CEER's members and observers comprise 39 national energy regulatory authorities (NRAs) from across Europe.

CEER is legally established as a not-for-profit association under Belgian law, with a small Secretariat based in Brussels to assist the organisation.

CEER supports its NRA members/observers in their responsibilities, sharing experience and developing regulatory capacity and best practices. It does so by facilitating expert working group meetings, hosting workshops and events, supporting the development and publication of regulatory papers, and through an in-house Training Academy. Through CEER, European NRAs cooperate and develop common position papers, advice and forward-thinking recommendations to improve the electricity and gas markets for the benefit of consumers and businesses.

In terms of policy, CEER actively promotes an investment friendly, harmonised regulatory environment and the consistent application of existing EU legislation. A key objective of CEER is to facilitate the creation of a single, competitive, efficient and sustainable Internal Energy Market in Europe that works in the consumer interest.

Specifically, CEER deals with a range of energy regulatory issues including wholesale and retail markets; consumer issues; distribution networks; smart grids; flexibility; sustainability; and international cooperation.

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More information at www.ceer.eu.