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Renewables Work Stream (RES WS)

of

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Abstract

This document (C21-RES-75-05) presents an updated assessment of the status quo of formally supported RES installation in Europe. A first CEER paper (C19-RES-64-04a) on the topic was published in May 2020.

This paper follows three main objectives: (1) Assessing the magnitude of RES installations, which will be running without support, notably after their support time has ended, in the coming years; (2) identifying the upcoming regulatory challenges and, if needed, the changes to the legal framework; and (3) showing alternative business strategies for RES installations running without support.

Target audience

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

Keywords

Support schemes; renewables; renewable energy; renewable energy sources (RES); end of support time; solar; photovoltaics (PV); hydropower; offshore wind; onshore wind; biomass; biogas, feed-in-tariff; feed-in-premium.

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Related documents

CEER documents

- [Status Review of Renewable Support Schemes in Europe for 2018 and 2019](#), June 2021, Ref: C20-RES-69-04.
- [CEER Paper on Unsupported RES](#), May 2020, Ref: C19-RES-64-04a.
- [Status Review of Renewable 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.
- [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, [Directive on the promotion of the use of energy from renewable sources \(recast\)](#), 2018/2001/EC, 11 December 2018.
- [Guidelines on State aid for environmental protection and energy 2014-2020, European Commission \(EEAG\), 2014/C 200/01, 28 June 2014.](#)
- European Commission, [Directive on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC](#), 2009/28/EC, 23 April 2009.

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EXECUTIVE SUMMARY

CEER member countries (MCs) have been promoting the deployment of generation from Renewable Energy Sources (RES) for over a decade or longer through dedicated support schemes. With varying support time durations, MC are progressively being confronted with an increasing number of RES installations reaching the end of their support time (EOS), which, in many cases, will differ from their technical lifetime end.

From a socioeconomic perspective, it could be beneficial to implement an enhancing framework allowing RES installations to further produce and sell their RES electricity beyond support times instead of being repowered or dismantled. Besides support systems, new business models, market players and/or market products will emerge to accommodate new and existing EOS installations in their strive for adequate market earnings. To reflect these developments, adaptations of national legal frameworks governing connection and dispatch arrangements might become relevant in selected MCs.

This paper follows three main objectives:

- (1) Assessing the magnitude of RES installations, which will be running without support, notably after their support time has ended, in the coming years.
- (2) Identifying the upcoming regulatory challenges and, if needed, the changes to the legal framework.
- (3) Showing alternative business strategies for RES installations running without support.

Against this background, CEER has gathered information via a questionnaire sent to its member National Regulatory Authorities (NRAs) for energy over the summer of 2021. Compared to the last report published in 2020, four countries (i.e. Albania, Estonia, Finland and France) did not respond this time but six other countries that did not respond for the last report did so this around time (i.e. Denmark, North Macedonia, Norway, Romania, Sweden and United Kingdom). Based on the responses provided, the following limited messages can be brought forward:

- At present, only a small share of RES installations is not being supported but by 2030, around 40% of currently supported installed capacity will reach the EOS;
- The largest share of RES installations running without support have never been supported in the past, notably large hydropower plants;
- For onshore wind and solar, new (larger) capacities are already being planned and installed to run without any direct financial support;
- The legal framework governing RES installations has so far not been adapted. Either because the framework does not distinguish between supported and unsupported RES or because support time is still running, and adaptation will be needed only in the future; and
- The strategies followed by unsupported RES installations are manifold. The most common approach is – at least in case of larger installations – to rely on the market as a source of income. Smaller ones, mainly solar, are expected to focus on self-consumption.

1 Introduction

An increasing number of Renewable Energy Sources (RES) installations will reach the end of their support time (EOS) in the upcoming years while in some CEER member countries' (MCs)¹ formerly supported RES installations are today already running without any financial support. For the time being, no major changes or planned changes to the legal framework can yet be observed in CEER MCs in connection with those kind of installations. Coming from a Feed-in-Premium (FiP) system, which was not in place around the beginning of the 2000s, one would expect that those RES plant operators are already acquainted with a market environment since they have been selling their electricity on a marketplace from the start. What can be observed though, is that also installations coming straight out of a Feed-in-Tariff (FiT) system do not necessarily get decommissioned after the end of their support time and therefore somehow can market or use their electricity successfully. With increasing shares of formerly supported installations, some challenges might intensify, e.g. taking on balancing responsibility. For MCs relying only on a FiT scheme for RES support, the question arises whether there will be enough knowhow and new players available to effectively handle the formerly supported electricity in a market environment.

This paper will:

- (1) Assess the magnitude of RES installations, which will be running without support, notably after their support time has ended, in the coming years.
- (2) Identify the upcoming regulatory challenges and, if needed, the changes to the legal framework.
- (3) Show alternative business strategies for RES installations running without support.

¹ In this report "CEER member countries (MCs)" is used as a term to indicate all CEER Members and CEER Observers that provided data.

2 Type and duration of support schemes for RES electricity

On a biennial basis, CEER publishes the main features – including costs – of national renewable support schemes. According to the 2011 CEER RES Status Review², which depicts support systems in place in 2009, 10 years ago the main support instrument in place was a FiT. As such, it is very likely that most RES installations already have reached, or are about to reach the end of their support time in the coming years. In the latest CEER RES Status Review³, which provides an overview of the support schemes by technology in 2017, a steady move toward market-oriented support schemes (FiP or green certificates) for newly installed RES capacities can be observed.

In the current situation of RES installations that are about to reach their EOS, the vast majority have not been operated under market conditions and will therefore be confronted with a completely new environment compared to that that they have been acquainted with so far under a FiT scheme.

To assess the magnitude of unsupported RES installations, the RES WS has asked its members to provide further information about the year in which RES installations have been supported for the first time and the time span of financial support granted. Based on the responses provided by the members (N=19), it can be seen that RES has already been financially supported in some MCs as early as the late 1980s (e.g. Portugal) or in the 1990s (e.g. Italy, Luxembourg, Spain, Latvia), years before the first European Directive 2001/77/EU on the promotion of renewable energy was adopted in 2001.

Starting with Portugal in 1988, more and more MCs introduced national support schemes for RES installations, as shown in Table 1.

	PV	CSP	onshore	offshore	biomass	biogas	hydro	geothermal
AT	2002	X	2002	X	2002	2002	2002	2002
CZ	2006	X	2006	X	2006	2006	2006	2006
DE	2000	X	2000	2000	2000	2000	2000	2000
DK	2008	X	X	1995	X	X	X	X
ES	1998	2004	1998	X	1998	X	1998	X
HU	2002	X	2002	X	2002	2002	2002	2002
IT	1992	2008	1992	1992	1992	1992	1992	1992
LT	2002	X	2002	X	2002	2002	2002	2002
LU	1994	X	1994	X	2008	1994	1994	X
LV	1998	X	1995	X	1998	1998	1995	X
MK	2008	X	2007	X	2010	2007	2007	X
MT	2006	X	2006	X	X	X	X	X
NO	2012	X	2012	X	2012	X	2012	X
PL	2004	X	2004	2020	2004	2004	2004	2004
PT	1988	1988	1988	1988	1988	1988	1988	1988
RO	2004	X	2004	X	2004	X	2004	X
SE	2003	2003	2003	2003	2003	2003	2003	2003
SI	2010	X	X	2010	2010	2010	2010	2010
UK	2002	X	2002	2002	2002	2002	2002	X

Table 1: Introduction of national support schemes

Support times for new installations are depicted in Table 2. They range from 13 years up to 30 years for PV installations in Spain or hydropower in the Czech Republic.

² [CEER Report on Renewable Energy Support in Europe](#), C10-SDE-19-04a, 4 May 2011.

³ [Status Review of Renewable Support Schemes in Europe for 2018 and 2019](#), Ref: C20-RES-69-04, June 2021.

	PV	CSP	onshore	offshore	biomass	biogas	hydro	geothermal
AT	13	0	13	0	15 + 5	15 + 5	13	13
CZ	20	0	20	0	20	20/15	30	20
DE	20	0	20	20	20	20	20	20
DK	20	0	20	20	15-20	Indefinite - under revision	0	0
ES	30	25	20	0	25	0	25	0
HU	15	0	15	0	15	15	15	15
IT	20	25	20	25	20	20	20 - 30	20 - 25
LT	12	0	12	0	12	12	12	12
LU	15	0	15	0	15	15	15	0
LV	8	0	20	0	20	20	20	0
MK	0	0	20	0	15	15	20	0
MT	0	0	0	0	0	0	0	0
NO	15	0	15	0	15	0	15	0
PL	15	0	15	25	15	15	15	15
PT	15	15	15	15	25	15	20	25
RO	15	0	15 new / 7 reused	0	15	0	15 new / 10 upgrade/ 3 old	0
SE	15 (per installation)	15	15	15	15	15	15	15
SI	0	0	0	0	0	0	0	0
UK	20	0	20	20	20	20	20	0

Table 2: Support times for new installations in 2020

Out of 19 countries, 15 changed their support times for at least one technology since introducing national support schemes (see Table 3). Usually, the changes made to support-time duration mainly applied to new plants and did not affect the support time of RES installations already in operation. In some cases, e.g. in Germany, all RES installations benefitting from a financial support since 1991 were entitled to a new support time duration of 20 years starting in 2000, when a comprehensive new RES legislation was introduced.

In more than half of the countries where the support time was changed, the support time increased for some support schemes (e.g. Spain, Italy, Latvia, Germany, Malta). In significantly fewer countries the support time, for at least some RES technologies or support schemes, decreased (e.g. Hungary, North Macedonia, Romania).

	PV	CSP	onshore	offshore	biomass	biogas	hydro	geothermal
AT	no	X	no	X	no	no	no	no
CZ	yes	X	no	X	no	no	no	no
DE	no	X	no	no	yes	yes	yes	no
DK	yes	X	yes	yes	X	yes	X	X
ES	yes	yes	yes	X	yes	X	yes	X
HU	yes	X	yes	X	yes	yes	yes	yes
IT	yes	yes	yes	yes	yes	yes	yes	yes
LT	yes	X	yes	X	yes	yes	yes	yes
LU	yes	X	no	X	no	X	X	X
LV	no	no	yes	X	yes	yes	yes	X
MK	yes	X	no	X	yes	yes	no	X
MT	yes	X	X	X	X	X	X	X
NO	no	X	no	X	no	X	no	X
PL	yes	X	yes	no	yes	yes	yes	yes
PT	yes	yes	yes	yes	yes	yes	yes	yes
RO	yes	X	yes	X	yes	X	yes	X
SE	yes	yes	yes	yes	yes	yes	yes	yes
SI	no	X	X	no	no	no	no	no
UK	No	0	No	No	No	No	No	No

Table 3: Changes made to the support times for new installations since the introduction of the support scheme

For more information, in Annex 3 specific comments to support time changes are listed. Mainly on the timing and on which legal acts those changes were based.

Regarding the impact of the worldwide Covid-19 pandemic, MCs were asked whether there have been changes for unsupported RES caused by the situation. None of the MCs indicated that Covid-19 specific changes to their support systems were made.

3 Installed capacity and installed capacity reaching end of support time

This chapter gives an overview of the installed capacity of supported RES at the end of 2020 and what amount of capacity will reach the end of support time by the end of 2030.

3.1 Installed supported capacity at the end of 2020

Figure 1 and Figure 2 show the overall installed supported capacity per MC at the end of 2020 – in total around 270 GW – with Germany having the largest share of 123 GW. The following figures will show how much installed supported capacity will reach the EOS. Looking at all the MCs that provided data for installed capacity, around 40% of the supported installed capacity at the end of 2020 will not be supported anymore at the end of 2030.

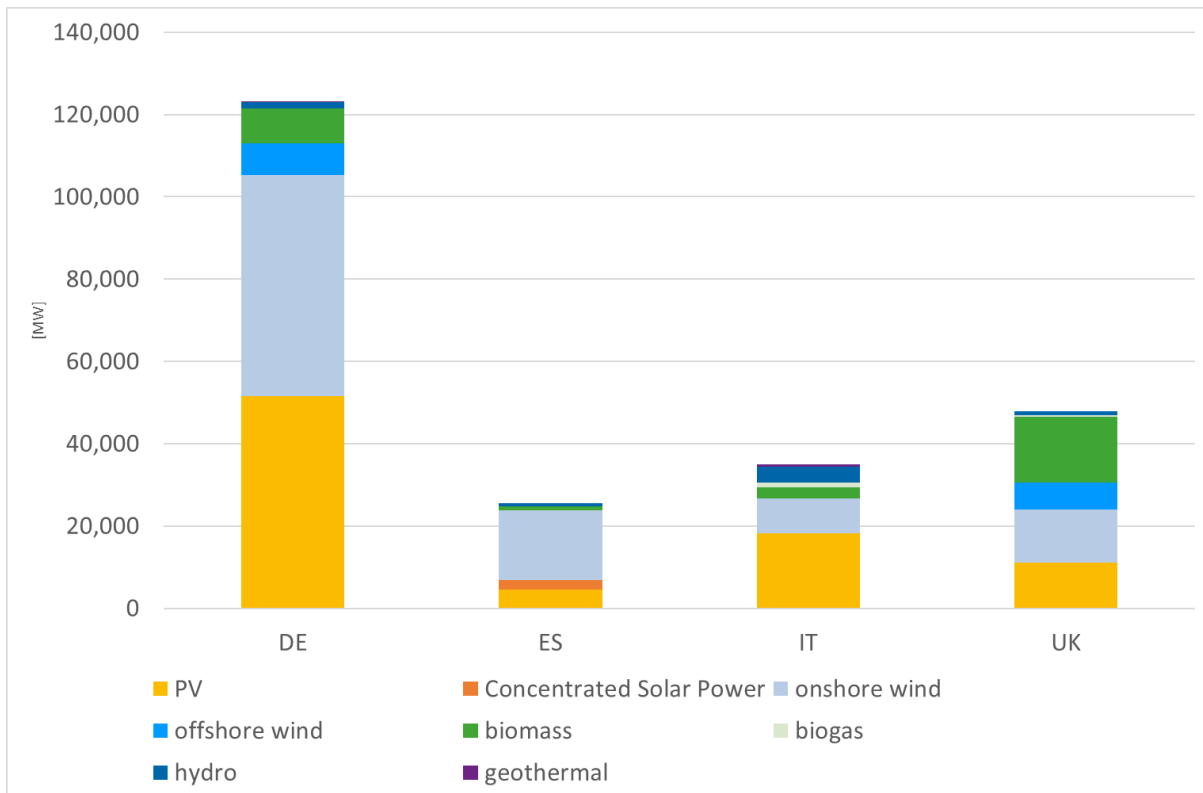


Figure 1: Installed supported capacity per country (>20 GW)

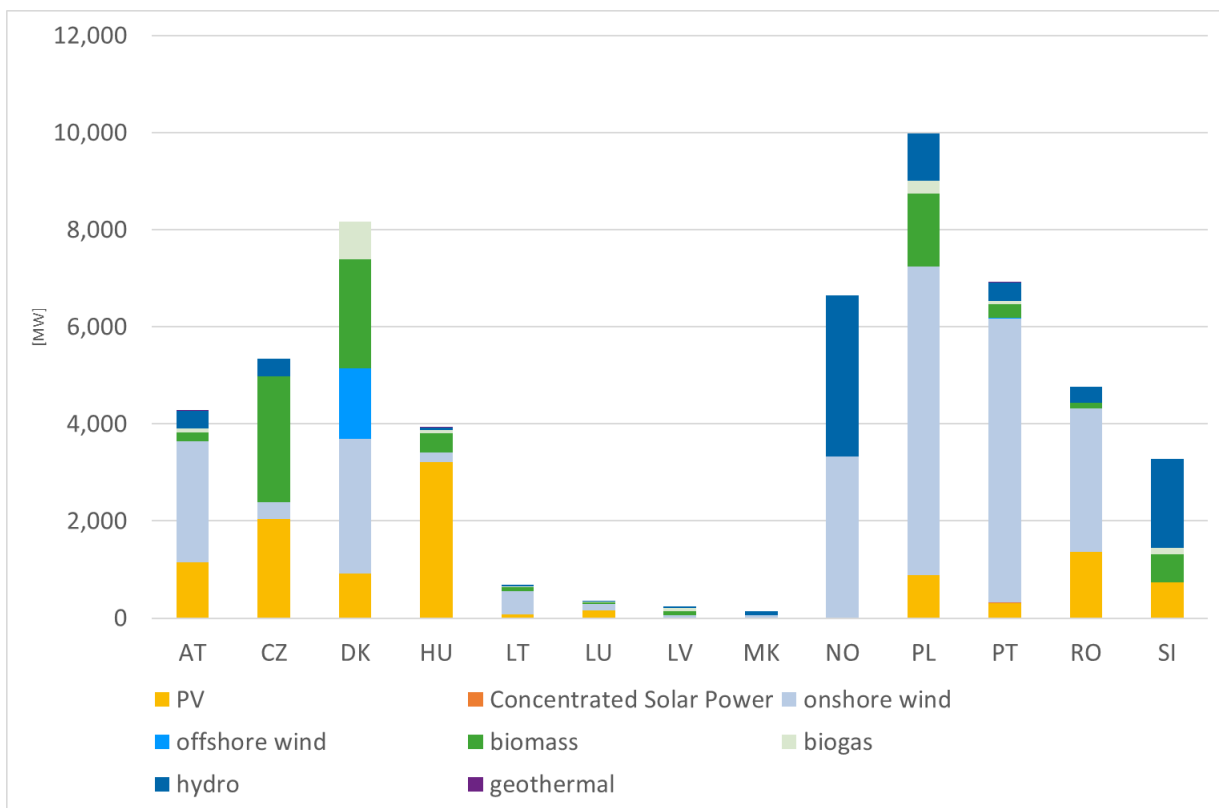


Figure 2: Installed supported capacity per country (<12 GW)

3.2 Installed capacity reaching end of support time

Since most RES support schemes were introduced in the early 2000s and support times often last for 20 years, an increasing number of supported RES installations started to reach the end of their support time from 2020 onwards.

Figure 3 depicts the installed photovoltaic capacity that will reach the EOS until 2030. A significant cost reduction, and thus an increase in solar PV development, was witnessed in the last decade in the EU. Thus, major shares of PV installations will reach their EOS mainly starting from 2030 onwards, as can also be seen in Figure 3.

Figure 4 shows the trend for onshore wind installations. Onshore wind has the biggest share of overall installed capacity falling out of the support system according to data delivered for this study. Between end of 2020 and end of 2030, around 23 GW of onshore wind capacity will gradually fall out of the RES support scheme in Germany and 19 GW in Spain. Overall, around 58 GW will reach the EOS until the end of 2030

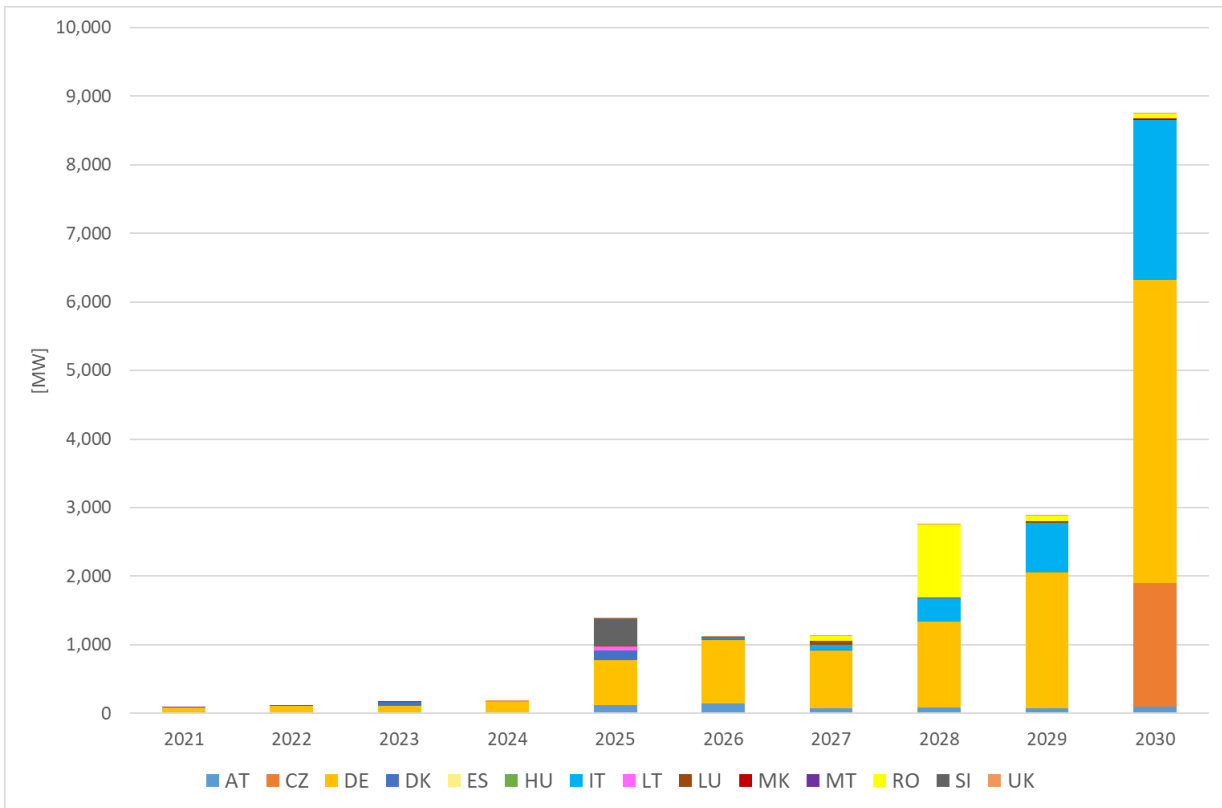


Figure 3: PV-installations reaching end of support

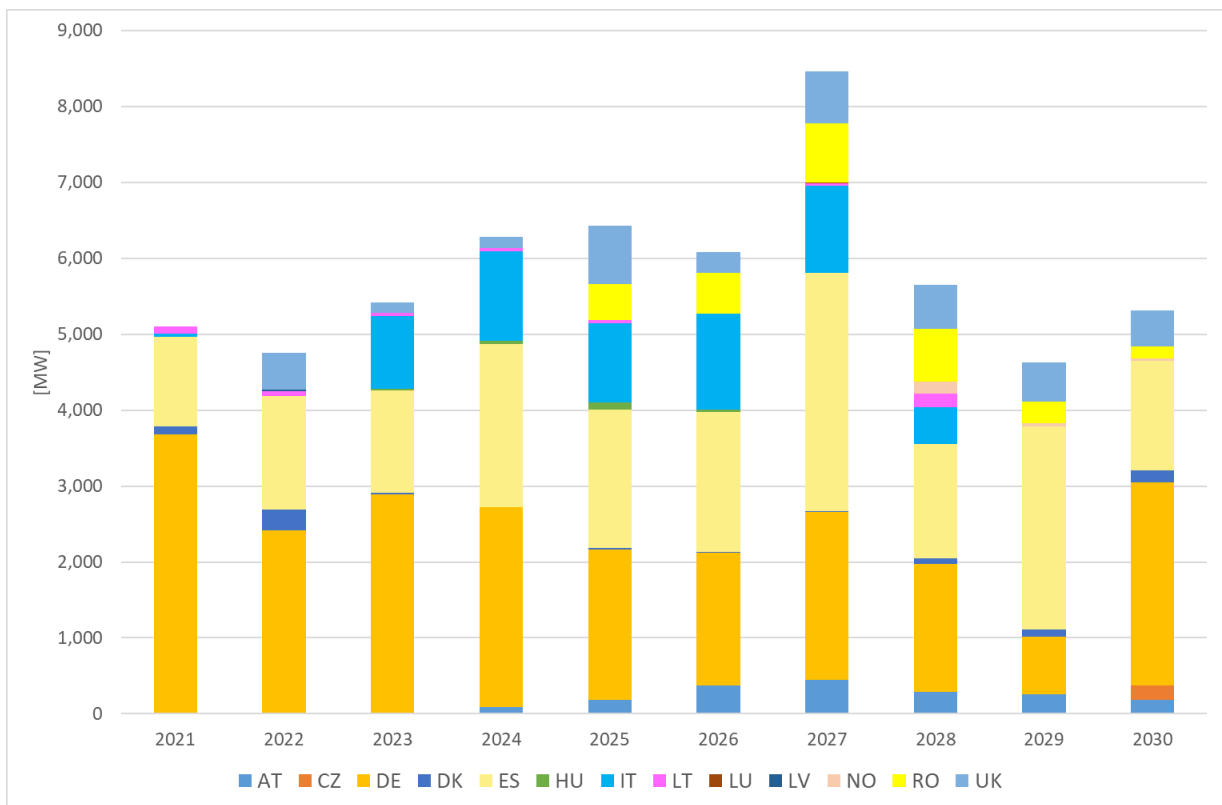


Figure 4: Onshore wind capacity out of support by year

The development for offshore wind is depicted in Figure 5. Reaching the EOS for this support type picks up in 2022 with 160 MW in Denmark.

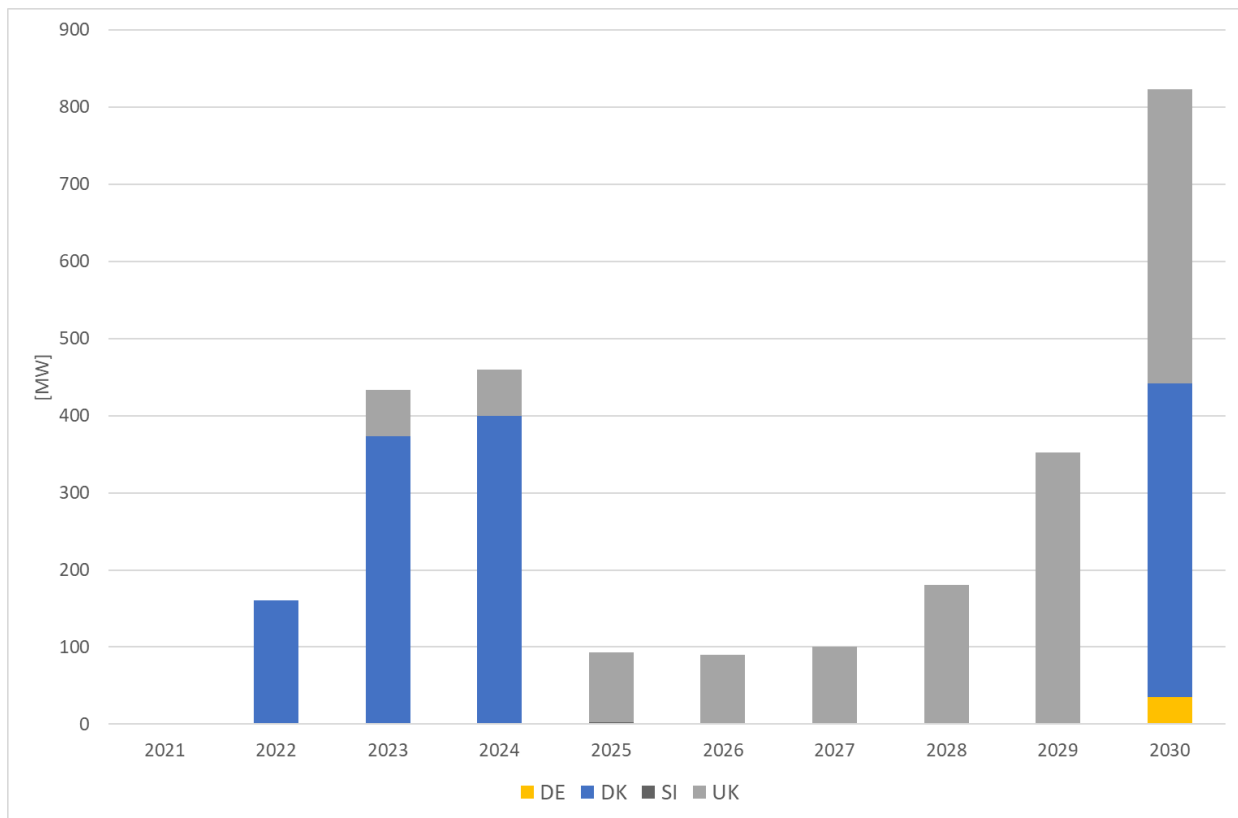


Figure 5: Offshore wind capacity out of support by year

For biomass, the development is depicted in Figure 6. Due to high costs of input materials, further support based on Levelised Costs of Energy (LCOE) might be needed to keep biomass plants operational after they reach the end of their support time. The Guidelines on State aid for environmental protection and energy 2014-2020 (EEAG)⁴ foresee such an option only for this technology. Germany has already implemented a tendering scheme for existing biomass installations to extend their support time. Hungary introduced a so-called 'brown premium' in 2017 for existing solid biomass and biogas plants in order to ensure their further operation (the operator can request this type of support after the EOS from the regulator).

The development for biogas reaching the EOS is depicted in Figure 7. As was the case for biomass, for biogas it is also very unlikely that plants will be able to operate without any support after their EOS due to high operating costs – mainly fuel costs.

⁴ European Commission, [Guidelines on State aid for environmental protection and energy 2014-2020](#), (2014/C 200/01).

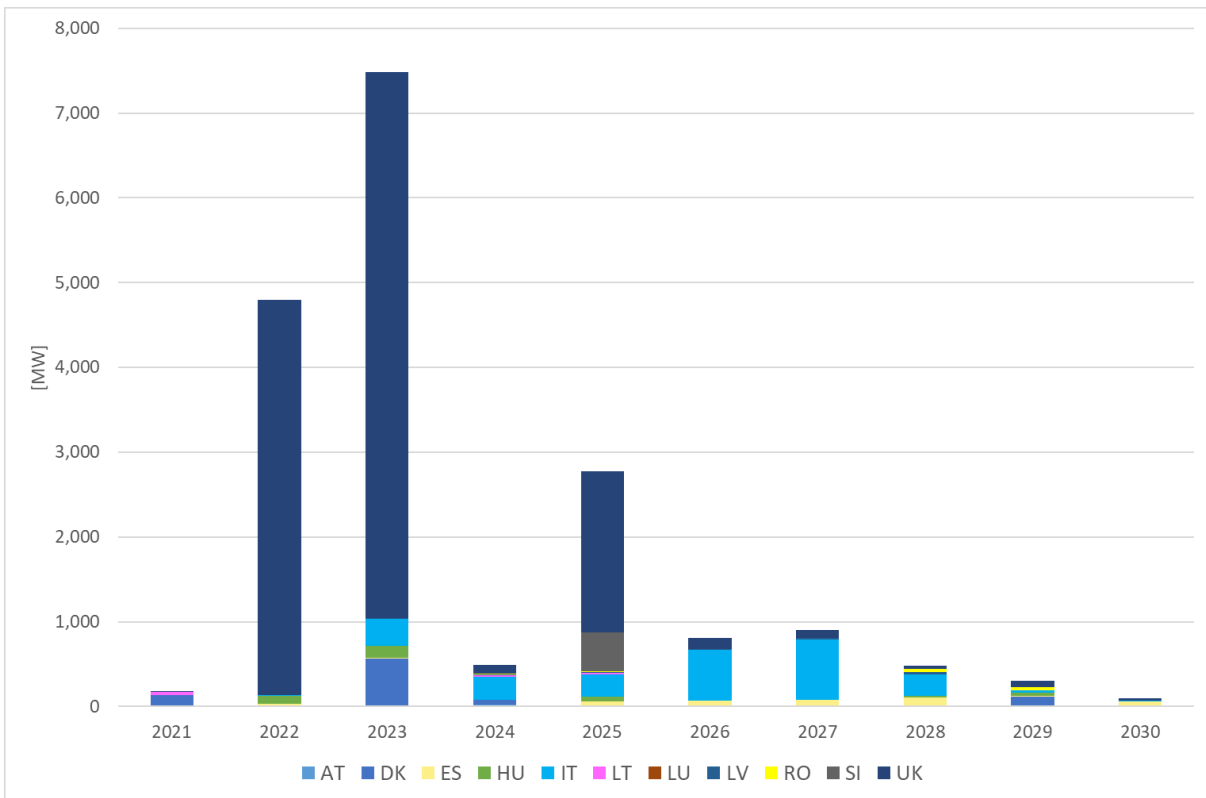


Figure 6: Biomass reaching end of support

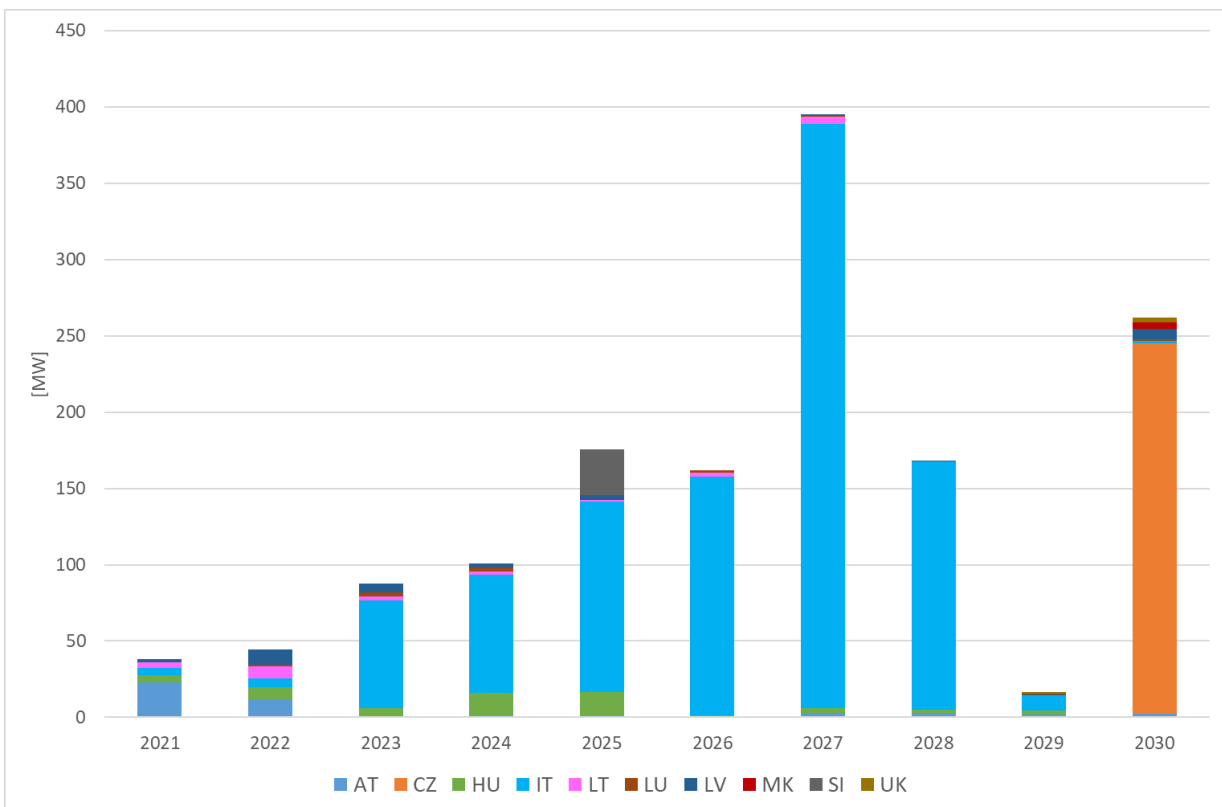


Figure 7: Biogas reaching end of support

Especially for biomass and biogas the question arises of how their flexibility is used during their support time and especially how the flexibility is valued after the EOS.

Figure 8 shows the installed capacity of hydropower reaching the end of support time. There is no common definition of small hydropower, but in general, large hydro installations are usually not supported in current support systems. Starting from 2022, a minimum of 500 MW will reach the EOS with significantly more starting from 2025 (except for 2026). The situation for hydropower is somewhat special. First of all, their lifetime is significantly longer and due to lower operating costs, it is likely that, compared to other technologies, a bigger share of those plants will have the option to operate under market conditions.

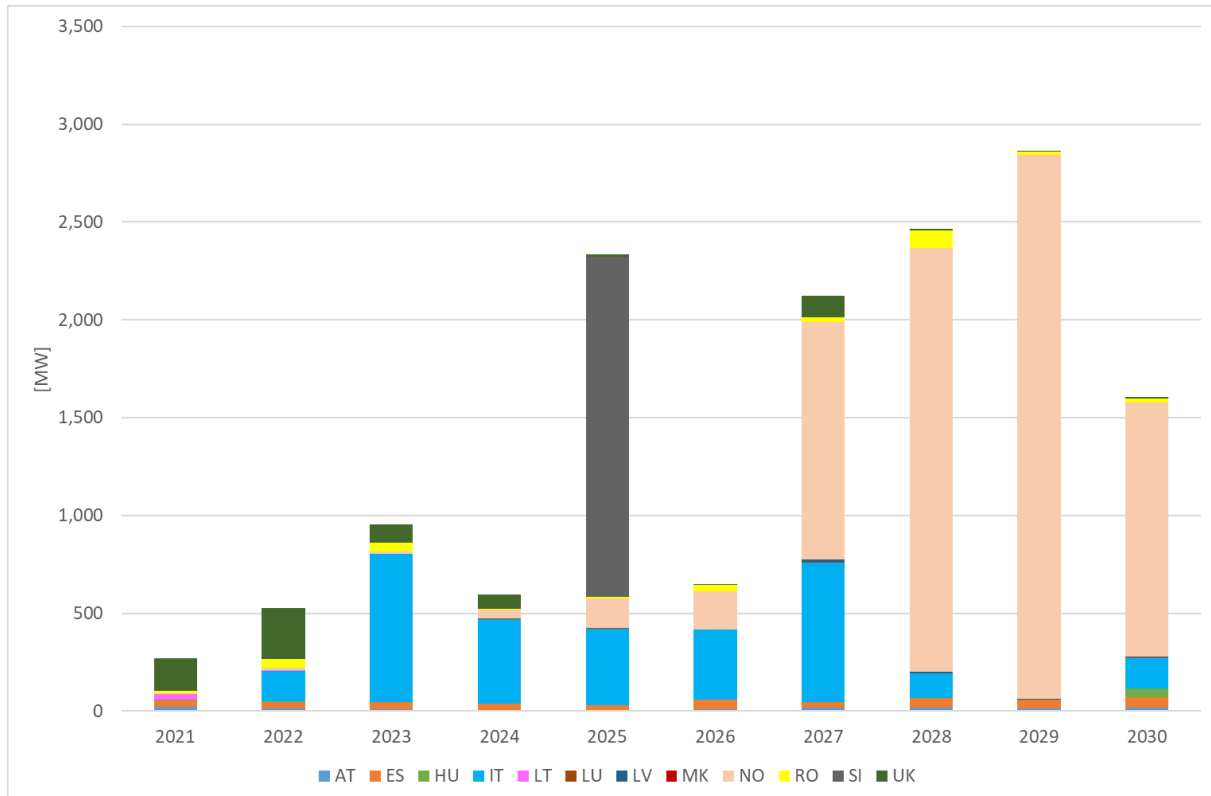


Figure 8: Hydropower reaching end of support

Supported geothermal installations are not widely spread and therefore only a minor amount of installed capacity will reach the EOS. Figure 9 depicts the installed capacity that will reach the EOS, which is mainly centred in Italy.

Figure 10 depicts the sum of all types of capacity that will reach the EOS between 2020 and 2030. Onshore wind accounts for around 50% of the overall capacity followed in size by PV and biomass. If permit granting procedures (building permits or rules for environmental impact assessments etc.) outside of NRAs' scope significantly changed it might be difficult to repower certain assets or to reach certain goals. On the other hand, the potential of additional electricity from repowering existing plants should also be kept in mind.

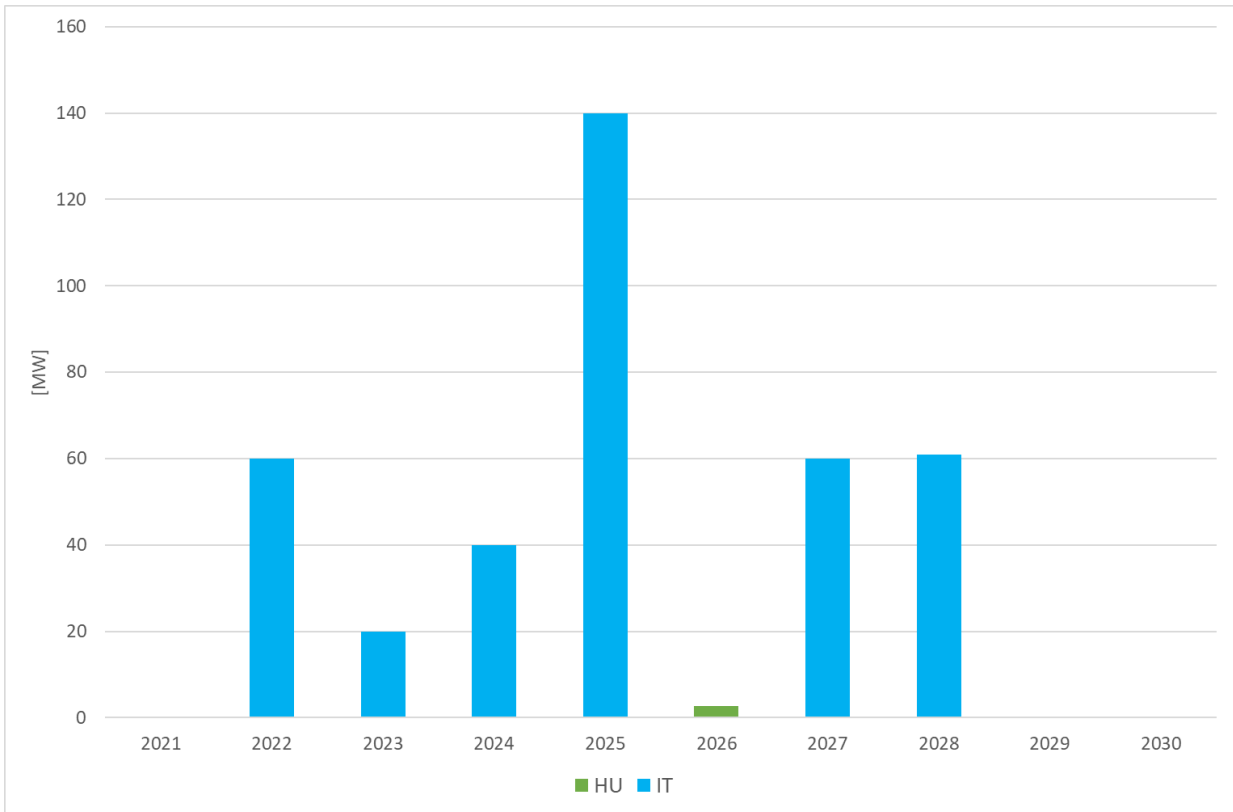


Figure 9: Geothermal reaching end of support

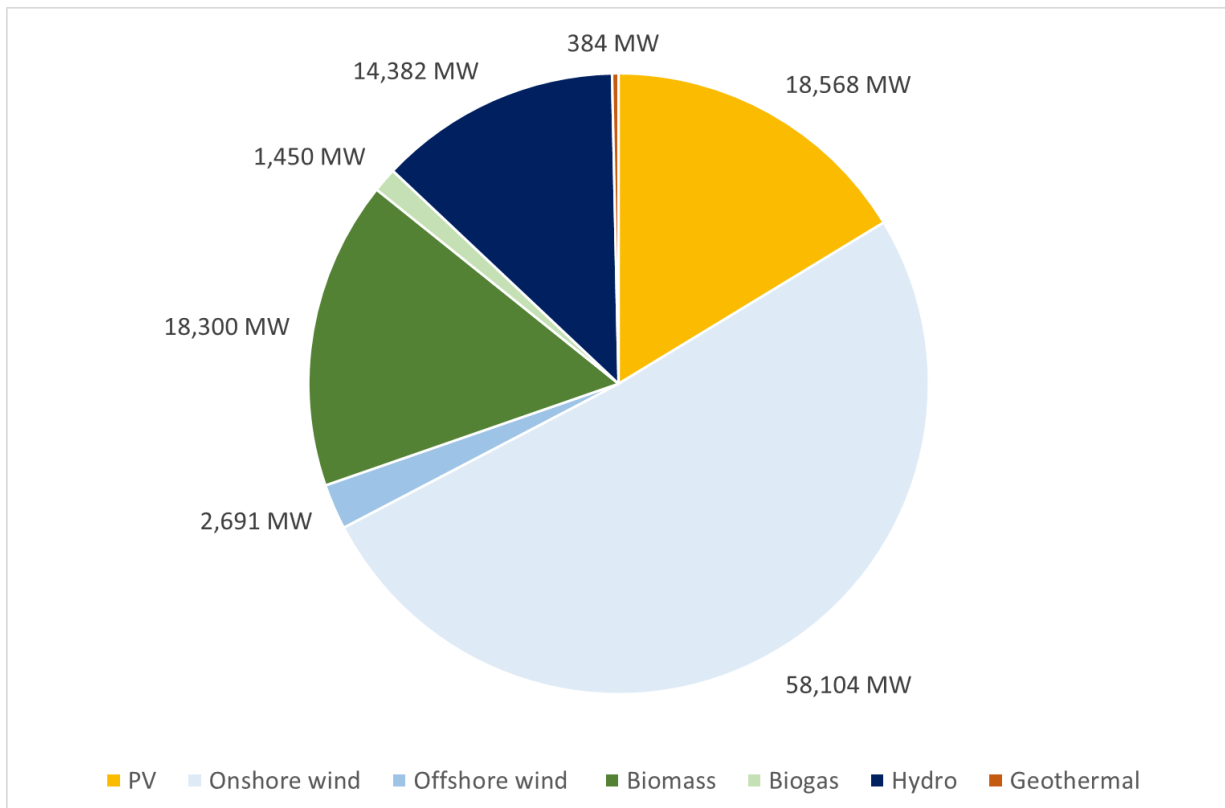


Figure 10: Sum of capacity reaching end of support (2020 - 2030)

4 Running without any financial support

Table 4 provides an overview of RES installations which have never received financial support or reached the EOS. For every technology – now even offshore wind – there are unsupported plants in operation. Concerning PV, onshore wind and hydro plants, a vast majority of MCs reported that there are installations running without support. Thus, every MC will sooner or later have experience with unsupported RES plants.

More than half of the MCs indicated that there are onshore wind and hydro installations which were supported initially but reached the EOS. MCs reported that four (onshore) and six (hydro) plants never received any support.

On the one hand, MCs should not support RES producers who can thrive under market conditions. On the other hand, given the increasing demand for RES energy, MCs should avoid a situation wherein RES producers decommission their plants due to a lack of support bringing RES production to a halt. Therefore, MCs have to define balanced support levels and support durations.

	PV	onshore	offshore	biomass	biogas	hydro	geothermal
AT	yes, NRS and EOS	yes, EOS	x	x	x	yes, NRS and EOS	x
CZ	yes	yes, NRS	x	yes, NRS	yes, NRS	yes	no
DE	yes, NRS and EOS	yes, NRS and EOS	no	no	no	yes, NRS and EOS	no
DK	yes, NRS and EOS	yes, EOS	yes, EOS	no	x	x	x
ES	yes, NRS	yes, NRS and EOS	x	yes, NRS and EOS	x	yes, EOS	x
HU	yes, NRS and EOS net metering	yes, NRS and EOS net metering	x	yes, EOS	yes, NRS and EOS net metering	yes, EOS, net metering	no
IT	yes, NRS	yes, EOS	x	yes, EOS	yes, EOS	yes, NRS and EOS	yes, EOS
LT	yes, NRS	yes, NRS	x	no	yes, NRS	yes	no
LU	yes, NRS and EOS	yes, EOS	x	yes, NRS	yes, NRS and EOS	yes, NRS	x
LV	yes, NRS	no	x	yes, EOS	no	yes, NRS	x
MK	yes, NRS	no	no	no	no	yes, NRS	x
MT	yes, NRS and EOS	x	x	x	x	x	x
NO	yes, NRS	yes, NRS	x	x	yes, NRS	yes, NRS and EOS	x
PL	yes, NRS and EOS	yes, NRS and EOS	no	yes, NRS and EOS	yes, NRS and EOS	yes, NRS and EOS	yes, NRS and EOS
PT	yes, NRS	yes, NRS and EOS	no	no	yes, NRS and EOS	yes, EOS	no
RO	yes, NRS	yes, NRS and EOS	x	yes, NRS	x	yes, NRS and EOS	yes
SE	no	yes, EOS	yes, EOS	yes, EOS	yes, EOS	yes, EOS	no
SI	yes, EOS	x	no	yes	yes	yes, EOS	no
UK	yes	yes	yes	yes	yes	yes	yes

RES that never received support (NRS) or whose support time already ended (EOS)

Concerning Concentrated Solar Power, 5 MCs reported that there are not any RES installations in their country running without any financial support.

Table 4: RES installations running without support

Five MCs reported biomass plants which have never received support. In six MCs, there are biomass installations which have already reached the EOS. Biomass plants running without support are thus becoming more common. Given the high costs of input material, this might change and MCs would have to grant further support. While section 3.3.2.3. of the Guidelines on State aid for environmental protection and energy 2014-2020 foresees such an option, the revised Guidelines⁵ (that were being publicly consulted on at the time of drafting of this paper) do not address this issue explicitly.

The majority of solar PV installations have been developed in the last decade in EU Member States, so the EOS will mainly be reached after 2030.

⁵ European Commission, [Draft the revised Climate, Energy and Environmental Aid Guidelines \(CEEAG\)](#) published for public consultation.

4.1 Legal schemes

In general, it seems that there are no special legal frameworks in place for RES installations once their support time has ended compared to RES installations which have never been supported. There might be differences compared to conventional plants regarding priority access and dispatch but, for example, no special rules regarding balancing responsibility have been highlighted. Responses from CEER MCs regarding legal schemes are gathered in Table 5.

Preferential treatment of RES such as priority access and dispatch seem to be granted independently of the existence of a financial support. Other than that, RES installations running without financial support are most likely treated like any other installation. For smaller installations there might be some “fall back” solutions in place or under discussion, notably in case they would not be able to find a supplier to collect and sell their surplus electricity on a market. For example, Latvia allows net metering for small installations.

Current legal schemes for RES installations after EOS	
AT	Same legal scheme as conventional plants
CZ	No special legal scheme
DE	Priority dispatch, balancing responsibility, technical requirements of the EEG (German Renewable Energy Sources Act)
DK	n/a
ES	No special legal scheme
HU	Plants sell electricity under market conditions (no priority dispatch, balancing responsibility) For biomass and biogas installations, there is also an option to apply for the so called ‘brown premium’* after EOS
IT	No special legal scheme (balancing responsibility)
LT	No special legal scheme (priority dispatch)
LU	Priority dispatch, balancing responsibility
LV	No special legal scheme (balancing responsibility); net metering for small installations
MK	Priority dispatch, balancing responsibility
MT	No special legal scheme
NO	Installations > 100 kW, falls under regular rules
PL	No special legal scheme
PT	No special legal scheme. RES producers can be represented by an aggregator to help deal with balancing.
RO	No special legal scheme
SE	No special legal scheme
SI	n/a
UK	n/a

*Hungary introduced a so called ‘brown premium’ in 2017 for existing solid biomass and biogas plants in order to ensure their further operation (the operator can request this type of support after the EOS from the regulator).”

Table 5: Legal schemes for RES installations

4.2 Changes in legal schemes

Table 6 displays the answers provided to the question whether any legal changes have been made to accommodate RES installations without support.

Five MCs reported changes to legal schemes. Hungary, Malta and Poland have introduced new support schemes. Hungary, for example, supports the EOS biomass and biogas for additional five years (the so-called brown premium). Malta supports the EOS-PV installed by households for another 12-14 years depending on the initial support length. Meanwhile, Germany has focused on market access: German Transmission System Operators (TSOs) can now buy PV, biomass and hydroelectricity at market value. By comparison, the United Kingdom has obliged electricity suppliers to offer a tariff for electricity produced by small generators, e.g. households with PV.

Changes in legal schemes for RES installations so far	
AT	No changes
CZ	No changes
DE	Yes, TSO can buy (market value only) RES PV, biomass and hydro electric
DK	n/a
ES	No changes
HU	"Brown premium" introduced in 2017 for existing biomass and biogas plants, for 5 years after EOS
IT	No changes
LT	No changes
LU	No changes
LV	No changes
MK	No changes
MT	Decision in February 2021: 10.5c FIT for 12-14 years for EOS-PVs installed by households
NO	n/a
PL	2018: introduction of FiT / FiP for EOS installations using biogas and hydropower to re-join support systems.
PT	No changes
RO	No changes
SE	n/a
SI	No changes
UK	January 2020: Introduction of the Smart Export Guarantee (SEG), requires most electricity suppliers to offer a tariff to buy electricity exported by small low-carbon generators – typically households that have installed solar panels. The SEG ensures that these generators can have a guaranteed access to market and choice of options.

Table 6: Changes in legal schemes for RES installations so far

Some MCs have not yet adapted their framework. However, they will have to do so. RES operators will be obliged to sell their surplus electricity to a third party. As the provision for priority dispatch for small RES installations is mandatory under the recast Renewable Energy Directive 2018/2001/EU⁶ (RED II) (Articles 17 and 21), the national framework would need to be adapted, especially to deal with smaller installations.

⁶ European Commission, [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.](#)

The Czech Republic and Poland are planning to expand financial support (see Table 7). While Czech plants may expect new support by means of repowering, Poland is planning to extend the scope of biomass and biogas entities eligible for FiT/ FiP support schemes. The latter might become more and more common as biomass plants with high costs of input material reach the EOS. Other MCs do not have concrete plans for reform, but this surely will change as more and more RES installations will fall out of existing support schemes over this decade.

Planned changes in legal schemes	
AT	No changes planned
CZ	PPA, accumulation, repowering (including new support)
DE	No changes planned
DK	n/a
ES	No changes planned
HU	No changes planned
IT	No changes planned
LT	Under consideration to provide for exceptions to PSO payment for production, which would be sold by PPA
LU	n/a
LV	No changes planned
MK	No changes planned
MT	No changes planned
NO	n/a
PL	Extension of scope of biomass, biogas and hydro plants eligible for FiT / FiP support
PT	n/a; energy policy is not under the NRA scope
RO	No changes planned
SE	n/a
SI	Auctions for the purchase of electricity (in force since January 2019, but not used yet)
UK	n/a

Table 7: Planned legal changes

5 Business models for RES installations and challenges

5.1 Possible business models

Looking at the business models for RES installations once their support time ended, one can distinguish between (1) making major changes (decommissioning, repowering, etc.) and applying for new support in various ways or (2) not making any or only minor changes to an existing plant and making use of the produced electricity under market conditions. CEER MCs were asked which business models currently could be used for the respective renewable energy sources after the support time has ended. The MCs could select between the following predefined possibilities:

- Power Purchasing Agreements (PPA);
- Selling to the market via retailer;
- Self-consumption;
- Repowering (including new support);
- Any kind of follow up support scheme;
- Decommissioning; and
- The TSO/DSO/central entity has to buy (market value only) RES electricity.

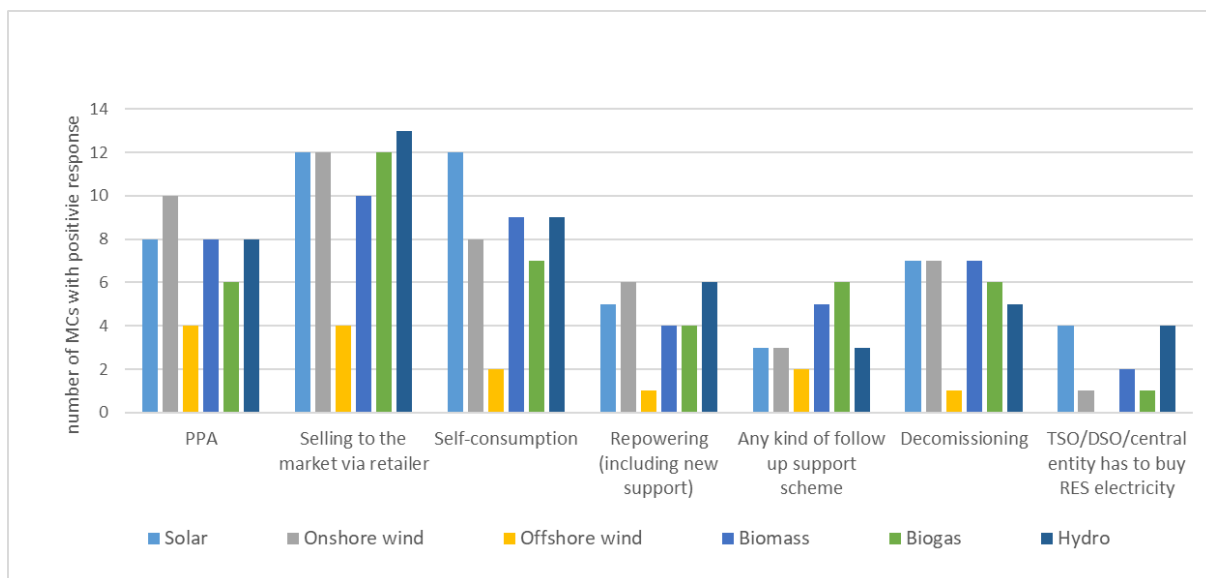


Figure 11: Business models followed by RES installations once their support time ended by number of MCs with positive responses

As displayed in Figure 11 for all technologies the most frequently given answer was “selling to the market via retailer”. In total, 12 MCs consider regular market participation as a feasible business model for solar, biogas and onshore wind installations in their respective country. For hydro, 13 MCs gave a positive reply.

However, when looking at the second-most-mentioned business models, there are differences between the technologies. As for solar, 12 MCs consider self-consumption as a possible business model. And also for biomass plants, self-consumption seems to be a frequently used business option in many MCs. In comparison, only eight MCs consider self-consumption for onshore wind turbines as a possibility. This could indicate that while increasing the share of self-

consumption can be a solution for households, institutions and some businesses, it might not be an option for utility-scale projects, where electricity self-consumption is marginal.

PPAs seem to be especially relevant for onshore wind, but also for solar, biomass and hydro installations. Figure 11 furthermore shows that more countries regard decommissioning as an option for RES once support ends compared to repowering. It also seems to be rather rare that the TSO/DSO/central entity has to buy electricity from unsupported RES.

Additionally, the Czech Republic's NRA mentioned providing system flexibility as a business model for biomass, biogas and hydro installations. Two MCs also consider energy communities as a future possibility for solar systems. Sweden's NRA replied that different kinds of combined systems with wind or solar power and storage for self-consumption or selling to the market could be a possible future business model, as could providing heavier industries with electricity or producing hydrogen.

It should be noted that only few MCs named possible business models for unsupported onshore wind installations. This may be due to the fact that it will be several years before the first plants no longer receive subsidies. Geothermal and concentrated solar power have been excluded from Figure 11, as there have been only few or no answers concerning possible business models.

5.2 Reasons for producers to build RES installations without support

The previous chapter focused on RES installations that received subsidies at some point. For this chapter MCs were asked for reasons why producers build RES installations that do not receive any support in the first place. MCs could choose between the following options:

- no support scheme available for the technology / size of plant
- existing support schemes impose constraints on the projects
- producers expect higher profitability without support
- etc.

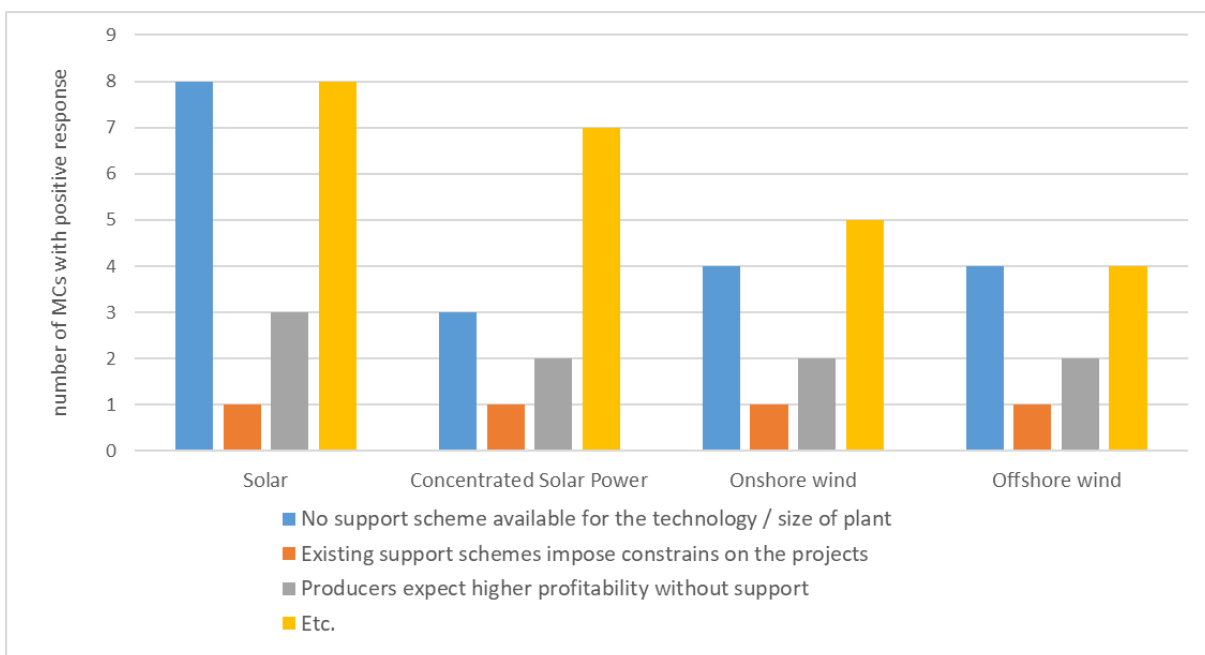


Figure 12: Reasons for producers to build RES installations without support by number of MCs with positive response

As displayed in Figure 12, only the first reason (no support scheme available for the technology / size of the plant) was chosen by multiple MCs and according to the answers, this reason seems to be especially relevant for PV installations. In addition to the predetermined responses, MCs provided additional reasons. Especially with regard to solar PV installations, multiple MCs have identified self-consumption and/or net metering as reason for producers to build RES installations without support. The advantage of self-consumption is the use of electricity without using the public grid and thereby mainly having only the cost of producing the electricity. Depending on the countries' electricity market model, some additional charges may be applied to self-consumed electricity. However, the advantage of saving on the grid charges and possibly other grid related charges (indirect support) also makes self-consumption an attractive option for small new installations being built without any direct support.

Other MCs gave the following reasons for building unsupported RES: installations would be profitable even without subsidies; producers react to market demand; producers failed to get support, etc. However, the capacity of RES installations that have never received any support is limited and therefore, some MCs have emphasised that they do not have any installations that were built without support.

5.3 Challenges for RES installations once support time has ended

Challenges for unsupported RES producers arise from leaving the secure conditions of support schemes, which in case of FiT support often meant priority access to the grid, priority dispatch, direct off-take by the TSO, only partial (or no) balancing responsibility and, in some MCs, also simplified permitting procedures. RES plants operating in premium schemes may find the transition towards full market conditions easier, as they have already been acting in a market environment, while being shielded from mid-to-long-term price risks.

Eleven MCs responded to the question concerning challenges, which might indicate that while business models can be envisaged for unsupported RES, in several MCs only a few RES projects have been affected (or none) yet and unsupported RES will become an issue only in a couple of years' time (see previous chapters). Most answers were given with regard to solar and onshore wind installations. Due to the limited number of answers, it is not really possible to analyse the challenges by technology. Three main challenges have been put forward by the respondents; for the full list please refer to Table 8:

- **Balancing responsibility:** This is regarded as the major challenge for unsupported RES. Production schedules of variable solar and wind are difficult to match with real production, thus balancing costs can rise substantially. Constant development of forecasting techniques and services, as well as market models that allow for modifying production schedules close to delivery, may reduce balancing costs. Aggregating different sources and locations of RES projects can also help keep deviations from production schedules low. Some MCs stated that the challenges faced by the operators depend on the capacity of the plant. This supports the assumption that balancing responsibilities are especially demanding for small plants.
- **Building permits and grid connection:** Permitting procedures for repowering are complicated and lengthy, which might make it in practice faster and more lucrative to decommission existing turbines. As indicated by the MCs, in some countries, grid connection can also be a challenge.

- **Rentability:** Selling electricity solely in market conditions means that revenues become lower and more unpredictable, compared to production in a support scheme. Market prices might not provide profit, especially if balancing costs are high and permitting procedures are complicated. The risks can also cause problems with financing. Selling directly on the power exchanges comes with high levels of uncertainty, so it remains a realistic option primarily to large-sized projects. PPAs could reduce these risks but are also more likely to be considered as a business model for larger plants.

	PV	Onshore wind	Biomass	Hydro
CZ	Yes, the size of the installation plays a role in these options.	Yes, the size of the installation plays a role in these options.	Yes, the size of the installation plays a role in these options.	Yes, the size of the installation plays a role in these options.
DE	Rentability, market integration (direct marketing)	Building permits, repowering.	Rentability, market integration.	Rentability.
ES	Currently, as lot of projects are on the line, main challenge is grid access permission.	Currently, as lot of projects are on the line, main challenge is grid access permission.		
HU	Rentability, financing.	Rentability, financing.	No information available.	No information available.
IT	The most important challenge has been in regard to permits and balancing responsibility.	The most important challenge has been in regard to permits and balancing responsibility.	The most important challenge has been in regard to permits and balancing responsibility.	The most important challenge has been in regard to permits and balancing responsibility.
LT	We do not have the information	Complicated environmental impact assessment procedures	We do not have the information.	We do not have the information.
LV		Stronger limits have been introduced related to control of RES installations, as a result some of supported RES installations have been excluded from the support schemes. Also rentability of received support has been evaluated and overcompensation have been reduced.	Stronger limits have been introduced related to control of RES installations, as a result some of supported RES installations have been excluded from the support schemes. Also rentability of received support has been evaluated and overcompensation have been reduced.	Stronger limits have been introduced related to control of RES installations, as a result some of supported RES installations have been excluded from the support schemes. Also rentability of received support has been evaluated and overcompensation have been reduced.
MK		Main challenges have been building permits and connection to the transmission grid. For WPP up to 1 MW the building permit is issued by the municipality administration. For more than 1MW of installed capacity the building permit is issued on the state level. Procedures for resolving land issues are also lengthy.		
RO	Small producers of E-RES had difficulties in estimating their production of E-RES needed on the balancing market. A solution to this problem is the possibility of aggregating them.	Small producers of E-RES had difficulties in estimating their production of E-RES needed on the balancing market. A solution to this problem is the possibility of aggregating them.		Small producers of E-RES had difficulties in estimating their production of E-RES needed on the balancing market. A solution to this problem is the possibility of aggregating them.

SE	Installations have sometimes been rejected a grid connection due to the limited net capacity in certain locations. A general challenge is how to handle the variability from solar and wind power due to net capacity. Another challenge is building permits for larger solar farms due to different local interests.	Installations have sometimes been rejected a grid connection due to the limited net capacity in certain locations. A general challenge is how to handle the variability from solar and wind power due to net capacity. Another challenge is building permits for wind power plants due to different interests. In applying for a permission of onshore wind there are several other interests that can be seen as regulatory barriers for the wind company. These are interests connected to the national defence, the environment (such as Natura 2000) and the public opinion. To get permission a municipal approval is necessary if the wind project is within the municipalities border.		
UK	Planning processes, network/system constraints, market conditions and availability of private finance			

Table 8: Challenges for not supported RES installations (only countries displayed which provided information)

6 Main findings and conclusions

Since 2020, the support time for more and more RES installations has ended throughout Europe. In countries with shorter support times, the end of support time has already been reached. Nevertheless, no major changes were made or are expected to be made to the electricity market models for those installations. Either MCs did not look at this development in detail or they are confident that RES installations either can make use of the produced electricity themselves (self-consumption, market via aggregators, selling to energy utilities...) or that those installations will be replaced with new installations anyway.

There are some open questions regarding balancing and the use of electricity, but there seem to be no serious obstacles that will make it technically impossible to operate RES installations after the EOS.

Based on the responses provided by CEER NRAs, the following limited messages can be brought forward:

- At present, only a small share of RES installations is not being supported.
- The largest share of RES installations running without support have never been supported in the past, notably large hydropower plants.
- An increasing amount of capacity will be confronted with the EOS time in the coming years and by 2030 around 40% of currently installed capacity will reach the EOS.
- For the RES technologies of onshore wind and solar, new (larger) capacities are already being planned and installed to run without any direct financial support.
- The legal framework governing RES installations has so far not been adapted: Either because the framework does not distinguish between supported and unsupported RES or because support time is still running, and adaptation will be needed only in the future.
- Coming from FiT support systems, of which more and more are being substituted by market-based support systems, the taking on of balancing responsibility will become a reality for a greater number of RES plants and could constitute a major challenge for already-existing RES plants.
- Besides other advantages, the transition to market-based support systems gives an advantage to installations built under that market-based support system because they already have had the possibility to gain market experience which should make production without receiving support afterwards easier and more likely to occur.
- The strategies followed by unsupported RES installations are manifold. The most common approach is – at least in case of larger installations – to rely on the market as a source of income. Smaller ones, mainly solar, will most likely focus on self-consumption.

Annex 1 – List of Abbreviations

Term	Definition
CSP	Concentrated Solar Power
DSO	Distribution System Operator
EEAG	Environmental and Energy State Aid Guidelines
EOS	End of Support
E-RES	Electricity produced from renewable energy sources
FiP	Feed-in-premium
FiT	Feed-in-tariff
GW	Gigawatt
kWh	Kilowatt hour
LCOE	Levelised Costs of Energy
MC	CEER Member Country (covering CEER Members and Observers)
MW	Megawatt
NRA	National Regulatory Authority
PPA	Power Purchase Agreement
PV	Photovoltaics
RES	Renewable Energy Source
TSO	Transmission System Operator

Annex 2 – Questions asked

- 1 In which year did your country first introduce a national support scheme for RES installations?
- 2 How long is the financial support duration currently (in years, in kwh p.a. or full load hours (h) p.a.)?
- 3 Did the support period change since the start of the support scheme mentioned under point 1)?
 - 3a If yes, please indicate how the support duration has changed.
- 4 Please specify the capacity volume of directly (e.g. FiT, FiP) supported RES installations by 31.12.2020.
- 5 Do you have had RES installations in your country running without any financial (direct) support (e.g. FiT, FiP) by 31.12.2020?
 - 5a If yes, please indicate the underlying reason, i.e.
Further description
- 6 Please specify (if possible) the capacity volume of unsupported RES installations (by 31.12.2020), which were never directly supported (e.g. FiT, FiP).
- 7 Please specify the capacity volume of unsupported RES installations (by 31.12.2020), which were previously directly supported (e.g. FiT, FiP).
- 8 If for the time being no RES installation have fallen out of national support schemes, please indicate the year in which RES installations will for the first time reach the end of their support time.
 - 8a "Please indicate/approximate how much capacity will fall out of the support scheme in the upcoming years.

If possible, indicate how much capacity will fall out of the support scheme per year.

Otherwise indicate the volume/sum for a certain period (e.g. from 2020 until 2025) at the end of that period (in this example in 2025)."
- 9 "Under which legal scheme (e.g. regarding priority dispatch, balancing responsibility, etc.) do RES installations fall, once their support time has ended?
Please specify."
- 10 Have any legal changes been made to accommodate RES installations (which were previously supported) without support?
 - 10a If yes, please describe the changes.
- 11 Are any legal changes planned to accommodate RES installations without support?
 - 11a If yes, please describe the changes.
- 12 What are the business models followed by RES installations once their support time ended at the moment?
 - 12a Are there any additional business models you can think of for the future?

- 13 What are the main reasons for producers to build plants without support in your country?
- 14 "What have been the major challenges encountered with respect to e.g. rentability, market integration (balancing responsibility), building permits, or any other administrative issues? Did the size of the installation play a role in the option chosen? Please specify."
- 15 "Did the Covid-19 pandemic influence the situation of unsupported RES installations in your country and are there any legal changes planned or in place to accommodate the affected installations? Please specify."

Annex 3 – Changes to the support duration

	PV	CSP	onshore	offshore
CZ	The power plants taken into operation during 2006 and 2007 were given the financial operation support duration of 15 years. The plants which were taken into operation during 2008 and 2013 were given the financial support duration of 20 years. Since 2014 operations support for PV has been no longer determined.			
DK	Some previous support schemes have had a 10 year support period		There has been numerous different support schemes over the decades, some time-limited, some using fullload hours, some using a combination of the two, and even some where you switch from time-limited after using your fullload hours	Most big installations from the last decade have been receiving a number of fullload hours of approximately 10 TWh per 200 MW capacity with a time limit of 20 years. Future tenders will have a 20 year limit with caps on payments in both directions.
ES	Indeterminate/20/30	Indeterminate/25	Indeterminate/20	
HU	In the former FIT scheme KÁT (application until 31.12.2016.), it was max. 25 years. In the FIT scheme METÁR-KÁT (application until 25.04.2018), it was max. 17 years 4 months. In the premium scheme without tendering (application until 30.04.2019), it was max. 17 years 11 months. For new installations applying for premium support via tenders (from 01.05.2019), it is max. 15 years.		In the former FIT scheme KÁT (application until 31.12.2016.), it was max. 16,5 years. For new installations applying for premium support via tenders (from 2017), it is max. 15 years.	
IT	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in premium for PV plants that started operation between September 2005 and July 6th 2013: 20 years; - No incentives for PV plants that started operation between July 7th 2013 and July 2019; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 4th 2019 (only for PV > 20 kW): 20 years. These incentives can still be required for new plants or for refurbishments.	The support period depends on the support scheme. - Feed in premium defined by the Ministerial Decree April 11th 2008: 25 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree June 23rd 2016: 25 years. - No incentives can be required for new plants or for refurbishments.	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 200 kW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 20 years; - Feed in Premium or feed in tariffs defined and by the Ministerial Decree 4th July 2019: 20 years. These incentives can still be required for new plants or for refurbishments.	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 200 kW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 25 years - No incentives can be required for new plants or for refurbishments.
LT	No period of the support was regulated		No period of the support was regulated	
LU	plants commissioned before 2005 receive additional governmental support for another 5 years. We have considered those plants as plants where the support time already has ended, as they only receive an additional support now and have to sell their production on the market			
LV			8 years from 1998 and 20 years from 2005	
MK	From 20 years in 2008 to 15 years in 2010 to 0 years in 2018			
MT	Between 2010-2012 duration 7 to 8 years normally FIT combined with a grant; From 2013, for households benefitting from a grant FIT duration 6 years. FITs without grant introduced in 2013, duration 20 years. As from 2020 feed-in tariff combined with grant duration 20 years			
PL	The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.		The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.	
PT	Evolution from a scheme based on avoided costs to a differentiated method depending on the technology.			
RO	GD no 1892/2004 - from 1.11.2004 the period of support scheme (GCs) was unlimited; Law no 220/2008, authorized through Decision C 2011 (4938)/13.07.2011, from 01.11.2011 the period of support scheme (GCs) was modified according to point 2		GD no 1892/2004 - from 1.11.2004 the period of support scheme was unlimited; Law no 220/2008, authorized through Decision C 2011 (4938)/13.07.2011, from 01.11.2011 the period of support scheme was modified according to point 2	
SE	The support period per installation has always been 15 years but the final date for the system has changed and is today 2035. Since the Joint Electricity Certificate scheme will end in 2035 and the support period is 15 years the final year to apply for the system was 2020. To get the support the RES installation needs to be done before 31.12.2021.			

	PV	CSP	onshore	offshore
CZ	The power plants taken into operation during 2006 and 2007 were given the financial operation support duration of 15 years. The plants which were taken into operation during 2008 and 2013 were given the financial support duration of 20 years. Since 2014 operations support for PV has been no longer determined.			
DE				
DK	Some previous support schemes have had a 10 year support period.		There has been numerous different support schemes over the decades, some time-limited, some using fullload hours, some using a combination of the two, and even some where you switch from time-limited after using your fullload hours.	Most big installations from the last decade have been receiving a number of fullload hours of approximately 10 TWh per 200 MW capacity with a time limit of 20 years. Future tenders will have a 20 year limit with caps on payments in both directions.
ES	Indeterminate/20/30	Indeterminate/25	Indeterminate/20	
HU	In the former FIT scheme KÁT (application until 31.12.2016.), it was max. 25 years. In the FIT scheme METAR-KÁT (application until 25.04.2018), it was max. 17 years 4 months. In the premium scheme without tendering (application until 30.04.2019), it was max. 17 years 11 months. For new installations applying for premium support via tenders (from 01.05.2019), it is max. 15 years.		In the former FIT scheme KÁT (application until 31.12.2016.), it was max. 16,5 years. For new installations applying for premium support via tenders (from 2017), it is max. 15 years.	
IT	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in premium for PV plants that started operation between September 2005 and July 6th 2013: 20 years; - No incentives for PV plants that started operation between July 7th 2013 and July 2019; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 4th 2019 (only for PV > 20 kW): 20 years. These incentives can still be required for new plants or for refurbishments.	The support period depends on the support scheme. - Feed in premium defined by the Ministerial Decree April 11th 2008: 25 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree June 23rd 2016: 25 years. - No incentives can be required for new plants or for refurbishments.	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 200 kW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 20 years; - Feed in Premium or feed in tariffs defined and by the Ministerial Decree 4th July 2019: 20 years. These incentives can still be required for new plants or for refurbishments.	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 200 kW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 25 years - No incentives can be required for new plants or for refurbishments.
LT	No period of the support was regulated		No period of the support was regulated	
LU	plants commissioned before 2005 receive additional governmental support for another 5 years. We have considered those plants as plants where the support time already has ended, as they only receive an additional support now and have to sell their production on the market			
LV			8 years from 1998 and 20 years from 2005.	
MK	From 20 years in 2008 to 15 years in 2010 to 0 years in 2018.			
MT	Between 2010-2012 duration 7 to 8 years normally FIT combined with a grant; From 2013, for households benefitting from a grant FIT duration 6 years. FITs without grant introduced in 2013, duration 20 years. As from 2020 feed-in tariff combined with grant duration 20 years.			
PL	The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.		The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.	
PT	Evolution from a scheme based on avoided costs to a differentiated method depending on the technology.			
RO	GD no 1892/2004 - from 1.11.2004 the period of support scheme (GCs) was unlimited; Law no 220/2008, authorized through Decision C 2011 (4938)/13.07.2011, from 01.11.2011 the period of support scheme (GCs) was modified according to point 2.		GD no 1892/2004 - form 1.11.2004 the period of support scheme was unlimited; Law no 220/2008, authorized through Decision C 2011 (4938)/13.07.2011, from 01.11.2011 the period of support scheme was modified according to point 2.	
SE	The support period per installation has always been 15 years but the final date for the system has changed and is today 2035. Since the Joint Electricity Certificate scheme will end in 2035 and the support period is 15 years the final year to apply for the system was 2020. To get the support the RES installation needs to be done before 31.12.2021.			

Table 9: Changes made to the support duration (1/2)

	biomass	biogas	hydro	geothermal
CZ				
DE	Follow up support scheme for additional 10 years (tendering procedures)	Follow up support scheme (tendering procedures)	The Renewable Energy Sources Act 2000 (EEG) did not yet include a support duration for hydropower. This has been introduced with the Renewable Energy Sources Acts 2004 and 2009.	
DK		The law was recently changed to introduce a time limit as well as a maximum amount of energy per year, but the changes have not been enforced yet - thus, question 8a cannot be answered at the moment.		
ES	Indeterminate/25		Indeterminate/25	
HU	It was max. 25 years in all former types of support schemes. For new installations applying for premium support via tenders (from 01.05.2019), it is max. 15 years. The so-called 'brown premium' has been introduced in 2017 for existing solid biomass and biogas plants in order to ensure their further operation. The brown premium can be requested by the producer from HEA for 5 years after the end of the support period, and this can be prolonged once.	It was max. 25 years in all former types of support schemes. Except for landfill gas: in the FIT scheme METÁR-KÁT (application until 25.04.2018), it was max. 5 years 9 months and in the premium scheme without tendering (application until 30.04.2019), it was max. 4 years 9 months. For new installations applying for premium support via tenders (from 01.05.2019), it is max. 15 years. The so-called 'brown premium' has been introduced in 2017 for existing solid biomass and biogas plants in order to ensure their further operation. The brown premium can be requested by the producer from HEA for 5 years after the end of the support period, and this can be prolonged once.	It was max. 25 years in all former types of support schemes. For new installations applying for premium support via tenders (from 01.05.2019), it is max. 15 years.	It was max. 25 years in all former types of support schemes. For new installations applying for premium support via tenders (from 01.05.2019), it is max. 15 years.
IT	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 1 MW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 20 years - No incentives can be required for new plants or for refurbishments.	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 1 MW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 20 years; - Feed in Premium or feed in tariffs defined and by the Ministerial Decree 4th July 2019, limited to biogas by purification processes: 20 years. These incentives can still be required for new plants or for refurbishments (only for biogas by purification processes).	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 1 MW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 20-30 years; - Feed in Premium or feed in tariffs defined and by the Ministerial Decree 4th July 2019: 20-30 years. These incentives can still be required for new plants or for refurbishments	The support period depends on the support scheme. - CIP 6/92: between 8 and 20 years; - Feed in premium which replaced Green Certificates / Green Certificates: 12 years for power plants that started operation between April 1999 and December 2007, 15 years for power plants that started operation after January 1st 2008 up to the end of 2012; - Feed in tariff referred to Law 244/2007 for plants up to 1 MW in operation before December 31st 2012: 15 years; - Feed in Premium or feed in tariffs defined by the Ministerial Decree July 6th 2012 and by the Ministerial Decree June 23rd 2016: 20-25 years - No incentives can be required for new plants or for refurbishments.
LT	No period of the support was regulated.	No period of the support was regulated.	No period of the support was regulated.	No period of the support was regulated.
LU				
LV	8 years from 1998 and 20 years from 2005.	8 years from 1998 and 20 years from 2005.	8 years from 1998 and 20 years from 2005.	
MK	Support duration has changed from 20 years to 15 years	Support duration has changed from 20 years to 15 years.		
MT				
PL	The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.	The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.	The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.	The 15-year limit of the support system was introduced in the Act of February 20, 2015 on renewable energy sources.
PT	Evolution from a scheme based on avoided costs to a differentiated method depending on the technology.			
RO	GD no n1892/2004 - form 1.11.2004 the period of support scheme was unlimited; Law no 220/2008, authorized through Decision C 2011 (4938)/13.07.2011, from 01.11.2011 the period of support scheme was modified according to point 2.		GD no n1892/2004 - form 1.11.2004 the period of support scheme was unlimited; Law no 220/2008, authorized through Decision C 2011 (4938)/13.07.2011, from 01.11.2011 the period of support scheme was modified according to point 2.	
SE	The support period per installation has always been 15 years but the final date for the system has changed and is today 2035. Since the Joint Electricity Certificate scheme will end in 2035 and the support period is 15 years the final year to apply for the system was 2020. To get the support the RES installation needs to be done before 31.12.2021.			

Table 10: Changes made to the support duration (2/2)

Annex 4 – 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 is available at www.ceer.eu.