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CEER Report on Tendering Procedures for Renewable Energy Sources in Europe

Renewable Energy Sources Work Stream
of
Electricity Working Group

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INFORMATION PAGE

Abstract

This CEER report (C21-RES-79-03) presents the current state of play on renewable energy sources (RES) tendering schemes in Europe. It is an update of the 2018 (C18-SD-63-03) and 2020 (C20-RES-67-03) CEER Reports on Tendering Procedures for RES in Europe. It provides a comprehensive overview of the various competitive bidding procedures in place for determining the level of support for RES in CEER member countries. Assessments of schemes in selected countries complement the report.

Target audience

RES operators, electricity customers, RES industry, electricity industry, consumer representative groups, network operators, Member States, academics and other interested parties.

Keywords

renewables; support schemes; competitive bidding procedures; National Regulatory Authorities (NRAs).

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Related documents

CEER documents:

- Status Review of Renewables Energy Support Schemes in Europe for 2018 and 2019, June 2021, Ref: C20-RES-69-04
- Status Review of Renewables Energy Support Schemes in Europe for 2016 and 2017, December 2018, Ref: C18-SD-63-03
- CEER Report on Tendering Procedures for RES in Europe, June 2018, Ref: C17-SD-60-03
- Status Review of Renewables Energy Support Schemes in Europe for 2014 and 2015, April 2017, Ref: C16-SDE-56-03
- Key support elements of RES in Europe: moving towards market integration, 26 January 2016, Ref: C15-SDE-49-03

External documents:

- Directive 2018/2001 on the promotion of the use of energy from renewable sources, December 2018, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L2001
- Directive 2009/28/EC on the promotion of the use of energy from renewable sources, April 2009, http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028
- Guidelines on State aid for environmental protection and energy 2014-2020, European Commission, June 2014, 2014/C 200/01, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014XC0628%2801%29

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EXECUTIVE SUMMARY

Background

The EU is striving towards reaching at least a 32% renewable energy sources (RES) share in its gross final consumption of energy in 2030. European energy regulators agree that decarbonisation[1] should be done at least cost, therefore also the deployment of RES should be realised at the lowest possible cost to society. Market-based mechanisms, notably competitive tendering procedures, have been – in many circumstances – observed to be a successful instrument for reducing RES support cost[2].

The 2018 revision of the Renewable Energy Directive (2018/2001) foresees competitive tendering procedures as a standard instrument for granting RES support in an "open, transparent, competitive, non-discriminatory and cost-effective manner"[3] in all the European Union Member States. This is in line with the Guidelines on State aid for environmental protection and energy (EEAG), which first paved the way towards the implementation of competitive bidding procedures.

Objectives and contents of the document

This report offers an update to a previous CEER report on RES tendering procedures published in 2020, which described key tendering design elements and provided an overview of experiences with the implementation of tenders. Besides mapping the tenders implemented since the last report, this report will put an emphasis on available empirical evidence up to April 2022, notably with respect to the level of competitiveness and price development as well as the realisation rate.

The report is structured as outlined below:

- Update of existing or planned tendering procedures in CEER member countries (MCs);
- Experiences with technology-specific tenders;
- Experiences with technology-neutral tenders; and
- Key lessons learnt.

Brief summary of the conclusions

By beginning-2022, tendering as a competitive instrument to determine the level of financial support for the operation of RES installations had been implemented by most European countries.

This third report has brought forward the following main conclusions concerning the implemented tendering procedures:

- In a large number of MCs, national tendering schemes have already been implemented. The last report highlighted that 18 out of 30 MCs have had tendering schemes in place, while one MC had passed the legislation and was about to carry out its first tendering

[1] See CEER's 3D Strategy for 2019-2021.

[2] See Directive (EU) 2018/2001 recital 19.

[3] See Directive (EU) 2018/2001 Art. 4 (4).

procedures. Although not all MCs provided information, three additional MCs (Austria, Cyprus and Ireland) newly introduced tendering schemes since then;

- The report finds that most MCs have opted to implement both technology-neutral and technology-specific tenders. Only a small number of countries (five) do not have any technology-specific tenders at all;
- Across all technology-specific schemes implemented, offshore wind, onshore wind, photovoltaic (PV solar) and biomass have been the most selected renewable technologies;
- As a price-awarding mechanism, the pay-as-bid method, where bidders are awarded a support entitlement in accordance with the level of their submitted bid, has been the favoured approach;
- Recent tenders have predominantly been set up to determine the level of the reference value for calculating a market premium, i.e. the support payment in addition to the market income;
- Where empirical evidence is available, results regarding the main criteria demonstrating the success of tenders as a market-based instrument – level of competition, price developments and realisation rates – are mixed. Indeed, prices went down, but often not in a continuous linear manner but with ups and downs, and not always as strongly as expected. Competition among bidders could not be ensured throughout all tenders. Realisation rates observed are high in solar tenders. However, for most tenders, realisation times are still running;
- Acceptance issues for RES deployment are being observed, especially for onshore wind, negatively impacting the participation level in onshore wind tenders; and
- Competitive procedures do not obviate the need for administrative processes. Instead of detailed monitoring and anticipating price developments of supported technologies, the implementation of tenders, i.e. the preparation and the evaluation of the tenders, is at the centre of attention, which also requires administrative capacities, notably in national regulatory authorities (NRAs).

1 Introduction

Market-based mechanisms, notably competitive tendering procedures, have been – in many circumstances – observed to be a successful instrument for reducing renewable energy sources (RES) support cost and since the first report in 2018 more and more member countries (MCs) introduced tendering procedures.

This report offers another update to a previous CEER report on RES tendering procedures published in 2020 (first published in 2018), which described key tendering design elements and provided a first return of experiences with the implementation of tenders. Besides mapping the tenders implemented since the last report, this report will put an emphasis on available empirical evidence up to July 2022.

Purpose of this report

This report offers an update to a previous CEER report on RES tendering procedures published in 2020, which described key tendering design elements and provided some key lessons learnt from various auction rounds. Besides mapping the tenders implemented since the last report, this report will put an emphasis on available empirical evidence up to April 2022, notably with respect to the level of competitiveness, price development, and realisation rate.

Structure of the report

The report follows the structure outlined below:

- Update of existing or planned tendering procedures in CEER MCs;
- Experiences with technology-specific tenders;
- Experiences with technology-neutral tenders; and
- Key lessons learnt.

2 Tendering procedures for RES in Europe: Status 2022

2.1 Overview of RES tenders in place

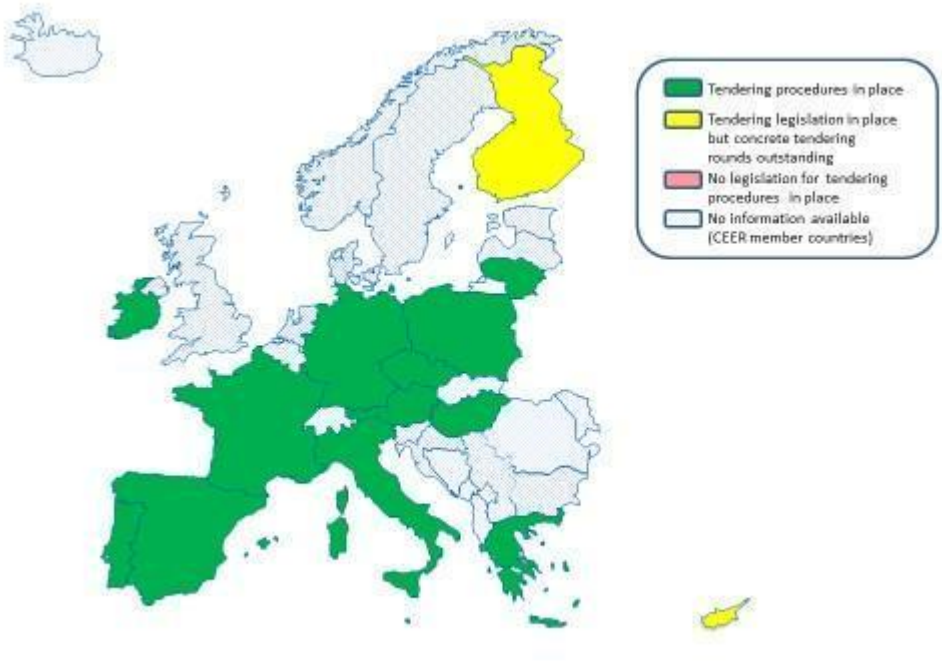

Figure 1: Tendering Schemes for RES

MS	Tendering procedures						
	PV	Wind onshore	Wind offshore	Biomass	Technology neutral	Cross border scheme	Other
Austria	■	■		■	■		
Cyprus	■						
Czech Republic		■					■
Finland					■		
France	■	■			■		■
Germany	■	■	■	■	■		■
Greece	■	■					
Hungary					■		
Ireland					■		
Italy					■		
Lithuania					■		
Luxemburg	■						
Malta	■				■		
Poland					■		■
Portugal	■						
Spain	■	■			■		
Sweden							

Table 1: Overview tendering schemes for RES

ERO, the national regulatory authority (NRA) of the Czech Republic additionally highlighted that auctions were announced on 5 October with a deadline for bids on 7 December 2022. The auctions were for:

- New and upgraded electricity-generating plants using water energy put into operation within the deadline specified in the invitation with an installed capacity of the electricity-generating plant from 1 MW up to and including 2 MW;
- New electricity-generating plants using wind energy put into operation within the time limit specified in the invitation with an installed capacity of the electricity-generating plant from 6 MW up to and including 12 MW or a number of electricity sources higher than 6 but not exceeding 12; and
- Upgraded electricity generating plants using biogas, for which the upgrading of the plant will be carried out within the time limit specified in the call for proposals and with an installed capacity of the electricity generating plant after upgrading of 1 MW up to and including 2 MW.

No bids were submitted in any of the above-mentioned calls. Therefore, the Ministry of Industry and Trade decided to announce the second round of auctions. The second round will be announced before the end of 2022. Under these calls, the entry conditions will be adjusted, the ceiling price will be increased, and the commissioning period of the plant will be extended.

2.2 Main elements of RES tenders

NRAs have been asked to update the information about national tendering procedures in place up to mid-2022[4]. Based on the information provided, the following main elements can be observed:

	Technologies	Price awarding mechanism	Key awarding criteria	Reference value determined through tender
Technology neutral	All or selected RES technologies. Wind and solar most common combination.	Pay-as-bid.	Mainly price and in case of equality volume.	RV for FiP or investment grant.
Technology specific	Onshore wind, offshore wind, solar, biomass, hydro, biogas, geothermal	Pay-as-bid	Mainly price and volume	RV for FiP

Table 2: Main elements of tendering schemes

2.3 Administrative aspects of tendering procedures

2.3.1 Implementing body

The design of a tendering scheme for determining the level of RES support falls in the remit of the respective national ministry, while the implementation of the tendering procedures may be the task of different public or private entities.

In some MCs, such as in Germany, Greece, Finland, France, Hungary, Lithuania, Malta and Poland, the national regulatory authority (NRA) is in charge of carrying out the tenders (see Table 3). Alternatively, the implementation of the process may also be delegated to a public-interest company, as is the case in Austria and Italy. In Malta, responsibilities are divided: The Ministry for Energy and Water and the Agency for Energy and Water are in charge of the implementation while the Maltese NRA only provides certain resources. In other words, the NRAs do not always play a role in the implementation of tendering procedures, but are the national body most often entrusted with this task (nine out of 16 MCs).

In general, the practical implementation of a tender encompasses a range of activities, such as:

- Preparation and publication of tendering documentation (explanation of the procedure, forms to be submitted by the bidders, etc.);
- Information service for potential bidders (e.g. service hotline, email account, etc.);
- Preparation of an electronic platform for submitting the bids;
- Database for the administration of the bids and awards; and
- Evaluation of bids and publication/ analysis of results.

[4] The key design elements applied in RES tenders implemented up to 2018 have been extensively described in the 2018 report.

A stable bidding environment is crucial for bidders to develop trust in the new tendering instrument and in the body implementing the procedures. As such, it is advisable to avoid changing the procedures once introduced or to change the results. As displayed in Table 3, in France it is possible for the Ministry to change the decision taken by the NRA with respect to the volume and bidders awarded. The French Ministry can accept informal appeals from eliminated bidders and under exceptional circumstances, a higher volume of projects can be awarded as tendered out.

MC	NRA's role in tenders	Can the decision (tendering outcome) taken be changed?
AT	Support on ministry on request	No
CY	None	-
DE	Implementation of tendering procedure from A to Z.	No; by court in case of a legal case risen by bidder
ES	Supervisory role	NRA report necessary for validation of final results.
FI	Auctioning of support and paying support on a quarterly basis per accepted bids, supervision etc.	No
FR	NRA is in charge of collecting and analysing the bids and proposing a list of winning candidates	Under exceptional circumstances, Ministry may select a higher volume of projects than the tendered volume
GR	The NRA determines the details of the auction (criteria for participation, geographical limitations, realisation deadlines, the fees for participation, the amount of financial guarantees and any other limitations to boost competition) and is responsible to grant the award to the RES projects that are successful in the auction. It also monitors the projects' implementation.	Can be overruled by Athens Administrative Court of Appeal after an appeal of an interested party
HU	NRA (MEKH) issues the call according to the request of the Ministry and handles the whole tendering process.	No
IE	Support, pipeline info and competition assessment	No
IT	None	No
LT	NRA, in accordance with the law, prepares and approves the rules of auction procedures, organises the auction at the time set by the Government, and approves the winner of the auction	No, except court. If the NRA's decision were appealed to a court, the judge could rule that the decision was made in violation of the law.
LU	None	No

MT	The NRA administers the process from issue of tender, receipt and opening of bids and publishing the documentation including results of award. The evaluation of the bids is carried out by a tender evaluation committee set up by the Ministry. Evaluation committee is composed from staff of the NRA, Ministry and Energy and Water Agency. The evaluation committee draws up the recommendations for awards. The bidders sign the contract for the support with the Ministry.	No, however the decision of the evaluation committee may be appealed to the Public Contracts Review Board.
PL	Ministry determines the tender maximum volume and value, ceiling bid price. NRA prepares and organizes auctions.	No
PT	None	

Table 3: NRAs' role and interferences with decision making body

2.3.2 Fees and procedures

For participation in a tendering procedure, 14 MCs have indicated they apply an electronic procedure to submit bids. Fees for participation are charged in seven MCs. When applied, the fee varies between technologies, project sizes and are either expressed as a fixed value or per kW. The approach followed for announcing the submission dates and the participation features, and as such the time allocated to bidders for compiling their bids, differs among MCs. In most MCs, bidders have between one and six months to prepare the requisite documentation for submission. Once the tender has closed, the body in charge for assessing and ranking the bids often has a limited time at its disposal for publishing the results. This time span varies between 24 hours and five months.

MC	Electronic procedure	Administrative fee for participant	Time to complete the bidding document	Time for Administration to evaluate the submitted bids
		TECHNOLOGY NEUTRAL		
AT	Yes	No		No requirements
DE	No	Yes	No requirements - Dates of the rounds are communicated in the law. More precise information is published on the website 5 to 8 weeks in advance of the bidding date closure.	No requirements
ES	Yes	Yes	Timing in legislation (Art. 2 of Resolution of 8 September 2021) https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-14750#	Report in 24h
FI	Yes	Yes	No specific requirement; About half a year, from the announcement of the auction until the last day of bid submission.	No requirements

FR	Yes	No	The online platform is open for 2 weeks to submit the bids.	1 month
GR	Yes	Yes	30 minutes	No requirements
HU	Yes	No	Varies form call to call. 20-90 days so far	Maximum 5 months (this includes the correction possibility for applicants if any documentation is missing or not correct)
IE	Yes	No	~6 months from publishing of T&Cs, ~2 weeks from publishing of auction information pack	TSO notifies provisional results one week after close of auction
IT	Yes	Yes	30 days from the notice publication by GSE S.p.A.	GSE S.p.A. publishes tender results after 90 days from the call closure
LT	Yes	-	70 days to prepare proposal and required documents. 15 days to submit documents"	10 working days with the possibility of extension for another 10 working days
LU	Yes	No	6 Month - Q&A until 2 months before end date. Conformity check one month before end date.	-
MT	Yes	No	The bidding session start, and end dates are published in the Government Gazette, normally each bidding session is open for 8 days. The tender document must be published 6 weeks in advance of the start of the particular bidding session.[5]	Not established by law, indicative 35 to 45 days
PL	Yes	Yes	Auction session takes at least 8 hours.	21 days
			TECHNOLOGY-SPECIFIC	
AT	Yes	No	No requirements	No requirements
CY	Yes	No	So far auctions have been performed within 30 minutes	No requirements
DE	No	Yes	Auction documents are published 5-8 weeks prior to the bidding date closure	No requirements
ES	Yes	Yes	Timing in legislation	Report in 24h
FR	Yes	No	2 weeks to submit the bids	1 month
GR	Yes	Yes	30 minutes	No requirements
LU	Yes	No	6 Months - Q&A until 2 months before end date. Conformity check one month before end date.	No requirements
MT	Yes	No	No requirements - Dates of the rounds are communicated in the Government Gazette law. The tender document was published on the website of the NRA 10 days in advance of bidding and was open for bidding for 60 days.	No requirements by law, indicative time frame 35 days

[5] The new ITB scheme launched in September 2022 GN 1135 of 2022, the tender document must be published 62 days in advance of start of bidding

PT	Yes	No	Electronic auction at a set date according to previously presented rules	NRA not involved

Table 4: Administrative aspects of tenders

3 National experiences with technology-specific tenders

A number of MCs have opted – exclusively or in addition to technology-neutral tenders – for technology-specific tenders to determine the level of support for RES installations. Technology-specific tenders have been implemented for PV (nine MCs), for onshore wind (five MCs), for offshore wind (one MC), for biomass (five MCs) and for other RES (three MCs).

This chapter will provide an overview of the technology-specific tenders in CEER MCs.

3.1 Experiences with tenders for PV

Some MCs have experiences with tendering procedures for PV installations for around ten years. However, most tenders have been introduced after 2014, the year in which the EEAG introduced competitive procedures as a prerequisite for approving new or adapted national RES schemes.

3.1.1 Main elements of PV tenders

In PV tenders, different sizes, types and sites of PV installations are covered. As shown in Table 5, tenders are carried out for solar installations on buildings (e.g. rooftops, shading on structures, car parks) and for ground-mounted installations on industrial land, agricultural or green land, disused landfills, or quarries. In one MC (France) the innovative aspects of the participating solar installation are of relevance for the tender.

MC	Tendering categories
Austria	All PV > 10 kW (2022)
Cyprus	PV ground-mounted > 100 kW (2013 only)
France	Rooftop PV (2020)
	Ground-mounted PV (2020)
	Innovative PV (2020)
Germany	All PV installations > 750 kW (2017)
	Rooftop PV (2021)
Greece	PV ground-mounted $P_{pv} \leq 1$ MW (in 2016)
Luxembourg	PV > 200 kW (2020-2021)
	PV > 200 kW (2021-2022)

Malta	PV ≥ 1 MW (2017)
Portugal	PV fixed tariff (2020)
	PV system contribution (2020)
	PV flexibility (2020)
Spain	PV (2021)

Table 5: Categories of PV tenders in place

Since the introduction of the tenders for PV installations, some minor changes have been made to most schemes, usually by:

- Adapting the ceiling and floor bid prices to reflect technological developments or price developments in the former rounds;
- Adapting the maximum participation size; or
- Introducing additional location categories.

The tenders are mostly used to determine the reference value for a market premium. In Malta and Portugal, the reference value for a feed-in-tariff (FiT) is determined by the tenders.

The support is granted for a period of maximum 12 years (in Spain), 15 years (in Luxembourg and Portugal) or 20 years (in the other MCs that provided information). In Malta, the support is provided for up to 1,600 hours per year and in Spain, there is a minimum of 1,500 full load hours per year and a maximum of 2,300 hours per year. Where a support is granted, in most countries additional revenues are not foreseen, self-consumption is allowed only in Malta and Spain.

In all the PV tenders, the price offered by the bidders is always the main awarding criteria, in Malta and Portugal, it is the single criterion. In most other countries, the size of bids is the second criterion. In France, there are other criteria in place such as the carbon footprint, the environmental relevance or the level of innovation are considered in accordance with the different schemes implemented (rooftop PV, ground-mounted PV or innovative PV). In the cases where the bid volume is considered as a criterion, the smallest volume offered is awarded first.

The price awarding mechanism used in all PV tenders is pay-as-bid, i.e. the successful bidders are awarded the price they offered in the tender. While uniform pricing as a concept for RES tenders is politically considered as an option from time to time, it is interesting to note that there is no practical implementation.

Regarding the detailed tendering elements such as the volume offered, the number of rounds carried out each year, the availability of floor and/or ceiling prices as well as the realisation time, a very heterogeneous picture of the PV schemes can be observed in the MCs. This is not surprising since the schemes are covering differing types of PV categories, from small-scale rooftop to large-scale ground-mounted solar installations.

With this in mind, Table 6 shows the ranges of PV tenders observed:

Design element	Range over all solar tenders
Number of implemented rounds p.a.	1 - 7 rounds
Tendered volume per round	Capacity: 16 – 1,300 MW
Tendered volume per year	16 – 2,300
Minimum participation size (volume in kW)	1 – 10,000
Maximum participation size (volume in kW)	5,000 – 180,000
Ceiling bid price (in ct/kWh)	5.9 – 123.8 ct/kWh
Floor bid price (in ct/kWh)	0
Realisation time for awarded projects	12 - 36 months

Table 6: Summary of key elements of PV tendering procedures

Another important design element is the choice of material and financial prerequisites for participation to ensure the genuine intention of a bidder to realise a project and to minimise the risk of speculative behaviour.

In the PV tenders implemented up to now, most MCs are requesting some kind of material prequalification to disclose the development status of the submitted projects. In most cases a building permit serves to proof the development status. Only in Cyprus and Portugal, no building permit is required. As it is a prerequisite in most MCs, it could be stated that a building permit or administrative confirmation is a standard prerequisite in PV tenders. Additional prequalifications, such as a business plan and a carbon footprint assessment (France) or a production licence or a grid connection agreement (Greece), are also observed. For the innovative PV tenders in France, an additional report describing the innovative aspect of the installation is requested.

In terms of financial prequalification, four MCs are requesting a total financial security between 10 and 60 €/kW to be installed, while 10 €/kW are requested in Greece and 60 €/kW are requested in Spain and Portugal. In the majority of MCs, between 40 and 50 €/kW are required to participate. The security is either split into a financial security for participating and a financial security to be paid once the bid has been awarded, or it is only due once the bid has been awarded. Germany applies a reduced financial security for more advanced projects, i.e. participating with a building permit (25 €/kW instead of 50 €/kW). In Cyprus, a confirmation of the bank that will finance the project is required. This could also be regarded as a financial security as it also aims to guarantee the bidders intent to realise the project.

3.1.2 Evaluation criteria: competition level, price development and realisation rate

Besides the tendering design, it is of great interest to policymakers to evaluate the outcome of the tendering procedures, i.e. to assess whether they have been successful in delivering RES deployment at least cost. Relevant criteria underlying such an assessment are the level of competition, the bid price development and eventually, the realisation rate. Robust empirical data is not yet available for all MCs. However, for some MCs a closer look at the performance of tenders is possible on the basis of the data provided does not allow an in-depth comparison of different PV-tendering schemes across Europe. For some MCs, data has been provided that suggests that for PV-tenders, usually there is a solid level of competition.

3.1.3 Challenges and lessons learnt since 2020

Compared to the last edition of this report, it can be seen that there has been a trend to harmonisation concerning financial prequalification. The spread from lowest to highest requirements has in general become smaller across MCs. It could be a future challenge to adapt the tendering schemes to the Guidelines on State aid for climate, environmental protection and energy (CEEAG)[6] as changing the rules by nature affects the performance of tenders. Therefore, the future will show if and how these changes, e.g. the correction of tendered volume, will affect the so-far stable and functioning PV tenders.

3.2 Experiences with tenders for onshore wind

Information for the years 2020 and 2021 is available for four MCs: Germany, Greece, France and Spain.

3.2.1 Main elements of onshore wind tenders

Based on the provided information, onshore wind tenders do vary widely in terms of the volume tendered, which is due to the different wind deployment path in each country. The preferred price mechanism is a pay-as-bid approach. Germany applies both price mechanisms, uniform pricing for energy communities and pay-as-bid for other bidders. The reference value determined through the tendering procedure is in most cases a feed-in premium (FiP). In Spain the reference value is the income (€/MWh) for the energy produced by the plant. When set, minimum and maximum participation sizes do vary as well. Minimum threshold ranges between 1 kW (Spain) and 751 kW (Germany), while maximum participation is unlimited in some places e.g. 180 MW in Spain. Germany has only a maximum participation size for energy communities, set at 18 MW. Realisation rates vary between 24 (Greece, ≤ 10 MW) and 36 months.

Design element	Range over all onshore wind tenders
Price mechanism	Pay-as-bid & uniform pricing
Reference value determined through tender	FiP or investment grant
Number of implemented rounds p.a.	1 - 7
Tendered volume per round or budget	481.45 – 2,258 MW
Tendered volume or budget per year	481.45 – 4,250 MW
Minimum participation size	None or 1 kW to 751 kW
Maximum participation size	180 MW to unlimited
Ceiling bid price (in ct/kWh)	None or 6 (min) to 7 ct/kWh (max)
Floor bid price (in ct/kWh)	None or 0 ct/kWh
Realisation time for awarded projects	24 - 36 months

Table 7: Main elements of onshore wind tenders

[6] The CEEAG is the new legislation applicable as from January 2022, which provides guidance on how the Commission will assess the compatibility of environmental protection, including climate protection, and energy aid measures which are subject to the notification requirement under Article 107(3), point (c), of the Treaty.

In all onshore wind tenders, bidders have to prove their technical ability and their intention to realise their wind projects by meeting the requirements for the defined financial and material prequalification.

In Germany, participation is only possible with a valid building permit. Similarly, in France, the bidder also needs a building permit. In Greece, bidders need network connection terms granted by the network operator, financial guarantee submitted to the network operator, and an electricity generation license.

In terms of financial prequalification, bidders in France and in Germany need to pay 30 €/kW. In Greece, bidders first pay 12.5 €/kW when participating and once awarded an additional 50 €/kW. In Spain bidders first pay 60 €/kW when participating and once awarded an additional 60 €/kW.

3.2.2 Evaluation criteria: competition level, price development and realisation rate

Experiences with onshore wind tendering reach back as far as 2016. Spain carried out a single round in 2016.

In the years 2020 and 2021, Greece has implemented two (one per year), France has implemented four (two per year), Spain has implemented two in 2021 where as Germany implemented ten (see Table 8).

MC	Year of first tender	Total number of rounds from first tender to 2021*
France	2018	9
Greece	2018	6
Germany	2017	26
Spain	2016	3
*** until June 2022**		

Table 8: Year of first onshore wind tender and number of rounds carried out

In the following figure, the development of prices (average awarded bid price and ceiling price per tendering round) and the level of competition[7] in Germany is pictured. In Germany seven rounds have been carried out in 2020 and three rounds have been carried out in 2021. The average awarded price is lower in the last round carried out compared to in the first round.

[7] The level of competition is defined as the ratio between the capacity tendered out and the capacity submitted.

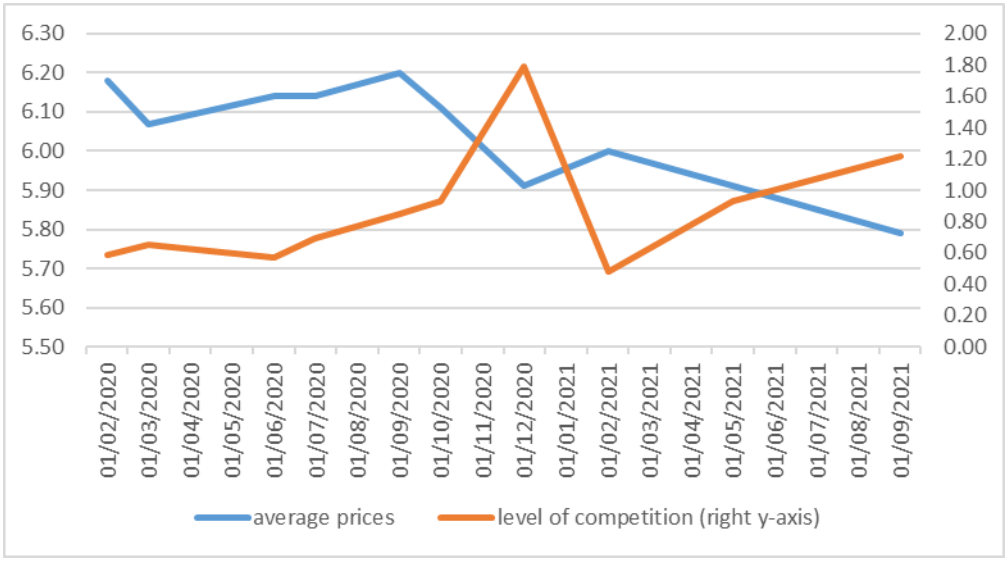

Figure 2: Average awarded price & competition level – German onshore wind tenders

In France, one round has been carried out in 2022. The average awarded price is 6.73 ct/kWh. The ceiling bid price was 7.00 ct/kWh. In Greece, one round has been carried out in 2020. The average awarded price is 55.67 €/MWh. The ceiling price is 6.299 ct/kWh.

The level of competition in France and Greece is under one. In Germany all rounds in 2020 and 2021 but two (round seven and round ten) have been undersubscribed, with the level of competition well below 1. This is a consequence of the difficulties encountered by wind project companies to obtain a building permit, notably due to strong environmental and/or species protection legislation but also due to complaints filed by citizens' associations against wind projects in their regions (i.e. NIMBYism).

With realisation times of up to 36 months for most of the countries mentioned here, no information is yet available for the realisation rates. In Germany, the first two rounds in 2020, where the realisation time without penalisation of 24 months, has expired 83.7% and 72.4% of realisation has been achieved. However, these rates are not final yet, as the Covid-19 pandemic caused realisation difficulties, and realisation rates have been prolonged by six months through legislation.

3.2.3 Challenges and lessons learnt since 2020

No robust statement can be made with respect to price development and to realisation rates so far.

Permitting issues for the building of wind turbines are linked to strict environmental rules and public acceptance still are serious challenges in Germany. With the lack of building permits for new wind projects, the deployment objective for onshore wind, as one pillar of the energy transition, is seriously jeopardised. A revision of the RES legislation will try to address some of the issues, e.g. by increasing the capacity for onshore wind projects to be tendered out and by proposing simplification and streamlining in the permitting process.

3.3 Experiences with tenders for other RES technologies

Tendering procedures for other RES technologies such as biomass (biogas) or hydro, are far less widespread. Only Poland and Germany have carried out tenders for biomass (biogas) while tendering for hydro plants have only been carried out in France.

3.3.1 Main elements of biomass, biogas, hydro and offshore wind tenders

3.3.1.1 Hydro

Based on the provided information, France is carrying out one tender round per year. The tendered volume per year is 35 MW. The minimum participation size is 1,000 kW and there is no maximum participation. Key awarding criteria are the price on the one hand and environmental impacts on the other hand (weighted firstly price, secondly environmental impacts). There are ceiling prices which depend on the type of installation (new sites/existing weir). The ceiling prices in round one start from 12 to 13 ct/kWh in and are subsequently lowered to 10 to 12 ct/kWh in rounds two to five.

Bidders have to prove their technical ability and their intention to realise their wind projects by meeting the requirements for the defined financial and material prequalification. Participation is only possible under the following criteria:

- Building permit;
- Administrative identification of the bidding company;
- Descriptive report of the project and demonstration of the readiness of the project;
- Proof of land-use right;
- Note of analysis of the energetical performance; and
- Technical report on environmental impacts of the project (to be assessed by the regional environmental authority).

There are no financial prequalification or administrative fee for participation. The realisation rate is 54 months. The NRA is in charge of collecting and analysing the bids and establishing a list of winning bidders. Under exceptional circumstances, the Ministry may select a higher volume of projects than the tendered volume.

3.3.1.2 Biomass

For biomass (biogas) tenders, information is only available for Germany and Poland. The tender system in both countries differs between operation and new plants. Based on the provided information, biogas tenders vary in terms of the volume tendered, which is due to the different objectives in each country.

The reference value determined through the tendering procedure is in both countries a FiP. The preferred price mechanism is a pay-as-bid approach. In Germany only small biogas plants (<151 kW) get a uniform price.

Minimum and maximum participation sizes vary as the minimum threshold ranges between 1,001 kW (Poland) and 0 (operating)/150 (new) kW (Germany), while maximum participation is unlimited in Poland and Germany. Realisation rates vary between 30 (Germany; new installations) and 42 months (Poland, new installations). Key awarding criteria is the price in both countries. In case of equal prices, the time of selling of the bid and the bid volume are the key awarding criteria in Poland and Germany respectively.

Design element	Range over biomass tenders
Price mechanism	Pay-as-bid & uniform pricing
Reference value determined through tender	FiP
Number of implemented rounds p.a.	Minimum 1 - 2
Tendered volume or budget per year	334 – 574 MW (Germany) 500,000 – 2,500,000 MWh (Poland)
Minimum participation size	None to 1,001 kW
Maximum participation size	unlimited
Ceiling bid price (in ct/kWh)	
Floor bid price (in ct/kWh)	None
Realisation time for awarded projects	30 - 42 months

Table 9: Main elements of biomass tenders

3.3.2 Challenges and lessons learnt since 2018

No robust statement can be made with respect to the price development and realisation rates so far.

4 National experiences with technology-neutral tenders

As in the last report, the term "technology-neutral" will be used if two or more technologies are tendered together. For the last report, out of 21 MCs that provided information on their tendering schemes, five (the Czech Republic, Estonia, Hungary, Ireland, and Poland) had implemented technology-neutral tendering schemes only. The report covers technology-neutral tenders which were introduced between 2017 (Hungary) and 2022 (Austria).

The last report highlighted that: *"Looking at the data provided, a joint tender for onshore wind and PV seems to be easier to implement than other types of technology-neutral tenders. This is linked to the comparable cost structure between those two technologies."*[8]. This assessment is still true since five out of 17 MCs had joint tendering schemes for onshore wind and PV in place. Besides that, six out of 17 MCs had technology-neutral only schemes in place and 5 MCs had a different mix of technology-neutral schemes (e.g. wind and hydro for Austria, and innovative projects for Germany) in place – see Table 10.

	All	Innovative projects	self-consumption	wind and solar	wind and hydro	hydro and residual gases	Refurbishment (wind on-shore, hydro and residual gases)	bioliquid, geothermal, hydro	biomass, biogas from wastewater treatment plants, biogas from landfill site, waste incineration plant
AT					x				
DE		x		x					
EL				x					
ES	x								
FI	x								
FR			x	x					
HU	x								
IE	x								
IT				x		x	x		
LT	x								
MT	x								
PL				x				x	x
	6	1	1	5	1	1	1	1	1

Table 10: Technology-neutral tendering schemes

4.1 Main elements of technology-neutral tenders

For this year's report, 12 MCs reported technology-neutral tendering schemes being in place. Of these countries, six rely on fully technology-neutral tenders and six countries have a combination of wind and solar. Besides those seven other combinations of technologies like wind and hydro power in Austria or hydro power and residual gases in Italy (see Table 10). Including all iterations, the 12 MCs reported 23 combinations of technology-neutral tenders which is shown in Table 11.

[8] 2nd CEER Paper on Tendering Procedures for RES in Europe, page 38.

	All	Innovative projects	self-consumption	wind and solar	wind and hydro	hydro and residual gases	Refurbishment (wind on-shore, hydro and residual gases)	bioliquid, geothermal, hydro	biomass, biogas from wastewater treatment plants, biogas from landfill site, waste incineration plant
AT					1				
DE		1		1					
EL				2					
ES	1								
FI	1								
FR			1	1					
HU	1								
IE	1								
IT				1		1	1		
LT	1								
MT	2								
PL				2				2	2
	7	1	1	7	1	1	1	2	2

Table 11: Technology-neutral tendering schemes number of versions

4.1.1 Awarded support

In 10 MCs, the awarded support is based on a reference value which is then used for calculating some sort of market premium – Italy and Spain use a contract for difference scheme. Only Malta uses its tendering scheme for determining a FiT.

4.1.2 Support duration

The support duration varies from 12[9] up to 30[10] years. Nine of the listed tendering schemes grant support for 20 years or more. Besides a support duration of 20 years, Malta and Hungary[11] also have a yearly production cap.

4.1.3 Key award criteria

For all technology-neutral tendering schemes the key award criteria is the price. In the case of Italy, the price is determined through the offered reduction from the decreed reference value. For ten tendering schemes, the volume was listed as second award criteria, whereas Italy's secondary ranking criteria are (in the order of mention) legality rating, location, and submission date. In case of equal prices, the following selection criteria are applied in Hungary (in the order of mention): investments on "brownfield" sites, greater capacity, earlier application, and lottery by notary.

4.1.4 Price awarding mechanism

All MCs reported that their various technology-neutral tendering schemes are based on a pay-as-bid price awarding mechanism.

4.1.5 Number of rounds per year

Greece, Finland, France, and Lithuania have one round. Austria and Poland have a minimum of one round per year and Hungary had one to two rounds per year so far, although the tendering frequency is not predetermined. Germany and Spain have had two rounds. Italy had three rounds in the past and depending on a new decree should have one or two rounds in 2022. Malta planned to have five auction rounds between 1 June 2021 and 30 June 2022.

[9] Spain

[10] Italy – hydro power

[11] In Hungary, support duration can be 20 years as a maximum, but it differs from call to call (mainly 15 years, but there was also a call with 20 years).

4.1.6 Tendered volume

The yearly tendering volume and the tendering volume per round varies widely. The overall tendering volume varies from 6 MW in Malta to 1,398 MW in Spain. 19 out of the 27 schemes rely on MW whereas Finland and Poland tender MWh. In Hungary, tendered capacity is not defined, rather the maximum yearly support amount and/or maximum yearly supported quantity is set in each tender call. Ireland's tendering volume depends on national targets and policies.

4.1.7 Realisation time

Besides tendered volumes also realisation times vary widely amongst implemented schemes. The shortest realization time (depending on technology and plant size) is observed in Greece with 12 (to 36) months in its mixed wind and solar tender. Although most realisation times start at 24 months and can last up to five years. This is similarly the case in Finland, although there the construction collateral is lost after three years. In some cases, MCs reported that the maximum realisation times for PV installations were six to nine months shorter than for onshore-wind installations.

4.1.8 Participation sizes (min/max)

For six out of 23 technology-neutral tendering schemes there are no minimum participation size. For the other 17 schemes the size varies between 1 kW in Spain and up to 5 MW (depending on the call) for Hungary. For eight technology tendering-schemes, no maximum participation size is foreseen. For those schemes that limit the maximum participation size, it varies from 200 kW in the case of Malta (that auction scheme is designed for 40 kWp up to less than 200 kWp) up to 180 MW in Spain.

4.1.9 Bid prices (ceiling/floor)

The majority of technology-neutral tendering schemes do not have a floor price (19 schemes). Italy is the only MC which uses a floor price higher than zero. The floor price is determined by subtracting 70% from the general reference value or the technology-specific reference value.

With the exception of the technology-neutral tendering schemes in Finland and Spain, all countries have a ceiling price (16 schemes) and for an additional five tendering schemes an adapting ceiling price was reported.

4.1.10 Prequalification (material/financial) and administrative fees

With the exception of Spain[12], all reported technology-neutral tendering schemes have some kind of material prequalification. Seventeen require a building permit. For 13 schemes, a grid connection permit is needed.

For two technology-neutral tendering schemes, no financial prequalifications are needed. Most of those are set as €/kW values or in the case of Finland as €/MWh per year. In Hungary, it is a percentage of the benchmark investment cost.

4.1.11 Cross border

Two MCs (Italy and Hungary) have the option for technology-neutral cross border tenders but neither country has signed the necessary agreements with potential countersigning MCs yet.

[12] Although there is no specific material prequalification in Spain, the time to build the plant is such, that plants without an existing grid connection permit would have difficulties to meet that deadline.

4.2 Outcome of technology-neutral tenders

The price for reported technology-neutral tenders (wind and solar PV) ranges from 37.60 €/MWh in Greece (2021) to 68.60 €/MWh in Italy (2021). Except for later rounds in Italy, the level of competition has been high sometimes even exceeding 200%. Since most of the round were held recently and realisation rates start for theses rounds at 24 months in Germany up to 36 months in Greece realisation rates are, if reported, on the lower end of the scale except for the 2020 round of Germany which has a realisation rate of 74%. For more information see Table 12.

	Round (date)	Price (€/MWh)			realisation rate	level of competition (MW)	Realisation time (months)
DE	01.04.2020	53,40			74%	277%	24
	01.11.2020	53,40			40%	259%	24
EL	25.05.2021	37,60			NA	212%	up to 36
IT*	30.09.2019	48,62	67,00	wind solar	6% 0%	119%	24/31
	31.01.2020	56,00	68,40			85%	24/31
	31.05.2020	64,96	68,53			43%	24/31
	30.09.2020	68,19	68,60			28%	24/31
	31.01.2021	68,50	68,60			6%	24/31
	31.05.2021	68,56	68,60			26%	24/31
	30.09.2021	67,55	68,60			37%	24/31
	31.01.2022					on going	24/31
PL**	AZ/8/2020	56,65			0,00%	217%	33/24
	AZ/8/2021	50,85			0,21%	124%	33/24
	AZ/11/2021	54,18			0,00%	130%	33/24
	AZ/7/2020	49,33			0,24%	132%	33/24
	AZ/7/2021	50,42			0,00%	122%	33/24
	AZ/12/2021	50,11			0,00%	144%	33/24

* price is indicated as the minimum and maximum reduction rate to the reference tariff bid under each auction procedure w
regard to the admitted applications. Reference tariffs are: 70€/MWh for wind and solar
** 1 PLN = 0,22 EUR

Table 12: Tendering outcome for technology-neutral schemes (wind and solar PV)

The price for technology-neutral auction (including all technologies) varies widely depending on country, auction time and most likely the technology outcome of said rounds.

	Round (date)		Price (€/MWh)	realisation rate	level of competition (MW)	Realisation time (months)
ES	Solar PV		min. 14,89 max. 28,49		323%	24/36
	Wind onshore		min. 20,00 max. 25,31			
	Solar PV		min. 24,40 max. 34,90		163%	24/36
	Wind onshore		min. 27,90 max. 36,68			
FI	2018		2,5 (premium)	Not known yet	Extremely high, and hence extremely low price.	5x12
HU	15.07.2020		48,46	n/a	550%	36+12
	30.04.2021		47,51	n/a	336%	36+12
	22.11.2021		103,39	n/a	58%	36+12
	04.03.2022		n/a	n/a	84%	36+12
IE	01.06.2020	Community average:	104,15		82%	24 (plus 12 to longstop)
		Solar average:	72,92			24 (plus 12 to longstop)
		All projects average:	74,08			24 (plus 12 to longstop)
LT	2019-2020		3,02 (premium)	void*		36
MT MESD/ITB/01/2021 RES greater or equal to 40 kWp but less than 200kW	1st of June 2021 until noon of the 28th June 2021	1	120,00	0,00%	60%**	18+6
		2	125,00			18+6
		3	140,00			18+6
		4	140,00			18+6
		5	140,00			18+6
		6	124,00			18+6
		7	139,00			18+6
		8	125,00			18+6
		9	126,00			18+6
		10	140,00			18+6
MT MEW/ITB/01/2020 RES Generators with capacity from 400kW up to less than 1000kW	15th June 2020 until noon of the 6th July 2020	1	139,00	57,14%	70%**	18+6
		2	119,00			18+6
		3	139,00			18+6
		4	139,00			18+6
		5	139,00			18+6
		6	127,00			18+6
		7	140,00			18+6
		8	140,00			18+6
		9	140,00			18+6
		10	130,00			18+6

* The auction went void as there was not enough participants. NERC registers participants documents and if at least 3 participants enter the contest document evaluation comission can open the documents and after checking documents, the bids are opened and the winner is announced. In auct of 2020, there were only 2 participants and auction was declared void. The lack of participants was probably because last auction winner bid for 0
**based on number of bids not MW

Table 13: Tendering outcome for technology-neutral tenders (all technologies)

4.3 Challenges and lessons learnt

In the last update, it was observed that having parallel tender schemes in place i.e. technology-neutral tender for PV and onshore wind and technology-specific tenders for PV and onshore wind can result in a less efficient support system. There is a risk that participants are cherry-picking based on the specific tendering schemes or that dividing up tendering volumes between parallel technology-neutral and technology-specific tenders can lead to insufficient participation in either case. This observation is still valid and should be considered when drafting support laws.

Compared to the last update of this report there are no specific lessons learnt in connection with technology-neutral tenders that were highlighted by the MCs. In the last update, it was highlighted that some countries (e.g. Finland and Hungary) switching to tendering schemes chose to have a technology-neutral tendering scheme only.

5 Conclusions

The report brings forward the following conclusions:

- By the beginning of 2022, the large majority of CEER MCs have implemented tenders as a means for determining the level of financial support for RES technologies in a competitive manner;
- In terms of outcome, missing behind-the-scenes information of each single national scheme limits the validity of drawing generic conclusions for this report. Nevertheless, where empirical data has been provided, prices usually went down but not tremendously, while the level of competition was very mixed. Further information about realisation rates is still outstanding, as most realisation periods are still running. First results are encouraging for PV projects. Overall, the results differ from country to country and from tender to tender;
- RES support systems based on tendering schemes still seem to be more vulnerable to outside influences such as permit granting systems and zoning or more generally, aspects that influence the number of potential participants and the risk level. Market analysis including technology potentials (and auction volumes based on them) should, therefore, also consider the time component to develop those potentials;
- Technology-specific and technology-neutral tendering procedures carried out in parallel for the same technologies impact on the level of competition and the price development. When carried out in parallel, the design of both procedures must be adapted to avoid gaming;
- Tenders as a market-based instrument for determining level of RES support are starting to slowly converge in general terms with newly introduced schemes. However, new additions, such as a technology neutral tender for wind and hydro in Austria, are also observed; and
- Acceptance issues can emerge, which are not per se linked to the tendering instrument. However, this has repercussions on the project risks and as such on the participation level and the price outcome.

Annex 1 – List of abbreviations

Term	Definition
ACER	The EU Agency for the Cooperation of Energy Regulators
EEAG	Guidelines on State aid for environmental protection and energy 2014-2020, European Commission
CEER	Council of European Energy Regulators
CHP	Combined Heat and Power
DNO	Distribution Network Operator
DSO	Distribution System Operator
EC	European Commission
EE	Energy efficiency
EEA	European Economic Area
EU	European Union
FiP	Feed-In-Premium
FiT	Feed-In Tariff
GGP	Guidelines of Good Practice
GCs	Green Certificates
GWh	Gigawatt hour is a unit of energy equal to 1,000 MWh or 1,000,000 kWh
kWp	Watts-peak and kilowatts-peak is a measure of the nominal power of photovoltaic device under laboratory conditions. Kilowatts-peak (kWp) is the most common unit in the domestic context.
kWh	The kilowatt is a unit of energy equal to 1,000 watt hours or 3.6 megajoules. The kilowatt hour is the most common billing unit for energy delivered to consumers.
MC	CEER Member Country
MW	Megawatt
MWh	Megawatt hour is a unit of energy equal to 1,000 kWh or 1,000,000 Watthours
NPV	Net present value
NRA	National Regulatory Authority (for energy)
PSO	Public Service Obligation
PV	Photovoltaic
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
RV	Reference Value

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

Annex 2 – 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.