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Picking winners: A critical analysis of scoring processes in European offshore wind multicriteria tenders

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Abstract.

Multicriteria tenders are playing an increasingly important role in allocating offshore wind seabed leases and remuneration, with more than 30 GW of European offshore wind capacity awarded through these mechanisms as of 2025. The central mechanism of multicriteria tenders are scoring processes that translate price and/or non-price bid attributes into scores used for bid ranking. If designed well, these scoring processes can reflect the social value of projects by internalising non-price attributes. However, if designed poorly they can be inefficient or even produce invalid rankings. This paper presents the first systematic assessment of multicriteria scoring processes applied in renewable energy tenders, using European offshore wind as a case study. We compile 289 award criteria from offshore wind tenders carried out in the Netherlands, Germany, France, Norway and Poland from 2015-2025. We then systematically categorise these criteria by policy objectives, weighting, scoring rules, and aggregation methods. The results reveal heterogeneity in the number, type and weighting of award criteria adopted between countries and across tender rounds, reflecting differing policy priorities. We also identify fundamentally different approaches to criteria scoring (quantitative vs discretionary scoring with absolute or relative scales) which have important implications for the efficiency of the tender processes and the validity of the bid rankings they produce. This work highlights key challenges for future multicriteria tender design, including increasing process complexity, setting of criteria weights, inconsistent definitions of criteria and the use of relative scoring scales with fixed criteria weights. We conclude with recommendations for future research that address these challenges.

1 Introduction

The accelerated deployment of offshore wind will play a key role in decarbonising European electricity supply, with the EU's offshore renewable energy strategy targeting up to 450 GW of offshore wind deployment by 2050. This represents an over 20-fold increase compared to 2025 levels (European Comission, 2020; Wind Europe, 2025b). In line with this ambition, the annual volume of auctioned/tendered offshore wind areas has risen rapidly in European countries (Wind Europe, 2025b). Historically, administrative allocation and price-only auctions were the primary approaches to allocate offshore wind seabed

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leases and remuneration[1] in Europe (ELS Analysis, 2024; Portela de Carvalho, 2025) . However, driven in part by the reduced reliance of the offshore wind sector on subsidy (Portela de Carvalho, 2025), several European countries have adopted multicriteria tender[2] processes in recent years, representing in excess of 30 GW of tendered offshore wind capacity as of 2025. Going forwards, further uptake of these processes is expected following the passage of the EU's Net Zero Industry Act (NZIA). The NZIA mandates the use of sustainability and resilience non-price criteria (either pre-qualification or award) for a minimum of 30% of annual tendered renewables volume by member states from the end of 2025 (European Commission, 2025a, b).

Multicriteria tenders use scoring processes to translate both price and non-price bid attributes (such as environmental sustainability or workforce and supply chain development) into an overall score for each bid. In this paper, the term scoring process refers to the set of evaluation rules and scoring functions used to quantify, weight, and aggregate bid attributes into a final bid score. The aim of multicriteria tenders is to select projects based on their overall social value rather than price alone (Ciaccia et al., 2010). However, if designed incorrectly, these scoring processes can result in less efficient bids and potentially produce rankings that do not reflect social value, negating the benefits of the multicriteria tender over a price-only approach. For this reason, understanding the current design of these processes and their challenges and limitations can provide valuable lessons for policy makers and the research community.

As highlighted by Del Rio (del Río, 2017), there is limited academic literature on multicriteria tenders[3] for renewable energy. This literature can be divided into two broad categories. Firstly, there are publications that review elements of renewable energy (RE) tender design, including multicriteria vs price only winner selection procedures, and relate these design elements to measures of tender effectiveness (Anatolitis et al., 2022; Fleck and Anatolitis, 2023; Haelg, 2020; Kiefer, 2024; del Río, 2017; del Río and Kiefer, 2023). Secondly, there are publications that explicitly consider the design of RE multicriteria tenders (e.g. selection of award criteria and scoring rules) (Ciaccia et al., 2010; Iglesias et al., 2011; Portela de Carvalho, 2025; Stecher et al., 2024). The first set of studies largely employ qualitative approaches which combine literature review, case studies and economic theory to make judgements about the directional effects of tender design elements on measures of tender effectiveness (for example, using a multicriteria vs price only tender design results in higher support costs) (Fleck and Anatolitis, 2023; Haelg, 2020; Kiefer, 2024; del Río, 2017; Stecher et al., 2024). The general findings from these studies, regarding the effects of multicriteria vs price only RE tenders, is that multicriteria tenders have a positive impact on externalities (e.g. local benefits, green growth) (Fleck and Anatolitis, 2023; Haelg, 2020; del Río, 2017) and technology diversity/innovation (Haelg, 2020; del Río, 2017), while having a negative impact on support costs (Fleck and Anatolitis, 2023; Haelg, 2020; del Río, 2017), and potentially on actor diversity (both in terms of number and diversity of

[1] In this paper the term remuneration is specifically referring to state remuneration, e.g. through a CFD, FIT etc.
[2] In this paper the term multicriteria tenders refers to competitive processes used to assess bids based on multiple award criteria, including non-price criteria. These multicriteria tenders may be for remuneration and/or a seabed lease. In other publications these processes are alternatively referred to as tenders, auctions or multicriteria auctions (European Commission, 2022b; Portela de Carvalho, 2025).
[3] These competitive processes are referred to as both tenders and/or auctions in different publications. For brevity the term tender is used for auctions/tenders within this document.

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tender applicants) (Haelg, 2020). In addition to these qualitative studies, quantitative analysis of the effects of multicriteria vs price only RE tenders has been carried out by Anatolitis et al. (Anatolitis et al., 2022) and Stecher et al. (Stecher et al., 2024). Anatolitis et al. performed a regression analysis on the tender price results from the AURES 2 dataset, including the effects of price-only vs multicriteria winner selection. Counter to the qualitative studies, the authors did not find a statistically significant effect on prices from the application of multicriteria winner selection, however this may be explained by the small number of multicriteria tenders in the early years of the AURES 2 dataset (Anatolitis et al., 2022). Stecher et al. (Stecher et al., 2024) developed a deterministic technoeconomic model to analyse the effect of multicriteria tenders on solar PV tender strike prices in the EU. The results of this study predict a significant increase in tender strike price when either GWP and/or local content are given a weighting of 15-30% as award criteria alongside strike price. The second set of publications specifically consider the design and/or implementation of RE multicriteria tenders. Iglesias et al. (Iglesias et al., 2011) review authorisation procedures of Spanish regional authorities to award development rights for onshore wind. The authors highlight a shift towards the use of multicriteria tender processes with explicit criteria and scoring processes to reduce the subjectiveness of authorisation decisions. Additionally, the heterogeneous nature of the criteria used across Spanish regions is discussed, highlighting the trade-offs between tailoring multicriteria tenders to regional contexts and information costs. The discussion of this study focuses on how differing priorities between national and local government effect the selection of award criteria, and how quantitative multicriteria scoring processes should be used to improve process objectivity and transparency. A recent publication by Portela de Carvalho (Portela de Carvalho, 2025) presents a qualitative policy analysis of non-price criteria in used in recent European offshore wind tenders. The study reviews the EU level regulations promoting the use of non-price criteria and presents qualitative case studies of the implementation of non-price criteria in Denmark, Finland, Germany, and the Netherlands. The author then discusses the challenges associated with the use of non-price criteria, including increased project costs, alignment with other regulation, sunk costs reducing tender subscription, ambiguity in application of criteria as pre-qualification or award criteria and harmonization of criteria at an EU level. Finally, Ciaccia et al. (Ciaccia et al., 2010) develop a bid scoring process methodology, designed to allow public authorities to select onshore wind projects based on both price and environmental sustainability. Ciaccia et al. highlight that "optimal mechanism approaches"—which account for the buyer's information costs[4] associated with non-price criteria (Asker and Cantillon, 2010; Che, 1993)—are, in theory, the most efficient scoring methods. However, the authors conclude that these "optimal mechanism approaches" are impractical for public authorities due to their high level of complexity. For this reason, the authors propose a scoring rule designed to select the highest social value projects *ex post* (after the bids are evaluated), thereby excluding the effects of information costs. Ciaccia et al. discuss several key theoretical aspects of scoring processes including the use of quantitative vs discretionary criteria scoring processes, and calibration of criteria weights. These key elements of scoring process design are elaborated on in Sect. 2.

[4] The additional costs associated with evaluating the non-price attributes of a bid.

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The existing literature therefore covers important theoretical considerations of multicriteria tender design and presents qualitative reviews of their application in the wind sector. However, these studies do not present a systematic analysis of primary tender documentation. This limits the current understanding of how these multicriteria tender scoring processes have been operationalized for any renewable energy technology. In this paper we address this research gap by developing a methodology to systematically review and analyse the scoring processes that have been implemented in all European countries multicriteria tenders for offshore wind carried out from 2015-2025[5]. Specifically, this study develops a methodology to categorize multicriteria tender bid scoring processes based on their award criteria, criteria weightings and criteria scoring procedures. This methodology is then applied to tenders carried out in France, the Netherlands, Norway, Germany and Poland. This research focus is motivated by four key factors: (1) the bid scoring process is the central mechanism that determines the winner(s) in a multicriteria tender (see Fig.1). The design of bid scoring processes therefore has vital implications for the efficiency and ultimate validity of the multicriteria tender process; (2) the selection and weighting of award criteria in the bid scoring processes provides a way of quantifying the policy priorities of the public authorities[6] running the tenders; (3) development of a methodology to assess these criteria and scoring processes facilitates a consistent comparison of these processes both between countries and over time. This enables a systematic analysis of the trends, challenges and limitations in the design of these processes, and; (4) other general tender design elements (that are common to both multicriteria and price-only tenders, see Fig.1) have already been reviewed extensively in other publications (Anatolitis et al., 2025; del Río, 2017; del Río and Kiefer, 2023). To this end, this paper aims to answer the following questions:

- How have the bid scoring processes been designed (regarding award criteria selection, weighting and evaluation) in European offshore wind multicriteria tenders?
- What are the challenges and limitations associated with the design of these processes?
- How can future research address these challenges and limitations?

The remainder of this paper is arranged as follows. Sect. 2 presents key design elements of scoring processes utilised in multicriteria tenders. Sect. 3 describes the methods this paper uses to analyse offshore wind multicriteria tenders carried out in Europe between 2015 and 2025. The results of this analysis are then presented in Sect. 4, including a cross-country comparison of the policy objectives that have been targeted in these multicriteria tenders and the different criteria scoring processes that have been adopted. Sect. 5 discusses the design of these scoring processes and the associated challenges/issues. Sect. 6 then presents conclusions and recommendations for further research in the design of multicriteria renewable energy tenders.

[5] The inclusion criteria for the reviewed tender processes are detailed in Section 3.1.
[6] Following Ciaccia et al. (Ciaccia et al., 2010), "public authority" in this context is defined as the subject with the right to authorize the development or remuneration of the wind farm.

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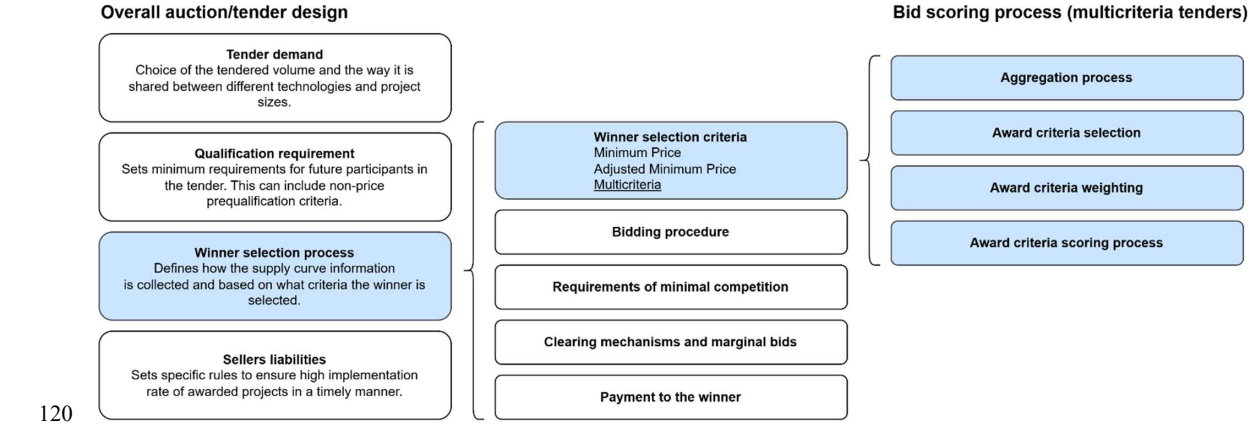

Figure 1: Overall renewable energy tender design based on IRENA (2019) with bid scoring process expanded.

2 Key design features of multicriteria scoring processes

2.1 Bid scoring processes

The winner in a multicriteria tender is determined through a bid evaluation process that scores and ranks all submitted bids. An approach commonly adopted by public authorities[7] for the bid scoring process in a multicriteria tender is the Weighted Sum Method (WSM). This approach was utilised in all multicriteria tender processes reviewed in this paper. The WSM attaches a weighted score to each tender award criterion[8] which is then summed across all award criteria to determine a bid's total score. A general definition of the WSM approach is shown in Eq. (1).

$$S_j = \sum_{i=1}^{n} w_i C_{ij} \qquad (1)$$

$$C_{ij} = f_i(q_{ij}) \in [0,1]$$

In Eq. (1), S_j is the total score (or total points) for bid j, w_i is the weighting (or maximum available points) for the ith criterion[9] (out of n total criteria) and C_{ij} is the image of function $f_i(q_{ij})$. Function f_i assigns a score for the quality q_{ij}

[7] Following Ciaccia et al. (2010), "public authority" in this context is defined as the subject with the right to authorize the development or remuneration of the wind farm.
[8] The award criteria describe the different attributes of the bid that are being assessed in the multicriteria tender (these can be both price and/or non-price attributes).
[9] It should be highlighted that the weighting may be either explicitly stated or aggregated within the scoring scale of each criterion.

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offered in criterion i in bid j. The term "quality" is used herein to describe the performance in the attribute that a criterion is evaluating[10], while the function f_i is referred to as the "criteria scoring process". All the multicriteria tenders reviewed in this publication apply pre-defined weightings, where the weightings for each award criterion are fixed in advance of the bidding process. In the WSM the total score (S_j) should represent the total value to the public authority of the bid, given its quality across all award criteria (Ciaccia et al., 2010; Kolios et al., 2016).

An important feature of the WSM is that it treats the value of each criterion as independent and additive. Therefore, to correctly evaluate and rank bids using the WSM, the criteria weightings and award criteria scoring processes must be designed so that the value per incremental point to the public authority (herein referred to as "value per point") is equal between different award criteria included in the tender. This means the public authority should be indifferent to trade-offs between points obtained for quality improvements in different award criteria. For example, a point obtained for increasing environmental sustainability should have the same value to the public authority as a point gained for increasing social benefits. As discussed in the remainder of this section, different criteria scoring process designs can determine if a consistent value per point between award criteria is, or is not, possible.

2.2 Quantitative and discretionary scoring

A key design aspect of criteria scoring processes is the choice between quantitative or discretionary scoring. In quantitative scoring processes, the precise criteria scoring process is defined *ex ante* (before the bidding process) and made available to the prospective bidders. In discretionary scoring processes, the precise scoring process is not defined before the bidding process, and a discretionary judgment is made (usually by a panel of experts) after the bids are received regarding the awarded points.

The use of quantitative scoring (paired with an absolute scoring scale, see Sect. 2.3) gives predictability to the bidders regarding how many points are scored for different levels of quality in an award criterion. This has the benefit of enabling the bidder to efficiently design their bids to maximise the number of points achieved. In contrast, the use of discretionary scoring does not give predictability to bidders as they do not know *ex ante* the number of points they will receive for different levels of quality in an award criterion. Therefore, if the public authority can define an appropriate quantitative scoring process for a criterion in advance, this is preferable as it allows bidders to maximise the score (and associated value to the public authority) of their bids (Dini et al., 2009; IRENA, 2019, p. 28). Additionally, quantitative scoring of award criteria is desirable from the perspectives of transparency and contract enforcement (IRENA, 2026, p. 55, 2019, p. 28). A more discretionary scoring process may be appropriate when the public authority prioritises a high degree of flexibility in the scoring process. For example in the case of complex award criteria, whose value to the public authority cannot easily be defined *ex ante* in a quantitative way (Ciaccia et al., 2010; Dini et al., 2009).

[10] For instance, for an award criterion of estimated P50 power production, the quality may be the estimated kWh/year for that specific bid.

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2.3 Absolute and relative scales

A second design aspect of criteria scoring is the choice of relative or absolute scoring scales. An example criteria scoring process is illustrated in Eq. (2) where the score for criterion i is a linear function of quality (q_{ij}) evaluated on a scale with end points of $q_{i,min}$ and $q_{i,max}$.

$$C_{ij} = \left[\frac{q_{ij} - q_{i,min}}{q_{i,max} - q_{i,min}}, 1\right] \tag{2}$$

When criteria scoring processes utilise a relative scale, the score for a certain criterion is relative to the quality offered in that criterion in other bids. In the example of Eq. (2), this would mean that $q_{i,min}$ and/or $q_{i,max}$ are defined based on the minimum or maximum value of q_i across all bids in the tender round. When criteria scoring processes utilise an absolute scale, the score for a certain criterion is independent of the quality offered in other bids. In the example of Eq. (2) this would mean that $q_{i,min}$ and $q_{i,max}$ would be defined by the public authority without reference to the submitted bids.

As described above, when combined with a quantitative scoring process, an absolute scale offers predictability to the bidders, as the scoring scale is known *ex ante*, which allows them to efficiently design their bids (Ciaccia et al., 2010; Dini et al., 2009; IRENA, 2019, p. 28). Additionally, if calibrated correctly and combined with appropriate criteria weights, an absolute scale can ensure consistent value per point between criteria. Conversely, the use of relative scales reduces the predictability for the bidder as the scoring scale for the criterion is unknown *ex ante*, which in turn can result in less efficient bids (Ciaccia et al., 2010). Another limitation of relative scoring scales is that when they are combined with pre-defined criteria weights the scoring process cannot be calibrated to ensure that the value per point is consistent across different award criteria. This is because the increments in quality (q_{ij}) required to obtain an incremental point in a criterion are not fixed. Rather, they are dependent on the quality ($q_{i,max}, q_{i,min}$) offered in that criterion in other bids. As highlighted above, this is a significant issue as it undermines the ability of the WSM to necessarily rank bids based on their total value to the public authority. For these reasons, absolute scoring scales are generally seen as preferable when using the WSM with pre-defined criteria weights (Monat, 2009). Relative scoring scales, while simpler to implement, should be reserved for instances when a reasonable scoring scale cannot be defined by the public authority (Ciaccia et al., 2010; Dini et al., 2009; European Commission, 2025b). A summary of the key benefits and drawbacks of bid scoring processes that use quantitative or discretionary scoring processes combined with absolute or relative scoring scales is presented in Appendix B.

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3. Methods

The methodology followed in this study to analyse the bid scoring processes used in European offshore wind multicriteria tenders is summarised in Fig. 2.

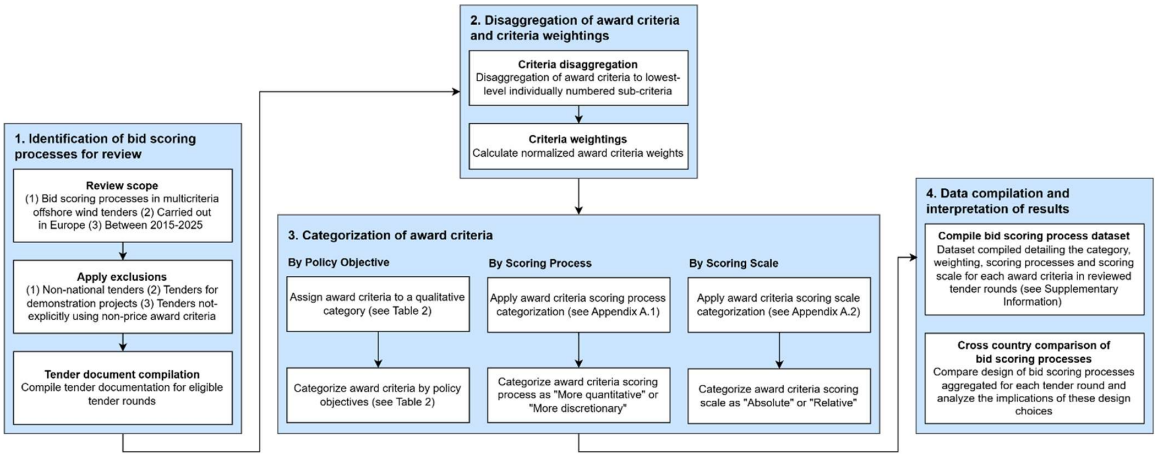

Figure 2: Methodology applied in this study to analyse the bid scoring processes in European offshore wind multicriteria tenders.

This analysis starts by defining the tender rounds for review and identifying the relevant tender documentation detailing the corresponding bid scoring processes (see Sect. 3.1). The individual award criteria used in these bid scoring processes are then extracted and disaggregated, and their normalised criteria weightings are calculated (see Sect. 3.2). These disaggregated award criteria are accordingly categorised by their policy objectives (see Sect. 3.3), the design of their criteria scoring process and the design of their criteria scoring scale (see Sect. 3.4). This data was compiled in an Excel workbook (available at DTU data (Kerr, 2026)) which was used to create the summaries of the bid scoring processes for each tender round.

3.1 Data collection

This paper reviews the bid scoring processes adopted by European countries that held multicriteria tenders for offshore wind areas between 2015 and the end of 2025. This covers all tender rounds in Europe during this timeframe, with the following exclusions: (1) tenders that were not national tenders; (2) tenders that were not for commercial scale offshore wind projects; (3) tenders that did not explicitly utilise non-price award criteria in the bid scoring process[11]. Given these exclusions, data

[11] It should be noted that these exclusions are applicable to seabed allocation tenders in Finland and Scotland during this period. Finland used a competitive processes for seabed lease allocation, with loosely defined non-price criteria (either as pre-qualification or award (Portela de Carvalho, 2025)). However, these are regional level processes only applicable to territorial waters (ELS Analysis, 2024; Portela de Carvalho, 2025). Scotland carried out two leasing rounds for offshore wind areas during this period (Scotwind and INTOG) which utilised non-price criteria. The bid scoring process in Scotwind was a multistage process where projects were screened based on non-price criteria, followed by winner selection using the price-only award criteria of lease option fee. In the case of multiple bidders submitting the same lease option fee, non-price award criteria were used as a tie breaker (Crown Estate Scotland, 2021, 2024). The Scotwind winner

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was gathered for the tender scoring processes in: Germany (for centrally pre-investigated sites), the Netherlands, France, Norway and Poland. Details of these tender rounds including the tendered item (seabed lease or seabed lease and remuneration), number and capacity of the tendered offshore wind areas and reference to the tender documentation detailing the bid scoring processes are presented in Table 1. In the Netherlands, Germany, Norway and Poland the tendered item(s) were seabed leases. In the reviewed multicriteria tender rounds, Germany (for centrally pre-investigated sites) and the Netherlands, did not have remuneration schemes for offshore wind. Norway and Poland have separate price-only tenders to allocate remuneration. It should also be noted that Poland utilised an "administrative tender procedure" (ELS Analysis, 2024) in its Phase II seabed leasing round, where the competitive tender process is initiated for each offshore wind area following a developer application (Ministra Infrastruktury, 2021). These differences do not affect the results and discussion related to the design of bid scoring processes. In France, the tendered item for the reviewed multicriteria tenders consisted of both a seabed lease and remuneration in the form of a Contract for Difference (CFD). The inclusion of remuneration in the French tenders means that EU state aid laws apply, which limit the weighting of non-price criteria to a maximum of 30% of the total score (European Commission, 2022a; Portela de Carvalho, 2025). This effect can be observed in the results section, where bid scoring processes in France place a higher weighting on price-related criteria than in other countries.

selection was therefore not considered explicitly to be a multicriteria tender. The INTOG round used price-only award criteria for commercial scale projects (with tie breaker non-price award criteria) and only used non-price award criteria as the primary bid scoring process for small (<100 MW) demonstration projects (Crown Estate Scotland, 2022).

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Table 1: Summary of the multicriteria tenders reviewed in this study.

Country	Tender round	Year	Tendered Item(s)[1]	Tendered Area(s)	Capacity (MW)	Reference
DE	2023	2023	SL	4	1,810	(Bundesnetzagentur, 2016)
DE	2024	2024	SL	3	5,500	(Bundesnetzagentur, 2016)
DE	2025	2025	SL	2	2,500	(Bundesnetzagentur, 2016)
FR	Dunkerque	2019	SL & RN	1	600	(CRE, 2019)
FR	Normandie	2023	SL & RN	1	1,000	(CRE, 2022)
FR	Bretagne	2024	SL & RN	1	250	(CRE, 2023)
FR	Mediterranee	2024	SL & RN	2	500	(CRE, 2024)
FR	Oléron	2025	SL & RN	1	1,200	(CRE, 2025a)
FR	Centre Manche	2025	SL & RN	1	1,500	(CRE, 2025b)
NL	Hollandse Kust Zuid	2019	SL	1	760	(Ministerie van Economische Zaken, 2017)
NL	Hollandse Kust Noord 5	2020	SL	1	759	(Ministerie van Economische Zaken en Klimaat, 2019)
NL	Hollandse Kust West 6	2022	SL	1	700	(Ministerie van Economische Zaken, 2022)
NL	Hollandse Kust West 7	2022	SL	1	700	(Ministerie van Economische Zaken en Klimaat, 2022)
NL	Ijmuiden Ver Alpha	2024	SL	1	2,000	(Ministerie van Economische Zaken en Klimaat, 2023)
NL	Ijmuiden Ver Beta	2024	SL	1	2,000	(Ministerie van Economische Zaken en Klimaat, 2023)
NL	Nederwiek plot IA	2025	SL	1	1,000	(Ministerie van Economische Zaken en Klimaat, 2025)
NO	Utsira Nord (1-3)	2025	SL	1	1,500	(Royal Norwegian Ministry of Energy, 2025)
PL	Phase II	2023	SL	13	8,997	(Ministra Infrastruktury, 2021)

[1] SL is Seabed Lease, RN is Remuneration

For each of the tender rounds that were assessed, data on the following key elements of the bid scoring process (as introduced in Sect. 2.1) was extracted from the tender documentation: (1) the individual award criteria specified in the bid scoring processes, (2) the weighting given to each individual award criteria, (3) information on the award criteria scoring process (a) if the criteria were scored using an absolute or relative scale and (b) if the criteria was scored in a more quantitative or discretionary manner.

3.2 Disaggregation of award criteria

In the majority of the reviewed tender documents, the award criteria are arranged into categories and subcategories. For example, the tender documentation for Nederwiek plot IA (2025) (Ministerie van Economische Zaken en Klimaat, 2025) defines the category “Consumption of raw materials, the environmental impact and the value retention in the design, construction, operation and removal of the wind farm” under which the subcategories “Circular design of a wind farm” and “Circular strategies” are specified. To ensure consistent assessment across tender rounds, each award criterion was

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disaggregated to the lowest level subcategory that was given a unique identifying number in the relevant tender documents. Following this logic, for the case of Nederwiek plot IA (shown in Table 2) "Circular strategies" is considered an award criterion with up to 18 points available (out of a total of 400 for the entire tender round). When the term "award criteria" is used within this paper, it refers to these lowest level subcategories.

Table 2: Extract of multicriteria tender documentation for Nederwiek plot IA (2025) (Ministerie van Economische Zaken en Klimaat, 2025).

		Qualitative measure	Assessment criterion	Pts.
1	Circular design of a wind farm	**1.1 Circular strategies** In the application, the applicant substantiates how the design of this wind farm will focus on each of the following circular strategies: (1) reducing the use of raw materials, (2) substituting raw materials and components, (3) high quality processing of raw materials and (4) extending the lifespan of the components of the wind farm. For each strategy, the applicant must at least address: Why the chosen design is appropriate for the relevant circular strategy; What the total additional costs, rounded to fifty thousand euros, are compared to a design where these design choices for implementing the chosen circular strategies are not applied for this wind farm; and If applied, in which phase of development (Technology Readiness Level) the circular innovations are, and what the expected development is in the next ten years on an annual basis. The applicant undertakes that the design choices described for implementing the chosen circular strategies will be applied for this wind farm.	The applicant does not address a circular strategy in the substantiation.	0
			In the application, the applicant substantiates how the design of this wind farm will focus on a single circular strategy referred to in Section 1.1 of this table.	4.5
			In the application, the applicant substantiates how the design of this wind farm is based on two circular strategies referred to in Section 1.1.	9
			In the application, the applicant substantiates how the design of this wind farm will focus on three circular strategies referred to in Section 1.1.	13.5
			In the application, the applicant substantiates how the design of this wind farm will focus on all four circular strategies referred to in Section 1.1.	18

In cases where points were not given in the tender documentation at the subcategory level, available points at the category level were divided equally between the respective subcategories to give an equivalent level of disaggregation. For example, in Norway's Utsira Nord (2025) tender the total points available are given at the category level. In this case, the points were divided equally between the respective subcategories that fall under each of the categories (e.g. category "sustainability" has a total of 10 points available, these were then divided equally—2.5 points each—between the subcategories of "Minimization of climate footprint", "Coexistence", "Waste, recycling and reuse" and "Nature and environment"). The weighting was calculated for each award criterion by dividing the points available for each the award criterion by the total number of points available across all criteria in the respective tender round.

3.3 Categorisation of award criteria by policy objectives

The specific award criteria used in multicriteria tenders vary between countries and tender rounds. Using the disaggregation approach described in Sect. 3.2, this study compiled 289 award criteria across all the reviewed tender rounds, with over 130 of these being unique—in some cases (e.g. Germany), the same award criteria are used between tender rounds. To facilitate comparison between the different tenders, a qualitative category was assigned to each award criteria and the high level policy

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objectives that they address. This grouping of award criteria is shown in Table 3 along with the respective counts of award criteria across all reviewed tender rounds.

Table 3: Award criteria categories and associated policy objectives used in this study.

Policy objective(s)	Categories of award criteria	Criteria count
Price or cost	Cost estimate (CAPEX, OPEX or LCOE estimate)	11
	Financial offer (royalty payment)	8
	Remuneration level (if subsidy is offered)	6
Project delivery	Experience (of bidders in project development and operations)	60
	Financial capability (of bidders)	22
	Risk evaluation and mitigation	13
	Timing of commissioning	5
	Project delivery (other)	10
Supply chain and workforce development	Skills development and jobs creation	11
	Supply chain investment and planning	13
Energy production and integration	Energy production (installed capacity, forecasted production)	11
	Energy system integration (storage and flexibility measures)	6
	Energy production and integration (other)	1
Sustainability	Collision risk (measures to mitigate bird/bat collisions)	5
	Underwater noise (measures to mitigate underwater noise)	9
	Other biodiversity (habitat restoration, ERC funds etc.)	18
	EOL circularity (component recyclability, reuse etc.)	26
	Materials used (critical materials, sustainable materials etc.)	11
	Greenhouse gas emissions	5
	Pollution (non GHG pollution)	1
	Sustainability (other)	10
Responsible business conduct	Responsible business conduct (due diligence policies)	13
Social acceptance and participation	Coexistence (with local stakeholders)	1
	Co-ownership and revenue sharing	5
Other	Other (criteria that do not fall into the policy objective categories: number of turbines, farm layout, distance to shore etc.)	8

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Detailed descriptions of the individual award criteria that fall into each category can be found in the Supplementary Material Excel workbook (Kerr, 2026). An initial set of policy objectives categories (Project delivery, Energy production and integration, Sustainability and Responsible business conduct) were derived from the award criteria categories specified in the EU's Net Zero Industry Act (European Commission, 2024). Four additional categories (Energy price or cost, Supply chain and workforce development, Social acceptance and participation, and Other) were added to cover the remaining award criteria.

3.4 Categorisation of award criteria by scoring processes and scoring scale

Each of the award criteria was categorised as having a more quantitative or more discretionary scoring process utilising either an absolute or relative scoring scale. As described in Sect. 2.2, if the scoring scale end points for an award criterion are defined in the tender documentation independently of the submitted bids, the scoring scale was classified as "Absolute". If either of the scoring scale end points are defined with reference to the other bids the scale was classified as "Relative". In the case that no scoring scale was available for a criterion—and the tender document did not specify if an absolute or relative scoring scale was used—the scoring scale design was classified as "NA". The classification of a criterion's scoring process as being "more quantitative" was done on the basis of two conditions (1) the criterion having a clearly defined scoring rubric where a formula is present in the tender documentation, and (2) the scoring rubric (if available) is evaluating a quantifiable measure of criterion quality. Any criterion scoring processes that did not meet these two conditions was categorised as "more discretionary". Quantifiable measures of criterion quality are attributes that are clearly measurable (e.g. measurable physical parameters) whereas non-quantifiable measures of quality are not clearly measurable (e.g. reports, strategies). Flow charts describing the full categorization protocols for both scoring process and scoring scale categorisation are presented in Appendix A. The measures of criterion quality considered as quantifiable vs non-quantifiable are detailed in Table A.1.

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4. Results

4.1 Weighting of different policy objectives and number of award criteria

Figure 3 presents the distribution of weightings given to different categories of award criteria in the reviewed tender rounds (see Table 1), grouped by their policy objectives (see Table 3). The weighting represents the proportion of total points available for the award criteria in the respective tender round. This reflects the importance that the public authority places on different criteria (for example in Germany 60% of total points available in every tender round have been categorised within the "Price or cost" policy objective).

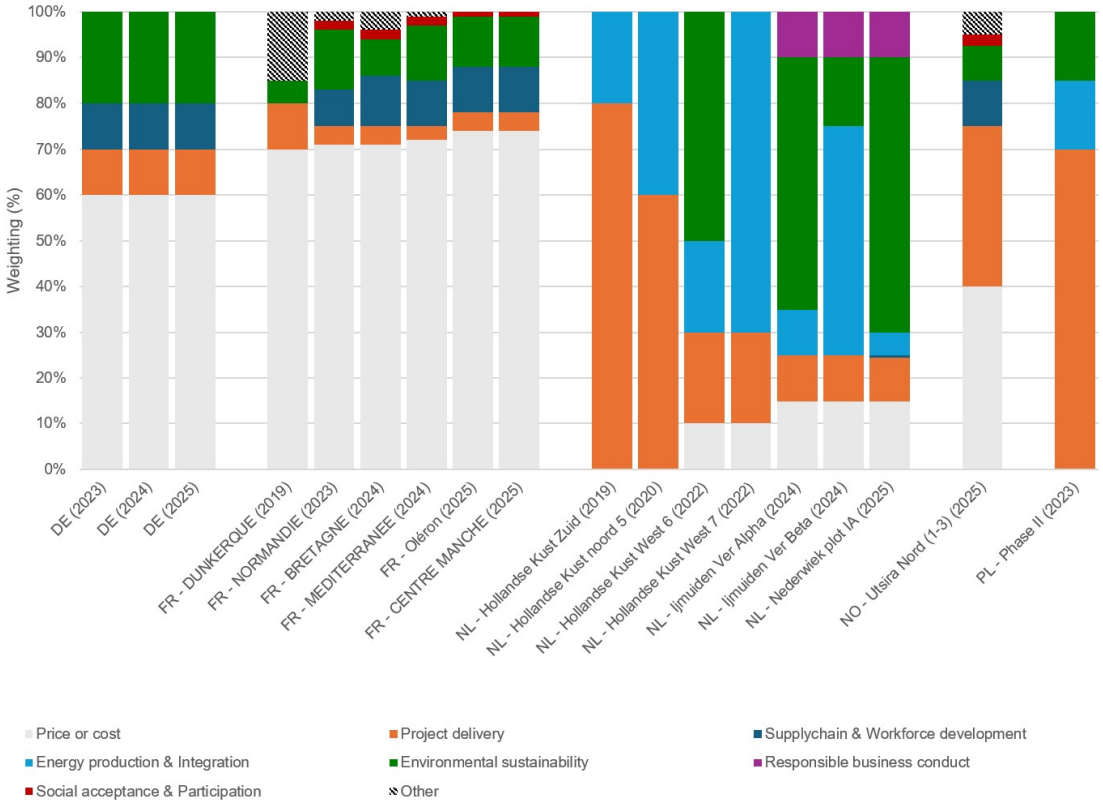

Figure 3: Weightings given to different award criteria (grouped by policy objective) in European offshore wind tender rounds carried out between 2015 and 2025.

Several observations can be made regarding these weightings. Firstly, the policy objectives being pursued through non-price award criteria differ significantly between countries. Several policy objectives, for example "Supply chain and Workforce development", feature prominently in some countries' bid scoring processes (Germany, France and Norway) while being almost absent in others (Netherlands and Poland). The way that these policy objectives have

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developed over time also varies between countries. In Germany identical award criteria have been adopted in all three tender rounds. France has used a similar set of award criteria from 2023 onwards, with incrementally higher weighting applied to "Price or cost" and "Environmental Sustainability" related criteria. Conversely, in the Netherlands substantial changes have been made to award criteria and weightings over time, with early tender rounds dominated by criteria related to "Project delivery", while recent rounds have emphasised criteria related to "Environmental sustainability" and "Energy production and Integration". A common feature across countries, with the exception of Poland, is the inclusion of "Price or Cost" award criteria. In France, this criterion holds a particularly dominant weighting due to state aid rules mandating a maximum 30% weighting for non-price criteria. The inclusion of these "Price or Cost" criteria allows, in certain cases, an implicit estimation of the monetary value placed on a point by the public authority (Ciaccia et al., 2010). As covered in the discussion section, this can provide an indication of whether the value per point has been calibrated in a consistent way between criteria.

Figure 4 presents the counts of award criteria—disaggregated following the method described in Sect. 3.2—included in each tender round. This presents a measure of the level of complexity of the bid scoring processes.

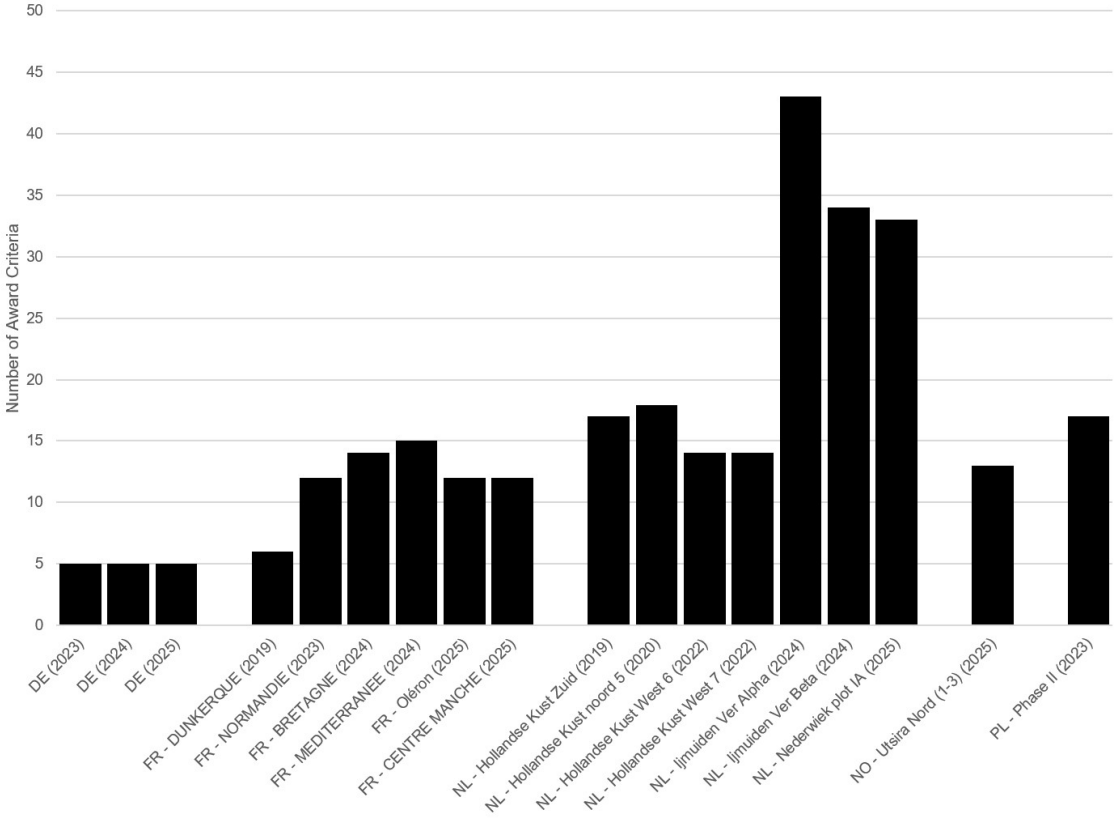

Figure 4: Number of award criteria included in European offshore wind tender rounds carried out between 2015 and 2025.

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From Fig. 4, a general trend of the bid scoring process becoming more complex over time can be observed. This is especially clear in the Netherlands, with recent rounds including over 30 separate award criteria. As covered in the discussion section this increasing complexity may present issues regarding information costs and tender timelines, both for the developers submitting bids and the public authorities that assess these bids.

4.2 Bid scoring process design

Figure 5 shows the design of the award criteria scoring processes, where each point represents an individual tender round (see Table 1). The x-axis of Fig. 5 shows the percentage of total points available in each tender round that were scored using a relative scale. The y-axis shows the percentage of total points available in each tender round that were scored using a "more quantitative" scoring process (see Sect. 2.1).

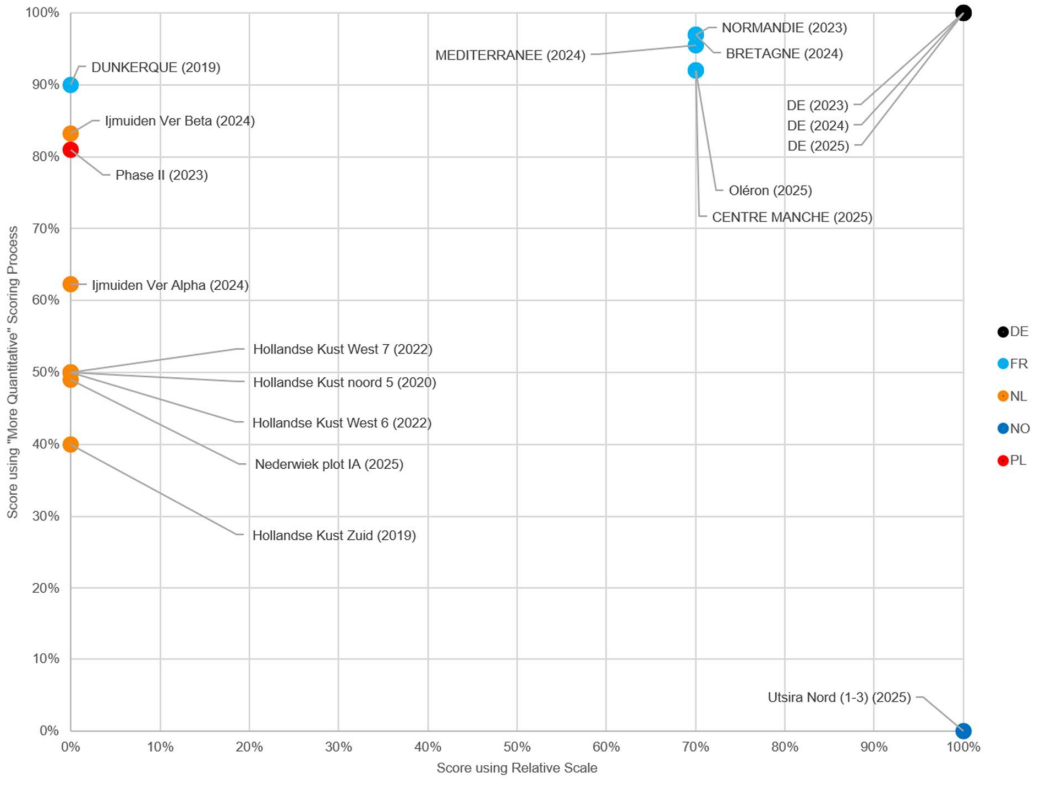

Figure 5: Award criteria scoring processes used in European offshore wind tender rounds carried out between 2015 and 2025. The y-axis shows the percentage of total tender score (for each tender round) that is awarded using a "more qualitative" scoring process, x-axis shows the total percentage of total tender score that is awarded using a relative scoring scale.

As shown in Fig. 5, all award criteria in the Dutch and Polish tender rounds were scored using absolute scales, whereas those in the German and Norwegian rounds were scored exclusively using relative scales. France—with the

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exception of the Dunkerque (2019) tender round—applied relative scales to the criterion of strike price and absolute scales to all remaining criteria. As highlighted in Sect. 2.1, the use of relative scoring scales with pre-defined criteria weights is generally not appropriate when using the WSM, as it does not allow calibration of consistent value per point between award criteria. This issue is elaborated on in the discussion section. Regarding the use of quantitative or discretionary scoring processes, all German tender rounds used scoring processes that were "more quantitative" in nature, while in Norway, the scoring processes were all "more discretionary" in nature. The Dutch, Polish and French tender rounds each included a mix of "more quantitative" and "more discretionary" scoring processes across different award criteria.

5. Discussion

5.1 Selection of award criteria

A clear observation from this analysis is the heterogeneity of award criteria that are included in offshore wind tender processes, both between countries and between tender rounds within countries. This is not necessarily an issue, as the types of criteria that individual countries choose to emphasise in their tender processes will reflect differing national policy priorities (Iglesias et al., 2011). A significant challenge, however, is the variety of standards and calculation methodologies used to evaluate similar criteria in different tender processes at present. A clear example of this is the award criterion of rotor or generator magnet recycling, which has been included in recent Dutch, Norwegian, French and Danish (as a pre-qualification criterion) tenders. The Netherlands, Norway and Denmark have used recyclability rate (mass of recycled materials from the recycling process divided by the mass of the original product (Dansk Standard, 2019)) as their recycling criterion, while France uses collection rate (mass of materials entering a recycling process divided by the mass of the original product (Haupt et al., 2017)). The Netherlands and Denmark both base their recycling criteria on the EN 45555 standard (although with different adjustments). Norway and France do not reference a specific standard in their tender documentation. Recycling is therefore defined in four different ways across these countries' tenders. This presents a situation where an end-of-life treatment may meet the definition of "recyclability" in one region, but not in another. This proliferation of standards poses a significant issue for supply chains operating across multiple countries—for example, turbine manufactures, component suppliers, and the recycling industry. This, in turn, reduces the potential for economies of scale, limiting European wide supply chain efficiency. To this end, both the European Commission (European Comission, 2024; European Commission, 2025b) and industry bodies (Wind Europe, 2025a) have recently proposed harmonisation of methodologies for commonly used non-price criteria in European offshore wind tenders.

A second challenge, associated with criteria selection, is the increasing complexity of multicriteria tender design. In principle, including additional award criteria allows public authorities to fine tune their bid scoring processes to better capture the externalities, and therefore overall social value, of offshore wind projects. However, a balance must be struck with this fine tuning and the practical issues of increased information costs and tender process timelines (both for the bid preparation and assessment). Complex tender processes inevitably make bid preparation more expensive and time consuming, representing a significant sunk cost for unsuccessful bidders (Portela de Carvalho, 2025). This may have the effect of reducing tender competition by discouraging participation of smaller developers who are less able to absorb these costs (Haelg, 2020; Kiefer, 2024). Similarly, significant expense and time commitment are also incurred on behalf of the public authority that evaluates these bids. For example, the bids received in the Hollandse Kust West 6 multicriteria tender, which utilised a large number of complex award criteria, took a technical committee at the Dutch regulator over six months to assess (Jansen et al., 2025). These additional information costs and delays should be considered by the authorities designing the multicriteria tender (Che, 1993) to ensure that they are properly balanced against the potential benefits of including a more diverse set of criteria.

Another potential issue is the inclusion of criteria that are based on characteristics of the bidders rather than the proposed projects. These criteria may be justifiable, for instance favouring experienced bidders has been demonstrated to increase project realisation rates (del Río and Kiefer, 2023). However, other award criteria based on the bidder's characteristics may serve the purpose of protectionism (Portela de Carvalho, 2025) rather than characterising the value of a particular bid. For

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example, the Phase II Polish tender round included an award criterion based on the share of non-renewable electricity produced by the bidder or capital group in the previous year. Given that Polish electricity supply has a significantly higher share of fossil fuel generation in comparison to the EU average (EMBER and Our World in Data, 2026) this criterion may serve as a form of protectionism by reducing the competitiveness of non-domestic bidders.

5.2 Criteria scoring processes

A second set of challenges are those associated with the design of the other elements of the bid scoring process, namely the award criteria scoring processes and weightings. An issue present in several countries' award criteria scoring processes (France, Germany and Norway) is the use of relative scoring scales in combination with predefined criteria weightings. As highlighted in Sect. 2.1, designing a criteria scoring process in this way cannot guarantee that the value to the public authority per point is equal across all award criteria. When combined with the Weighted Sum Method, this results in a bid scoring process that does not necessarily rank bids on the basis of value to the public authority. This represents a fundamental challenge in the design of these tender processes. This could be addressed by either adopting absolute scoring scales, or applying a correction to the criteria weights based on the range of received bids (Monat, 2009). Other challenges related to the use of relative scales include the potential for collusion between bidders to manipulate the scoring process (Dini et al., 2009) and a lack of clarity to the bidders, which may reduce the efficiency of bids (Ciaccia et al., 2010). Challenges also exist in using discretionary criteria scoring process, which are utilised to an extent in all countries' tenders with the exception of Germany. While these discretionary scoring processes may be appropriate for certain complex criteria which cannot easily be quantified, they present several drawbacks (Ciaccia et al., 2010). Firstly, the same issue of clarity to bidders exists as with relative scales, which may reduce bid efficiency (Ciaccia et al., 2010; Dini et al., 2009; IRENA, 2019). The opaque nature of discretionary scoring processes can also introduce issues around perceived procedural fairness (IRENA, 2026, 2019). For these reasons, the use of quantitative scoring processes utilising absolute scales are recommended in several academic publications (Ciaccia et al., 2010; Dini et al., 2009; Monat, 2009), by intergovernmental organizations (IRENA, 2026, 2019) and the European Commission (European Comission, 2024; European Commission, 2025b).
A final discussion point is related to the weightings given to different award criteria. The correct calibration of these weights is essential to ensure that the value per point is equal between different award criteria. Given that the choice of criterion weightings reflects the—undisclosed—value that the public authority places on each award criterion, any judgement made about the appropriateness of these weightings is inferred. However, in cases where tender processes include a financial offer, the equivalent monetary value per point to the public authority in each award criteria can be estimated (Ciaccia et al., 2010). This can provide a good indication of whether the criteria weightings have been calibrated in an appropriate manner. For example, in the Nederwiek plot IA tender, a maximum of 60 points were available to the bidder by making a royalty payment of 150 million EUR per year, from 2031 to 2065. This corresponds to a present value per point of around 36 million EUR_{2025} for this criterion[12]. If the criteria weightings are calibrated correctly, we would therefore expect the value of a point obtained in any of the other award criteria to represent 36 million EUR_{2025} to the public authority. If we again take the example of rotor recyclability, to score a maximum of 18 points in this criterion, a bidder must develop a non-binding recycling plan that achieves a recyclability rate of 70% or more. It may be reasonable to question if this non-binding recycling plan represents an equivalent value of almost 650 million EUR_{2025} to the public authority. This may indicate that, in this example, the weighting assigned to the rotor recyclability criterion is too high in this tender and should be adjusted accordingly in future rounds.

6. Conclusions

This paper carried out a cross-country critical analysis of the bid scoring processes utilised in offshore wind multicriteria tenders in France, the Netherlands, Norway, Germany and Poland between 2015 and 2025. This analysis compiled 289 award criteria across the reviewed tender rounds, which were then systematically categorised by their policy objectives and

[12] When assuming a 2% inflation rate and the Dutch government's 2.25% social discount rate (Groom et al., 2022).

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criteria scoring process design. The results of this analysis illustrate substantial differences in how these bid scoring processes have been implemented across European countries. Four main conclusions can be drawn from this analysis:

- First, there is significant heterogeneity in the type of award criteria being used in different countries' multicriteria tenders. This is not inherently a problem as these criteria reflect differing policy priorities, both between countries, and over time. However, at present, there is a lack of standardisation in how certain types of criteria (for example, recyclability) are defined. Complying with these varying standards may pose an issue for companies operating across multiple European countries, limiting economies of scale and supply chain efficiency.
- Second, a trend of increasing complexity (number of award criteria) is observed in the multicriteria tender design over time. Inclusion of additional award criteria allows countries to fine tune their bid scoring processes to better capture the social value of an offshore wind project. However, this also presents significant drawbacks regarding increased tender costs and timelines, both for bid preparation and evaluation. These benefits and drawbacks of increasing scoring process complexity must be considered in future tender design, especially if the trend of increasingly complex tender processes continues.
- Third, heterogeneity is also observed in the criteria scoring processes. There is considerable variation between countries' use of either more quantitative or discretionary scoring processes and either absolute or relative scoring scales. A particular challenge is presented by the adoption of relative scoring scales when combined with pre-determined criteria weights (used in Norway, Germany and France). This approach is inconsistent with the theoretical basis of the Weighted Sum Method and may result in bids not being ranked based on maximum value offered to the public authority.
- Fourth, public authorities face a challenge to correctly calibrate criteria weightings. These weightings should be calibrated to ensure the value per point to the public authority is consistent between different award criteria. At present, there are cases where criteria weightings appear not to meet this condition, therefore unduly favouring certain criteria.

Based on these findings the following recommendations can be made for future research:

- **Criteria selection.** This study presents a systematic review of the award criteria that have been utilized in multicriteria offshore wind tenders. Future work should aim to evaluate the suitability of existing non-price criteria and make recommendations about new criteria for inclusion in future tenders. This should take into account both subject matter specifics (for example there are many definitions of recyclability (Caro et al., 2023; Kerr et al., 2026) that could be used as a blade recyclability criteria, each providing different incentives to bidders) and tender applicability considerations (such as criterion contractability (Dini et al., 2009) and compatibility with quantitative scoring processes). This would assist policymakers in selecting criteria that are both well aligned with their policy objectives and are operationalizable within tender frameworks.
- **Scoring scale and criteria weighting design.** This study provides a detailed diagnosis of the limitations in existing multicriteria tender scoring process design. Further work should extend this to assist in the designing of future tender processes that overcome these limitations. Firstly, further work could map out the effects that different multicriteria tender design elements have on key tender effectiveness measures and bidder behaviour, similar to the approaches taken by Del Rio et al., Fleck et al. and Haelg (Fleck and Anatolitis, 2023; Haelg, 2020; del Río, 2017) for generic RE tenders/auctions. These effectiveness measures could include, for example, correct bid ranking, maximization of received bid value, minimisation of information costs and process transparency. This would create a framework for policymakers that illustrates the limitations and trade-offs inherent in different multicriteria tender designs. A second avenue for further research is investigating the use of multicriteria decision making frameworks (MCDM) to assist in setting criteria weights (Liu, 2000). This would support policy makers in designing criteria weightings that reflect their preferences and are not biased towards particular criteria (ensuring consistent value per point between criteria).
- **Empirical analysis of multicriteria tender outcomes**. This study has carried out a comprehensive review of the design of multicriteria tender scoring processes for offshore wind. Future work should extend this to empirically evaluate the outcomes of these tenders on measures of tender outcome effectiveness. This analysis would provide empirical evidence for the effectiveness of multicriteria tender processes, for example, in comparison to price-only tenders. As such, it could assess the extent to which multicriteria tenders achieved their stated objectives, including

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cost efficiency, project deliverability, environmental sustainability, supply-chain development, and broader social value creation. Previous work in this area has suffered from limited sample size on the results of multicriteria tenders (Anatolitis et al., 2022). However, the increased adoption of multicriteria tender processes is likely to address these data limitations in coming years.

- **Counterfactual assessment of scoring process design.** Expanding on the two previous recommendations, future research could develop an integrated assessment framework to undertake counterfactual analyses of alternative scoring process designs. Such analyses could evaluate how different criteria weights, scoring functions, and non-price criteria influence bidder behaviour and affect bid rankings, project selection outcomes, and overall tender effectiveness. Potential methodological approaches include counterfactual auction simulations based on historical tender data, agent-based models of bidder behaviour, and *ex ante* policy evaluation frameworks that assess alternative scoring process designs against predefined effectiveness metrics.

To summarise, multicriteria tender processes have already seen extensive use in the European offshore wind sector for seabed lease and remuneration allocation. These processes allow for a more holistic evaluation of the social value offered by offshore wind projects, by internalising non-price attributes that are not considered in price-only tenders. However, if designed poorly, they may represent a less efficient, or even theoretically flawed way of selecting tender winners. Going forward, lessons learned from the design of existing multicriteria tender scoring processes as highlighted in this paper should be incorporated into tender design to improve the efficiency and validity of these processes.

Appendix A. Criteria categorization flow charts

A.1 Categorisation by criteria scoring process

The flow chart presented in Fig. A.1 shows how award criteria were categorized based on their scoring process. The two categories are “More Discretionary” or “More Quantitative”. The decision gate 1 separates criteria based on if they have a scoring rubric. A scoring rubric is defined as a function which is included in the tender documentation that translates quality in the criterion into a score. Binary Yes/No and piecewise functions also meet this definition.

Decision gate 2 separates criteria based on if the unit of measurement for criteria quality (q_i) is “Quantifiable” or a “Non-quantifiable”. This is required as some award criteria scoring rubrics are used to evaluate quantifiable measures of quality (e.g. the installed capacity of the wind farm) while others are used to assess criteria with non-quantifiable measures of quality (e.g. number of sustainability strategies). The units of measurement for criteria quality that are categorized as “Quantifiable” and “Non-quantifiable” are described in Table A.1.

The categorisations of each criterion under decision gates 1 and 2 are available at DTU data (Kerr, 2026).

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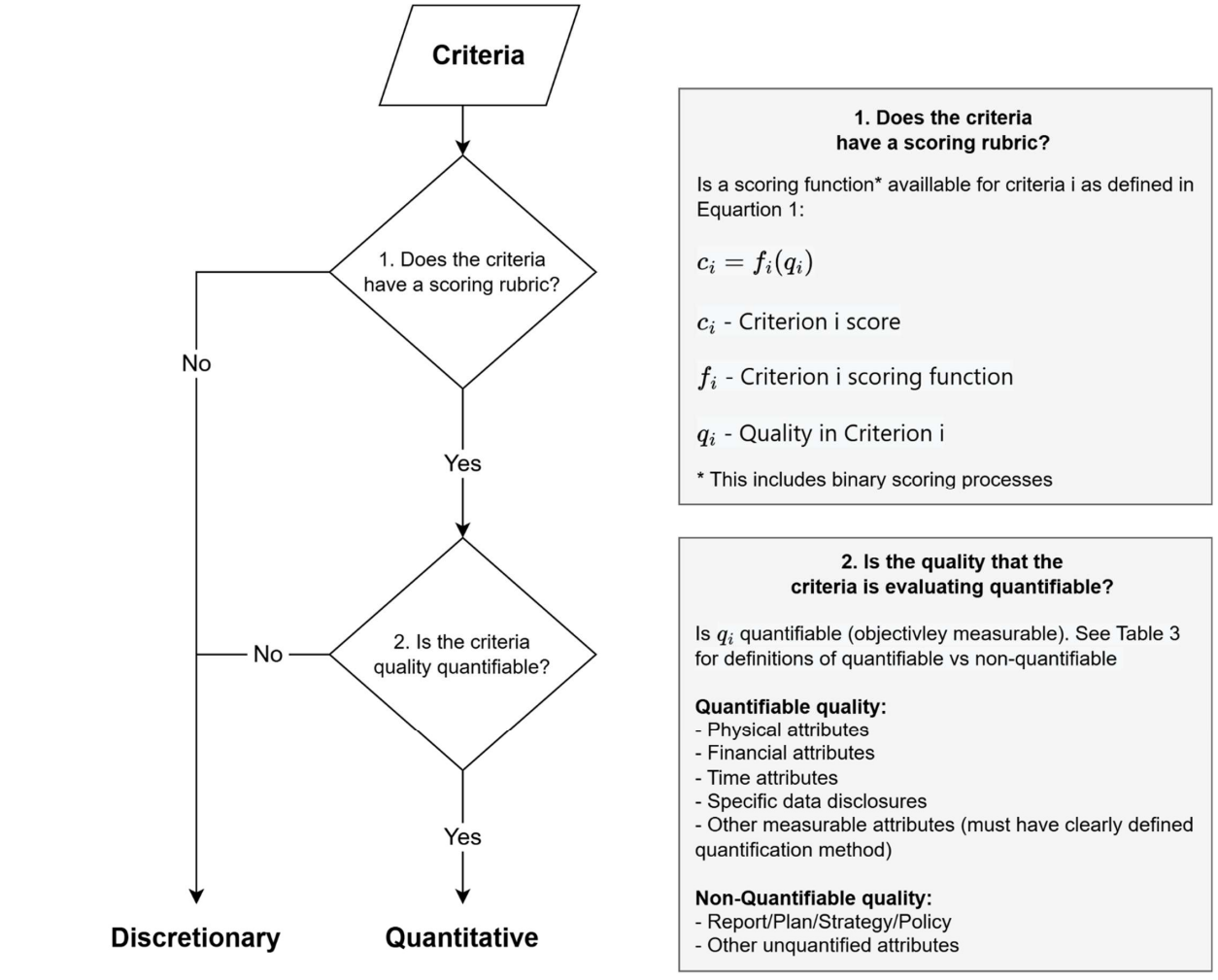

Figure A.1: Process used to categorise award criteria scoring processes as "More Discretionary" or "More Quantitative".

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Table A.1: Process used for categorising award criteria scoring processes based on the unit of measurement (UoM) of criteria "quality" (see decision gate 2 Fig.A.1). UoM is Unit of Measurement.

Quantifiable vs Non-quantifiable	***UoM for criteria "quality"***	***Descriptions***
Quantifiable	Physical parameter	Capacity of offshore wind (and components) installed/operated.
		Installed capacity (windfarm and co-located technology)
		Power production estimates.
		Material specifications (mass and type).
		Physical dimensions of wind farm (layout and turbines).
		Underwater noise threshold days exceeded.
		Use of specific technologies (curtailment, ADLS, specific foundation types).
		Recyclability and collection rates.
	Financial parameter	Royalty payment.
		Debt/equity ratio.
		Strike price.
		Spending on funds (ERC etc.).
		Targeted spending (suppliers, technology etc.).
		Equity offered.
		Financial guarantees & credit ratings.
		DSCR.
	Time parameter	Time to connect to grid.
	Specified data disclosure	Publishing specific data associated with wind farm.
	Other measurable parameter	Employment (internships etc.) offered (in hours or numbers of employees).
		Certificates and approvals (audits, planning permission).
		LCA evaluation of GWP and other impact categories.
Non-quantifiable	Report/Plan /Strategy/Policy	Policy (due diligence policy etc.)
		Strategies (circularity etc.).
		Reports.
		Plans (including descriptions of measures).
	Other unquantified parameter	Wind farm design descriptions.
		Description of (unspecified) measures to achieve an objective.
		Credibility evaluations (of technologies, cost estimates etc.).
	No rubric	Criterion does not have a rubric.

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A.2 Categorisation by criteria scoring scale

The flow chart presented in Fig. A.2 shows how criteria were categorized based on their scoring scale. The three categories are “Absolute” or “Relative” or “NA”. The decision gate 1 separates criteria based on if they have a scoring rubric (see Fig. A.2). Decision gate 2 separates criteria based on if both end points of the scoring scale used in the scoring process are defined in the tender documentation *without* reference to the submitted bids. Decision gate 2 separates criteria based on if either of the end points of the scoring scale used in the scoring process are defined in the tender documentation *with* reference to the submitted bids. In the case that the criterion does not have a scoring rubric, some tender documents specify elsewhere that all criteria are scored on an absolute or relative scale—this is described in decision gates 4 and 5.

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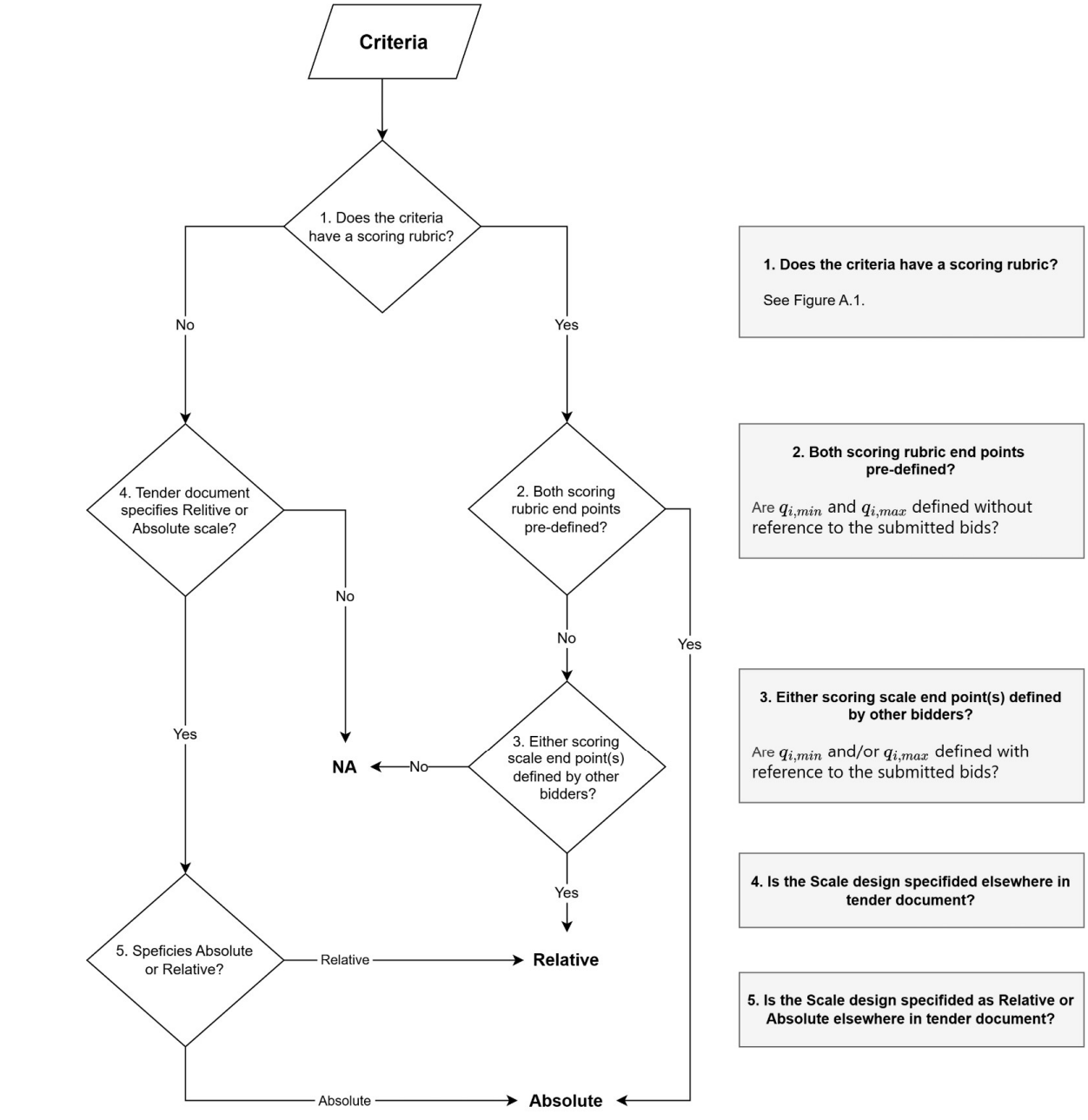

505 **Figure A.2: Process used to categorise award criteria scoring scales as "Absolute" or "Relative" or "NA".**

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Appendix B. Pros and cons of different scoring process designs

Table B.1 provides a summary of the pros and cons of different criteria scoring process designs. A short description of each of these is given in the text following the table.

Table B.1: Summary of Pros and Cons of different award criteria scoring process designs based on (Ciaccia et al., 2010; Dini et al., 2009; IRENA, 2026, 2019; Jansen et al., 2025)**.**

	Absolute scale	**Relative scale**
Quantitative	Pros: • High predictability to bidders • Consistent value per point* • Simple bid evaluation (*ex post*) • High process transparency Cons: • Low flexibility for complex criteria • Complex scoring process design (*ex ante*)	Pros: • Simple scoring process design (*ex ante*) • Simple bid evaluation (*ex post*) • High process transparency Cons: • Low predictability to bidders • Inconsistent value per point** • Low flexibility for complex criteria • Bidder collusion possible
Discretionary	Pros: • Flexibility for complex criteria • Consistent value per point* • Simple scoring process design (*ex ante*) Cons: • Low predictability to bidders • Complex bid evaluation (*ex post*) • Low process transparency	Pros: • Flexibility for complex criteria • Simple scoring process design (*ex ante*) Cons: • Low predictability to bidders • Inconsistent value per point** • Complex bid evaluation (*ex post*) • Bidder collusion possible • Low process transparency

* When using the WSM with pre-defined criteria weights it is possible to calibrate this scoring process so that the value per point is consistent between criteria.

** When using the WSM with pre-defined criteria weights it is not possible to calibrate this scoring process so that the value per point is consistent between criteria.

Predictability to bidders

Predictability describes if the bidders can predict *ex ante* how a level of quality offered in a criterion will translate into a score. Higher predictability allows bidders to more efficiently optimise their bid and maximise the value they offer to the public authority (Ciaccia et al., 2010; Dini et al., 2009).

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Consistent value per point

Consistent value per point between criteria is a requirement for the WSM to correctly rank bids based on their value to the public authority. Some processes cannot be calibrated to ensure consistent value per point between criteria.

Scoring process design (ex ante)

Scoring process design is more complex if both quantitative measures of criterion quality and the scoring scale must be defined in advance of the tender (this is the case for quantitative scoring processes using absolute scales) (Dini et al., 2009).

Bid evaluation (ex post)

Processes that use a formula to translate quantitative measures of criterion quality into a score can use a simple "automatic" bid evaluation. Processes that require discretionary expert judgment to translate quality in a criterion into a score have a more complex bid evaluation (Dini et al., 2009; Jansen et al., 2025).

Flexibility

Scoring processes with a discretionary element are more flexible as they allow *ex post* assessment of aspects of complex criteria that are not explicitly defined *ex ante*. This may enable more accurate bid ranking *ex post* in the case of complex criteria (Dini et al., 2009). Quantitative scoring processes are by nature not flexible (Ciaccia et al., 2010; Dini et al., 2009).

Transparency

In discretionary processes, the way in which bids are scored may be opaque. This can be perceived as unfair by bidders who may question the process legitimacy (IRENA, 2026, 2019).

Bidder collusion

Processes where criterion scores depend on the range of submitted bids are open to collusive behaviour between bidders (Dini et al., 2009).

Code and data availability

All primary data collected in this study is available at DTU data (Kerr, 2026).

Author contributions

Paul Kerr: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visu-alization, Writing – original draft, Writing – review and editing.

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Anastasia Ioannou: Conceptualization, Supervision, Writing – review and editing.

Competing interests

One of the (co-)authors is a member of the editorial board of Wind Energy Science

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