

# **DRAFT economic Terms and Conditions (T&C) of the 2023 Innovation Fund Pilot Auction for renewable hydrogen production**

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## Background and auction objectives

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The Innovation Fund (IF) is one of the world's largest funding programmes for the demonstration of innovative low-carbon technologies. The Fund aims to demonstrate and commercialise industrial solutions to decarbonise Europe and support its transition to climate neutrality. Financing of the IF is provided by revenues from the EU Emission Trading System (ETS) and remaining funds from the NER300 programme. Until now, the IF has used a selection procedure based on multiple award criteria defined in its legal basis and call-specific scoring and ranking mechanisms.

The revised ETS Directive foresees the introduction of competitive bidding mechanisms (i.e. auctions) to award funding. The objectives of the competitive bidding mechanism are fourfold:

- Cost efficient way of distributing financial support. Auctions have been a major success story in the power sector in many Member States<sup>1</sup>, bringing down the support costs for renewable power by magnitudes.
- Price discovery and market formation. As long as there is sufficient competition, auctions can reveal the "real" price of the private sector of engaging in a certain activity. This creates valuable data points for the public sector but also helps to create markets where there are none yet, by providing a vetted price point.
- De-risking projects and leveraging private capital into them.
- Reduced administrative burden for projects and the contracting authority.

With the RePowerEU Plan<sup>2</sup> to reduce dependence on Russian fossil fuels, the EC explicitly states renewable hydrogen uptake in industrial processes as a central measure to reduce fossil fuel consumption in hard-to-abate industrial sectors. Derived from that, the first pilot auctions under the IF will target renewable hydrogen production and transition to hydrogen-based production processes in new industrial sectors. As hydrogen can be used as an energy carrier in many sectors and appliances across the energy system, a cross-sectoral perspective is still ensured. This was confirmed in the Green Deal Industrial Plan<sup>3</sup> that announced the launch of the first auction for renewable hydrogen production for autumn 2023, with a budget of EUR 800 million allocated to be paid out as a fixed premium. The European Hydrogen Bank Communication<sup>4</sup> indicated further elements of the economic design and outlined the idea of "auctions as a service" that could award additional projects with national contributions. After the pilot auctions on renewable hydrogen production, low-carbon hydrogen could be targeted. Possibly, Carbon Contracts for Difference could be auctioned for the industrial sectors.

Consequently, a competitive bidding mechanism aiming at renewable hydrogen production and uptake in industry was developed by the Commission services, supported by a project team including Fraunhofer ISI, Guidehouse, ICF and BBH.

For the first pilot auction rounds of the IF competitive bidding mechanism, a supply-side auction for supporting hydrogen production based on a fixed premium was chosen in the light of stakeholder feedback and consulting work that will be published. The auctions aim at ramping up hy-

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<sup>1</sup> Competitive auctions are the recommended type of support under Climate, Energy and Environmental State Aid Guidelines.

<sup>2</sup> European Commission (2022): REPowerEU Plan. COM/2022/230 final.

<sup>3</sup> European Commission (2023): Green Deal Industrial Plan. COM/2023/62 final

<sup>4</sup> European Commission (2023): European Hydrogen Bank. COM/2023/156 final

drogen production in line with the REPowerEU Plan, the Green Deal Industrial Plan and the European Hydrogen Bank objectives. The proposed auction design elements for these pilot supply side auctions are outlined in the following tabular overview.

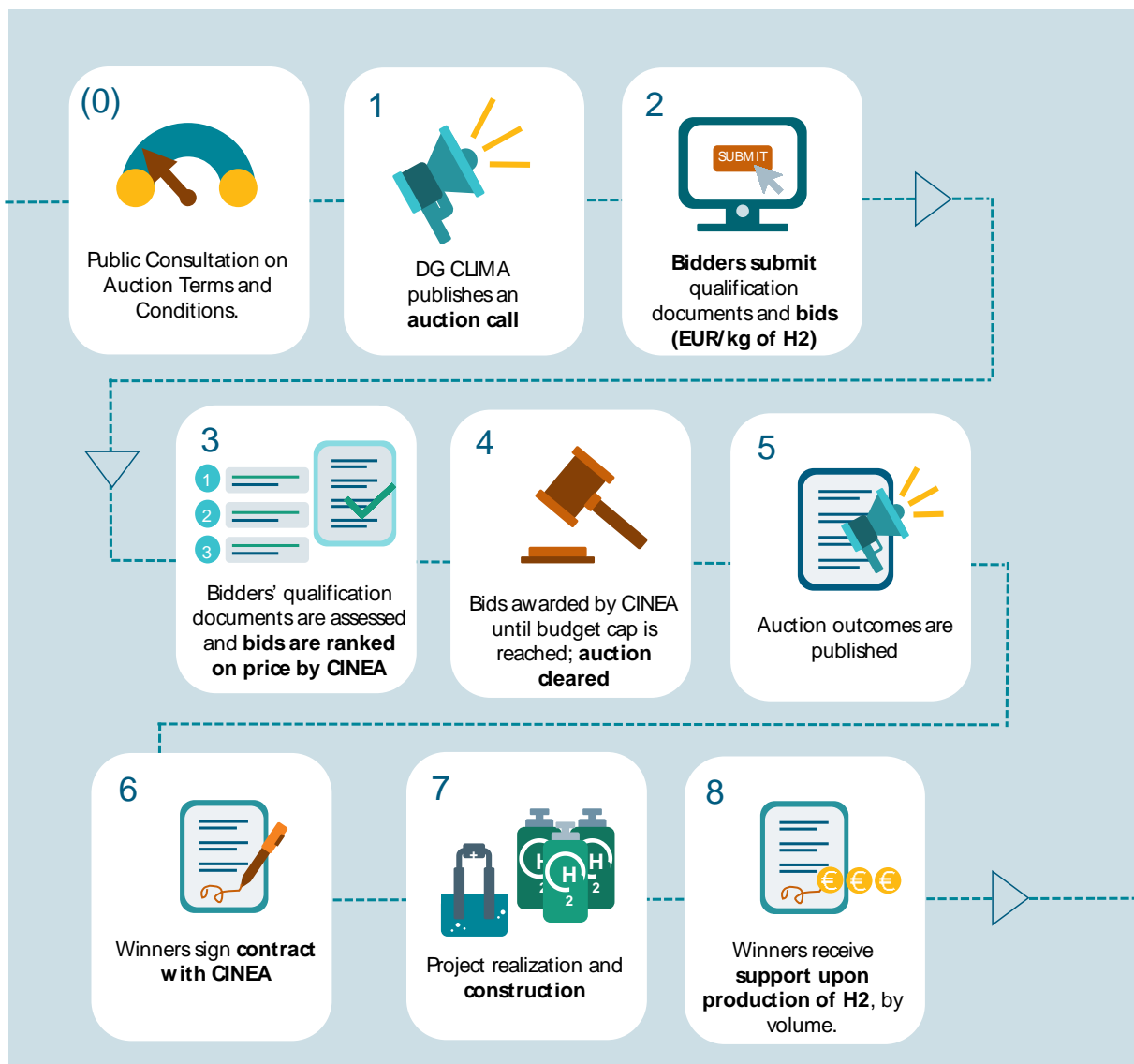
## Overview of auction design elements

In the following, the proposed auction design elements determining the pilot hydrogen supply auctions of the IF are presented in a tabular overview. In order to facilitate orientation, the design elements have been split into five categories:

- I. General auction design elements
- II. Qualification requirements
- III. Auction procedure
- IV. Obligations, deadlines and penalties
- V. Auction framework conditions

Figure 1 gives an overview of the auction process for the IF pilot auctions.

**Figure 1: Innovation Fund pilot auction process**



## I. General auction design elements

**Table 1: Overview of design elements for the IF competitive bidding mechanism - general design**

No.	De- sign ele- ment	Short description and options	Concrete imple- mentation in the IF pilot auc- tions	Why this choice?
(1.0)	Objective of the auction	Objective of the auction is essential for defining the key auction features.	To cost-efficiently support the production of renewable hydrogen and ensure connection of supply with European off-takers.	This corresponds to the policy priorities outlined in the RePowerEU and Green Deal Industrial plans.
1.1	Auc- tioned good	The auctioned good is the product of the auction to be subsidised/supported by the auctioneer. In the context of the IF pilot auction, this could be <b>hydrogen produced/ demanded or electrolyser capacity installed</b> .	Renewable hydrogen in line with requirements put forward in RED II Delegated Regulations	Political decision to use Innovation Fund auctions to help reach RePower EU targets on renewable hydrogen.
1.2	Con- straining value	The constraining value in the auctions for hydrogen could be the <b>installed electrolyzer capacity</b> , the <b>hydrogen produced</b> or the <b>budget available</b> .	Auction budget will be constraining value and will	Budget in the auction has a hard cap. Transparent and deliberated budget gap ensures that there is competition.

No.	Design element	Short description and options	Concrete implementation in the IF pilot auctions	Why this choice?
			be known in advance.	See correction measures regarding under-subscription in point 3.10.
			Based on budget constraint and bidding prices, the volume of awarded RE H2 will be identified.	
1.3	Support type	The remuneration auctioned for a project can be either <b>capacity-based</b> (e.g. payment for each installed MW of electrolyser capacity) or <b>output-based</b> (e.g. payment for each unit of hydrogen produced). In principle, it can be restricted to certain cost types (e.g. investment expenditures or operational costs).	Output-based support (payment per unit of verified and certified production).	Ensures that objectives of the scheme (incentivising RE H2 output) are achieved.
1.4	Reference price	(Carbon) contracts for difference require the definition of reference market values, which is particularly challenging in the absence of liquid markets.	No reference price needs to be defined for a fixed premium auction (see 1.5).	Non-liquid hydrogen market makes it too difficult to find a reference price that substantially reduces risk.
1.5	Support form	The support form defines the details of the payment. There are several options for operational support including <b>feed-in tariffs</b> (fixed payments covering all	Fixed premium	Preference of stakeholders, ease of implementation in the regulatory environment of the EC, absence of H2 reference market

No.	Design element	Short description and options	Concrete implementation in the IF pilot auctions	Why this choice?
1.6	Limits to profitability of guaranteed support	<p>costs), <b>fixed premiums</b> (covering only part of the costs and require to sell the product on the market), one-sided (without payback) or two-sided (with payback) <b>contracts for difference</b>.</p> <p>Fixed premium is regarded as a form of guaranteed support.</p> <p>Claw-backs to profitability could be envisaged (e.g. if hydrogen producers achieve a better offtake price during the payment period, part of the upside could be clawed back) or alternatively strong competition in line with CEEAG recommendations needs to be ensured.</p>	<p>Ensuring competition by: market testing, hard budget cap and feedback on level of competition from one round to another.</p> <p>No claw-backs.</p>	<p>price, transparency of auction. Lower provisioning costs for EC resulting in higher funding volumes available earlier.</p> <p>This approach will ensure sufficient levels of competition from one auction round to another.</p>
1.7	Ranking of bids	<p>Auction ranking criteria can be <b>price-only</b> or include <b>additional decision criteria</b> (for <b>multi-criteria</b> auctions).</p> <p>After the bids are received, their qualification documents are assessed (see point 2.1-2.2), the auctioneer ranks the bids that passed qualification on price and awards the bids from lowest to highest.</p>	Price-only ranking	Cost-efficiency, speed, transparency and legal robustness.

No.	Design element	Short description and options	Concrete implementation in the IF pilot auctions	Why this choice?
1.8	Bid components	The bid components are the pieces of information that the bidder needs to provide in the auction. Besides information on the auctioned good and bid price, other bid components can be included. This design element does not include qualification requirements, which are discussed in point 2.1-2.2.	<p>Fixed premium required in EUR/kg of hydrogen production (basis for bid ranking),</p> <p>Planned average annual production over 10 years that would benefit from fixed premium (basis for the calculation of overall project support) in volume of hydrogen per year,</p> <p>Capacity of electrolyser (GW<sub>el</sub>) to be certified as being fully operational at Entry into Operation.</p>	Information necessary for clearing the auction, calculating support requirements per bidder and ensuring the budget cap is met.
1.9	Minimum and maximum yearly	Minimum and/or maximum production thresholds can be set to determine the range in which bidders can define their planned production. Minimum thresholds can	No limits for the planned produc-	Variety in size or other features of hydrogen production projects is expected. The



No.	Design element	Short description and options	Concrete implementation in the IF pilot auctions	Why this choice?
1.10	Banking and borrowing	<p><b>Banking of support</b> can reduce risks and allow for more flexibility by moving support to later years e.g. if an off-taker faces difficult market situations and hydrogen production is paused. <b>Borrowing</b> describes the opposite mechanism.</p>	<p>Yearly production can be increased by 30% compared to plan. Production above 130% compared to plan is possible but not supported. Support is restricted to 100% over the overall project volume. Support disbursement terminates the earlier of ten years after entry into operation or</p>	<p>Balance between budget provisioning and flexibility of production. No hard sanctions in case of slightly lower or higher production (within limits foreseen). Operational support and hydrogen offtake agreements are deemed sufficient to incentivise production up to 100%. If more hydrogen can be produced in line with requirements for renewable hydrogen and electricity grids, this is beneficial for the programme.</p>

No.	Design element	Short description and options	Concrete implementation in the IF pilot auctions	Why this choice?
1.11	Support duration (disbursement period)	<p>The duration of support needs to be defined and can be based either on a <b>temporal span</b> (i.e. years), a <b>certain project output</b> or a <b>maximum support budget</b>. These options can also be combined. Budget limits can be beneficial for the provider of support, whilst they tend to increase the risks for investors.</p>	<p>when the overall financial support is reached (if on average the project produces more than 100% per year (see below) and the total production volume is met earlier).</p> <p>See also 4.2. for severe underperformance leading to termination of the contract.</p> <p>Limitation to a maximum of 10 years duration for disbursement of support after Entry into Operation of projects.</p>	<p>Long project lifetimes requires long support period to sufficiently de-risk the projects.</p> <p>While the practice for renewables projects is 10-15Y, limiting support disbursement period helps to address the possibility of overcompensation due to choice of fixed premium (on immature market of hydrogen).</p>

No.	Design element	Short description and options	Concrete implementation in the IF pilot auctions	Why this choice?
1.12	Indexation of support	<b>Support payments</b> can be <b>adapted to other price developments</b> such as electricity prices or inflation.	No indexation.	EU-wide indexation not sufficient for risk mitigation. MS specific indexation can level out price differences between MS which should be part of the bid calculation.

No.	Design element	Short description and options	Concrete implementation in the IF pilot auctions	Why this choice?
1.13	Technology baskets, differentiation by regions or actors	<p>Auctions can focus on a specific sector or technology or include multiple sectors and technologies. Auction design covering a specific sector with similar attributes is generally easier. In order to enable different sectors and technologies to compete, <b>minimum</b> and/or <b>maximum quotas</b> or <b>shares</b> or <b>bonus/malus systems</b> can be implemented. This can also be used in case different countries compete in one auction or different actor groups need to be considered.</p> <p>According to CEEAG, decarbonisation measures targeting specific activities which compete with other unsubsidised activities can be expected to lead to greater distortions of competition, compared to measures open to all competing activities.</p>	<p>No special rules for different technologies, regions or actors are foreseen.</p> <p>Such tools might be used in later auction rounds, e.g. to reach the IF objective of geographical or sectoral balance or to do broader auctions with different auctioned goods.</p>	<p>Indexation for inflation requires substantial provisioning of support payments and may thus reduce the supported hydrogen volume.</p> <p>Indexation can be tackled in PPAs and HOAs</p> <p>Special rules tend to decrease cost-efficiency of the auction. There is only limited budget and there are currently no important reasons to use discriminatory rules. Renewable hydrogen is a sufficiently uniform good.</p> <p>Sectoral or geographical balance in IF is sought for overall programme operation not a specific call.</p> <p>Broader eligibility will lead to greater competition, Lower costs risk of market distortions.</p>

## II. Qualification requirements (single step within auction clearing)

Bidders need to fulfil qualification requirements in order to have their bids ranked. Qualification aims at making sure that bidders are capable of realizing the project, the project is sufficiently advanced to be realized and the participation in the auction is not just used as an option. Qualification requirements can include material (as for example minimum requirements for CO<sub>2</sub>-abatement, bidder criteria (e.g., previous experience, financial and technical capacity), technical or financial requirements for projects. If completion bonds or other guarantees are used, other requirements can be reduced. The following table lists the qualification requirements proposed for the IF pilot auctions. These also include technical requirements for renewable hydrogen generation and rules for the cumulation of support with other support schemes. Qualification requirements will be assessed on a Yes/No basis.

**Table 2: Overview of design elements for the IF competitive bidding mechanism – qualification requirements**

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
2.1	Key technical and financial checks for project and bidder <sup>5</sup>	Qualification requirements ensure that the projects selected in the auction contribute to the objectives of the support scheme. They also guarantee the seriousness of the projects participating in the auction in combination with bid/completion bonds if used.	<p>Legal Entity checks (KYC, AML, not sanctioned (call), Anti Bribery, no default...) CINEA/REA</p> <p>Exclusion of undertakings in difficulty + exclusion of undertakings concerned by the Deggendorf rule (undertakings that have received incompatible aid and are subject to a recovery obligation)</p> <p>Standard Financial Viability Checks</p> <p><i>Streamlined application Forms A and B summarising the key project details, identification of applicants, planned FC and EiO time, assumptions behind financial model (Financial Information File).<sup>*5</sup></i></p>	Ensuring project contribution to target and seriousness of projects.

<sup>5</sup> IMPORTANT: Depth of descriptions in project application and number of documents requested marked with (\*) depends on the use of completion bonds. Feedback of stakeholders is sought on preference between completion bonds and requested documentation, especially for smaller companies and new market entrants.

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
			<p><i>Financial Information File</i><sup>5</sup></p> <p><i>Any existing information of financing (MoU/Lols with banks and/or equity investors)</i><sup>5</sup></p> <p><i>Feasibility study</i><sup>5</sup></p> <p><i>Business plan</i><sup>5</sup></p> <p>Evidence of (pre-)contractual relations:</p> <ul style="list-style-type: none"> <li>• MoU<sup>6</sup> or Lol with manufacturer of equipment, electrolyser</li> <li>• PPA: MoU or Lol for fixed-price or narrow sleeve, 10-year PPA, 90% of planned electricity usage</li> <li>• HPA: MoU or Lol for fixed-price, 5-year minimum HOA on 100% of the bid volume with flexibility to renegotiate; defined volume considering possibilities for banking and borrowing</li> <li>• Lol from a bank (min. rating BBB/Baa2) to issue the completion bond requested at grant signature (see 2.2).</li> </ul>	

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<sup>6</sup> Existing contracts equally acceptable wherever MoU or Lol is mentioned

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
			<ul style="list-style-type: none"> <li>• Proof of advanced conversation with environmental permit authority and grid provider.</li> </ul> <p>List of self-declarations (general legal implications apply for false declarations in EU application, e.g. if self-declaration is false the support will be recovered and the contract terminated.)</p> <ul style="list-style-type: none"> <li>• Declarations on non-cumulation with State aid or funding from other EU programmes for the same project</li> <li>• Declaration that the applicant will produce the RE H2 according to REDII DAs (relevance)</li> <li>• Declaration that it is green field project (co-location of a new project with an existing project is allowed) electrolyser construction has to be new. Standard document.</li> <li>• Declaration that “do no significant harm” check is applied</li> </ul>	

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
2.2	Bid and completion bonds <sup>7</sup>	Bid bonds and completion bonds aim to ensure that bidders take the auction seriously and non-serious/speculative projects or those with lower chances for realisation refrain from participating. They also guarantee that financial fines, e.g. for non-realisation of a project are covered. Bid bonds and completion bonds thus complement and/or replace other prequalification requirements. Bigger bid bonds have a stronger effect in ensuring realisation, but can also add an extra barrier for (smaller) companies to participate.	<p>No bid bond.</p> <p>Completion bond covering the amount of 7.5% of the total support volume based on a bank guarantee or guarantee of a mother company, through a bank.<sup>8</sup></p> <p>Letters of intent from the bank indicating possibility of the completion bond for a bidder will be required as qualification. Completion bond will have to be signed ahead of contract signature with auctioneer.</p> <p>The enforcement of completion bonds is further explained in Section 4 below.</p>	<p>The checks described in point 2.1 exclude non-serious/speculative bids.</p> <p>Completion bonds ensure seriousness of the bid, commitment of bidder and ease of implementation. Completion bond sized to strike a balance between being a real deterrent to speculative bids, but still low enough to be financeable by serious participants through a guarantee.</p>
2.3	Minimum or maximum restriction for project size and for bid volume	Limits to project sizes and bid volumes that each bidder can submit can be implemented for different reasons, such as market concentration, diversification of bids, limited resources for project monitoring,	<p>Maximum restriction: 33% of initially defined budget available for the respective auction round.</p> <p>Minimum requirements: 5 MW installed electrolyser capacity</p>	The minimum requirement reduces administrative efforts, while a maximum of 33% guarantees more

<sup>7</sup> IMPORTANT: Depth of descriptions in project application and number of documents requested marked with (\*) depends on the use of completion bonds. Feedback of stakeholders is sought on preference between completion bonds and requested documentation, especially for smaller companies and new market entrants.

<sup>8</sup> The maturity of the requested completion bond needs to cover at least the maximum time until entry into operation (4 years) plus time to verify entry into operation. If entry into operation is reached earlier, the bond can be released.



Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
2.4	Offtaker restrictions	<p>policy objectives. Maximum size requirements can encourage diverse and smaller actors to participate but also limit economies of scale. Minimum size requirements can reduce the transaction costs associated with smaller bids, but also limit its participation and thus can reduce competition levels. Besides, limits to the maximum amount of bid volume each bidder can submit can be imposed to prevent one strong bidder being awarded with most or all the auctioned volume.</p> <p>Offtaker restrictions can ensure that the supported hydrogen is used in hard-to-abate sectors. The restriction can be a ban of selling to certain sectors or industries or only allow for certain shares of the hydrogen to be used in these sectors or appliances.</p>	<p>No restriction regarding clients. Close monitoring of first auction round to avoid that IF mainly funds H2 uptake in the transport/refineries sector.</p>	<p>than one supported actor per auction round.</p> <p>Greater participation in the scheme will ensure that learnings and experience are spread to a greater number of market players, and avoid the risk (1) consolidating market power of large players (2) entire auction failing if one beneficiary fails</p> <p>Enables flexibility for hydrogen producers. Monitoring ensures timely adaptations for new auction rounds if necessary.</p> <p>Broader eligibility will lead to greater competition, lower costs, and less risk of market distortions.</p>

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
2.5	Local content requirements	<p>Local content requirements (LCRs) in an auction can be implemented to spur domestic economic activity, usually expressed as economic growth or increased employment. Local content requirements typically require or incentivize bidders to source specific components of their projects domestically or to spend a certain amount of their investment expenditures locally.</p> <p>There are several options to include LCRs: as eligibility criterion or as a non-price award criterion. Options for LCR include specific components to be sourced locally, a CO2 footprint or lifecycle assessment of the hydrogen produced, a certain impact on the workforce or investment obligations or security of supply consideration.</p>	None	Decision in line with broader EU policy on WTO compatibility.
2.6	Regulations for transporting hydrogen	<p>Hydrogen transport is still in its early phases of development but will play a substantive role in the expected outcome of the IF pilot auction. An EU-wide hydrogen infrastructure will need to emerge allowing hydrogen transport from areas with large renewable potential to demand centres. Projects with and without transport costs incorporated into project costs will need to be considered in scaling up hydrogen production across Europe.</p>	No explicit mechanism to offset comparative disadvantage of projects with infrastructure costs	Hydrogen transport can be included in the bids but it is not the primary target of the IF pilot auction support.

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
2.7	Consideration of General measures (e.g. green premium stemming from regulations)	Projects will benefit from specific conditions in all MS	As long as these are not State aid but general measures projects are welcome to benefit from such favourable conditions, it will be an element of competition but not distortive	General measures have always been element of competition
2.8	Cumulation with State Aid or EU funding for hydrogen producers	Projects eligible for IF competitive bidding schemes could also be eligible for other (national) support schemes. The auction design needs to implement rules for such cumulation of support schemes or exclude it.	Cumulation with State aid (e.g. IPCEI) or EU funding programmes is excluded. The fulfilment of this criterion will be checked based on a self-declaration.	Avoid overcompensation and concentration of support to projects in countries that have own funds available (level playing field).  Auctions support becomes a “one-stop-shop” for securing necessary support.
2.9	Cumulation with State aid or EU funding for the hydrogen offtaker. Cumulation with funding for hydrogen infrastructure.	(1) Off-takers of hydrogen from production projects eligible for the IF competitive bidding schemes  (2) the infrastructure projects used for transporting the hydrogen (in case of non-co-located projects) could receive support from other (national) support schemes.	Contracts with off-takers receiving <u>operational</u> support for buying the hydrogen must be excluded.  Support for <u>infrastructure or CAPEX support</u> to off-takers should not be excluded (but declaration required that subsidy will not be used for construction of dedicated infrastructure <sup>9</sup> ).	Avoid overcompensation/cross-subsidization and concentration of support to projects in countries that have own funds available (level playing field).

<sup>9</sup> In line with CEEAG

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
		The auction design needs to implement rules for such cumulation of support schemes or exclude it.	If it cannot be distinguished if the aid received by the offtaker has been for CAPEX only, the project should be excluded.  The fulfilment of this criterion will be checked based on a self-declaration.	
2.10	Exclusion of cross-subsidisation of "grey" hydrogen	It is possible that subsidies awarded to projects will not cover the entire production of an electrolyser.	The GHG emissions savings of any non-RFNBOs produced by beneficiaries in the aided projects, which will not be subsidised under the scheme, must meet 70% GHG reduction threshold of RED II DA, on average during the lifetime of the scheme.  Based on self-declaration and submitted certification during operations.	This will ensure that any non-RFNBOs produced by beneficiaries do not undermine the environmental benefits of the support provided under the scheme.

### III. Design elements defining the auction procedure

**Table 3: Overview of design elements for the IF competitive bidding mechanism - auction procedure**

Nr.	Design element	Description and options	Concrete implementation in the IF pilot auctions	Why this choice?
3.1	Competitiveness of the process	In order to ensure a competitive process the following conditions have to be met:  a) the bidding process is open, clear, transparent and non-discriminatory, based on objective criteria, defined ex ante in accordance with the objective of	No discrimination on participants in auction.  Transparency on requirements and sufficient lead times to prepare bids.  Budget is a limiting constraint.	The auctions has to be competitive to ensure proportionality of the aid

the scheme and minimising the risk of strategic bidding;

(b) the criteria are published sufficiently far in advance of the deadline for submitting applications to enable effective competition;

(c) the budget or volume related to the bidding process is a binding constraint in that it can be expected that not all bidders will receive aid, the expected number of bidders is sufficient to ensure effective competition, and the design of undersubscribed bidding processes during the implementation of a scheme is corrected to restore effective competition in the subsequent bidding processes or, failing that, as soon as appropriate; and

(d) ex post adjustments to the bidding process outcome are avoided as they may undermine the efficiency of the process's outcome.

No ex-post adjustments of auction rules.

3.2 Single vs. multiple-item auction	In the auction either one project for which several bidders compete ( <b>single-item</b> , often used in offshore wind auctions) or several projects ( <b>multiple-item</b> ) can be awarded.	Multiple-item	Intention of the IF competitive bidding mechanism is to support the development of multiple projects per auction round.
3.3 One-stage or two-stage auction	The auction can be organized in a <b>one-stage</b> or <b>two-stage format</b> . In the latter, the auction is usually divided in a request for prequalification (RFQ) to prequalify the prospective bidders and a request for proposals including the financial bid. Both options can work well, and the choice often depends on local regulatory requirements.	One stage	Ease of implementation and faster overall clearing of the auction.

3.4 Auction type	The auction can be <b>static</b> or <b>dynamic</b> . In static auctions, the bidders bid one price which is not changed afterwards. The dynamic auction includes a price-discovery process during which bidders receive some information about the bidding of other auction participants (descending or ascending clock designs). Both options can also be combined in a hybrid format.	Static auction	Ease of implementation and faster overall clearing of the auction.  Dynamic auctions are more prone to collusion.
3.5 Pricing rules	Pricing can be <b>pay-as-bid</b> or <b>uniform</b> (pay-as-clear). In the case of pay-as-bid pricing, every bidder receives the amount required in his own bid. In the case of uniform pricing all successful bidders usually receive the amount of the last accepted bid. While there are some theoretical drawbacks and advantages of both mechanisms, empirical assessments tend to find very small differences between both approaches.	Pay-as-bid	Concept is easy-to-understand. Potential cost savings for auctioneer due to heterogeneous cost structure of projects and limited information of bidders about direct competition.
3.6 Minimum prices	<b>Minimum prices</b> are used in settings where costs are unclear and aim among others to ensure realistic bids.	No minimum price	Limited budget availability. Eligibility criteria and completion bonds implemented to ensure realistic bidding.
3.7 Ceiling prices	<b>Ceiling or maximum prices</b> can be introduced to limit possible support ranges if the budget is restricted and if a low competition level poses a risk for strategic bidding. The auctioneer also needs to decide whether the level of the ceiling or floor prices are <b>disclosed</b> or not.	Disclosed ceiling price: 4.00 €/kg of hydrogen produced as a maximum bid for the fixed premium.  To be reviewed in subsequent auction rounds.	Disclosure increases transparency, ensures that projects do not fall out of auction "by accident", and increases changes that auctioned volumes are met.

4€/kg of hydrogen premium ceiling was based on scenario analysis for auction results to avoid overcompensation.

Too low ceiling could depress level of competition.

3.8	Clearing mechanism and marginal bid	Bids are awarded based on the submitted price until the auctioned volume (for the IF competitive bidding mechanism, the budget) is covered. If the "marginal" project exceeds the pre-defined auctioned volume (1) the last bid can either be awarded and the auction volume increased, (2) the last bid can be rejected and the auction volume decreased, (3) the project can be partly awarded (requested to reduce its size) or the remaining auction volume can be filled with more expensive smaller projects.	The last bid that exceeds the pre-defined auctioned volume will be rejected and the auction volume decreased. The un-allocated remaining budget will be transferred to the next auction round.	Hard budget cap excludes increasing the auction volume, need for equal treatment of all applicants.
3.9	Tiebreaker rule	If two projects have the same score a tiebreaker rule must be defined.	If two bids have the same support level, the bid with the overall smaller support requirement will be awarded. If two bids have the same support requirements, the one from the country with less bids awarded in the same auction will be awarded. If both projects are from countries with an equal sum of IF projects awarded, shorter stated times until EiO are considered.	Limited budget availability, geographical balance as IF objective

3.10	Minimum volume of bidders	The minimum volume of bids can to be defined to define undersubscription. In the case of severe undersubscription the auction can be cancelled.	Endogenous rationing is excluded all conditions are set ex-ante.	Simplicity and clarity for participants
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## IV. Design elements defining rights and obligations

**Table 4: Overview of design elements for the IF competitive bidding mechanism - Rights and obligations**

Nr.	Design element	Description and options	Concrete implementation	Why this choice?
4.1	Realisation periods	Realisation periods define a certain date or period after the auction until when the project needs to have realised 100% of the capacity offered in their bid (reach entry into operation, EiO, for 100% of its bid capacity). After this date penalties can be applied or disbursement periods shortened, contracts terminated and unused auction volumes can enter the auction process again. The definition of realisation periods requires knowledge about the length of the planning and production process of the technologies covered in the auction.	3.5 years, see also section 4.2	Achieves timely results, avoids speculation on future cost developments, allows some flexibility for project developers but limits distortive impacts on national H2 funding lines. In line with the objective of the auction to attract bids from H2 projects that are already quite well developed.
4.2	Sanctions in case of non-compliance with support requirements	Sanctions, fines or penalties (usually guaranteed by the bid and/or completion bond) are used to ensure the seriousness of a bid and therefore effectiveness of an auction. They can also be in different levels (e.g. shortening the duration of support in case of delays or now support if the delay is too long). Sanctions increase bidders' costs of non-compliance with contractual obligations and discourage underbidding. They are usually applied in combination with bonds. They can adopt different nature, such as shortening the duration of support in case of delays; cancelling the allocated support or the signed PPA if the delay is too long; or even exclude the bidder from future auction rounds. Sanctions can be applied gradually, considering the extent of the delay or the failure to comply with obligations.	If the maximum realisation period is exceeded by six months or more, the completion bond is called and the contract is cancelled.  If the maximum realisation period is	Ensures effective project operation and effective spending of public support

Nr.	Design element	Description and options	Concrete implementation	Why this choice?
			<p>exceeded by less than six months, the total support is reduced: 1/20 of total support budget is lost.</p> <p>Termination clause applies when project produces on a average (cumulative, rolling basis) below 30% of planned yearly production for 3 years in a row.</p>	
4.3	Payment schedules	The payment schedule describes in which frequency payments are disbursed to the awarded projects. Payments may be disbursed as a lump sum or in multiple instalments, in set intervals or attached to the reaching of pre-defined milestones.	Annual.	Ease of implementation.
4.4	Reporting requirements	Reporting requirements are used to ensure that the support payment is adequate and the implementing agency is informed in time about adaptations. The information gained can contribute to the objective of price discovery and more generally to increase the EU Commission's knowledge about the hydrogen market.	<p>Reporting to implementing agency is tied to payments.</p> <p>Defined in call conditions, reporting will cover the</p>	Ensures price discovery and adequate support payments

Nr.	Design element	Description and options	Concrete implementation	Why this choice?
			renewable H2 volumes produced and certified as well as final offtake agreements..	

## V. Design elements defining the auction and framework conditions

**Table 5: Overview of design elements for the IF competitive bidding mechanism - auction and framework conditions**

Nr.	Design element	Description and options	Concrete implementation	Why this choice?
5.1	Scheduling/auction frequency	Auctions can take place regularly (daily, monthly, quarterly or yearly etc.) or non-regularly. Presenting a schedule with regular future auction rounds and volumes deliver clarity and build trust among investors and in the involved industries.	Annual auction schedule	Provides sufficient clarity and aligns with budgeting process and manpower for IF.
5.2	Timing of the auction (early stage or late stage auction)	The timing of the auction relates to the development stage in which competing projects are or need to be in to participate in the auction. A late auction can contribute to higher realisation rates since projects have already overcome issues that could stop the project until they are resolved. However, late auctions require bidders to invest more money and time before participating in the auction (which would imply sunk costs if they are not awarded),	Late stage auction	Allows sufficient time for prequalification elements such as permits to be in place or being negotiated

Nr.	Design element	Description and options	Concrete implementation	Why this choice?
5.3	Implementing authority	An important framework element is the designation of an authority or institution who manages the auction. It is important that the counterparty is endowed with sufficient creditworthiness and liquidity. A credible implementing authority is crucial to ensuring project bankability (e.g. financially viable public or state-owned entity or private industrial off-taker).	CINEA (delegation still outstanding)	Aligns with operation of IF grant programme