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UPCOMING DEVELOPMENTS: FUNDING INSTRUMENTS FOR HYDROGEN PROJECTS

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EU HYDROGEN PILOT AUCTION 2023

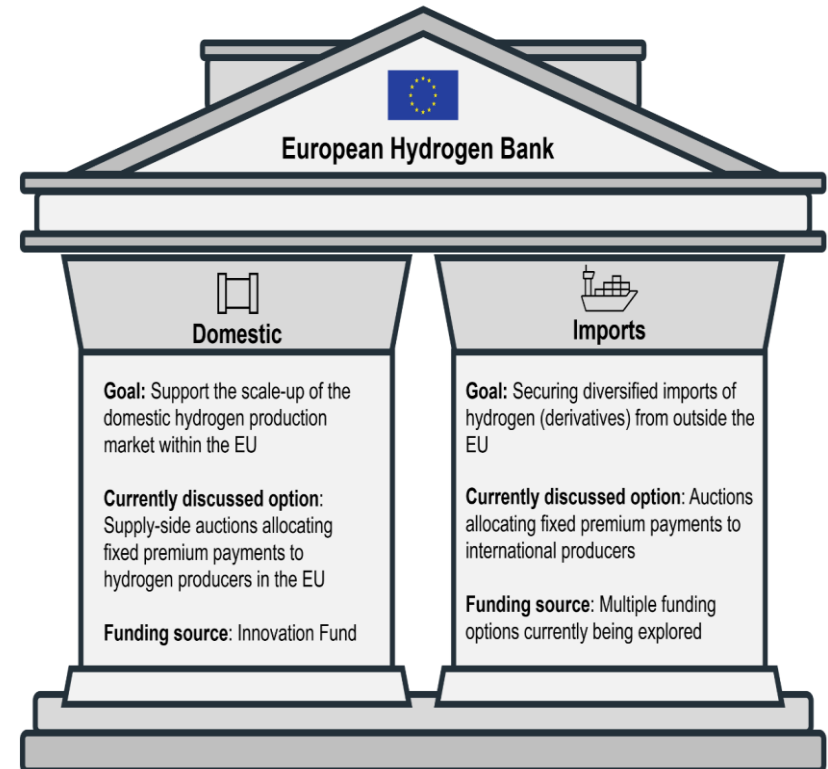
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Renewable Hydrogen Production: Pilot Auction 2023

EU Innovation Fund under umbrella of EU Hydrogen Bank

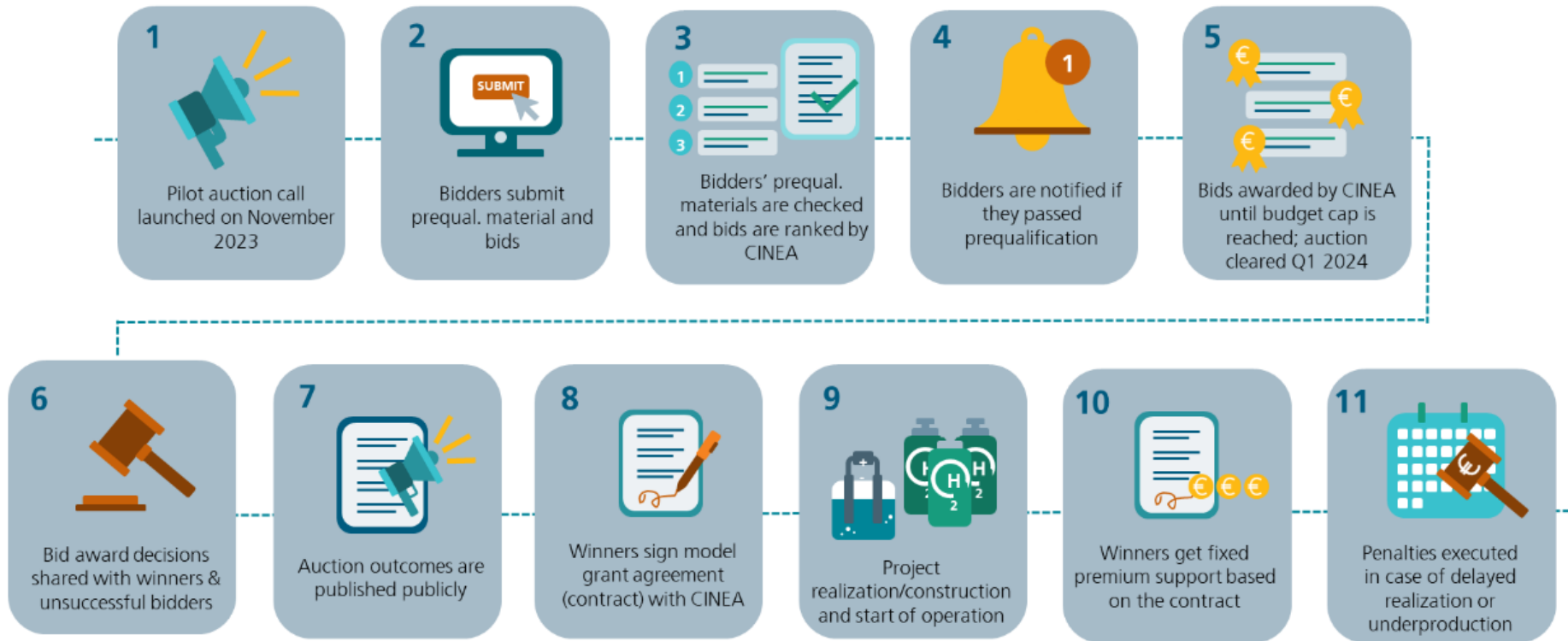
- **EUR 800 million** of funding available
- Open to **new projects** in EEA countries
- Electrolyser capacity **min. 5 MWe** (no pooling)
- **Fixed premium** in EUR/kg of renewable hydrogen produced over **10 years** of operation
- Ceiling for bids: **max. EUR 4.50/kg**
- Static auction, **pay-as-bid**



Source: EU Commission

Pilot Auction 2023

Step by step



Source: EU Commission

Pilot Auction 2023

Qualification / eligible projects (1)

RFNBO HYDROGEN

RFNBO = „renewable fuels of non-biological origin”
(Renewable Energy Directive and Delegated Acts)

- produced from renewable energy sources, and
- at least 70% greenhouse gas emissions savings compared to fossil fuels
- **Detailed requirements** in Delegated Acts

GENERAL AID REQUIREMENTS

- New production capacity = **no “start of works”**
- Checks on all beneficiaries: KYC/AML, not sanctioned, no open obligations to repay other state aid...
- **Rules on cumulation** with other public support
 - Project/hydrogen producer
 - Renewable electricity installations
 - Hydrogen off-takers

Innovation Fund Auction

Terms and Conditions

Date:	29 August 2023
Version:	0.1
Authors:	CLIMA C.2 – Low Carbon Solutions (II); Research & Low Carbon Technology Deployment

Pilot Auction 2023

Qualification / eligible projects (2)

RELEVANCE AND QUALITY OF PROJECT

- Comprehensive information/document requirements
- Each criterion to be evaluated on a “**pass/fail**” basis
 - Renewable **electricity sourcing** strategy: pre-contracts for 60% of total volume
 - **Hydrogen off-take** and hedging strategy: pre-contracts for 60% of total production
 - **Electrolyser procurement** strategy: pre-contract with supplier
 - Environmental **permits**: credible evidence of initiated procedure
 - **Grid connection** permits: credible evidence of ongoing process
 - **Technical** maturity: project description, timetable
 - **Financial** maturity: financial model, financing plan, business plan
 - **Operational** maturity: competence/experience of applicant/team
 - **Completion guarantee**: LOI on template to be provided

Pilot Auction 2023

Obligations of Producer

ENTRY INTO OPERATION WITHIN 5 YEARS

- Termination of grant agreement
- Penalty: 4% of maximum grant amount for project
- Secured by guarantee issued by financial institution

AMOUNT AND QUALITY OF HYDROGEN

- Risk of termination of agreement / reduction of grant if below 30% of expected annual production volume, over a rolling 3-year period
- Reduction of grant if 70% GHG savings cannot be certified for the total amount of hydrogen produced

REPORTING REQUIREMENTS

- Ongoing reporting obligations, and bid components will be published



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CLIMATE PROTECTION AGREEMENTS

BRITTA WIßMANN, PARTNER, WATSON FARLEY & WILLIAMS



Climate Protection Agreements

How they shall drive innovation in the hydrogen sector

BACKGROUND

- **European Climate Law:**



- **German Federal Climate Protection Act:**



Climate Protection Agreements

How they shall drive innovation in the hydrogen sector

BACKGROUND

- Costs of climate change not yet fully priced into production costs worldwide
- Climate-damaging production processes are often cheaper for companies than climate-friendly ones
- **Climate-friendly production leads to a great cost disadvantage in competition**



Investments in climate-friendly production processes are therefore highly risky

Climate Protection Agreements

How they shall drive innovation in the hydrogen sector

CLIMATE PROTECTION AGREEMENTS AS PART OF THE SOLUTION

- On 6th June 2023, the Federal Ministry of Economic Affairs and Climate Protection (“**BMWK**”) has published its draft “Guideline on the promotion of climate-neutral production processes in industry through Climate Protection Agreements” (“**Funding Guidelines**”).
- By way of conclusion of so-called Climate Protection Agreements with energy-intensive industrial companies, the Government wishes to support climate-friendly production processes.

Climate Protection Agreements

How they shall drive innovation in the hydrogen sector

CLIMATE PROTECTION AGREEMENTS AS PART OF THE SOLUTION

- Under these agreements, the **energy-intensive market participants shall be subsidies with the difference between the cost of a product produced with zero or low emissions and the cost of the same product produced using conventional, emission-intensive processes**. The relative reduction in greenhouse gas emissions for the total output produced should be considered. The result is the amount that the recipient receives from the funding body (i.e. BMWK / Federal Republic of Germany).
- Thus, Climate Protection Agreements are an **instrument of state investment steering** which should compensate companies from energy-intensive industries for the additional costs they incur through the construction and operation of more climate-friendly facilities compared to conventional facilities.

Climate Protection Agreements

How they shall drive innovation in the hydrogen sector

TWO MAJOR AIMS

DEVELOPMENT OF GREEN LEAD MARKETS

- **Reduction in emissions** by the subsidized industry (expected to directly save around 350 mega-tons of CO2 equivalent by 2045).
- **Incentive for the necessary technologies and infrastructures to be developed and implemented in Germany**
- **Innovations triggered will advance the decarbonization of industry worldwide**

START-UP FUNDING

- **Climate Protection Agreements serve as start-up funding for the industry transformation but not as financing**
- **Shall drive expansion of the hydrogen infrastructure in Germany**
- It should make **new technologies marketable**
- **Risks and ultimately costs should become more predictable which helps financing**

Climate Protection Agreements

How they shall drive innovation in the hydrogen sector

- In accordance with the Funding Guidelines, the Federal Government grants subsidies for the additional costs of the transformative production processes based on Climate Protection Agreements to emission-intensive industries.
 - **Note:** According to No. 4.3 of the Funding Guidelines, **only those industrial activities are promoted whose products provide an equivalent or better functionality compared to products of the corresponding reference systems** covered by Annex I of Directive 2003/87/EC, as last amended by Delegated Regulation (EU) 2021/1416 of 17 June 2021.
 - The **eligible industries listed therein are exhaustive** and mainly cover energy-intensive industries such as glass, ceramics, basic materials, cement, lime and steel.

Climate Protection Agreements

Who is eligible for the subsidy

COMPANIES WHO AIM TO SET UP A CLIMATE FRIENDLY INDUSTRIAL PLANT AND...



...belong to an **energy-intensive industrial sector subject to EU-ETS**
(mainly glass & ceramics, steel, lime, cement etc.)



...can set up a **production process with 90 % less emissions than a comparable traditional plant**
(ETS-reference plant) at the end of the funding period



... would emit more than **10 kt CO₂-eq. p. a.** using conventional technologies

Source: Bundesministerium für Wirtschaft und Klimaschutz - The German Carbon Contracts for Difference (CCfD) scheme (2023)

Climate Protection Agreements

How the process works

Applicants: § 14 of the German Civil Code, including **municipalities, municipal enterprises, municipal companies and municipal special-purpose associations** (fulfilling the requirements)



Consortium to jointly manufacture one or more eligible products in Germany



Participation in bidding procedure



Issuance of a grant notice (*Zuwendungsbescheid*) and the conclusion of a Climate Protection Agreement (*Klimaschutzvertrag*)

Climate Protection Agreements Process – Bidding Process

Climate Protection Agreements are awarded through bidding procedures preceded by a funding call

5 bidding procedures in total

2023

2x2024

2x2025

2 Months preparatory procedure started
on 6th June 2023

Deadline for the preparatory procedure started 7th August 2023

Climate Protection Agreements

Process – Bidding Process

Climate Protection Agreements are awarded through bidding procedures preceded by a funding call

- **Contract term:** 15 years beginning with operational start of the project, but in principle no later than 36 months after the funding decision becomes final. The funding authority may change this period in the funding call. However, a maximum of 48 months may be specified.
- If the green product has become price-setting, the Climate Protection Agreement can be terminated prematurely
 - Only if the share of transformative production processes that have greenhouse gas emissions below 50 % of the emissions of the respective applicable product benchmark has increased to 80 % of the total annual production in the European Union

Climate Protection Agreements

Requirements according to Sec. 4.12 of the Funding Guidelines

- The project must have a **minimum size of at least 10 kt CO₂-eq. per year of the absolute average annual greenhouse gas emissions in the reference system**. The funding authority can however set another (higher) minimum in the funding call.
- The project is compatible with the climate protection goals of the Federal Republic of Germany if:
 - At the latest from the beginning of the third year after the operational start, the **relative greenhouse gas emission reduction must be at least 60 % compared to the reference system**.
 - **A relative greenhouse gas emission reduction of at least 90 % compared to the reference system must be technically possible**
 - The projects has a **total funding amount of at least € 15 million**.
 - The granting authority may set higher threshold values than set out above in the funding call.
- **Not eligible are projects which the applicant would carry out anyway** (see 4.13 of the Funding Guidelines).

Climate Protection Agreements

Requirements in relation to hydrogen

- If hydrogen is used, it shall meet the requirements for **green or blue hydrogen**.
- The funding **authority may specify in the funding call the locations of an electrolysis with a capacity of more than 10 MW** for the purchase of green hydrogen to ensure operation that is beneficial to the system and the grid and, at the same time, to ensure that industrial hydrogen requirements are met on site, especially in the ramp-up phase of hydrogen supply.
- As an **alternative to green or blue hydrogen, hydrogen derivatives can also be used** if they are equivalent to green or blue hydrogen in terms of their contribution to climate protection and if they comply with the sustainability requirements from binding legal acts applicable at the time of the funding call.

Climate Protection Agreements

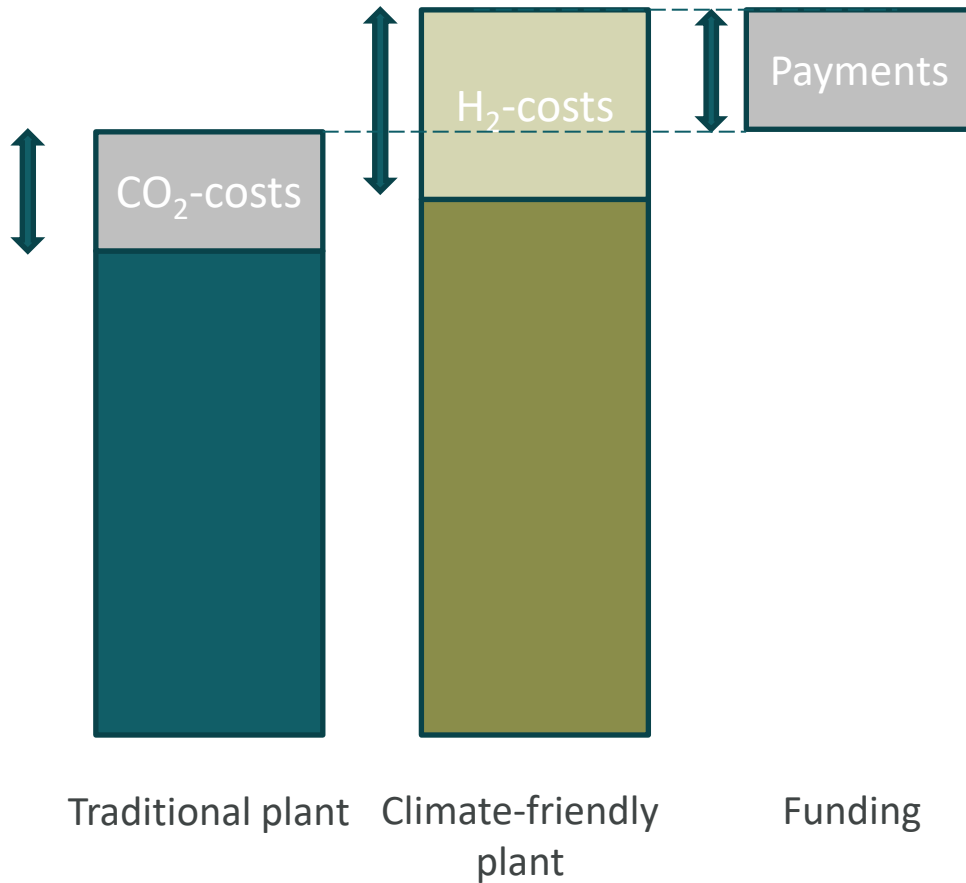
Calculation of subsidy

- Basis is the bid price (offered by the applicant) (after award: "(base) contract price"), which reflects the additional costs for a climate-friendly project compared to a conventional project.
- The price is calculated in euros per avoided ton of CO₂ equivalent. The avoided greenhouse gas emissions are determined from the difference between the remaining emissions of the project and the emissions of the reference system established for the project. The reference systems of the Climate Protection Agreements are based on the products regulated under the European Union Emissions Trading Systems (ETS).

Climate Protection Agreements

Calculation of subsidy - Example

Source: Bundesministerium für Wirtschaft und Klimaschutz –
The German Carbon Contracts for Difference (CCfD) scheme (2023)



- **Bidders assess their funding gap** by comparing a traditional plant with the climate friendly project
- **They submit a bid** within the given parameters (e.g. EU-ETS, energy prices, maximum possible bid)
- Annual **payments for the cost of operation are linked to energy and CO₂ prices**. Price risks are hedged and public funding is only paid out if needed
- **Funding is paid back** in years during which costs for the traditional plant would exceed those of a climate friendly facility (e.g., due to high CO₂-prices)

Climate Protection Agreements

Calculation of subsidy - Example

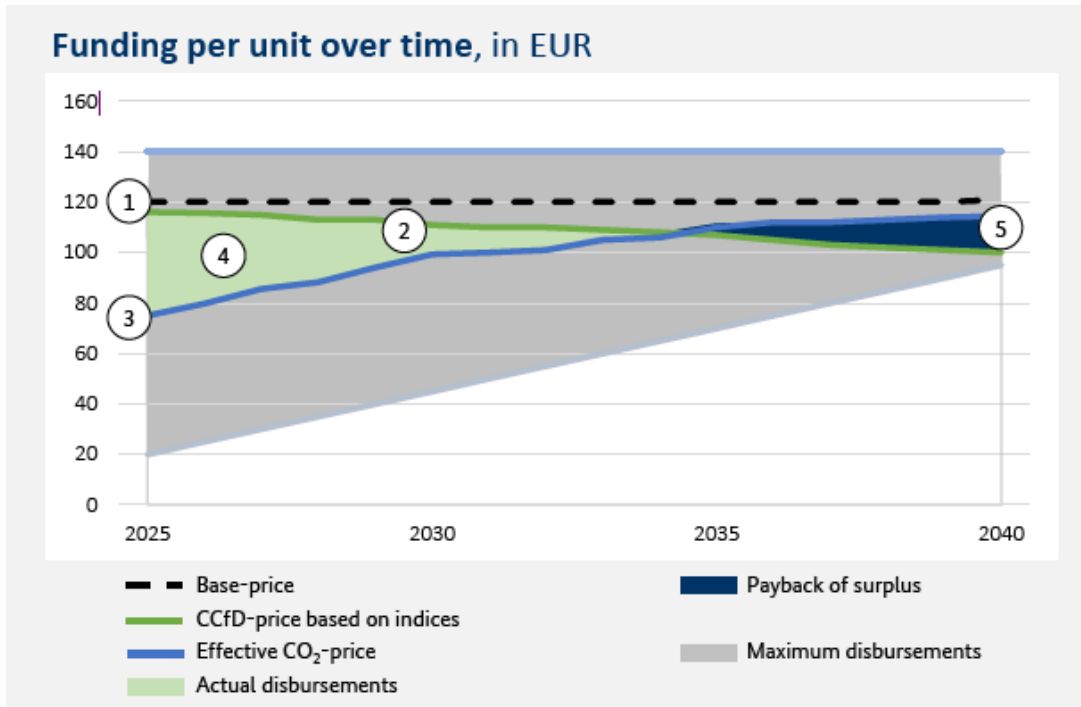
- **Simplified Example:** Company X produces a product using conventional technology



- **Dynamic price:** However, if the costs for emission certificates increase in the future, and the costs of conventional production exceeds the green production, then the subsidies end, and the payment obligation is reversed. Thus, company X would have to pay back to the funding authority.

Climate Protection Agreements

Calculation of subsidy - Example



Source: Bundesministerium für Wirtschaft und Klimaschutz - The German Carbon Contracts for Difference (CCfD) scheme (2023)

1. Companies calculate their „**base price**“ for the bidding procedure (CO₂-price per ton that would allow them switching to a climate-friendly plant)
2. This base price is **annually adjusted based on market prices** of energy sources
3. The **effective CO₂-price** is subtracted
4. This leads to **disbursements** or (over time)
5. **payback of surplus**

Q&A

 HYDROGEN
ENERGY STORAGE

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