ESPERIS

European Hydrogen Bank (EHB):

Assumptions

09/2023

Industry in the EU will need millions of tons of renewable hydrogen. This is impossible without support mechanisms.

The establishment of the EHB stems from both the EU's strategic decisions and the need to compete economically with the US

Green transformation of the EU through H2

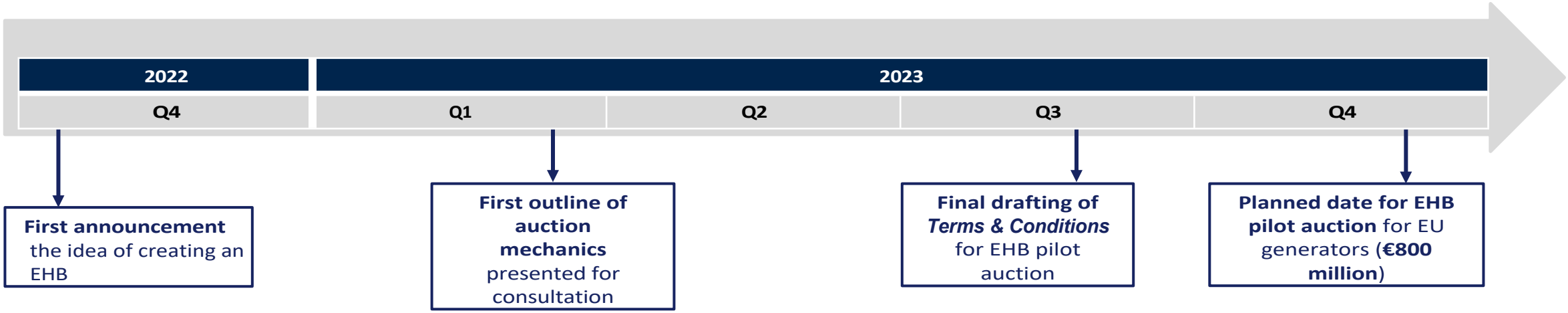
The EU wants to achieve **climate neutrality by 2050**, including reducing GHG emissions by 55% as early as 2030**.** One of the main tenets is the **need to use renewable H2 in hard-to-decarbonize industries** (including those sectors where hydrogen serves as feedstock and its consumption is indispensable in production processes - such as **fertilizers**).

Ambitious EU goals in the short term

The European Union is adopting very ambitious decarbonization targets using H2. In this context, the EU has set **very significant requirements to classify hydrogen as renewable** (RED Delegated Acts) and **ambitious targets for renewable hydrogen consumption** in industry (42% - 2030, 60% - 2035) and transportation.

Concerns about investment outflows to the US

As early as 2022. The **United States passed the *Inflation Reduction Act* (IRA), which includes an attractive support system for clean hydrogen producers**. The EU is concerned that the United States will "take over" potential investors and H2 plant developers will choose to locate operations outside Europe.



The requirements of the content of the Delegated Acts condition the ability to participate in EHB auctions.

Hydrogen must be produced in new installations and be renewable within the meaning of the RED Delegated Acts

Additionality

- **RES powering the** renewable hydrogen **plant** must be commissioned (or expanded in accordance with Directive 2018/2001) **no earlier than 36 months before the electrolyzer is** put into operation.
- RES feeding the electrolyzer **cannot receive public support (both CAPEX and OPEX**) unless they are connected to the hydrogen plant by a direct line or are *on-site.*
- **Transition period** - hydrogen plants commissioned **before the end of 2027** will be exempt from additionality until January 1, 2038.

Temporal correlation

- Renewable hydrogen generation must be **carried out in hourly correlation with the generation of electricity** to power the electrolyzer. This criterion will be applied from 2030.
- **By 2030, temporal correlation will be required only on a monthly basis.**
- In addition, the principle of temporal correlation is satisfied when hydrogen generation occurs **during hours of high RES grid saturation** (day-ahead market price equal to or lower than 20EUR/MWh or below 0.36 ETS value).

Geographical correlation

- Geographic correlation is considered fulfilled if:
  1. RES are **in the same clearing zone as the electrolyzer;**
  2. RES are located in a combined settlement zone with the electrolyzer zone, and **the electricity price in the day-ahead market is equal to or higher in the zone where the electrolyzer is located**;
  3. RES are located in a hypothetical *offshore bidding zone*.

In addition, in addition to the requirements of the Delegated Acts:

1) **Electrolysis capacity within the plant must be at least 5 MW** (*virtual pooling* from different plants not allowed)
2) **No cumulation of support with other CAPEX and OPEX aid to the hydrogen generator is allowed**

The hydrogen producer will have to authenticate its *business case, among* other things, demonstrating a strategy for obtaining energy.

Auction participants will have to commit to producing H2 within 5 years of receiving the subsidy

Due date investments

- A hydrogen plant that receives support will have to be **handed over within 5 years of the subsidy, i.e. from the moment the contract is signed**.
- For a plant to be considered commissioned, it must be capable of generating 100% of the H2 volume declared during the auction.
- **In the event that the 5-year deadline is not met, then the support is taken away**.

Credentialing *business case*

- The H2 generator **must have, a m o n g other things, letters of intent to secure min. 60% of the required electricity and for *offtake of* min. 60% of the hydrogen**, as well as a strategy for purchasing electrolyzers.
- Letters of intent must contain a range of information, including, for example, H2 collection profile, volumes, billing model, etc.
- At the same time, the EC requires the participant **to show evidence of initiating the process of obtaining the relevant environmental approvals** for the hydrogen plant and**, if applicable, approvals for connection to the grid.**

Bank guarantees

- The EC also requires that a letter of intent be submitted with a bank or financial institution for the **A guarantee of 4% of the total amount of support requested** in case the installation is not delivered within 5 years.
- The letter of intent must materialize in the form of an actual guarantee no later than **two months after the official announcement of the auction results and the invitation to sign contracts**.

The subject of the auction is a fixed premium for 10 years. For this moment The EHB does not consider the need to index support to inflation.

The logic behind the operation of intra-EU auctions

Subject of support

- The object of support will be a **fixed premium for a period of 10 years**, expressed as a specified **surcharge in EUR/kg H2.**
- The first pilot auction has a **budget of €800 million**. The price ceiling (i.e., **the maximum subsidy) is EUR 4.5/kg H2.** In practice, this means that a maximum of 20,000-25,000 t/y of H2 will likely be supported in the upcoming auction for a period of 10 years.
- **There are no indexation mechanisms**, including to inflation.
- The support awarded to auction winners will be **paid for 10 years in tranches every six months.**

Auction mechanics

- **A single auction** is to be held**, with no division into "baskets,"** where the **only criterion for selecting bids will be price** - i.e. the proposed amount of support (the projects with the lowest expected premium win).
- Each participant will declare the averaged annual volume of hydrogen for 10 years and the expected premium. **One bid cannot be calculated to support more than 1/3 of the budget of the entire auction.**
- Ultimately, i.e. after the base budget of the auction (allocated from the Innovation Fund) has been exhausted, **projects will be able to receive support in a second round, based on the additional budgets of individual member states.**
  - If a project from country X was not competitive enough to receive support in the pan-Union round, it will still be able to receive support in round two, as long as the budget allocated by country X allows.

The EHB pilot auction will only include a pool of "pan-European" with funding from the Innovation Fund....

Logic of functioning of intra-EU auctions (the course of a hypothetical auction - example)

Projects applying for support (RFNBO manufacturers)

EN 1 | EN 2 | ES 1 | ES 2
DE 1 | DE 2 | DE 3 | BE 1
NL 1 | NL 2 | HU 1 | IT 1
IT 2 | GR 1 | GR 2 | RO 1
RO 2 | FR 1 | FR 2 | FR 3

A hypothetical auction involves **a group of** RFNBO **generators** from different EU member states **competing on the expected premium**.

Course of the auction

Innovation Fund budget

EN 1 | EN 2 | ES 1 | ES 2
DE 1 | DE 2 | DE 3 | BE 1
NL 1 | NL 2 | HU 1 | IT 1
IT 2 | GR 1 | GR 2 | RO 1
RO 2 | FR 1 | FR 2 | FR 3

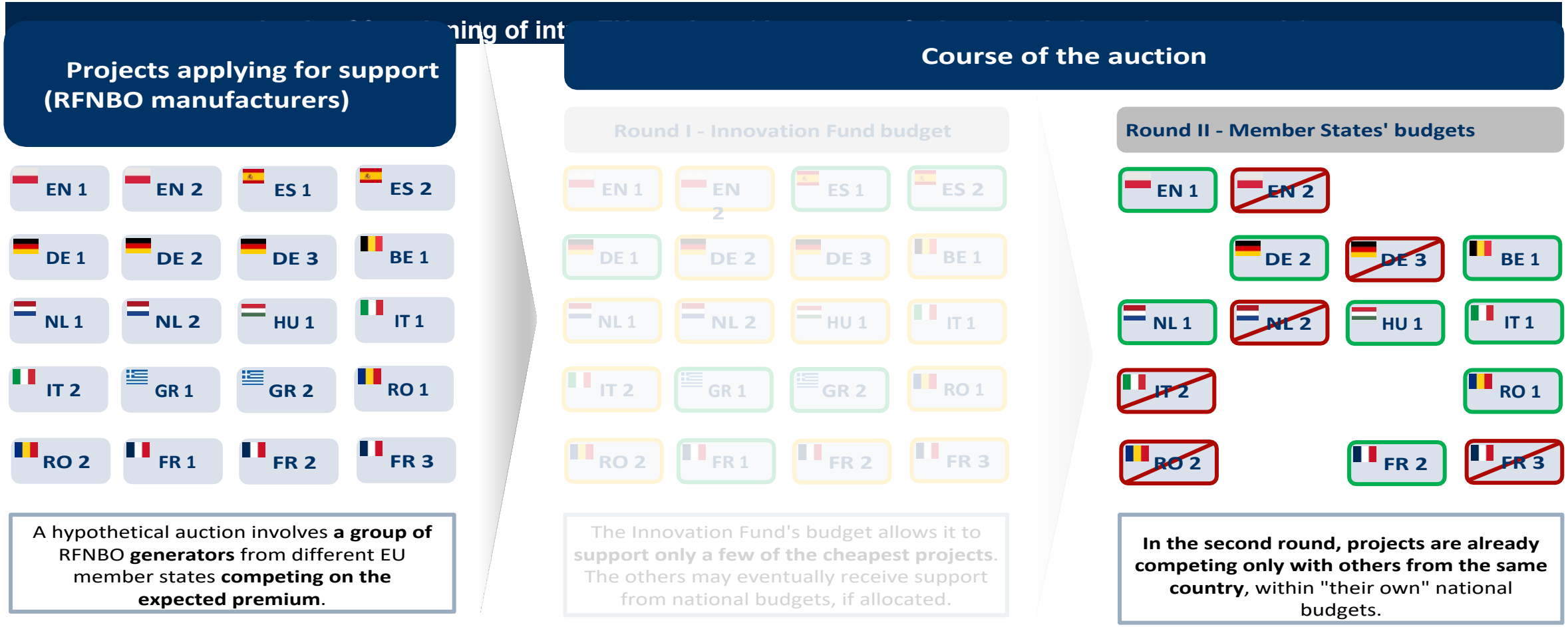
The Innovation Fund's budget allows it to **support only a few of the cheapest projects**. The others may eventually receive support from national budgets, if allocated.

Round II - Member States' budgets

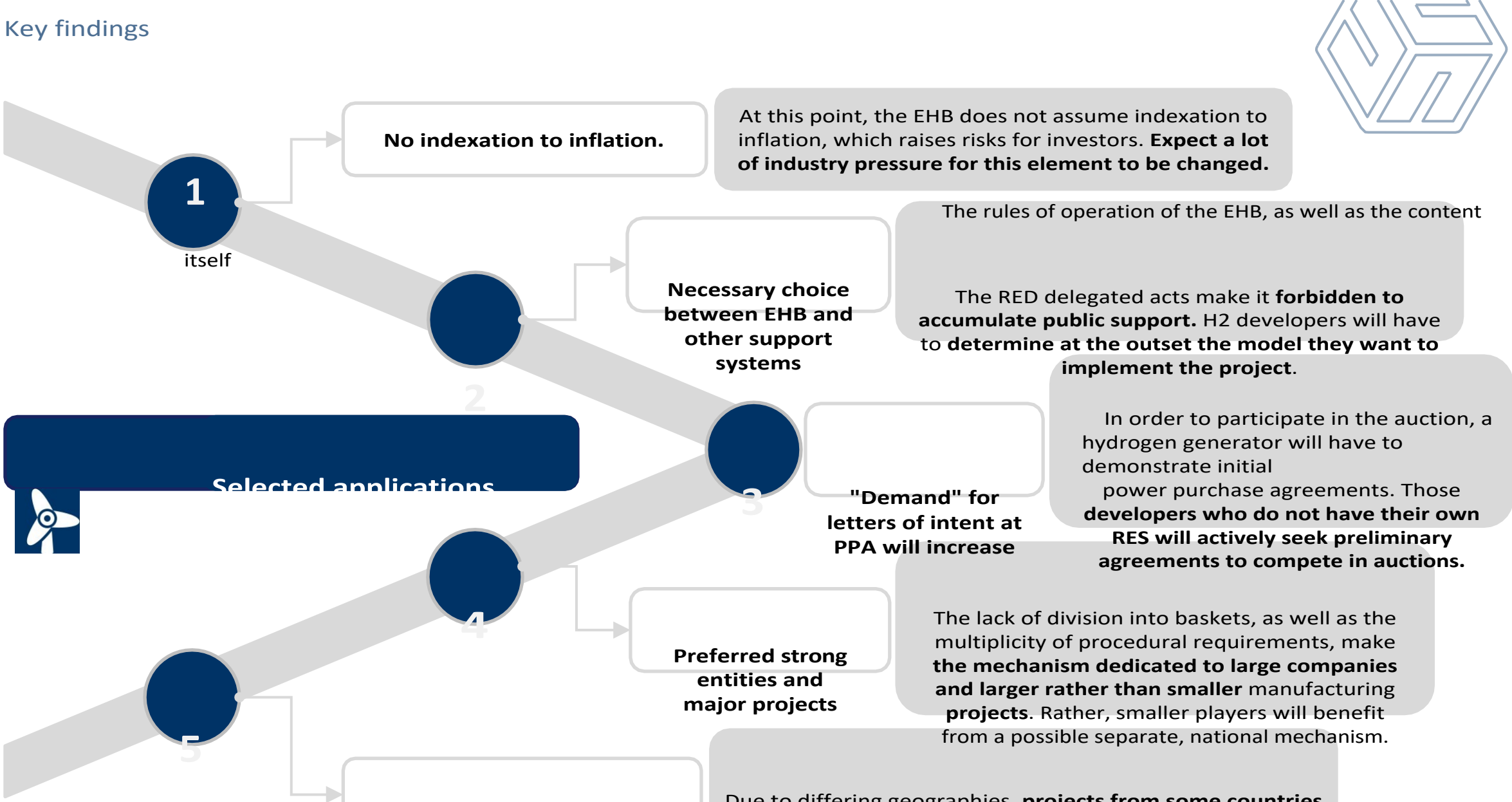
EN 1 | EN 2
DE 2 | DE 3 | BE 1
NL 1 | NL 2 | HU 1 | IT 1
IT 2 | RO 1
RO 2 | FR 2 | FR 3

In the second round, projects are already competing only with others from the same **country**, within "their own" national budgets.

... although ultimately individual countries are to be able to allocate their own "budgets" at the disposal of indigenous companies.



Key findings



Feel free to contact us

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