

Bridging the gap in hydrogen infrastructure investment

 **H2Global** Stiftung

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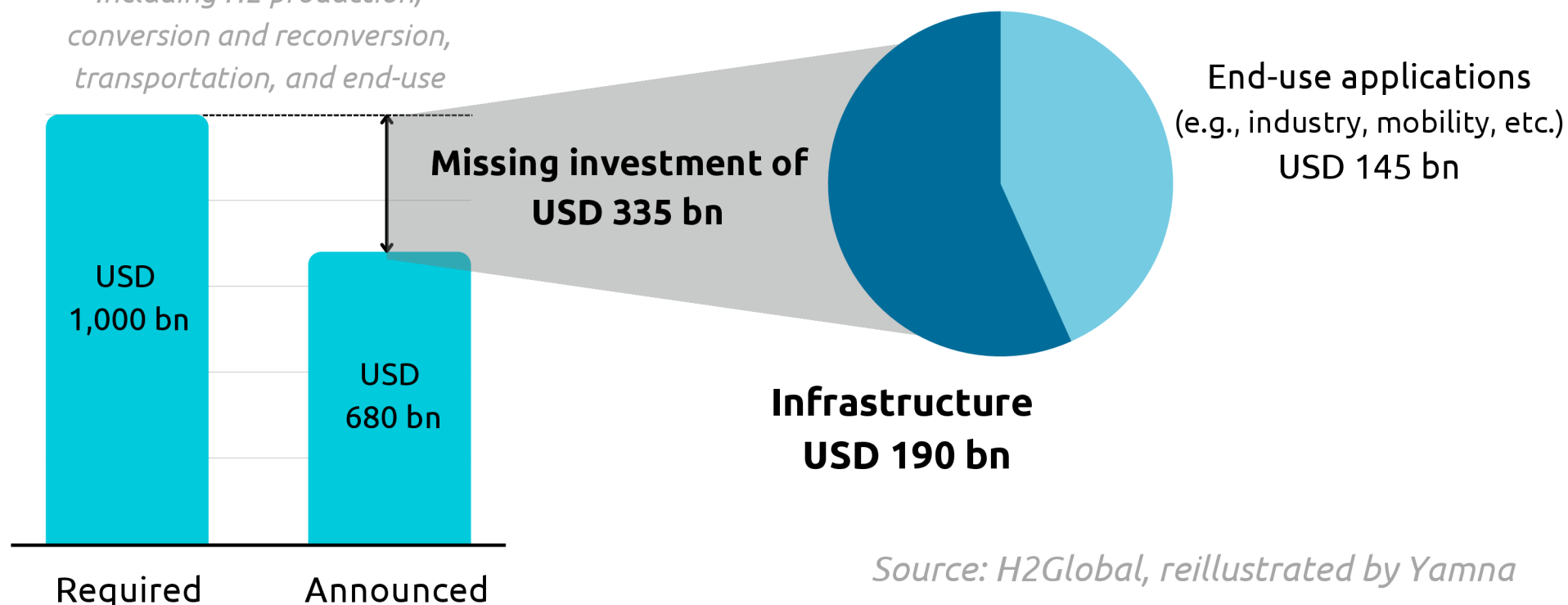
Here are **3** insights
from H2Global's report
published in December 2024

- ➔ **Hydrogen infrastructure to face a multi-billion investment gap by 2030**
- ➔ **Uncertainties on price and volume of capacity booking are identified as the main blocking point for H2 infra investment**
- ➔ **Several financial instruments can help mitigate costs and related risks in H2 infrastructure projects**

Hydrogen infrastructure to face a USD 190 billion investment gap by 2030

Total investment in clean hydrogen value chain by 2030

Including H2 production, conversion and reconversion, transportation, and end-use



What are some typical H2 infrastructure?

Comparable project(s)



Hydrogen pipeline

- Length: 1,500 km
- Capacity: 9,200 t-H2 per day

E.g., HY-FEN pipeline project in France



Import terminal

- Types: NH3, LH2, SNG, LOHC
- Import capacity: 5 TWh-H2-equ. per year

E.g., Ammonia import terminal and cracking projects in Brunsbüttel and Wilhelmshaven, Germany



Underground hydrogen storage

- Capacity salt cavern: 25 GWh
- Capacity depleted gas field: 145 GWh



Reconversion

- Types: NH3, SNG, LOHC
- Import capacity: 5 TWh-H2-equ. per year

Note: These parameters are techno-economic assumptions set by H2Global for this report. They are based on the information from public announcements of existing projects, relevant literatures, and expert interviews.

Why is there such huge investment gap?

Among many risks to hydrogen infrastructure projects, market related risks on price and volume remain the most critical ones

Investment risks



Will there be sufficient demand for H2 infra?

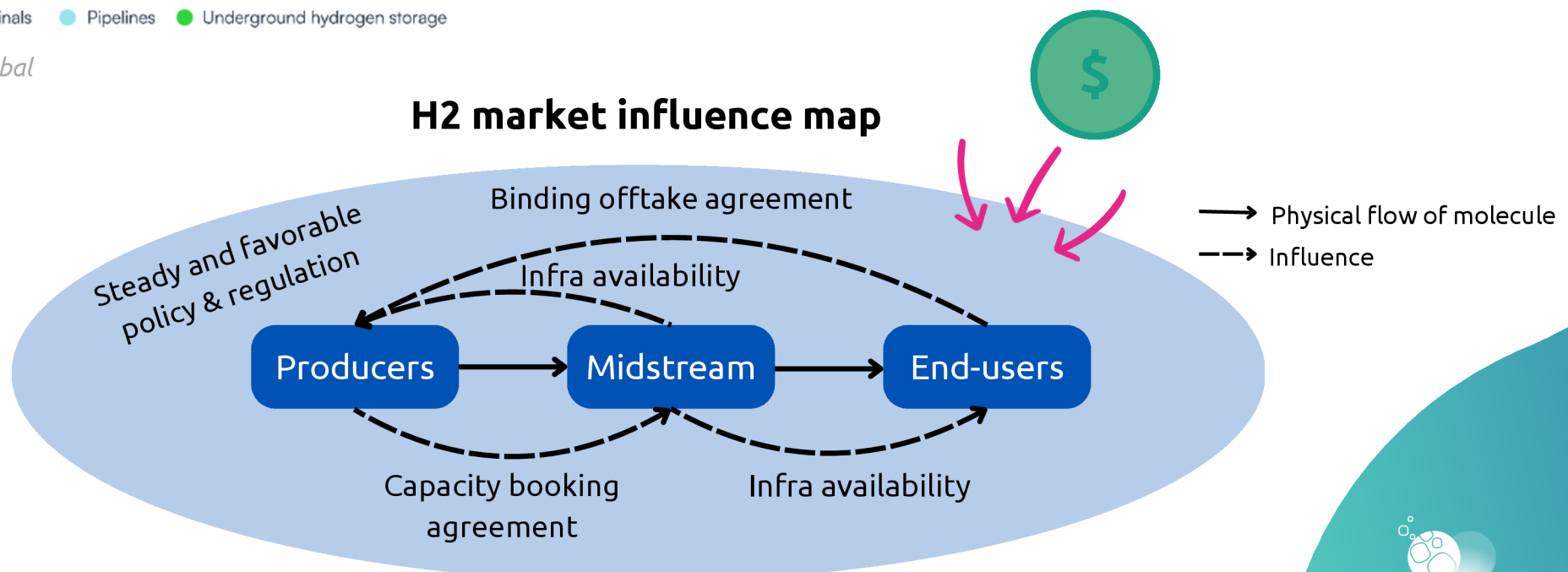
The uncertainty to capacity booking for pipelines, terminals, storage facilities, etc. is a major risk to project developers and operators

To mitigate these risks, clear and consistent targets, along with regulatory support, are needed across both upstream and downstream sectors to cumulate demand for hydrogen infrastructure



Source: H2Global

H2 market influence map



Financial supports can help de-risk hydrogen infrastructure

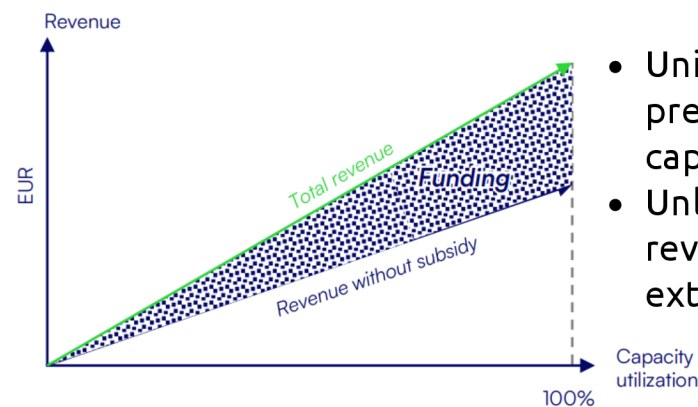
The price risks related to hydrogen infrastructure projects in early stages can be mitigated by government subsidies and funding instruments

4 types of funding instruments identified by H2Global

CAPEX support

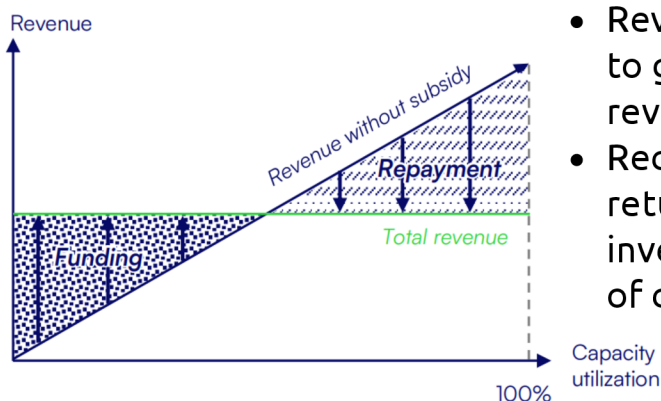
- One-time payment before project's construction or operation
- Lowers the upfront investment cost

Fixed Premium



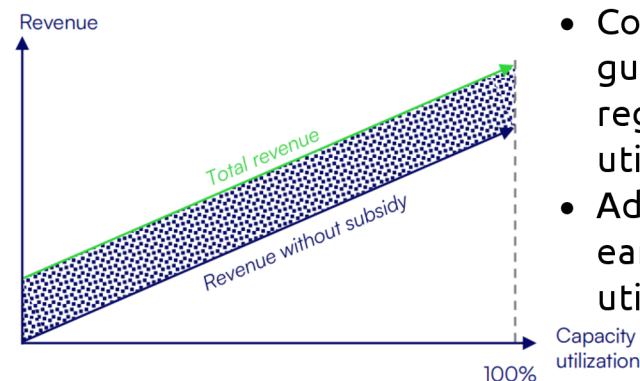
- Unit-price based premium linked to capacity utilization
- Unlocks additional revenue from selling extra capacity

Contracts for Difference (CfD)



- Revenue-based tariff to guarantee a revenue floor
- Receives a constant return on the investment regardless of capacity used/sold

Anchor Capacity Booking



- Constant revenue guaranteed regardless of the utilization rate
- Additional revenue earned when capacity utilization increases

Examples of support mechanisms for hydrogen infrastructure

Currently, there are only a few existing or proposed financial support mechanisms dedicated for hydrogen infrastructure projects



Germany's WANDA determination

For the uptake of its hydrogen core network, German government will set network tariffs covered by **amortization account**. This means that the loss made in the early stage of network operation (due to low tariff rate) will be compensated by higher revenue in the later stage (with increasing tariff).

The national development bank KfW will lend **€24bn to support the construction** of a national hydrogen core network.



EU's Connecting Europe Facility (CEF) program

Projects of Common Interest (PCIs) are eligible for funding from CEF Energy which allocates a total budget of **€5.8 billion** to the energy sector between 2021 and 2027.

PCIs are cross-border, interconnected energy networks in Europe contributing to the continent's energy transition, including hydrogen infrastructure projects.



**At Yamna, we believe that coordinated effort
between H2 producer and infrastructure
developers is crucial to ensure timely delivery of
green molecules to our customers**

Looking for a partnership?

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