

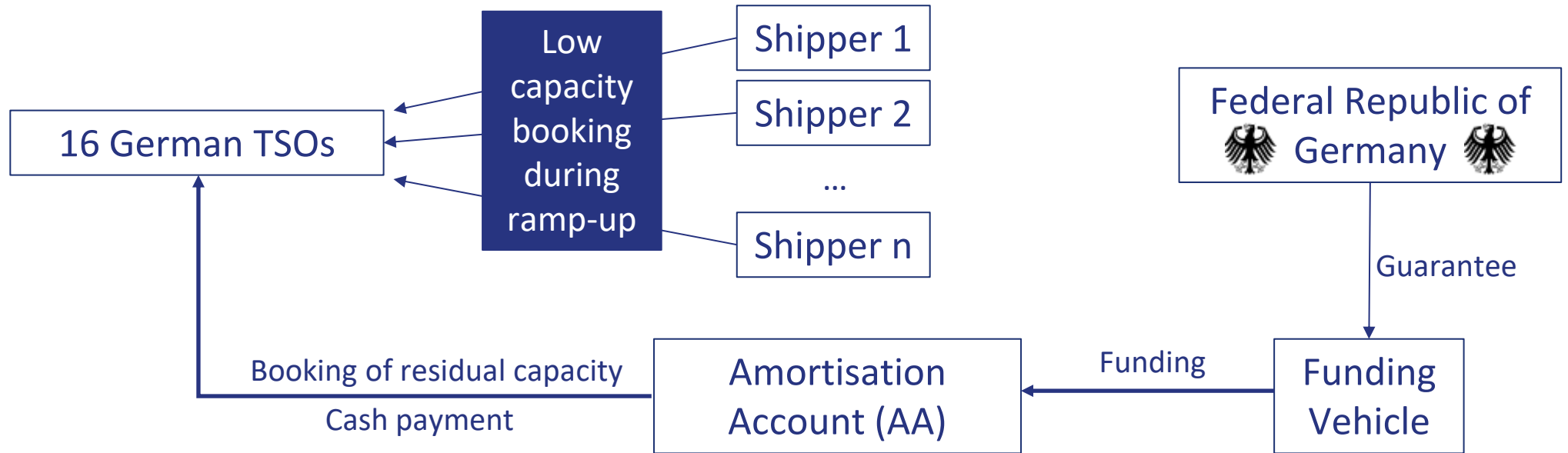
The German amortization account

How does it work?

Andreas Löffler, KfW IPEX-Bank
Brussels, 4 March

The German Amortization Account

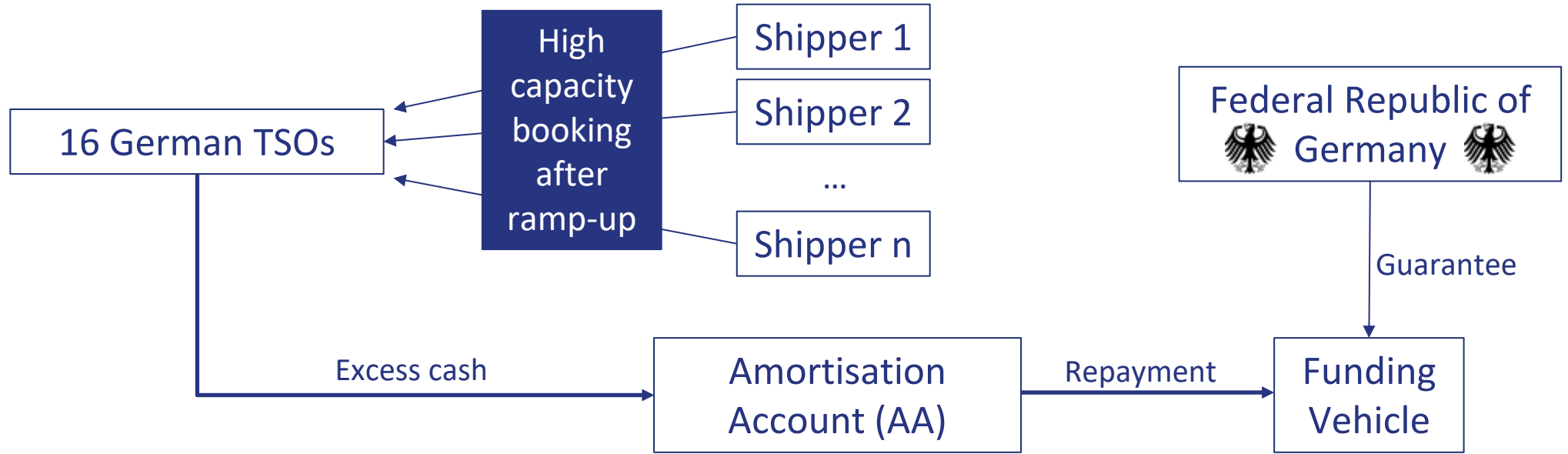
During network construction / ramp-up phase



Tariff is set lower than necessary to facilitate the market ramp-up, state books remaining capacity, negative balance of Amortization Account building up

The German Amortization Account

After construction / ramp-up phase



After the ramp-up phase, tariff is set higher than necessary to create excess cash and enable repayment of the AA, negative balance of Amortization Account depleting

Pros and Cons

Where is help and where isn't?



Establishes a business case for TSOs / HTNOs by providing certainty regarding revenues and, hence, de-risking



Stable cash flows, guaranteed returns, low risk...good deals for investors and banks!



No burden on state budget, unless guarantee is being drawn



Retention of up to 24% of amortization account's balance not in line with shareholders' risk appetite



Administrative burden, relatively inflexible structure (e.g yearly disbursements only)



Gas
Infrastructure
Europe

GIE on the Storage infrastructure derisking perspectives

Michael Schmöltzer

(representing Gas Storage Europe - GSE)

04 March 2026

Brussels, Belgium

ENNOH DERISKING WORKSHOP

The high value of hydrogen infrastructures

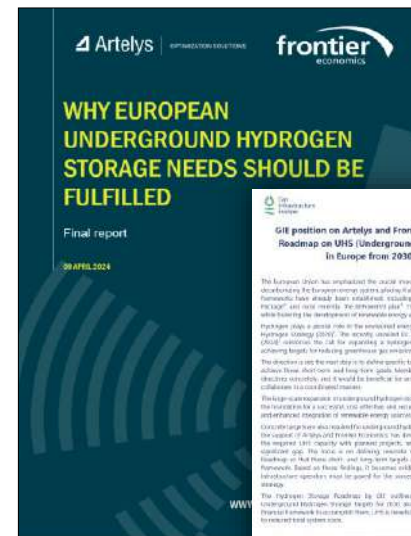
H2 and cross-border hydrogen infrastructure are key solutions, to deploy them we need to:

- **Ensure development of optimised energy infrastructure** for Europe with a sector-coupling focus Ensure that H2 is considered at par with other energy infrastructure sectors
- **Ensure that financing of cross-border hydrogen infrastructure (including storage and terminals) is possible proactively** to solve the chicken and egg issue and to ensure that supply and demand investments can rely on hydrogen infrastructure availability
- **Ensure that Member State level plans are aligned for the creation of H2 corridors and national regulators are prepared**

UHS allow for cheaper storage and increased flexibility to the energy system:



2022



2024

The values of UHS:

SYSTEM

INSURANCE

ARBITRAGE

KICK-START

ENVIRONMENTAL

Storing energy to **keep the lights on** is at least...



100x cheaper
...using (repurposed)
hydrogen storage
instead of batteries

2

GIE comments on ongoing ENNOH activities

Going beyond:

- GSE supports ENNOH's proposal for an EU Guarantee Mechanism.
- While national schemes (e.g. German amortization account) only aim at national hydrogen networks, the EU Guarantee Mechanism aims to only apply to funding gap of volume investment of a corridor (rest is covered by subsidies like PCI funds, national schemes (dedicated charge, ICA or IPCEI), and shippers booking)

Wider view: De-risking of hydrogen storage projects

- De-risking hydrogen storage projects requires mechanisms that enable an intertemporal allocation of costs for CAPEX-intensive investments.
- In addition to publicly coordinated and binding capacity allocation tenders, ICA-type mechanisms are therefore needed to reduce investors' risk exposure and unlock private financing for hydrogen storage projects.



THANK YOU
For your attention

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De-risking of the Dutch Hydrogen backbone



Service of General Economic Interest (SGEI)

- On 29 June 2022, former climate and energy minister Rob Jetten announced plans to build a national hydrogen transport network.
- In 2023 Hynetwork (subsidiary of Gasunie) was tasked with a Service of General Economic Interest (SGEI):
 - **Constructing and operating** the national hydrogen network (including interconnectors) under economic conditions, while ensuring safety, reliability, and efficiency.
 - Ensuring that the hydrogen network **meets the demand** for hydrogen transport in both the short and long term.
 - **Providing hydrogen transport services** to network users on non-discriminatory, transparent, and reasonable terms and tariffs, including supporting, supplementary, and connection services.
- To finance this assignment, the minister allocated a subsidy budget of up to **€ 750m** to Hynetwork.

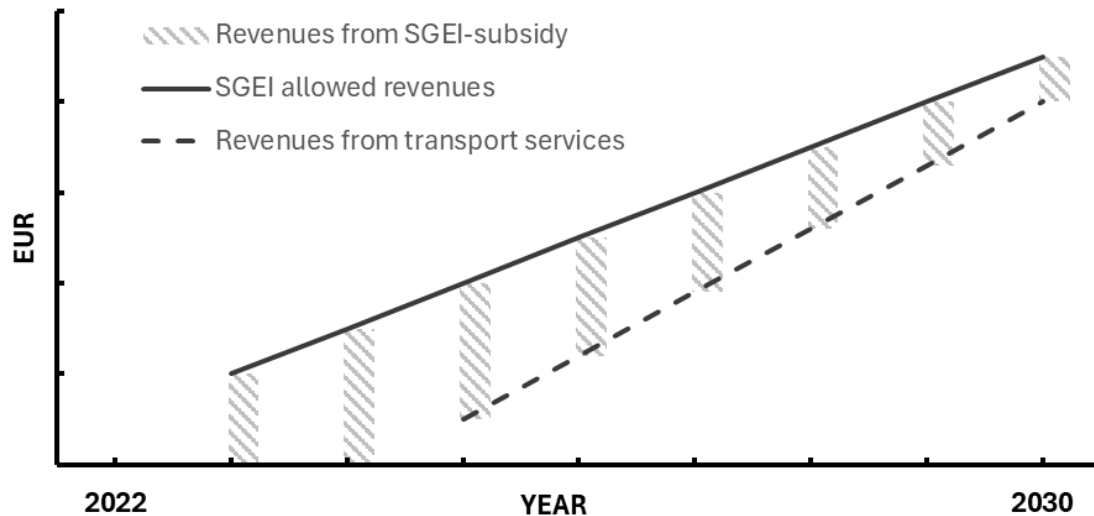


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SGEI Subsidy Characteristics

Basic principle: loss compensation



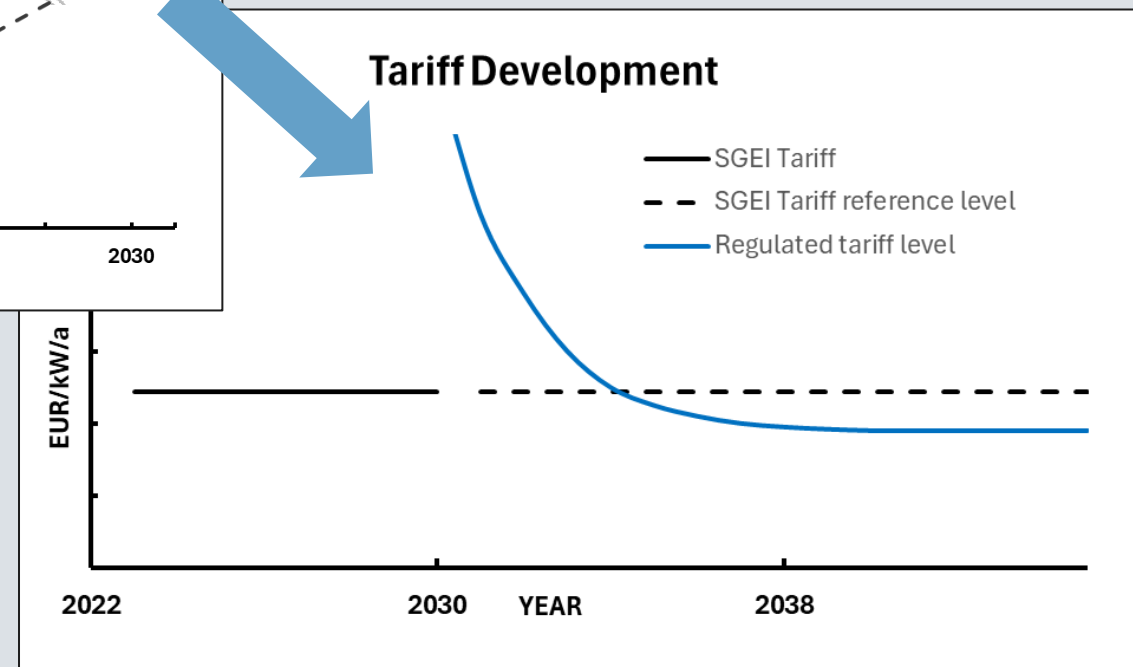
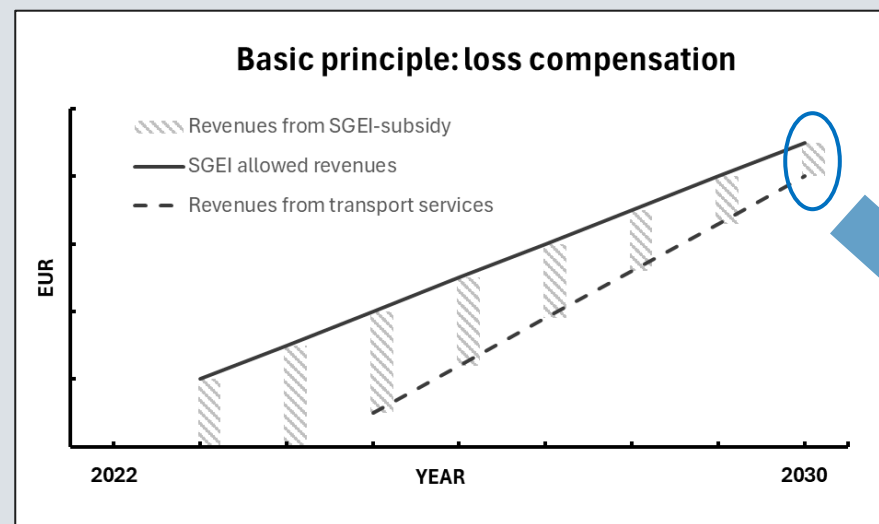
- SGEI period until 31.12.2030
- In total € 750m available
- Fixed postage stamp tariff level (cpi indexed)
 - 2026: 24.36 €/kWh/h/a (HHV)
- Loss compensation

The annual difference between allowed revenues (i.e. efficient cost) and revenues from transport services (transport contracts) is supplemented by subsidies
- There is expected to be sufficient subsidy to cover the full difference until the end of the DEAB period

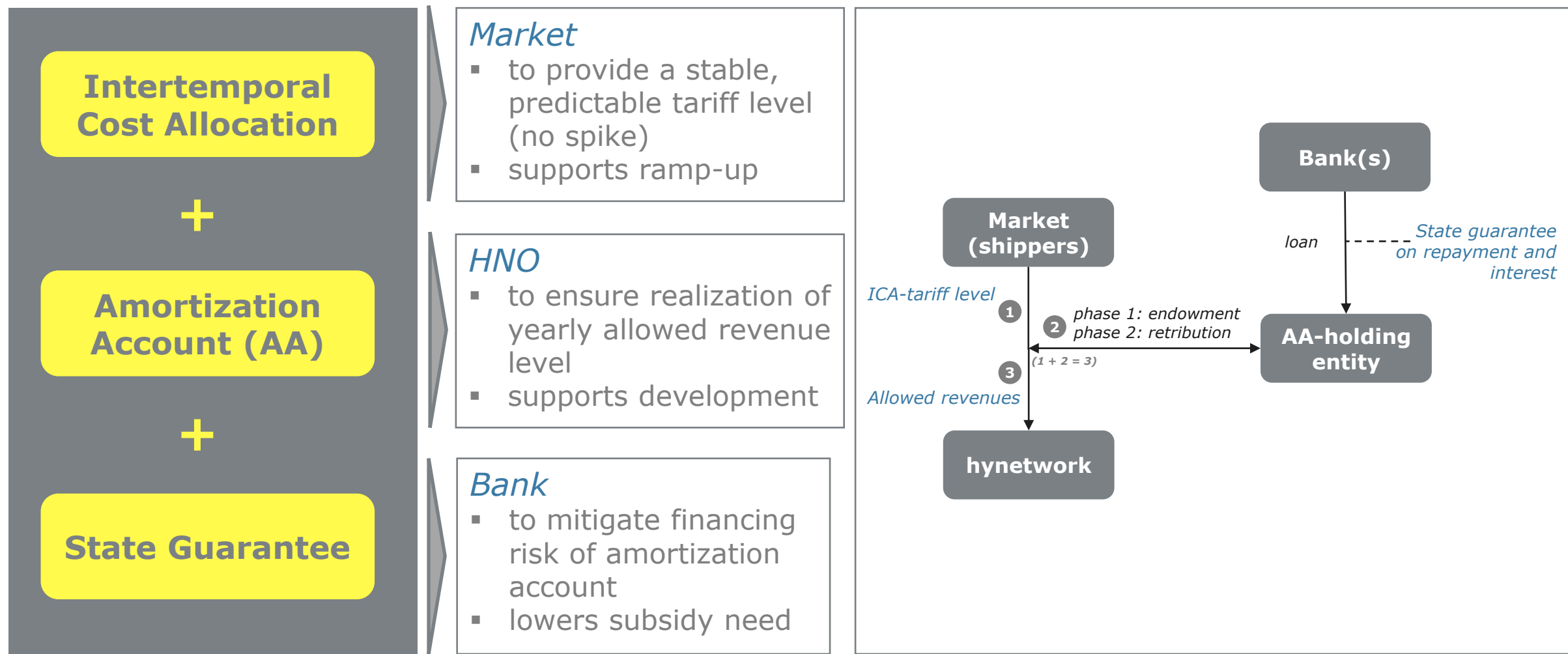
→ From 2031 (ultimately 2033) onward, costs must be recovered through regulated tariffs

Expected gap at end of SGEI period, would cause tariff level to spike

- Expected revenue gap at the end of SGEI-period
- This is due to projected higher cost and slower market ramp-up than originally estimated
- As a result, the regulated tariff level would spike
→ Various potential solutions under investigation (e.g. continuation of subsidy, German model, ...)



German model solves key issues



QUESTIONS?





with help and support of



Workshop on de-risking investment in hydrogen infrastructure

Opening remarks & Process of the de-risking report and status



A warm welcome to our De-Risking Workshop



with speakers and moderators from



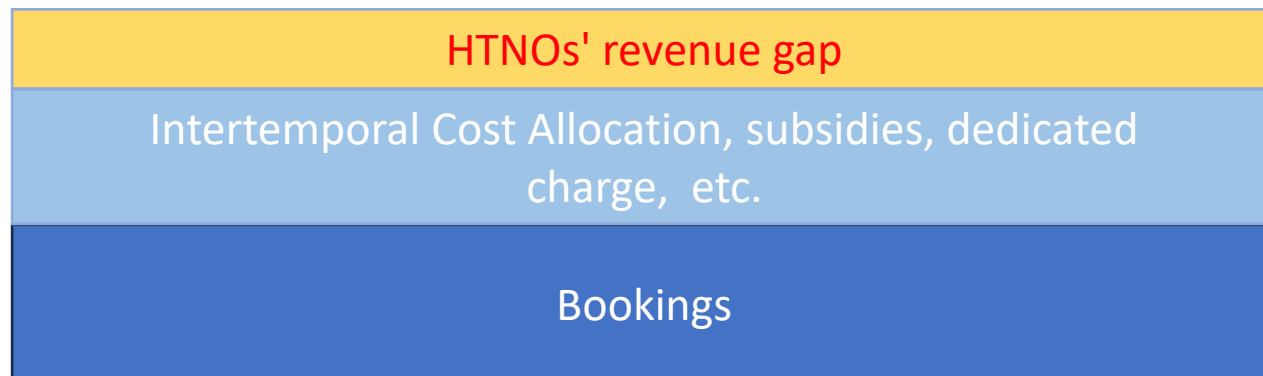
Forsyningstilsynet



"Securing capital remains a persistent challenge for hydrogen project promoters, particularly during the transition period leading up to the implementation of the Hydrogen and Gas Decarbonisation Package. In this sense, the Forum invites ENNOH, ENTSG and other relevant stakeholders to further work on the possible de-risking options and deliver a report on this topic by the next Forum." Conclusions of [Copenhagen Forum 2025](#)

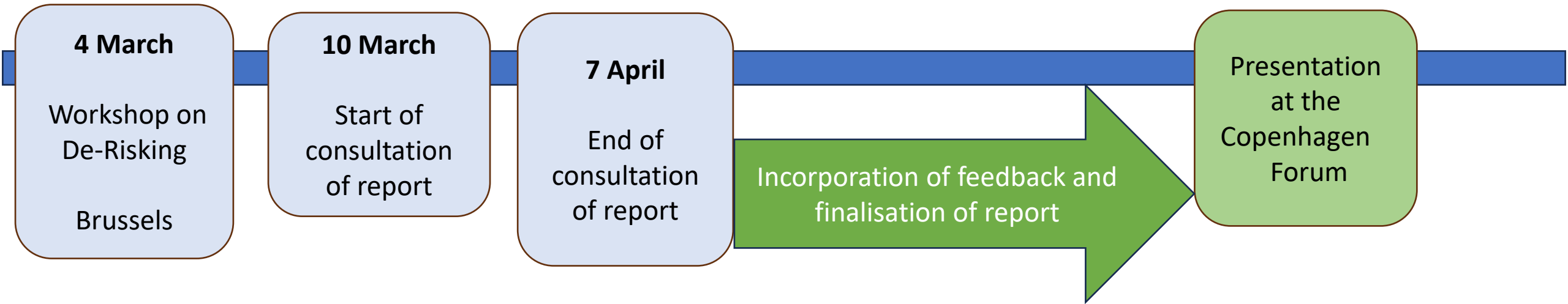
Hydrogen infrastructure operators have to take Final Investment Decisions on anticipatory investments now

Goal of the report: Analyse the existing de-risking toolbox for hydrogen project promoters and recommend expansions of the toolbox and solutions to close the HTNOs' revenue gap.



To take FID that revenue gap must be addressed





Agenda	Presenters
10:00 – 10:30 Registration & welcome coffee	
10:30 – 10:45 Opening remarks & Process of the de-risking report and status	• George Wüstner (ENTSOG)
10:45 – 11:45 Panel discussion on the existing toolbox for de-risking: Stakeholders views	• Catherine Galano (Frontier Economics) • Michael Schmöltzer (GIE) • Jeroen Tap (Dow Chemicals) • Marianna Frison-Roche (ENGIE)
11:45 – 12:30 Panel discussion on national approaches on de-Risking Measures	• Helena Astachowskaja (ENNOH) • Hans Jonk (Gasunie) • Søren Arnberg (Danish Regulator) • Andreas Löffler (KfW)
12:30 – 13:30 Lunch break	
13:30 – 14:45 Presentation of current perspectives of the report and discussion with stakeholders	• Claude Mangin (ENNOH) • Laurent Percebois (ENTSOG) • Andreas Löffler (KfW) • Søren Arnberg (Danish Regulator)
14:45 – 15:00 Wrap-up of workshop and next steps	Philipp Alexander Ostrowicz (CSEI)
<i>End of the workshop</i>	

Panel discussion on the existing toolbox for de-risking: Stakeholders views

Panelists:

**Michael Schmöltzer (GIE)
Jeroen Tap (Dow Chemicals)
Marianna Frison-Roche (ENGIE)**

**Moderator:
Catherine Galano (Frontier Economics)**

Panel discussion on national approaches on de-risking measures

Panelists:

Søren Arnberg (Danish regulatory authority)

Andreas Löffler (KfW)

H.W. Jonk (Gasunie)

Moderator:

Helena Astachowskaja (ENNOH)

Lunch break

Presentation of current perspectives of the report

Is it possible for hydrogen to follow the path of natural gas? (1/2)

Pre-Liberalisation path used by natural gas networks:

Natural gas networks developed from repurposing town gas networks and from **political and commercial agreements on gas supplies**, often using long-term (LT) supply contracts ([Bouzarovski et al. \(2015\)](#)). For Soviet gas, network expansion started with 1968 agreement between Austria and Czechoslovakia, in a Cold War context of realpolitik.

LT supply contracts made it efficient to secure **LT capacity bookings** to flow gas along TSO networks.

Before liberalisation of gas in Europe, **Vertically Integrated Undertakings (VIUs)** were the norm. **VIUs were active in gas production** (upstream), **gas networks** (midstream) and **gas retail** (downstream), i.e., along the whole value chain.

VIUs ensured that supply and demand internally coordinated within the integrated group (*from wellhead to burner tip*). Prior to Final Investment Decision (FID), the network size was set, based on foreseen capacity and flow levels.

With liberalisation and implementation of Third Gas Directive (2009), **unbundling for gas and electricity networks was introduced**, and TSOs were separated from companies active in production and retail to ease downstream competition and enforce regulated Third-Party Access.

Developments of new gas capacity were made possible using:

- Open Seasons / Call of interest or
- Incremental capacity auctions.

FID were taken when LT capacity bookings covered a relevant share of the investment cost.

Is it possible for hydrogen to follow the path of natural gas? (2/2)

With [Directive \(EU\) 2024/1788](#) of the Hydrogen and Decarbonised Gas Market Package, the **unbundling principle is transposed to hydrogen (Art. 60)**.

- Hydrogen market cannot ramp-up in an integrated way along the value chain like natural gas.
- Hydrogen network cannot rely only on market participants LT booking in a nascent market.

This configuration of a liberalized market prior its full development triggers uncertainties :

- **Hydrogen producers and retailers need guarantees** on 1) existence of a hydrogen network, and on 2) low enough TPA tariffs, especially in early years
- **Hydrogen networks need guarantees** on 1) long-term demand for capacity and flows, and on 2) high enough TPA tariffs, especially in early years

=> Finding the right balance, esp. on tariffs, justifies special de-risking strategies to break the infamous 'chicken-and-egg' issue

For hydrogen networks, a de-risking policy from NRAs and from the EC is essential, prior to FID

- 1) Tariffs cannot be fully cost-reflective in early years:** hydrogen users cannot be asked to pay for the average costs of a nascent network dimensioned in the perspective of a mature market.
- 2) Need for protection against non-controllable volume risk:** in contrast with gas history, no large volumes of hydrogen early on, hence risk to derail the hydrogen network business model.

Mechanisms	Fit for anticipatory investment in hydrogen	Limitations
LT booking	✓	Not enough capacity bookings materialise to take Final Investment Decision.
Integrated project	✗	Removes or reduces only the regulatory risk.
PCI / PMI funds	≈	Limited budget shared with investments in electricity, electrolysers and CO ₂ projects. Does not cover the revenues gap.
CBCA	≈	The uncertainties in production and demand of the nascent hydrogen economy may prevent other national systems to bear additional risk coming from a “transit” country.
ICA + State Guarantee	✓	Not applicable to cross-border projects.
Dedicated charge	✓	Not applicable to cross-border projects.
ICA + Operating State subsidy	✓	Not applicable to cross-border projects.
State Subsidy	✓	Subsidy unflexible to market changes.

Need for a new tool



Hydrogen is a nascent market that needs **anticipatory investment while avoiding non-prohibitive, affordable network tariffs for first movers during market-ramp up.**

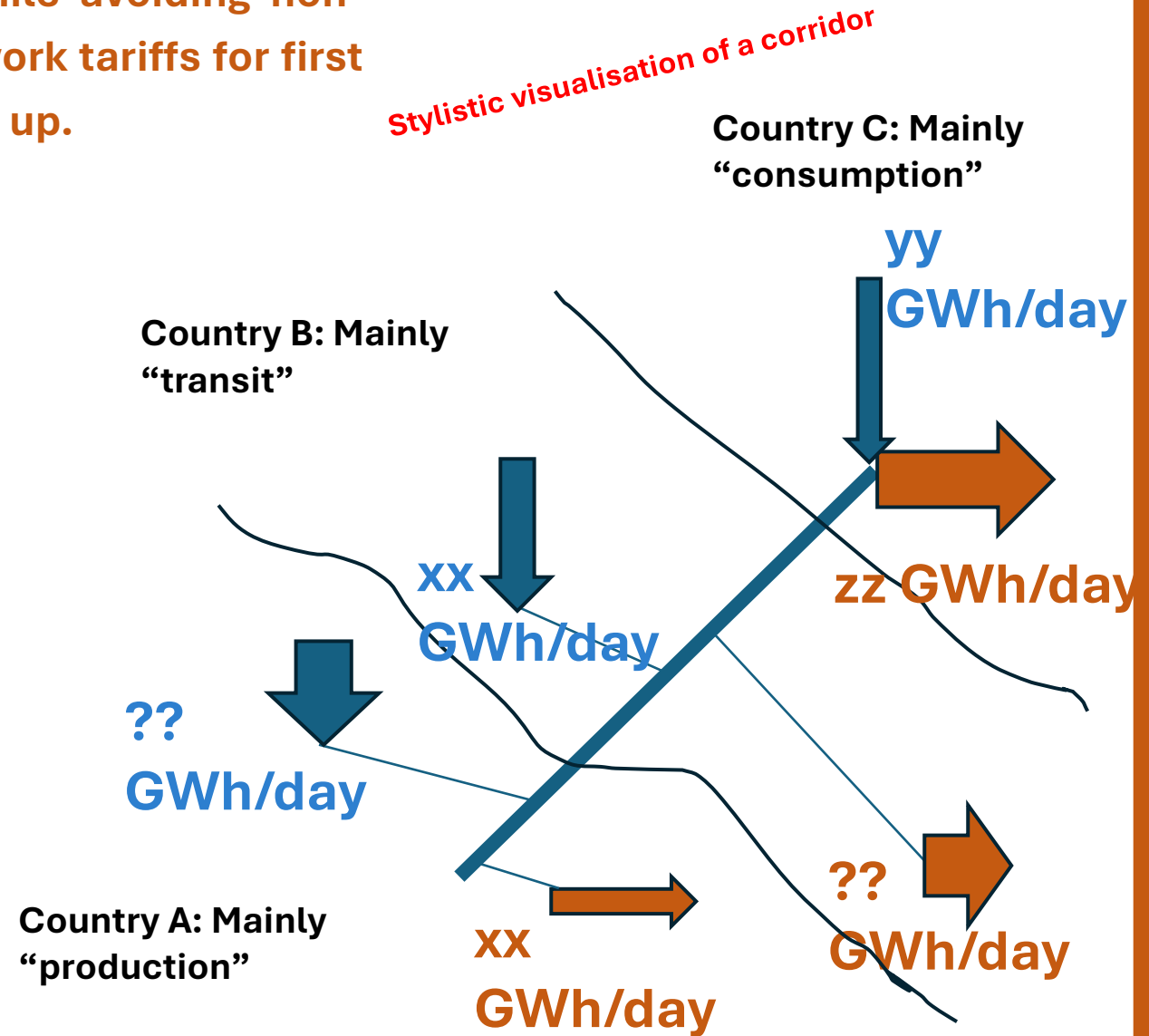


Since we do not know for sure the final production and demand in a cross-border supply corridor, countries A, B and C might have **difficulties to agree on a CBCA.**

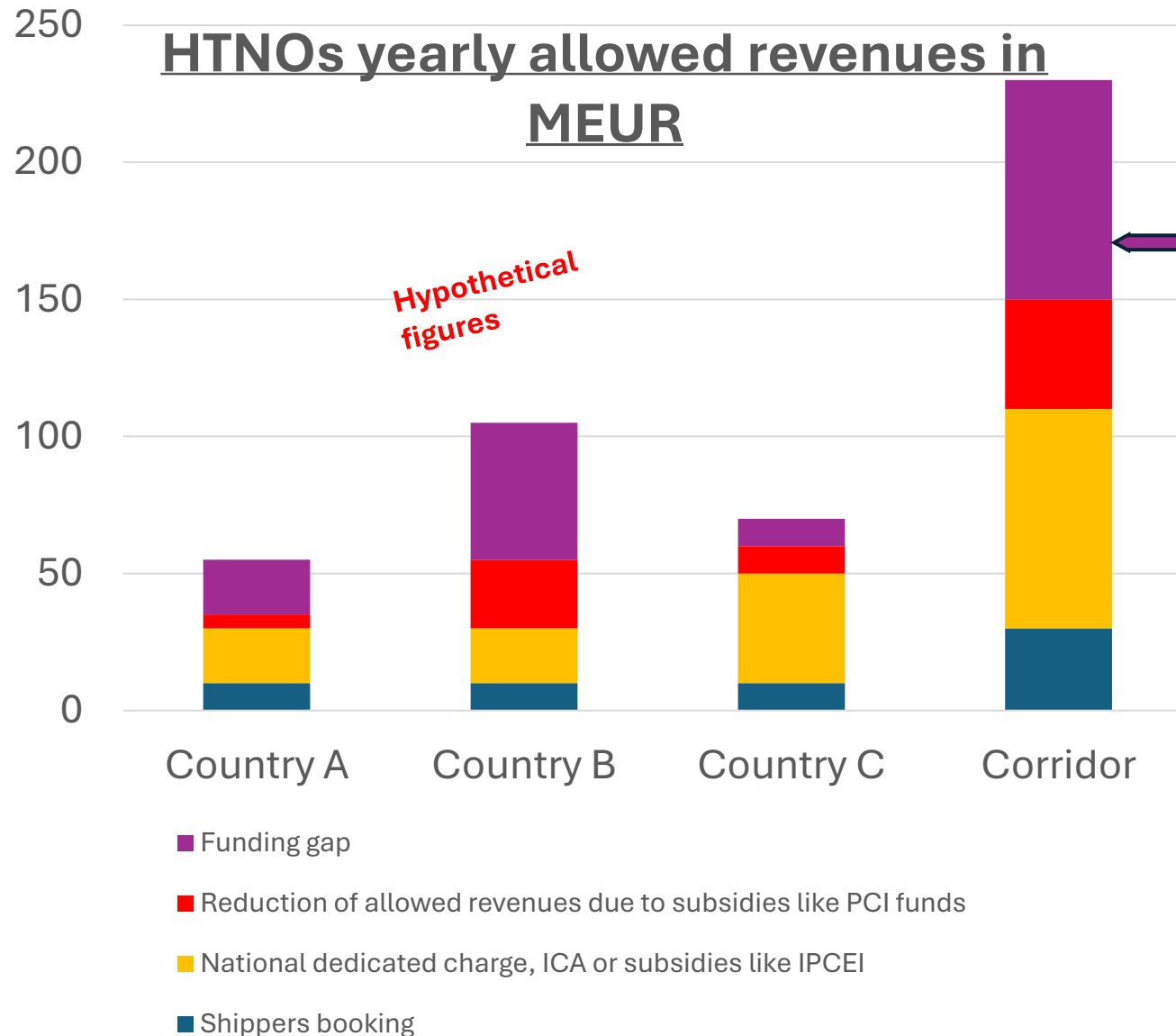


That is why to solve that chicken-egg issue **and secure private investment**, consideration could be given to further developing **an EU-level guarantee.**

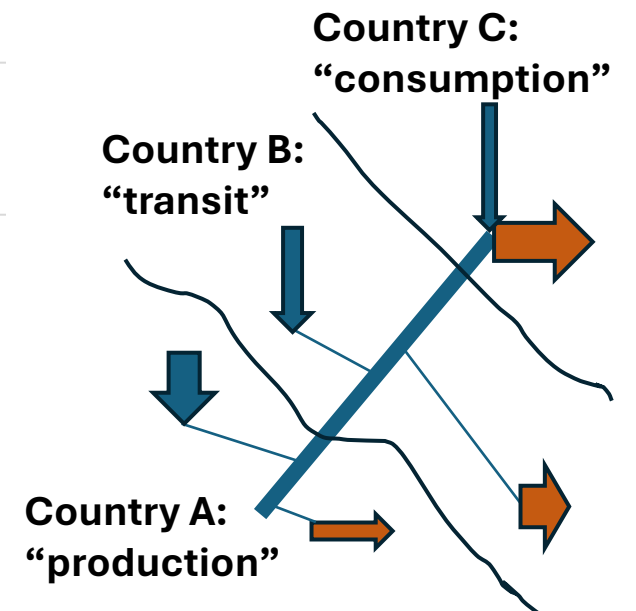
The existing toolbox is not enough for cross-border projects.



Volume of investment to be guaranteed?



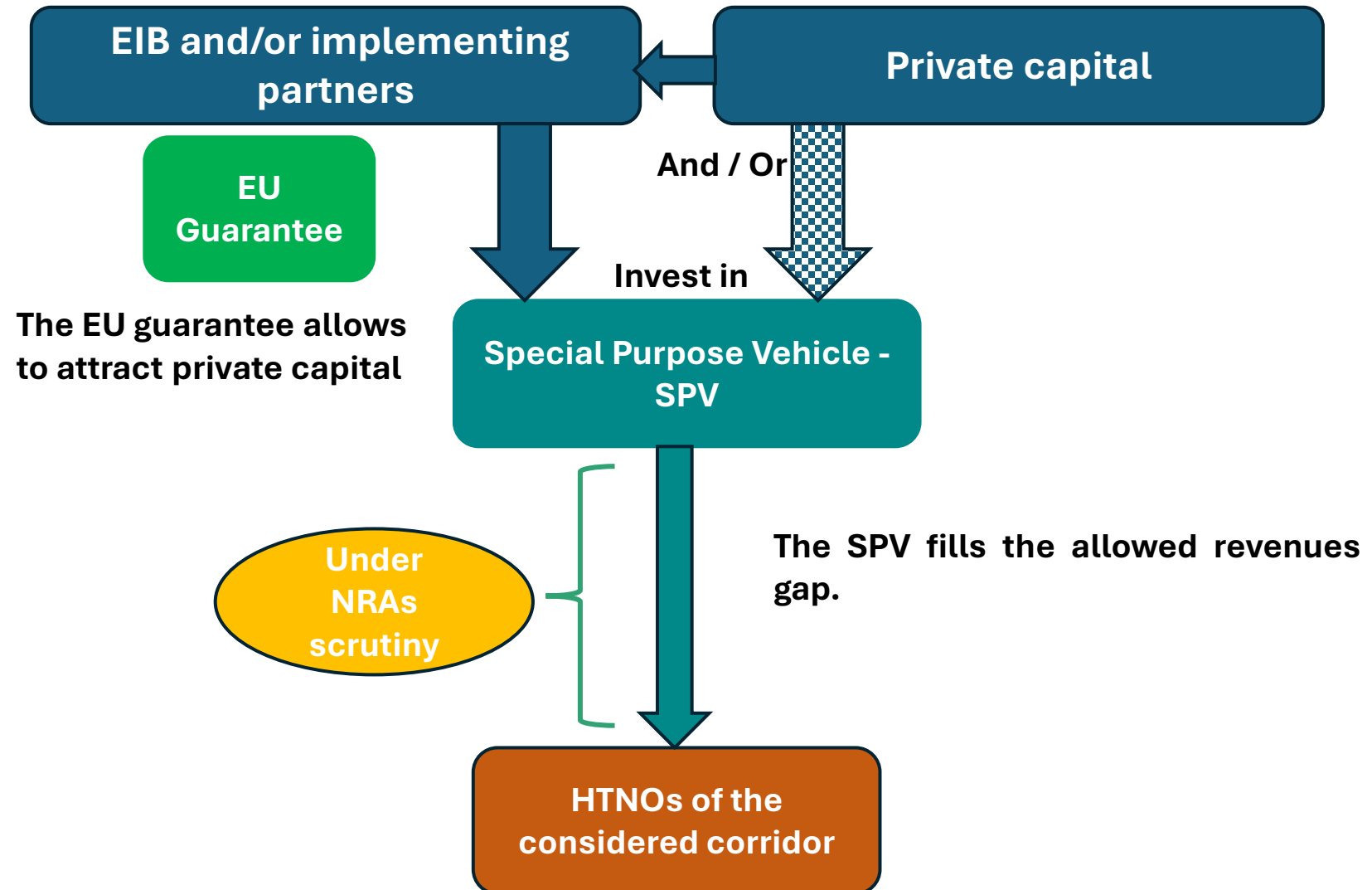
The EU guarantee would only apply to this share of the allowed revenues of the corridor.



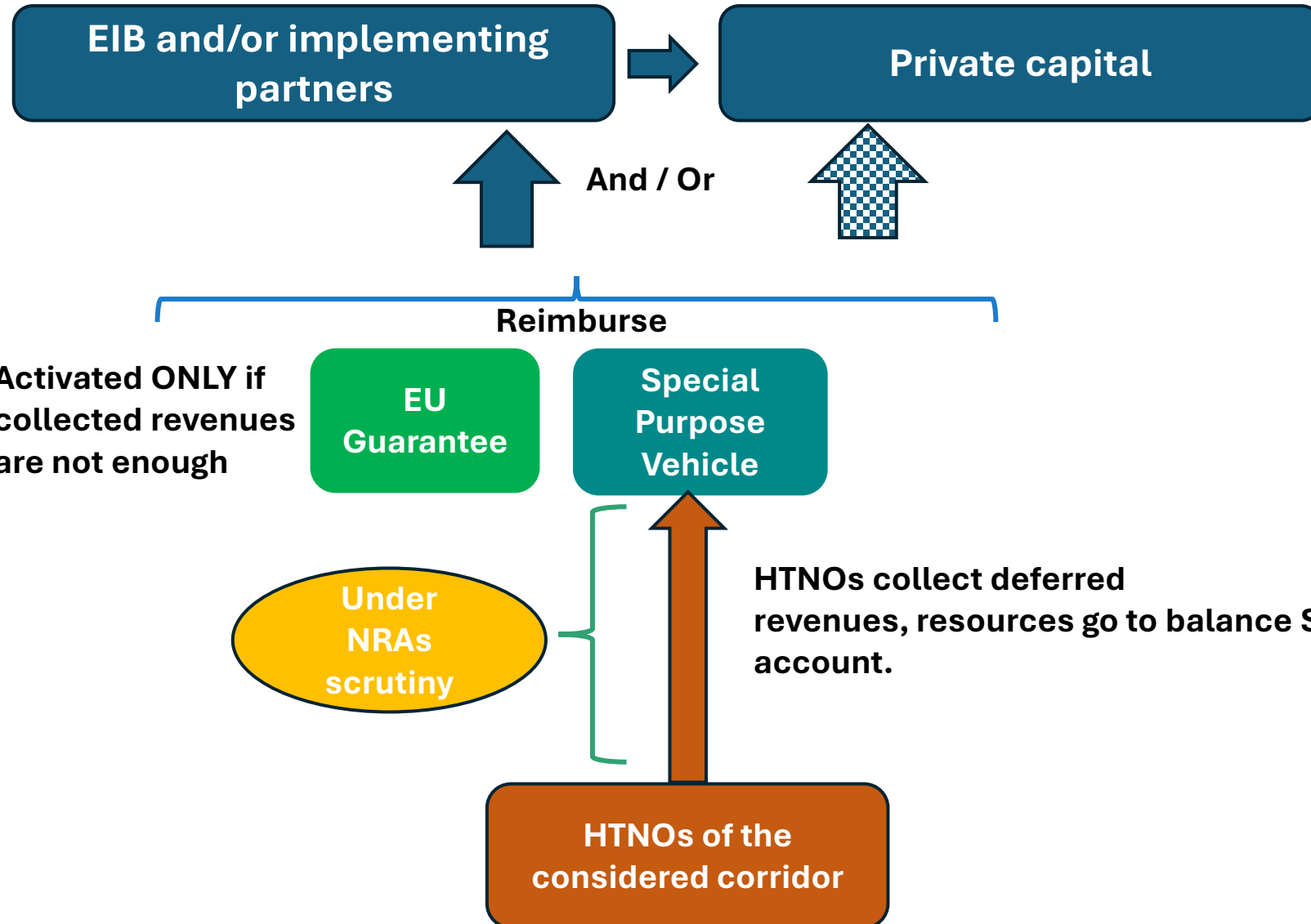
The new EU mechanism would guarantee only the share of the considered supply corridor cost needed to recover allowed revenues.

The EU guarantee mechanism in the first years

During the development phase of the hydrogen market, EIB and private capital would fill the HTNOs revenues gap.



The EU guarantee in medium / long term phase



HTNOs would reimburse EIB and the private capital providers. The EU Guarantee would only be triggered if the market does not develop.

Wrap-up of workshop and next steps

Hydrogen Infrastructure in Denmark – Approach to Risk Sharing and Intertemporal Cost Allocation

**ENNOH's Workshop on de-risking investment in hydrogen infrastructure,
Bruxelles 4 March 2026**

Presenter: Søren Arnberg (sarn@Forsyningstilsynet.dk)

The “Seven” project - Parliament and government decisions (2024-25)

Background

Objective: Promote Europe’s green energy transition by exporting green hydrogen from Danish PtX plants to the industrial sector in Germany

Usage of the Danish regulatory framework: Regulated third party access with revenue caps

- Startup revenue cap model (ICA) permitted.

State subsidy necessary

- Covers up to 60 pct of total cost over a 30-year ICA period (at 0.5 GWh booked capacity)
- Subsidy conditioned on required bookings

Timeline

2025 (Q4): Information package submitted to capacity bidders

2026: Capacity sales

Early 2028: Final Investment Decision (FID)

Late 2030: The pipeline is ready for transporting green hydrogen



Photo: Energinet A/S

Creating a realistic project

Sustainable budget

Tariffs must be close to users' estimated willingness to pay (rough estimate from early study)

State takes on market risk

State subsidy reduces tariffs to the willingness to pay level and takes on market risk, i.e. the risk of low demand

- To reduce shippers and TSO's exposure

Binding user commitment required before FID

- To reduce risk to TSO and state
- Minimum 0.5 GWh/h/year booking (of 2-3 GWh/h/year total capacity) for 10 years

Design of state subsidy

Objective: Reduce average tariff to approx. 24EUR/kWh/h/year – WTP

Design

Subsidy as low as possible and with upper limit – an upper cap, based on booking requirement is calculated at FID (2028)

Cost increases do not increase subsidy

- but cost reductions do reduce subsidy
- subsidy is reduced proportionally if booking exceeds 0.5 GWh so that tariffs do not go below the target

Structured as a conditional loan (repayment required if unsupported tariffs fall below target)

- Up to €1.4bn over 30 years, max. approx. €47m annually

Startup revenue caps – to get the market started, ICA

Classic revenue caps imply decreasing cost per capacity unit over time in a startup market

- High startup tariffs are a barrier for market entry

Startup revenue caps set annually at levels aiming at stable tariffs over time

- At a level close to the estimated willingness to pay also for the first user

Only a startup solution – return to classic revenue caps

- Current idea: ICA runs for 30 years
- Shorter ICA period to be explored to reduce financial cost and subsidy
- To be decided before FID in 2028

Efficient costs & risk sharing

Implementation of startup revenue caps

Annual revenue caps sum up to all costs during the project's lifetime

- At a level corresponding to efficient costs – investment and operation
- Includes the subsidy
- Build up of regulatory debt

Adjusted with

- Further investment applications
- Productivity requirements
- Development in prices and interest rates
- Other cost, cf. article 17 in Regulation (EU) 2024/1789 (the Gas Market Regulation)

Recalibration after each regulation period

Cost risk sharing during operation (2030 and beyond)

Classic cost risk sharing between TSO and shippers in the operational phase through the revenue caps

- TSO takes on cost risk that it can control
- Users take on cost risk related to exogenous factors.

Cost risk sharing during construction (2028-30)

Construction phase

- The users and the TSO share the risk of budget overruns in the construction costs (compared to the budget at FID)
- Users pay risk compensation to the TSO
- Incentive to minimize budget overruns
- Reduces risk for users.

Thank you for your attention