FRANCESE TRAININGS

# Regulatory Roles and Frameworks for Effective Incorporation of Hydrogen into Energy Networks

**Focus on Natural Gas and Pure Hydrogen Networks**

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# Today's Discussion

- Policy Decision on Hydrogen
- Role of Natural Gas Infrastructure Operators in the Hydrogen Economy
- Effective Hydrogen Regulation for Gas Networks

# POLICY DECISION ON HYDROGEN

## Creation of a Hydrogen Economy

**The Hydrogen Strategy for a Climate-neutral Europe defines hydrogen as a key priority to achieve Europe's environmental policy goals. Building up a hydrogen economy in Europe requires a structured value-chain approach**

**A POLICY DECISION HAS BEEN MADE AT EU LEVEL THAT GIVES HYDROGEN A PIVOTAL ROLE TO PLAY IN EU ENERGY TRANSITION**

- ✓ It contributes to decarbonize multiple sectors of the economy
- ✓ It contributes to advance sector coupling
- ✓ It contributes to security of energy supply

**REGULATION NEEDS TO SET THE FRAMEWORK FOR THIS POLICY DECISION TO MATERIALIZE**

Consistent regulatory approach across:

- ✓ Production
- ✓ Transportation
- ✓ Supply/consumption

**REGULATION TO BE TAILORED TO THE CURRENT PHASE OF THE H2 INDUSTRY OF VALUE CHAIN IN THE MAKING**

- ✓ Creation of a market for H2: production, transportation solutions and demand
- ✓ Definition of new business models for companies in H2

**REGULATION NEEDS TO FOCUS ON SUPPORTING THE CREATION OF THE H2 MARKET, VALUE CHAIN AND IN DEMAND CREATION**

# ROLE OF NATURAL GAS INFRASTRUCTURE OPERATORS

## Enablers of a Hydrogen Economy

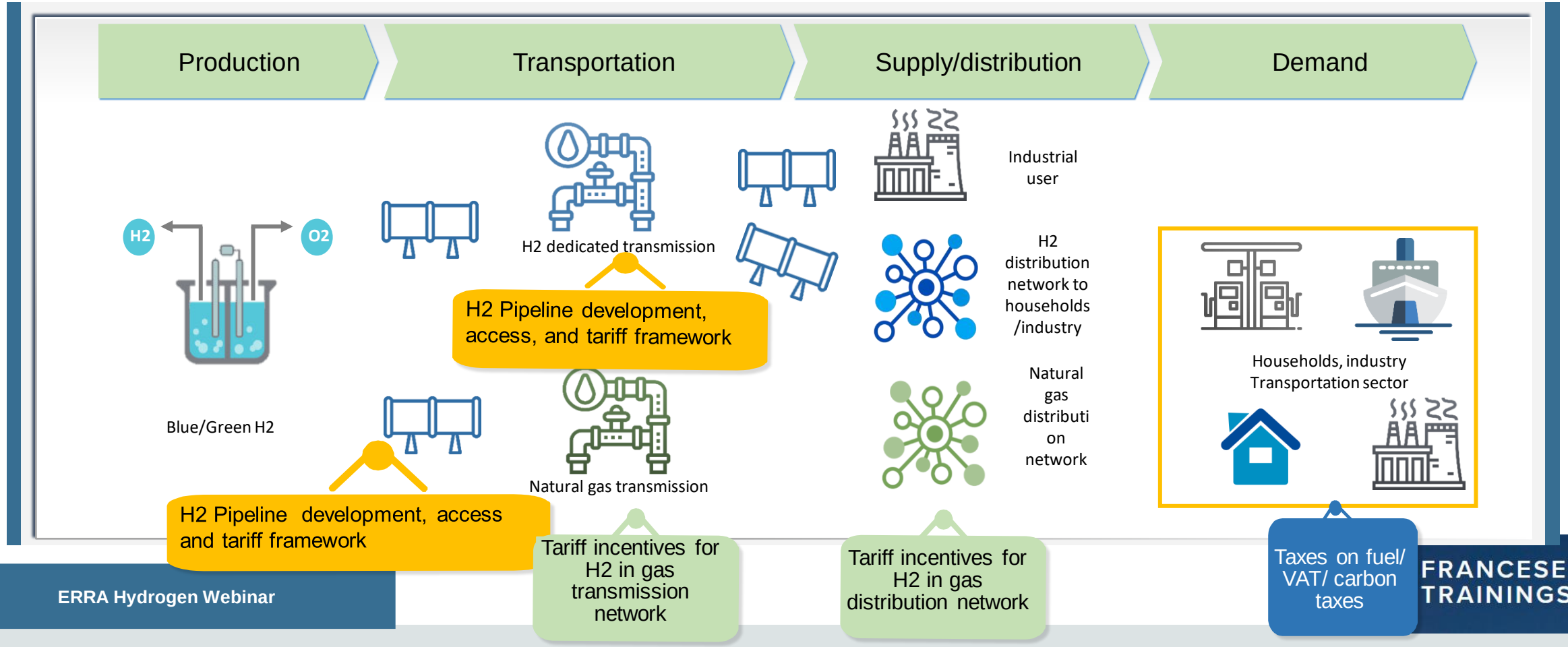
- The role of the **natural gas transmission system operators (TSO) as an enabler of the hydrogen economy** materializes through its assets and skillset
  - ☑ Existing assets that can connect new hydrogen supply and demand
  - ☑ Technical skillsets and know-how in the development or management of assets needed for hydrogen transportation
  - ☑ Commercial know-how and geographical location that facilitates matching hydrogen demand and supply
- Natural gas TSOs can therefore play a **key role in the creation of a hydrogen value chain** and in the achievement of policy goals set around hydrogen
- In order to fully play their role as enablers, **natural gas TSOs need to be able to operate across the whole hydrogen value chain** and collaborate with other players (including producers and suppliers) to the construction of such value chain
- Natural gas TSOs have already started such collaborations across a variety of projects including the following services, partners and customers to first blend hydrogen in natural gas networks and develop pure hydrogen networks

| Services | Partners | Customers |
|---|---|---|
| H2 / SNG / Biogas production / Storage excess wind power / P2G technology / H2 gas network development | Power TSO / Port authorities / Research institutions / other gas TSOs / H2 users / Gas suppliers | H2 users and industrial customers / Biogas producers / shippers |

# EFFECTIVE HYDROGEN REGULATION FOR GAS NETWORKS

## Focus on Natural gas and Pure Hydrogen Networks

The H2 value chain is in reality **multiple value chains evolving in a scattered and non-coordinated way** at the European level*
**Several regulatory measures can be taken** in line with value chain development in order to have a backbone for green gas regulation




* Simplified view of H2 value chain options

# EFFECTIVE HYDROGEN REGULATION FOR GAS NETWORKS

## Focus on Natural gas and Pure Hydrogen Networks

**An effective regulation to incorporate hydrogen into natural gas networks and for the creation of pure hydrogen networks needs to cover some critical areas as a minimum:**

| | |
|---|---|
| Unbundling | Regulation should recognize the role of the gas TSOs as enablers of the hydrogen economy and pivotal players in the achievement of the hydrogen policy goals, therefore requiring new rules on unbundling provisions regulating their participation in competitive activities such as hydrogen production |
| Network Access | Rules to manage transportation capacity need to be tailor made for new hydrogen networks to ensure parties investing in them can recover their investments |
| Tariffs | Tariffs for natural gas networks need to be revised to facilitate the injection of hydrogen and tariffs for pure hydrogen networks need to be set so that a viable rate of return is reached by their investors |
| Repurposing gas pipelines | Natural gas infrastructure may be converted to hydrogen transportation in some cases. A mechanism to modify the regulatory asset base (RAB) of natural gas transmission system operators, and adjustment of their tariffs, would need to be established |

# UNBUNDLING

## A Re-think of Existing Rules

**Risks to be evaluated for regulated natural gas TSOs involvement in competitive businesses**

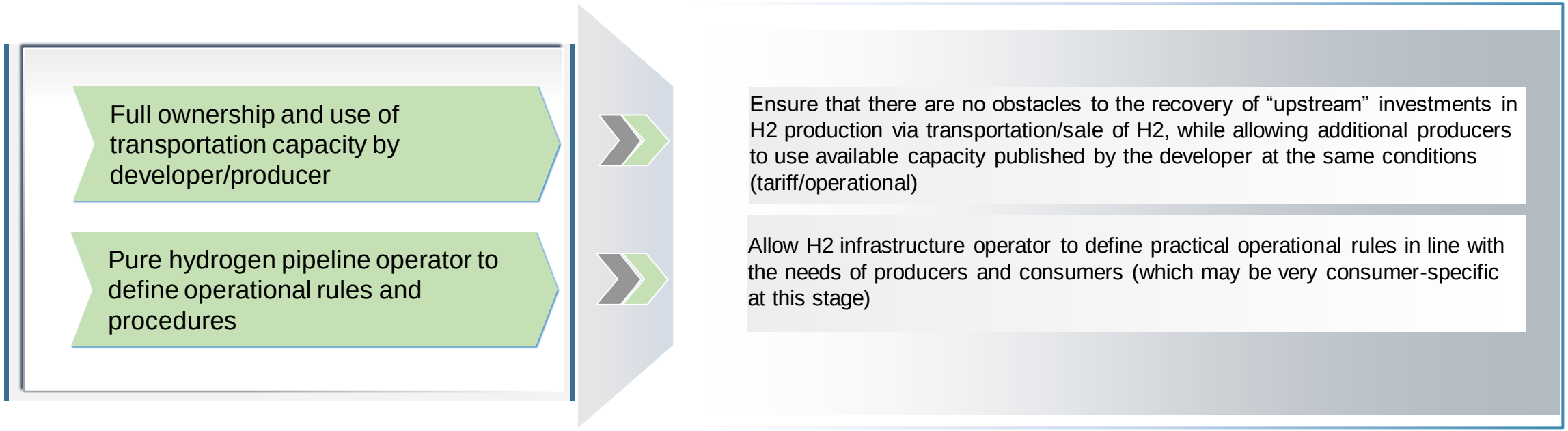
| | | |
|---|---|---|
| Risk of distortion of competition | Are these principles still effective in the light of the evolution of the gas value chain and new businesses identified above? | Distortion is unlikely to happen in markets that are new (P2G/H2 production), or where an established business or infrastructure for alternative fuels exists with multiple players in the market |
| Lack of incentives to invest in the regulated business | | The incentives to invest in regulated business are set by regulation itself (namely regulated rate of return). Incentives to invest in competitive businesses will be provided by the market |
| Risk of abuse of position due to access to cheaper capital | | Lending requested by the TSO to invest in new activities outside its current business carry more risk that lending for regulated activities, therefore making it unlikely to have better lending conditions than competitors |

New value chains change the overall context of TSO operations and therefore need to **re-think unbundling** and regulatory evaluation of TSO involvement in competitive businesses. Natural gas grid operators should be allowed to participate in competitive businesses within the hydrogen value chain with a clear legal separation between hydrogen-related activities and natural gas related activities

# NETWORK ACCESS

## Tailor-Made Solutions

- **Pure hydrogen transport infrastructure is currently developing around key anchor load users such as industrial areas or H2 distribution networks, around which it will be possible to further expand the network and demand**
- **These projects are built around anchor load shippers require tailor-made rules for access to capacity and operational procedures**



# TARIFFS

## Tailor-Made Solutions

- **New regulation should set the framework for tariffs for pure hydrogen pipelines and networks (TSOs/DSOs) and dedicated tariffs for injection of hydrogen in natural gas networks**
- **Existing natural gas tariffs mechanisms for the use of transportation capacity and injection of hydrogen in the natural gas grid need to be revised to facilitate the incorporation of hydrogen in such networks**

| | | |
|---|---|---|
| Pure hydrogen networks | Tariff regime set by pipeline developer within regulatory boundaries | Allow developers to propose a tariff mechanism suitable to recover their investments with a rate of return reflective of the added risk of this activity (different from traditional natural gas pipeline operations). Regulatory oversight on the rate set should be in place to avoid dumping of costs from other parts of the value chain and unfair competition among shippers* |
| Natural gas networks | Reduced entry tariffs for shippers injecting H2 in the TSO network | e.g. coefficient to reduce entry tariffs depending on % of H2 injected (TSO level)** |
| | Reduced distribution tariffs for end-users sourcing gas with share of H2 in the mix (DSO) | e.g. coefficient (variable discount) to reduce fixed/capacity charges on % of H2 in the grid/section of the grid (DSO level)** |
| | Pass-through of costs for connection of new PtG facilities to natural gas networks (TSO/DSO) | Costs for new connections of PtG plants to the natural gas grid are borne by all shippers in the natural gas system |

* Developers should justify their requested rate of return and tariff

** Depending on technical capability of TSO/DSO network to accept H2

# REPURPOSING OF NATURAL GAS PIPELINES

## Overview of the Course

**Several projects around hydrogen will be carried out through the re-purposing natural gas pipeline, therefore having clear rule on such re-purposing process is critical to achieve a hydrogen economy and hydrogen policy goals**

Re-purposing of natural gas assets represents a business decision at the discretion of its owners

Owners of natural gas infrastructure assets to evaluate and decide on the re-purposing in the context of a wider hydrogen project, whose economics are separate from the ones of the natural gas business. Any type of third party assessment on the need for re-purposing would interfere with the creation of hydrogen networks

Re-purposing of natural gas assets requires a modification of the RAB and natural gas transport tariffs

Tariffs for natural gas transport at transmission level are determined from the regulatory asset base (RAB) of the operators of the transport infrastructure in question. A regulatory mechanism therefore needs to be introduced in order to remove such assets from the RAB of these operators, and for the tariff charged to natural gas shippers to be modified accordingly

# THANK YOU!

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