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## **Dynamic regulation, an illustration based on hydrogen**

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**CEER internal workshop on dynamic regulation  
25/06/2021**

## Regulation is dynamic in essence

- Regulation consists in accompanying a sector in order to ensure that its development is in line with the general interest
- Regulation must be addressed from a dynamic perspective
  - ▶ Needs and systems are evolving
  - ▶ Dealing with uncertainty
  - ▶ Appropriate regulation modes one day may not be appropriate the next day
- Regulation consists in making trade-offs between sometimes conflicting interests and principles
- The history of energy regulation in Europe witnesses the need for flexibility
  - ▶ 4 legislative packages
  - ▶ Evolution of the main objectives from a more rational organisation of energy value chains to climate mitigation
  - ▶ Hydrogen raises new issues due to the lack of maturity of the sector

## A very uncertain context

- Some critical parameters change often:
  - ▶ CO<sub>2</sub> emissions targets
  - ▶ Value of CO<sub>2</sub>
  - ▶ Renewables targets
  - ▶ National commitments vs European ambitions...
- Scenarios highlight a lot of different combinations between energy carriers (power, gas, hydrogen), technologies, levels of electrification...
- Open issues remain (such as flexibility, seasonal storage, level of reliability standards) in a decarbonised world
- **The example of hydrogen**
  - ▶ A lot of expectations to foster the energy transition, with a large scale development of electrolyzers
  - ▶ But no market yet (except classical industrial use of H<sub>2</sub>), no clarity about infrastructure needs (electricity lines vs pipelines)
  - ▶ Problems of cost levels and the availability of low carbon power
  - ▶ H<sub>2</sub> fundamentals may be significantly different from those of electricity and gas

# White paper on H2 networks

## Main issues discussed:

- When it is needed to **regulate H2 networks**:
  - What to monitor: abuse of market power, H2 becoming essential facility
  - How provide **clarity and predictability** to investor: what regulation or regulatory principle should be defined **upfront**?
  - If and how much the H2 regulation should follow the **current gas regulation**
- How to treat **existing H2 infrastructure**
  - When they should be regulated
  - Using the regulation of direct lines and closed distribution networks?
- **Repurposing of gas infrastructure** for dedicated H2 transport:
  - If and how to avoid **cross-subsidization** between H2 and natural gas infrastructure
  - Under which **unbundling rules** (ex.: separated RAB)

## White paper on H2 networks

- The paper focuses on the **regulation of 100% H2 network**, not on other regulatory aspects (ex. market design), in particular:
  - The circumstances when it is needed to regulate H2 networks
  - How to treat existing H2 network infrastructure
  - How to address regulatory challenges related to the repurposing of gas infrastructure for dedicated H2 transport
- The paper promotes a **dynamic approach**:
  - **gradual approach** to the regulation of H2 networks **in line with market and infrastructure development** depending on how the H2 sector and the need for transportation of H2 will evolve
  - NRAs to **periodically monitor** the sector to decide when regulation should start
  - importance of considering repurposing of H2 infrastructure

## How to specifically address H2 fundamentals?

- The European Commission has spoken about the separation of infrastructure and trade for hydrogen
- Strong influence of existing gas market model
- Approach of European regulators
  - ▶ Accompany future developments as best as possible, with a focus on the economic efficiency of the sector: principle of efficient costs and needs-based investments
  - ▶ Supply and demand developments must be addressed jointly, while facilitating individual initiatives (stimulating innovation)
  - ▶ If "essential" infrastructure/natural monopoly principles emerge, then third party access will become relevant
  - ▶ Hydrogen should have its own coherence and should not be subsidised by gas or electricity
- Points for debate
  - ▶ Infrastructure planning: where to locate electrolysers?
  - ▶ How to anticipate the establishment of transport corridors at the risk of them being underused?





## What strategy?

- **Flexible regulatory principles**

- ▶ Future developments may require specific business models just to « allow things to happen »
- ▶ In the past, network energies developed within fully or partially integrated value chains
- ▶ Challenge: needs identification before going ahead with large scale investments
- ▶ In the absence of technological break, an incremental approach seems appropriate (progressively adapting the system)

- **Market design in energy**

- ▶ Competitive markets are efficient in terms of price coordination
- ▶ But new technologies are costly and generally need a public support, losses (incl. conversion) along the value chains must be minimized
- ▶ Viewed from today, prices are unlikely to send relevant investment signals
- ▶ Back to the fundamentals: long term risk mitigation is critical for investment
- ▶ Integrated models may be necessary

- **Regulation has to combine general principles and flexibility for decision making**

- **The gas package should not be seen as an “end” but could be revised according to observed developments**



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**Thank you!**

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