



---

# Sector Integration

## Regulatory framework for hydrogen

### 34<sup>th</sup> Madrid Forum

---

Luc van Nuffel

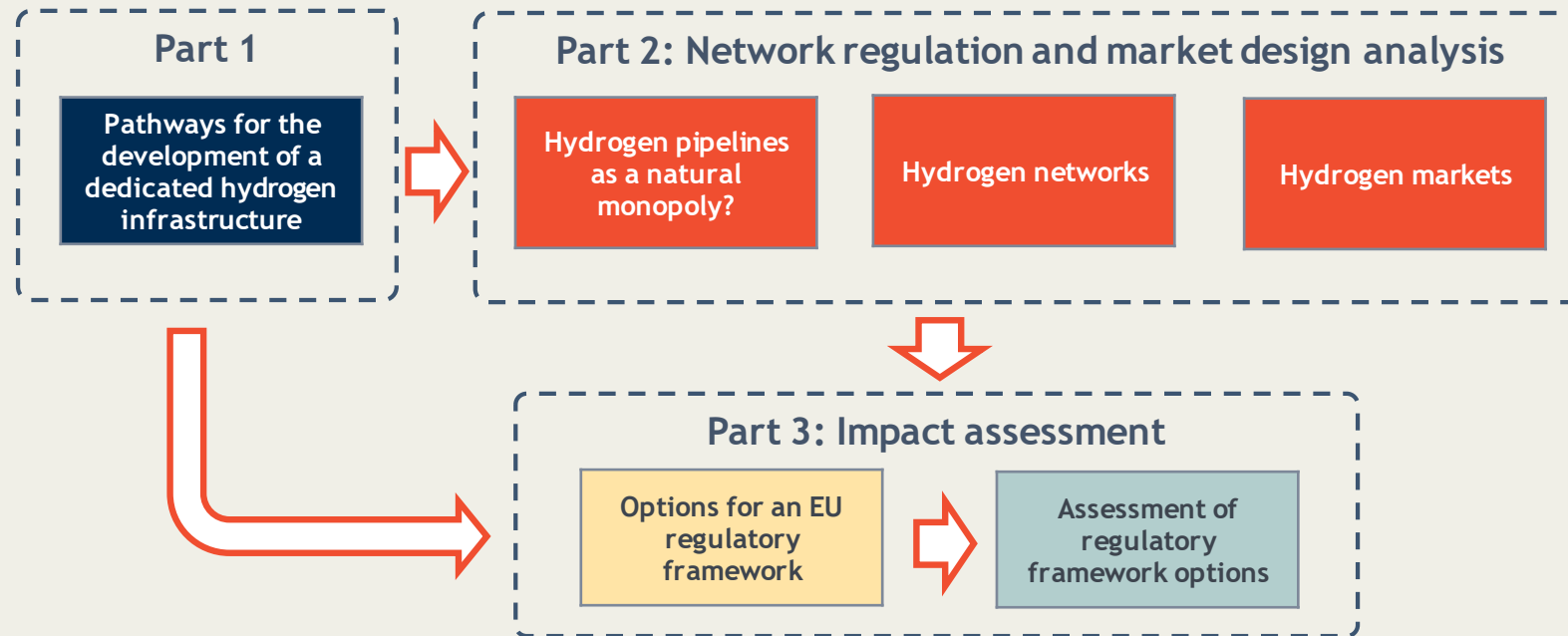
14<sup>th</sup> October 2020

---

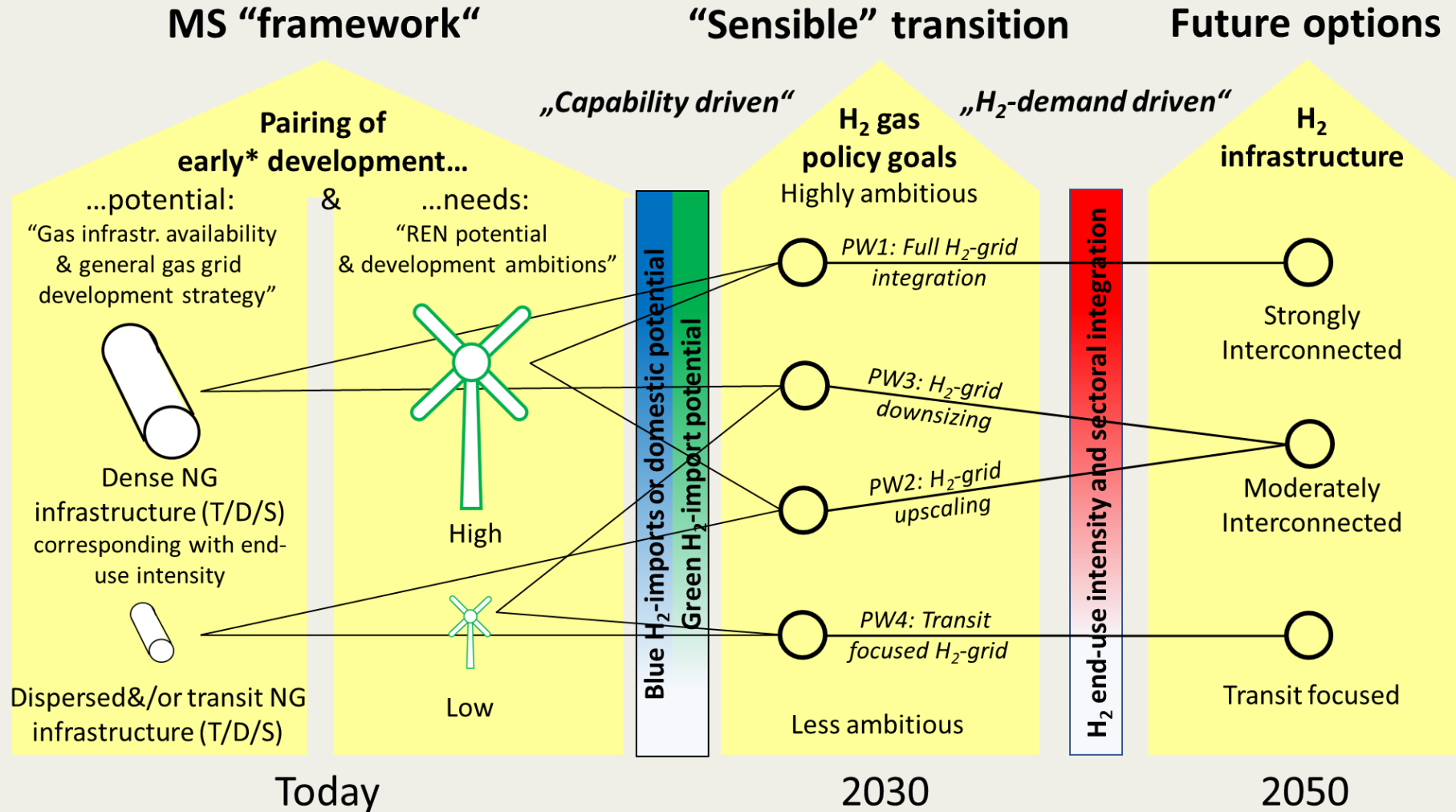
[www.trinomics.eu](http://www.trinomics.eu)

# Study objectives and structure

**Objective: Develop and assess options for an EU regulatory framework for dedicated hydrogen networks and markets**



# Pathways towards dedicated H<sub>2</sub> infrastructure



# Hydrogen pipelines as a natural monopoly?

---

- Existing and new pipelines may represent natural monopoly justifying network regulation:
  - Sub-additive investment cost curve for new pipelines
  - Hydrogen is expected to become traded commodity with high number of market operators
  - Limited competitive alternatives for transport of high volumes
  - Refurbished methane pipelines will offer competitive advantage to concerned operators
- Adequate network regulation can contribute to fair competition, energy system optimisation and cost minimisation:
  - TPA to networks, lowering entry barriers to hydrogen producers/suppliers
  - Cross-vector and supranational network planning
  - Allowing to value existing gas assets
  - Lowering overall transport costs (subadditive cost curves - revenue regulation)
- Stakeholders assume that natural monopolies will exist for hydrogen networks in mature markets, while also in emerging markets there is probability of natural monopolies. Position on adequate timing for regulatory intervention is not unanimous:
  - Some stakeholders support early regulatory intervention, while others prefer late actions
  - A view voiced rather widely is to apply market tests, and to develop regulatory approaches step by step

# Options for H<sub>2</sub> network & markets regulation

	No immediate EU action	Light EU regulation	Full EU regulation	Full+ EU regulation
<b>Role of gas TSOs</b>	Not regulated at EU level	Common operation of gas and H <sub>2</sub> networks not forbidden by EU law		+creation of EU-level H <sub>2</sub> TSO
<b>Unbundling from regulated CH<sub>4</sub> infrastructure</b>		Accounts		Accounts Variant: legal
<b>Role of private hydrogen networks</b>		Exempted from unbundling, regulated TPA and regulated tariffs		Legal unbundling, regulated TPA and regulated tariffs Exemptions for specific cases
<b>TSO network TPA rules</b>		Regulated/negotiated TPA choice	Regulated TPA	
<b>Network tariffication</b>		No H <sub>2</sub> specific EU regulation	Harmonised principles and tariff structures	Market coupling + Harmonised principles and tariff structures
<b>Planning</b>			ENTSO-H <sub>2</sub> Requirements for national planning	With EU TSO organisation Requirements for national planning
<b>CACM</b>			Rules for cross-market area CACM	Market coupling Rules for cross-market area and domestic CACM
<b>Balancing</b>			Individual balancing responsibility for market players Residual balancing by TSOs National/multinational balancing zones	Individual balancing responsibility for market players Residual balancing by EU TSO EU balancing zone
<b>Access to storage</b>		Regulated/negotiated TPA choice		Regulated TPA
<b>Organised market platforms or exchanges</b>		No H <sub>2</sub> specific EU regulation	Harmonised market rules	+ market area managers

# Regulatory options assessment

	No immediate EU action	Light EU regulation	Full EU regulation	Full+ EU regulation
<b>Accommodation to pathways and coherence with Hydrogen Strategy</b>	<ul style="list-style-type: none"> <li>Regulatory flexibility to MSs. Risks for hydrogen-intensive pathways due to need for further regulation in later stage.</li> <li>May lead to inefficient investments/divestments in infrastructure.</li> </ul>		<ul style="list-style-type: none"> <li>Allows different pathways, if adequate transitional measures are foreseen – including hydrogen-intensive pathways as mentioned in the Hydrogen Strategy</li> <li>Planning fosters efficient investments/repurposing.</li> </ul>	
<b>Hydrogen market integration and level-playing field</b>	<ul style="list-style-type: none"> <li>Lack of harmonised rules for unbundling, TPA and planning may be detrimental to market integration and risks distortions in internal energy market.</li> <li>Potential entry barriers to new market participants.</li> </ul>	<ul style="list-style-type: none"> <li>Limited market integration, except through voluntary cooperation.</li> <li>Can lead to distortions of internal energy market in case of development of national hydrogen sectors based on diverging national regulation.</li> </ul>	<ul style="list-style-type: none"> <li>Harmonised measures for market integration, planning aligned to policy objectives and fostering cross-border infrastructure, and non-discriminatory access for users support development of hydrogen infrastructure and markets in MSs and regions with hydrogen-intensive pathways.</li> </ul>	
<b>Investment certainty and efficiency</b>	<ul style="list-style-type: none"> <li>Regulatory uncertainty/potential need to update regulation in later stage may affect investments in hydrogen-intensive pathways</li> </ul>		<ul style="list-style-type: none"> <li>Provides investment certainty through clear regulatory framework.</li> <li>Full+: Integrated network planning and market coupling provide improved level playing field and higher overall efficiency</li> </ul>	
<b>Regulatory costs</b>	<ul style="list-style-type: none"> <li>Low EU and national regulatory costs, but ex-post harmonisation costs probable.</li> </ul>		<ul style="list-style-type: none"> <li>Additional costs and competencies to EU and MS policymakers and regulators.</li> </ul>	

# Conclusions (1)

---

- Hydrogen pipelines are expected to represent in future natural monopoly justifying regulation
- EU action can provide regulatory certainty, facilitate an integrated hydrogen market, and minimise the risks of distortion to the overall EU internal energy market
- An EU regulatory framework for hydrogen needs to be robust in order to address the:
  - Uncertainty of energy transition pathways
  - Incipient stage of development of hydrogen infrastructure and markets
  - Different development speeds across end-use sectors and Member States
- A Hydrogen Target Regulatory and Market Model should be defined in an early phase to guide MSs while providing the necessary flexibility
- No EU intervention or a light EU regulatory approach may negatively affect the cost-efficient achievement of hydrogen-intensive pathways foreseen in the Hydrogen Strategy

# Conclusions (2)

---

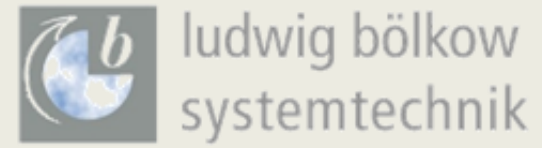
## Principles for an EU regulatory framework

- Guarantee non-discriminatory TPA to hydrogen networks and large-scale storage, with only limited and duly justified exemptions.
- Integrate network planning, aligned to policy objectives and with strong oversight and public consultation.
- Minimise risks for stranded gas assets and overall investment cost for hydrogen networks (and storage), by considering refurbishment of methane infrastructure as complementary or alternative to new build.
- Allow MSs to realise efficiency gains and economies of scope through combined NG/H<sub>2</sub> network operators. But this should not compromise transparency and cost-reflectiveness.
- MSs may be derogated from certain requirements, unless there is a risk of distortion of the internal energy market or of abuse of market power by network (or storage) operators.
- Harmonise market rules and principles

## Transitional measures

- Set up a Hydrogen Target Regulatory and Market Model and promote regional cooperation and harmonisation
- Isolated MSs / hydrogen systems (valleys) may be derogated/exempted from certain requirements
- Consider requirements for waivers and exemption procedures of hydrogen network operators
  - Covering pre-existing operators, direct lines, closed distribution systems and isolated hydrogen systems.
- Apply a sunset clause for exemptions to new and pre-existing hydrogen network operators
- Develop energy network planning (methodology, scenarios, plans) with each iteration





Thank you for your attention, please contact us for more information

**Luc van Nuffel**

**[luc.vannuffel\(at\)trinomics.eu](mailto:luc.vannuffel@trinomics.eu)**