



**marcogaz**

Technical Association of the European Gas Industry

# 55th MARCOGAZ Anniversary Conference & Gala Dinner

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Power Point Presentations from Andrea Stegher & Csilla Bartok

22 June 2023

# The Global Gas Market role in the Energy Trilemma

Mr. Andrea Stegher – International Gas Union Vice President and  
Incoming President

BRUSSELS, JUNE 22<sup>ND</sup> 2023

55<sup>TH</sup> MARCOGAZ ANNIVERSARY CONFERENCE

# The Global Voice of Gas since 1931

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- 150+ members in 80+ countries for 90% of the global gas market
- Supports gas as a key contributor to a sustainable energy future
- Represents the entire gas value chain, including production transport, storage, and delivery of natural gas, hydrogen, renewable, and decarbonised gases
- Members are national gas associations and industry representative entities, as well as commercial corporations.



# The Global Voice of Gas since 1931

*Fostering knowledge and gas industry development through well-recognized flagship, ad hoc reports and world-class events*





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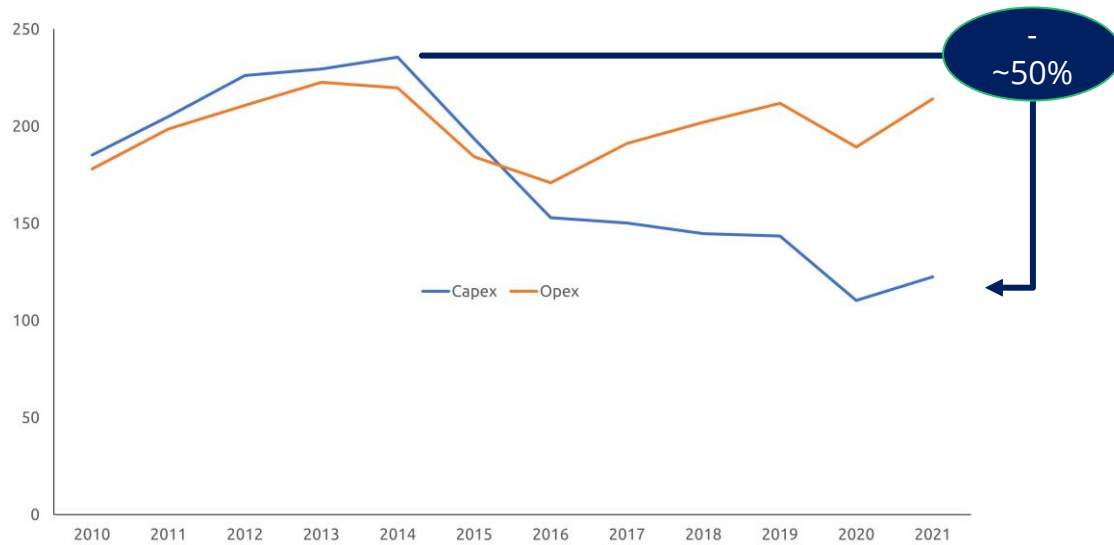
*A step back to understand where we are:*

*Energy Security is a Long-Term Play and key to meeting the Energy*

# Low Investment in Supply in Prior Years and ... Supply Crisis in 2021-2022

Gas Sector CAPEX & OPEX Billion USD

Source: IGU Global Gas Report 2022

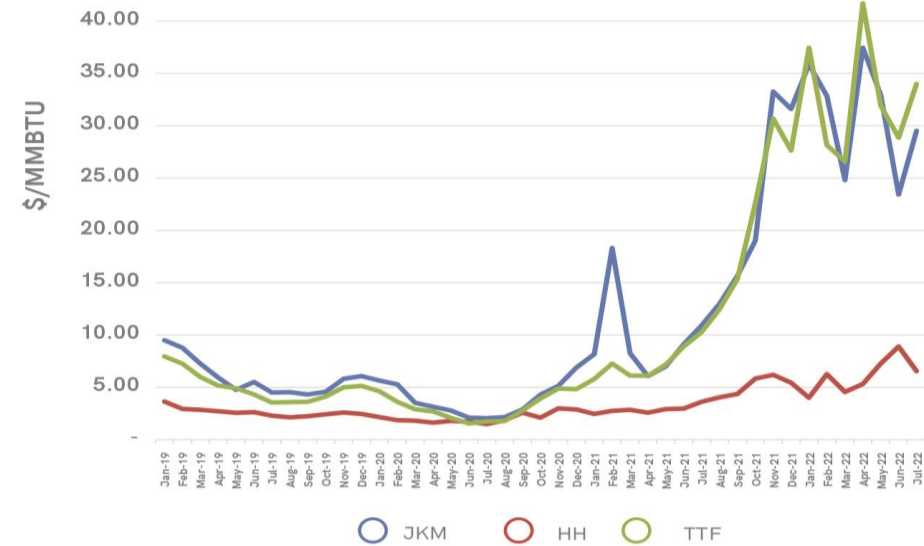


- **Upstream O&G capital investments**

- 2013-2014 ~\$700 billion
- 2016-2022 \$400-500 billion

Natural Gas Monthly Spot Prices Jan 2019 – July 2022

Source: IGU Global Wholesale Price Survey Report, 2022

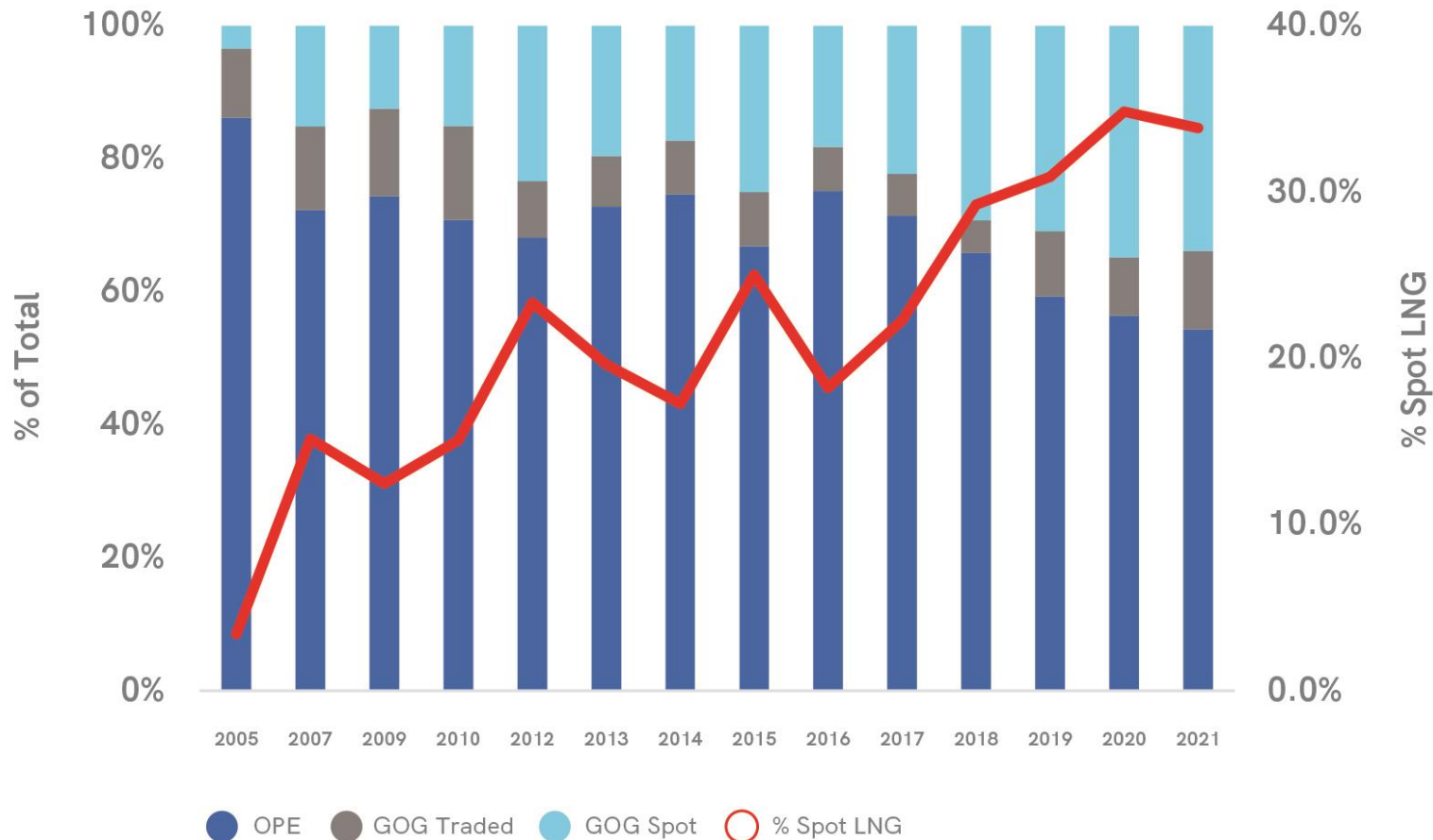


- Post-COVID19 demand recovered faster than supply capacity additions
- 2021: very strong demand and operational supply reductions (e.g. post-lockdown maintenance)
- 2022: the biggest global energy crisis in history





# Market Pricing and Well-Functioning Global Gas Market Were Key for Europe's Ability to Replace Lost Russian Volumes



- Gas on Gas competition pricing, whether as spot LNG or into traded markets, is the very definition of flexibility, which is indispensable for energy security.
- Commoditisation and globalisation of the gas market is key to enhancing energy security via better interconnectedness.

• **What if 2022 crisis would have happened 5 years before?**

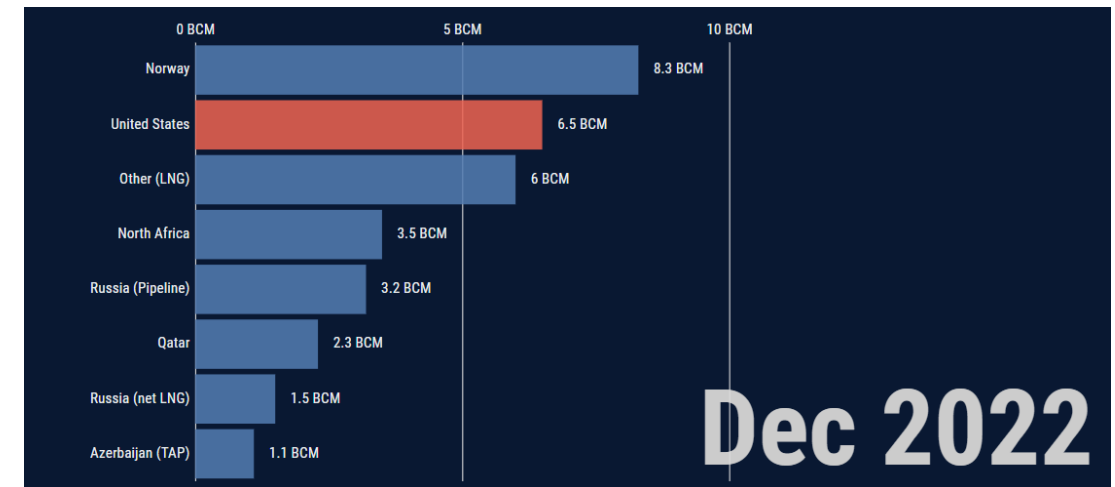
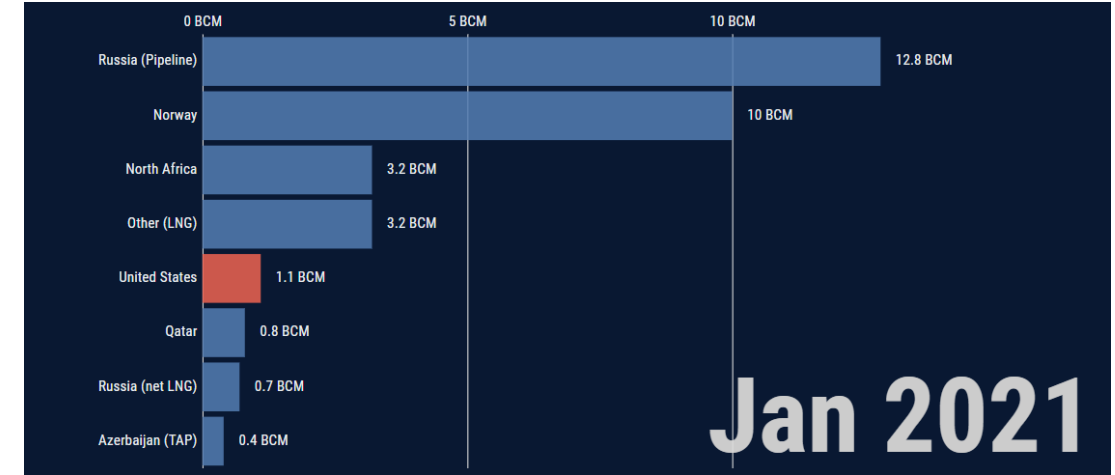
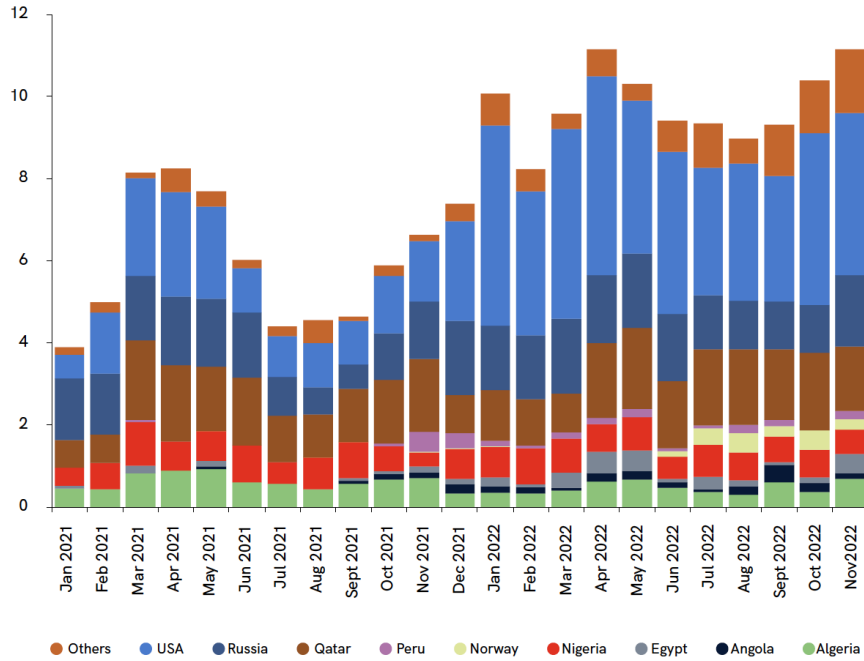
Source: IGU Global Wholesale Price Survey Report, 2022



# US LNG Playing a Fundamental Role in Europe's Supply

## European LNG Imports by Source

Source: Rystad Energy; <https://features.csis.org/us-lng-remapping-energy-security/>



Europe benefitting from US shale revolution

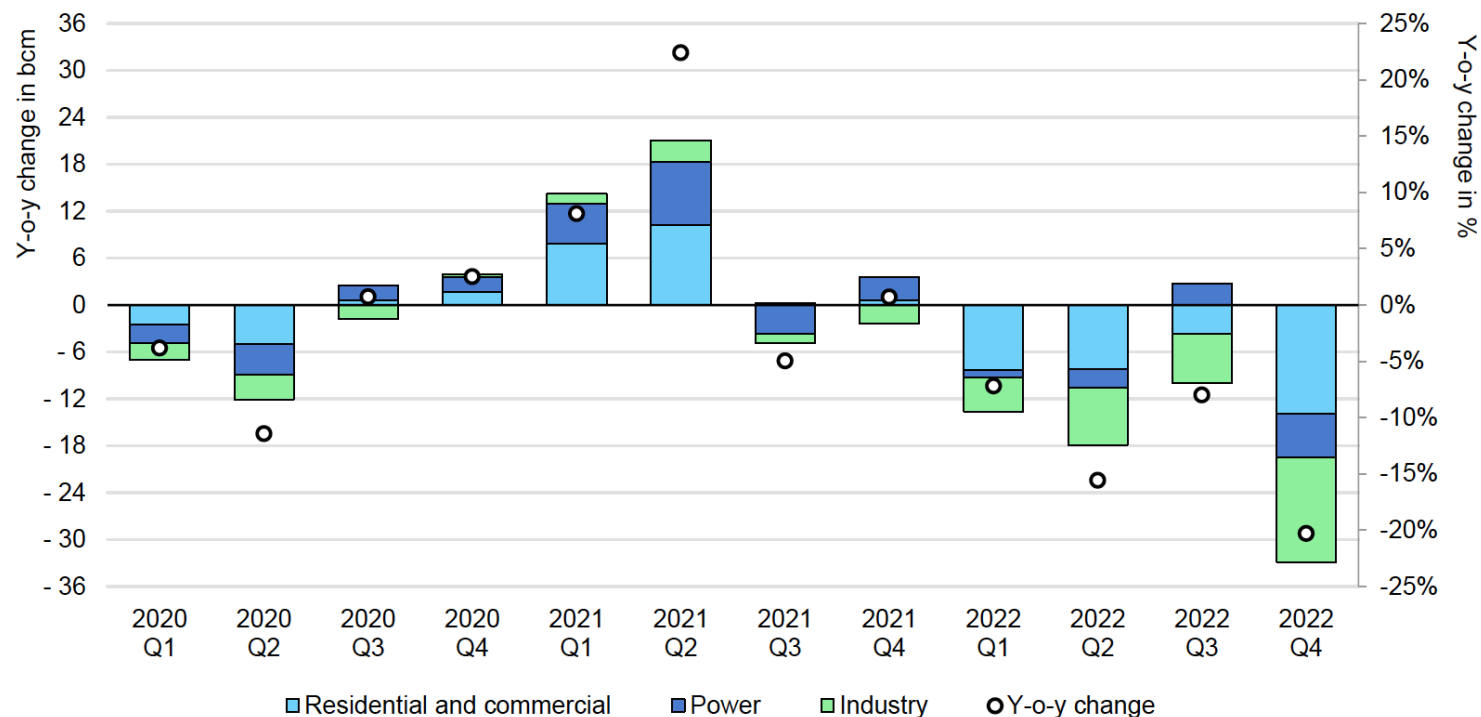




# 2022 Saw Record Drop in Natural Gas Demand in Europe

## IEA Estimated Quarterly Change in Gas Demand OECD Europe, 2020-2022

Source: IEA Quarterly Gas Market Report Q1, 2023



- 13% Reduction in natural gas demand YoY (70+ bcm)
- About 2/3 of the reduction due to weather and industrial demand destruction
- EU27+UK spent an additional close to 10% of GDP on energy: **1.1 Trillion€** or x2.6 more than the previous year on energy. This is just the fuel cost and excludes the cost of support subsidies



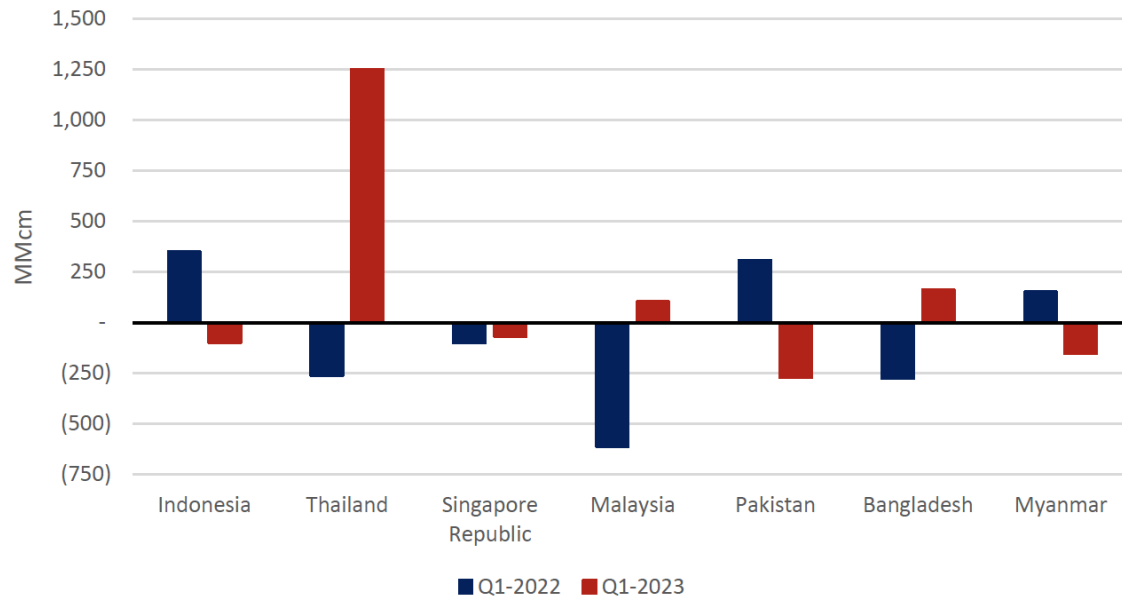
# Asian Demand Suppressed

## Year on Year Change in Asian LNG Demand

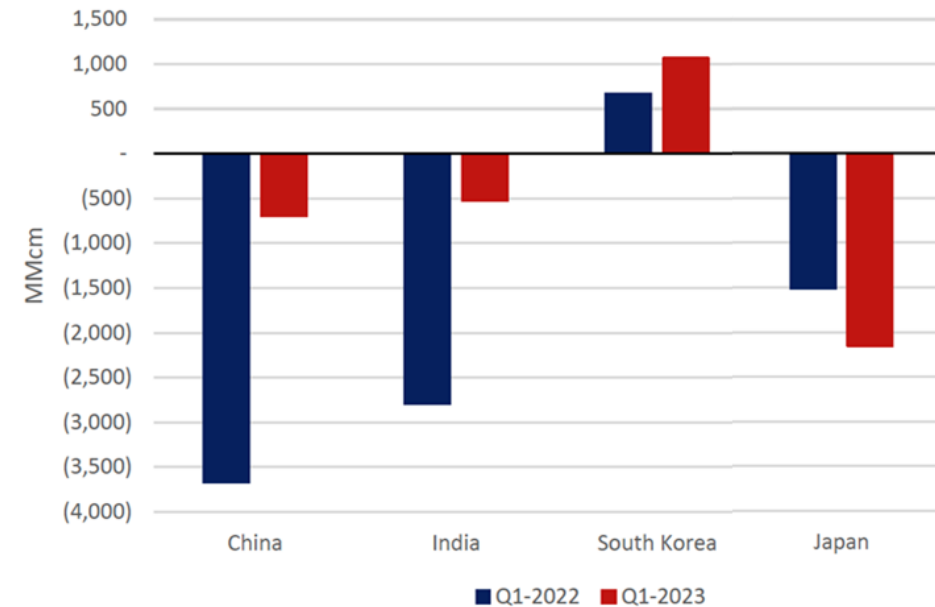
Q1 2022 vs Q1 2023

Source: OIES Quarterly Gas Review 2023

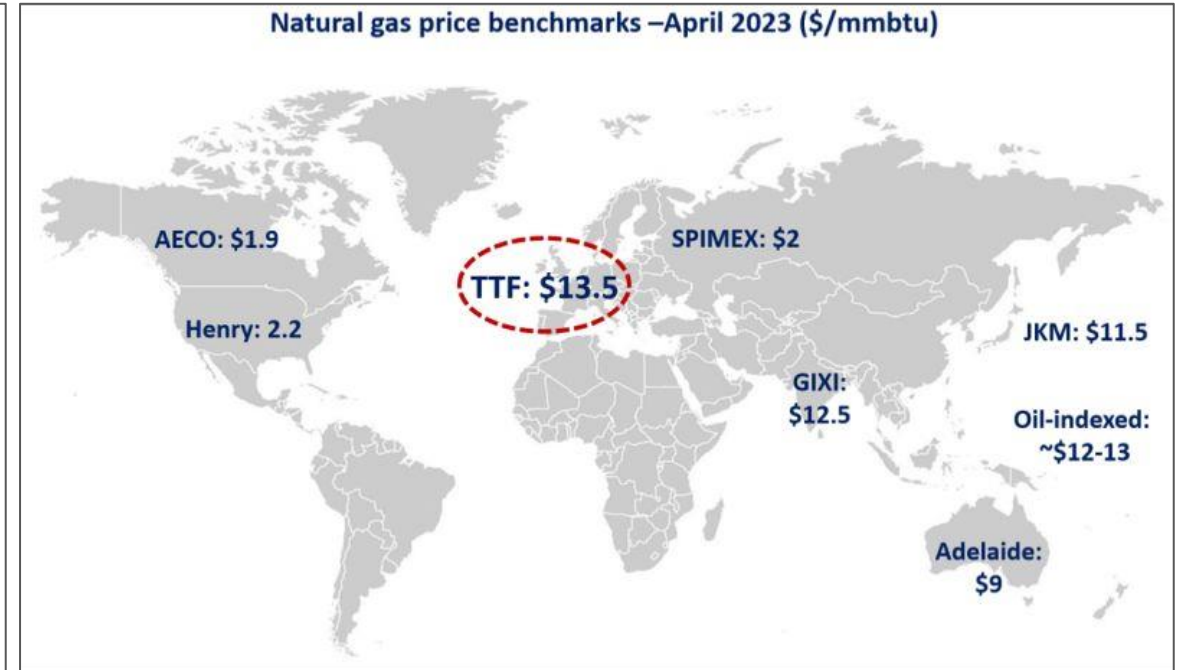
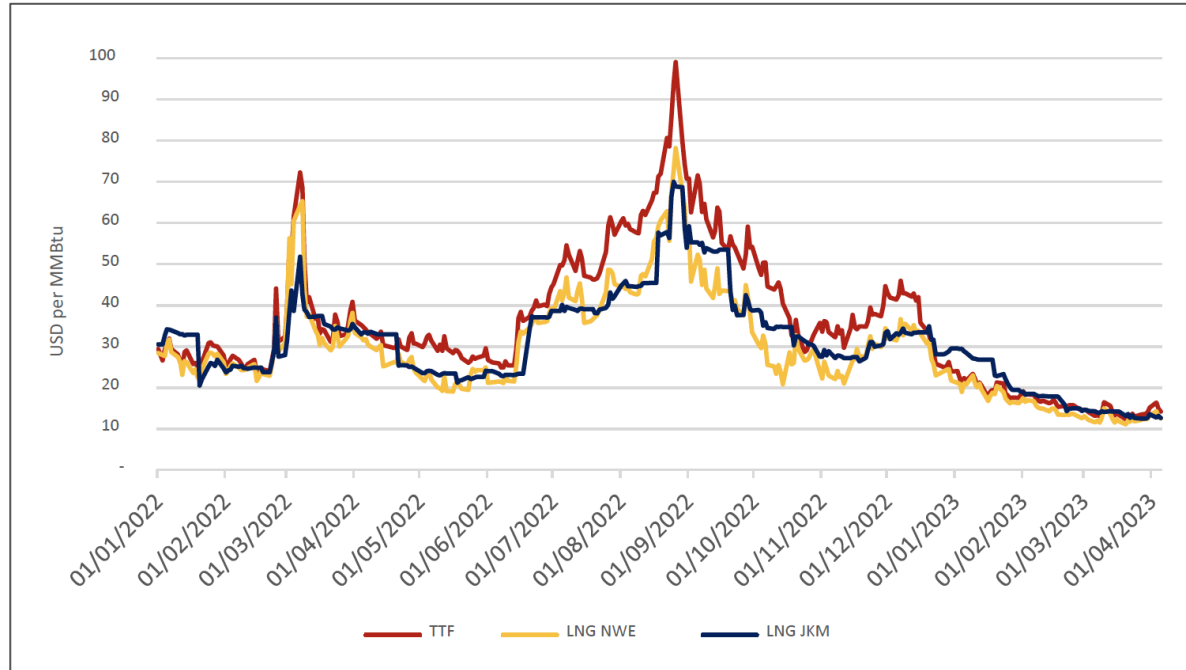
### Small Importers



### Major Importers



# 2023 Natural Gas Prices Significantly Eased. Problem Solved ?



- Price is down, but still above pre-crisis level
- Market remains tight with **higher volatility** as any swing on either supply or demand side can quickly change the picture



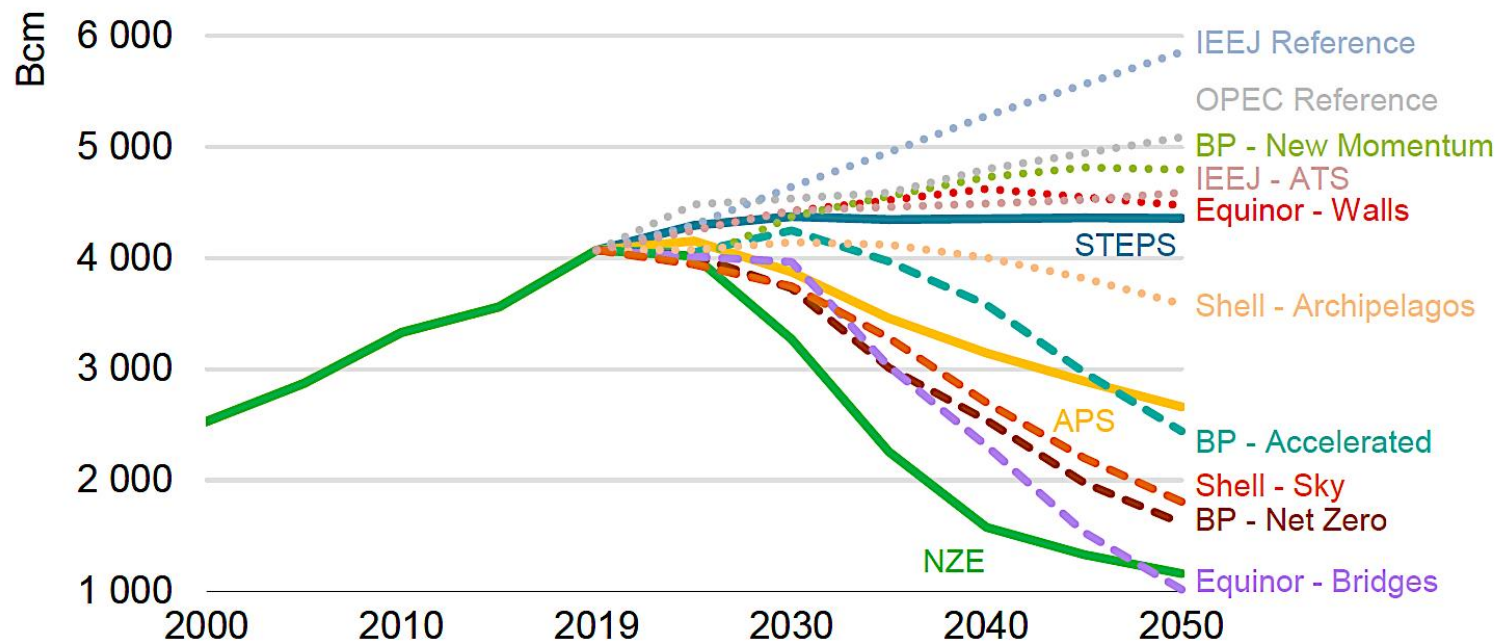


*2023-2030 ... and Beyond*

# The Policy & Reality Disconnect Can Undermine Energy Security

## Natural Gas Demand Outlooks Scenario Comparison

Source: IEA Outlook for Gas Market & Investments, 2023



- In 2021 the world consumed 4,200 BCM of natural gas
- 2050 projections for natural gas demand range between 1,000 and 6,000 BCM in different scenarios (**backcasting vs forecasting**)
- IEA NZE Scenario projects natural gas demand to decline by 20% by 2030 (to 3,300 BCM).

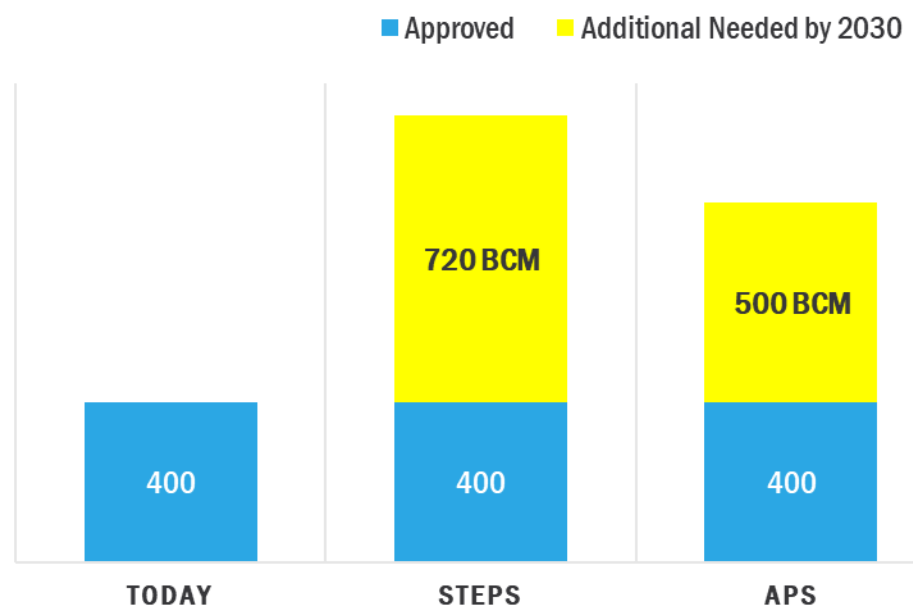


# Large Gap for Financing the Required Natural Gas Supply is Large under any Scenario

## 2030 Supply Investment Gap

Additional BCM of Natural Gas

Source: Data from IEA Outlook for Gas Market & Investments



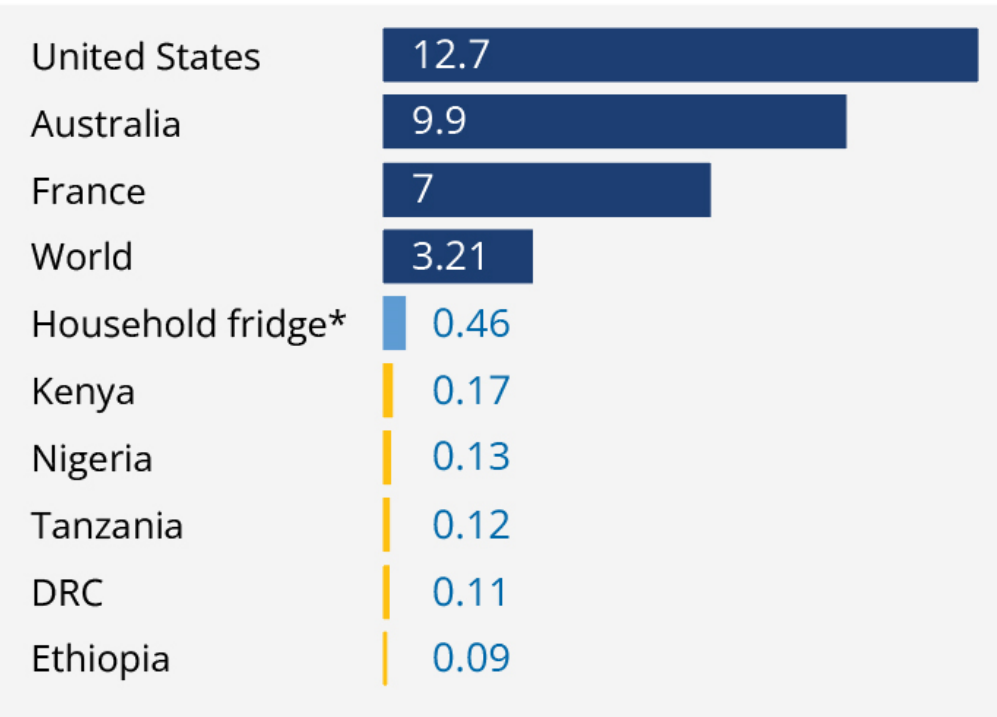
- The IEA STEPS and APS require additional upstream investment to offset declines from existing fields.
- **The total investment requirement in natural gas supply and transport for the remaining decade is USD 280 billion per year, on average, in the STEPS and USD 240 billion in the APS.** In the NZE Scenario, around USD 200 billion is required to maintain output at existing and commission already approved fields.
- Additionally, scaling up investments and prudent policy support for low-carbon and renewable gas **will be key to decarbonising the energy system**, while maintaining energy security.
- **Gas is a key component of “pragmatic” energy**



# The World Beyond OECD: Growing Populations & Development Needs Require More Energy

## Electricity Consumption MWh/Capita 2020

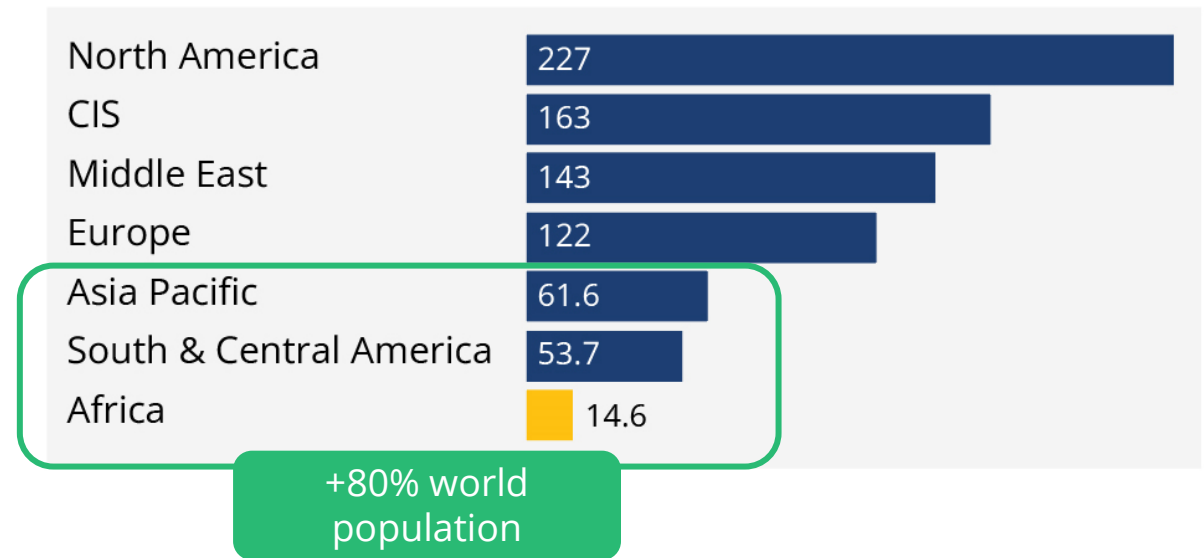
Source: IGU Gas for Africa Report; IEA; Energy for Growth Hub



\*US average

## Primary Energy Consumption GJ/Capita 2021

Source: IGU Gas for Africa Report; bp Statistical Review of World Energy



Hierarchy of needs: availability, affordability and security

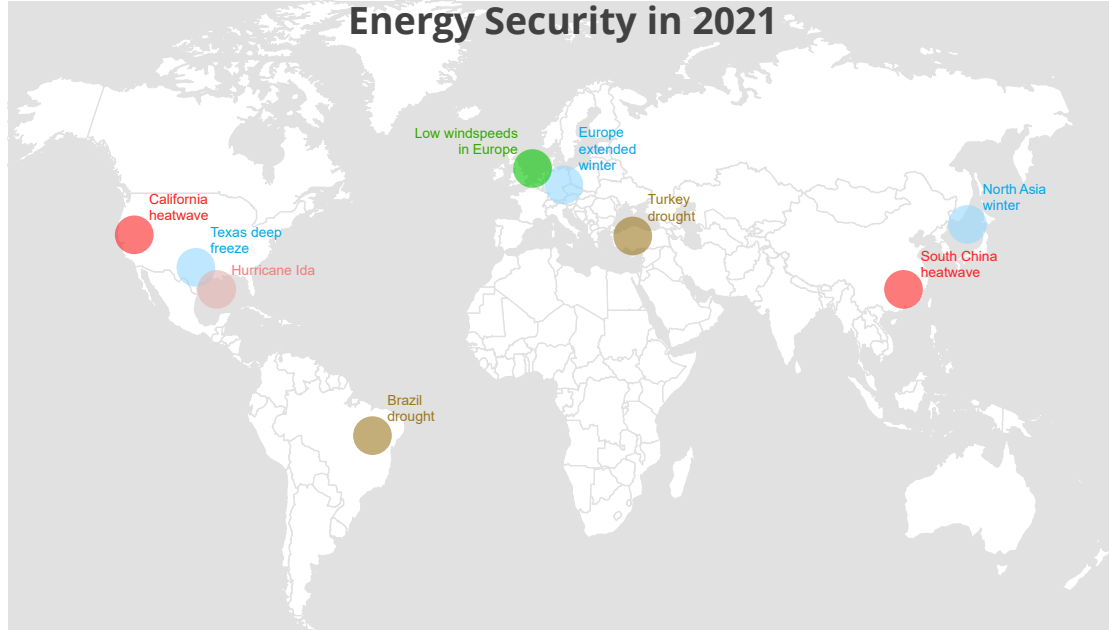
Transition is not a unique path





# More Flexible Energy Capacity needed: gas is a key component to address greater volatility

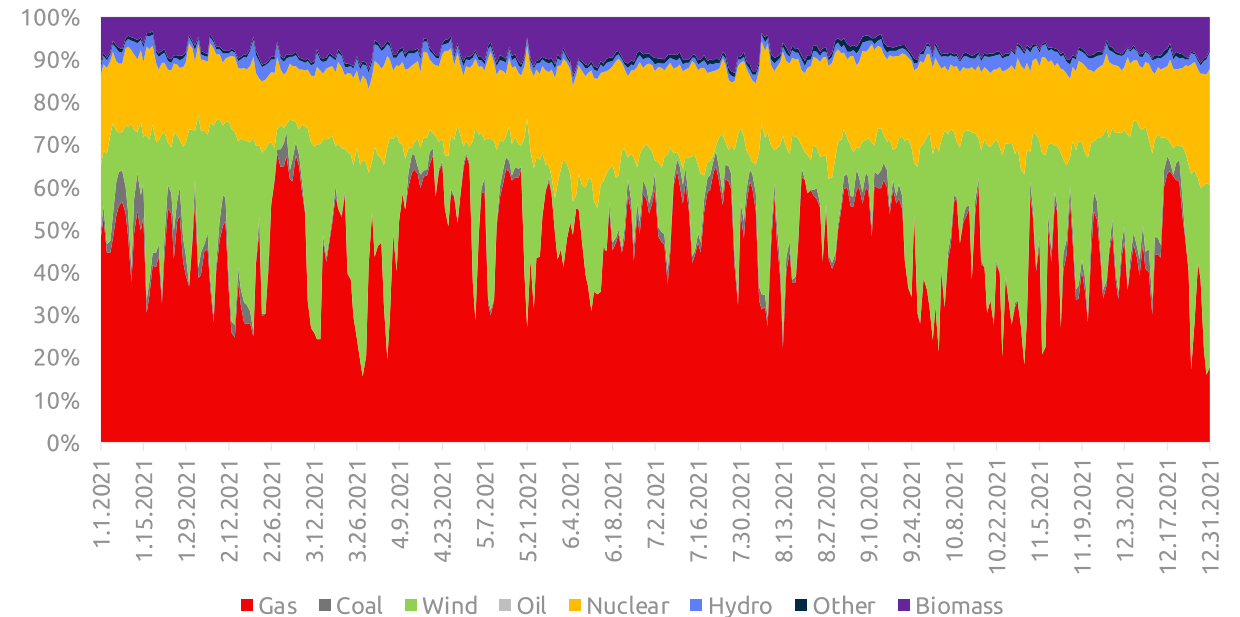
## Selected Extreme Weather Events Impacting Gas Markets & Energy Security in 2021



- Sufficient reserve energy capacity to respond to the growing reliability challenges emanating from extreme weather will be critical to energy security and to the energy transition.

Source: IGU Global Gas Report 2022

## UK Electricity Generation % by Source



- The UK experienced low average wind speeds in 2021, which reduced the output of its major source of renewable power generation by up to 70% for extended periods (Feb, Apr, Sep).
- The total avg. reduction of wind & solar output in 2021 was 12%.
- Reliable long-duration reserve capacity is needed for balancing unexpected shortfalls.

*"The importance of energy security never diminished; it had simply been taken for granted in a world of abundance and integrated, well-functioning global energy markets."*

*J. Bordoff & M.L. O'Sullivan "The Age of Energy Insecurity"*

- 1 **Diversification** of sources and instruments, and planned reserve and infrastructure redundancies
- 2 **Conservation** can turn demand into a resource; efficiency should be coupled with conservation incentives
- 3 **Long-Term Energy System Planning** of supply, reinforced by robust arms-length expertise and efficient regulation
- 4 **Markets** that function well and interconnections are vital to security in an integrated world
- 5 **Interoperability** and accounting for impacts across the energy system and the economy

Gas can play a fundamental role in solving the energy trilemma but **investments, further innovation and "good" policies** are needed, recognising the importance of a pragmatic and multifaceted energy evolution



**FUELLING**  
THE INNOVATION AGENDA



### GAS INNOVATION – A KEY GLOBAL PRIORITY

- The world's fastest growing source of energy needs constant innovation to maintain its affordability and reliability advantages while reducing global GHG emissions

### JOIN IGRC2024

- Connect with global innovators, academics, research organizations and industry leaders
- Showcase your organization's latest research, innovation and leading practices
- Join the dialogue that will shape the gas industry's future

### TAKE ACTION TODAY

- Encourage your team to submit a paper abstract
- Subscribe for Early-bird registration and conference updates





# Thank you

[www.igu.org](http://www.igu.org)





European Union Agency for the Cooperation  
of Energy Regulators



# Regulatory requirements to decarbonize the gas infrastructure

Csilla BARTOK (ACER)

55th MARCOGAZ Anniversary – Conference  
Brussels, 22 June 2023





**ACER**  **CEER**   
 European Union Agency for the Cooperation  
 of Energy Regulators Council of European  
 Energy Regulators

**Position Paper on  
 the Key Regulatory Requirement  
 to Achieve Gas Decarbonisation**

20 December 2021

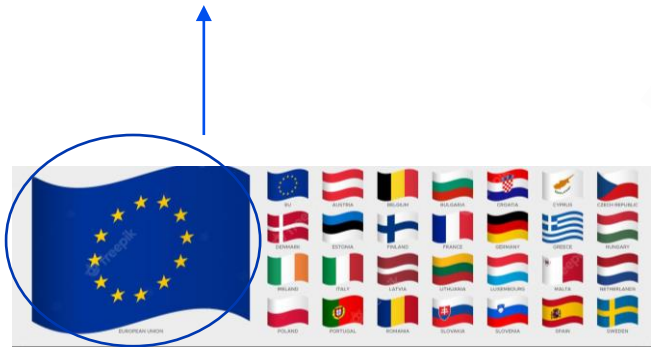
**ACER-CEER Briefing Pack**  
 Directive of the European Parliament and of the Council on the internal market for renewable and natural gases and for hydrogen

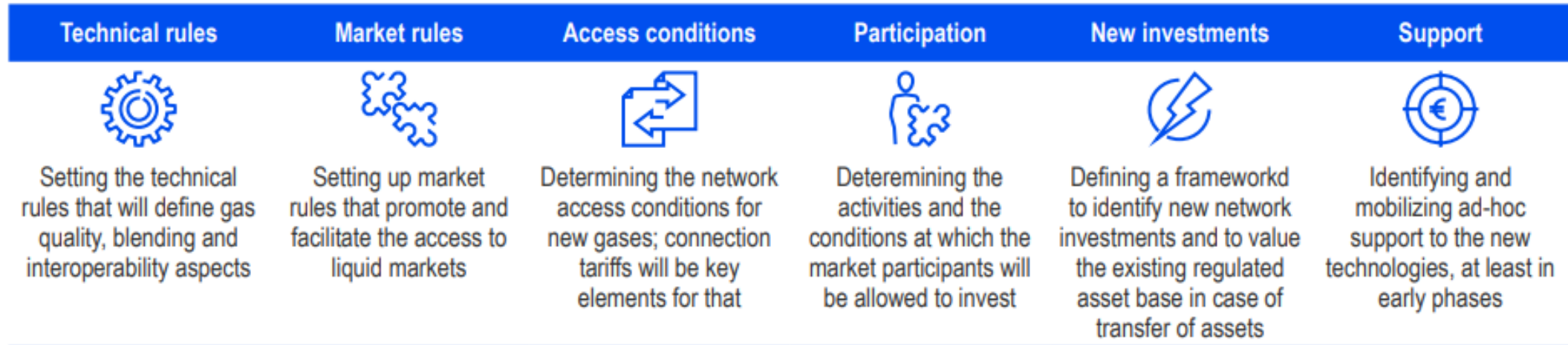
**ACER-CEER Briefing Pack**  
 Regulation of the European Parliament and of the Council on the internal market for renewable and natural gases and for hydrogen

**ACER-CEER Briefing Pack (Consolidated version)**  
 Regulation of the European Parliament and of the Council on the internal market for renewable and natural gases and for hydrogen  
 Version: 24 March 2023

**ACER-CEER take on the Council Presidency's REI 1 to 6 proposals**

Item	Proposal	ACER-CEER take	ACER-CEER comments
1	REI 1	✓	
2	REI 2	✓	
3	REI 3	✓	
4	REI 4	✓	
5	REI 5	✓	
6	REI 6	✓	





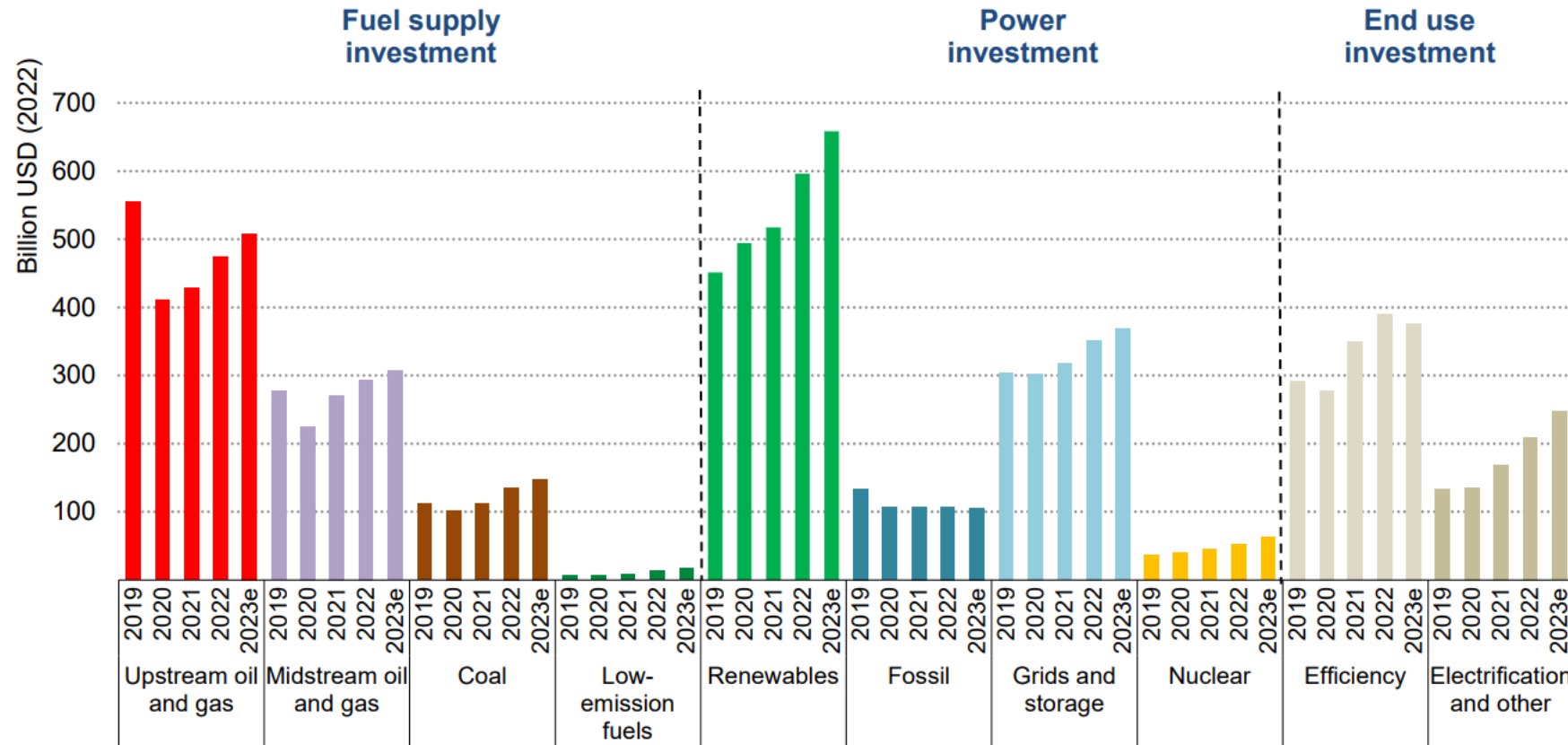
Source: ACER.

*‘ While energy efficiency, electrification and renewables can achieve 70% of the mitigation needed, hydrogen will be needed to decarbonise end uses where other options are less mature or more costly, such as heavy industry, long-haul transport and seasonal energy storage. Considering these applications, hydrogen could contribute 10% of the mitigation needed to achieve the IRENA 1.5°C Scenario and 12% of final energy demand. ’*

Source: IRENA



# Spending in all energy carriers increase



- Access to finance
- Renewable projects have shown uneven growth
- Fossil fuel have risen in countries that prioritised energy security
- 0.8:1 Energy Supply Banking Ratio (2.6:1 in Europe)

Source: IEA

# The market model for renewable & low carbon gases

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Regulators' views



## ACER-CEER Reaction to the European Commission's Hydrogen and Decarbonised Gas Market Package

3 June 2022

The EU Agency for Cooperation of Energy Regulators (ACER) and the Council of European Energy Regulators (CEER) welcome the European Commission's legislative proposals on Hydrogen and Decarbonised Gas Markets. In the present note, European energy regulators present their views and recommendations on key regulatory aspects.

Regulators appreciate the Package's ambition to establish a comprehensive system design with a clear target model for the hydrogen and decarbonised gas market(s), to reinforce measures on integrated network development and focus on consumer protection issues.

### In particular, ACER and CEER welcome:

- ✓ The willingness to establish core principles for the regulation of a dedicated hydrogen sector, entrusted to national energy regulatory authorities.
- ✓ The extensive mirroring of the consumer protection provisions already in place for electricity consumers to the benefit of gas consumers.
- ✓ The proposed role for regulatory authorities in approving and amending national development plans for gas as a way to promote a user-oriented and efficient development of the energy system.

Turning to the detailed elements of the proposals, regulators present below recommendations to enhance the effectiveness of the provisions in the Package, with a focus on

Comprehensive  
system design

Integrated  
network  
development

Inclusive  
consumer  
protection



Ensure flexibility to phase in regulation of hydrogen networks by allowing derogations and exemptions while keeping the 2030 target date



Allow temporary exemptions from ownership unbundling between gas transmission and hydrogen production activities



Apply a minimum set of unbundling rules also to low pressure hydrogen networks



Restrict possibility of cross-border cost allocation to regulated hydrogen networks included in national development plans approved by NRAs



Ensure NRAs have primary role in governance of ITC mechanism for tariff discounts and financial compensation for cross-border hydrogen networks

## Derogations for geographically confined and existing hydrogen networks

- **Broad power granted to regulatory authorities** ensure that derogations do not bring harm to the development of the hydrogen market
- No need to exempt the existing hydrogen networks of **horizontal and accounting unbundling requirements**

## Hydrogen network development

- **A separate hydrogen plan would provide hydrogen projects greater visibility and transparency** (vs. joint w gas approach)
- Consistency of regulatory oversight with multiple reviewers

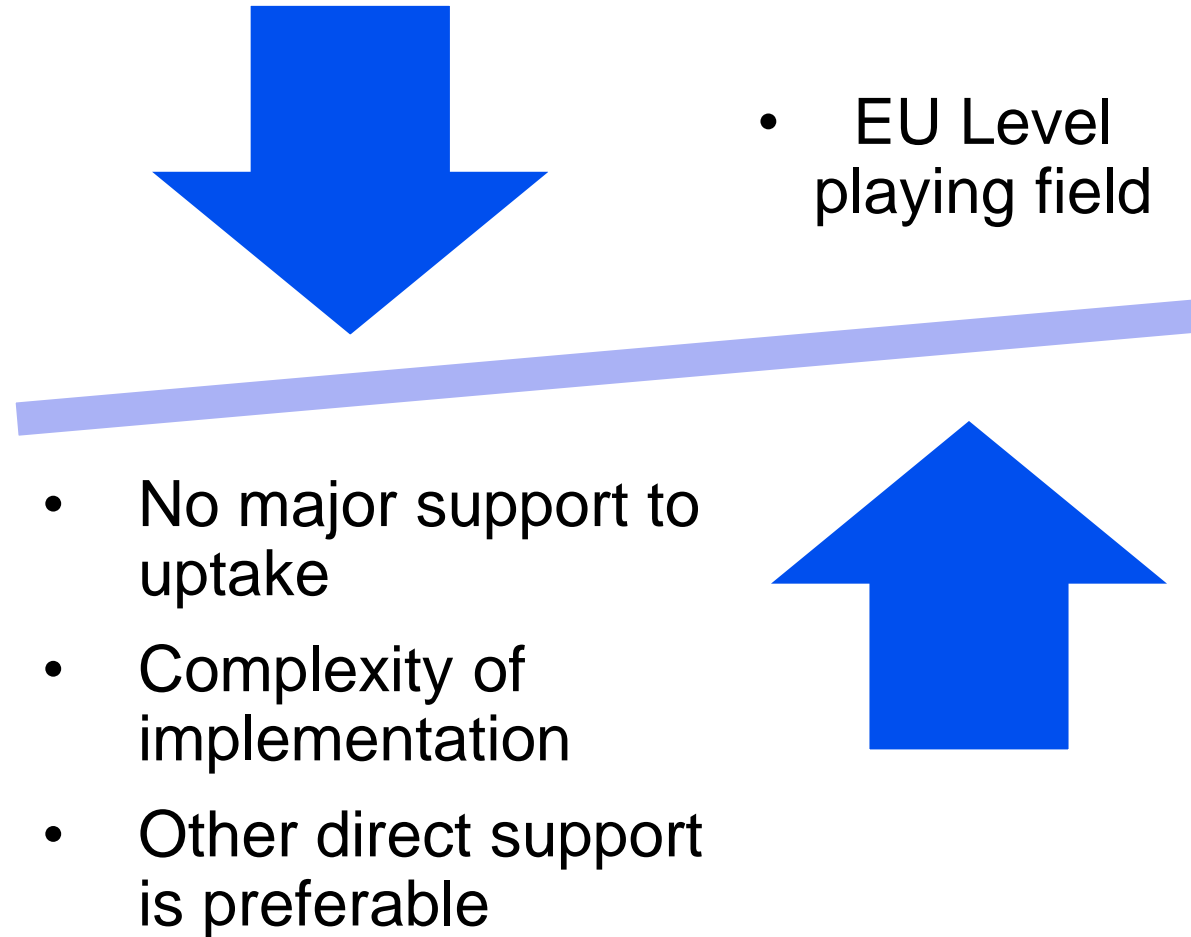
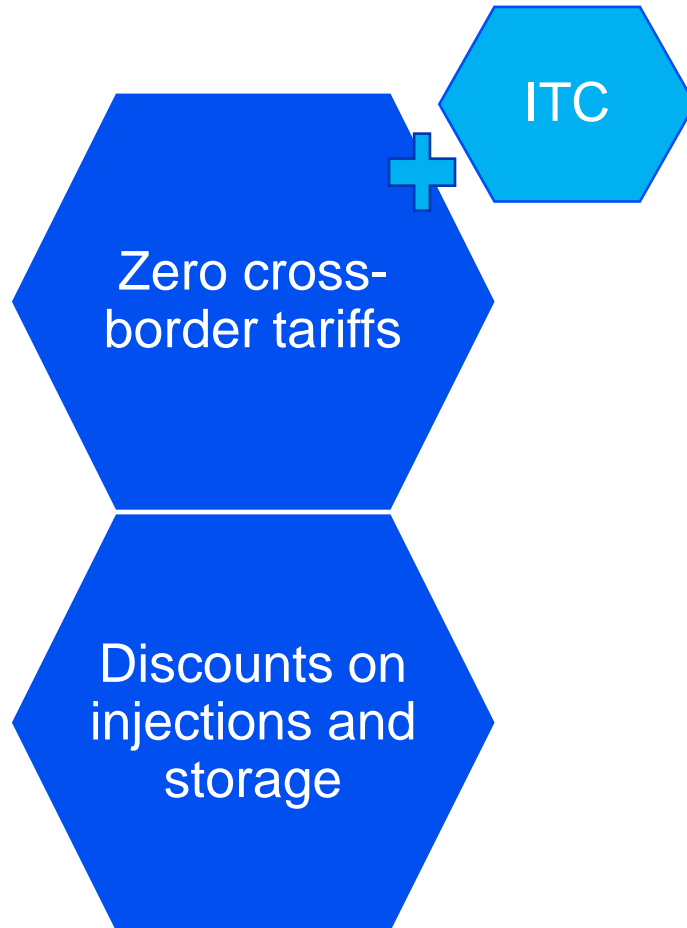
## Unbundling of hydrogen network operators

- **Ownership unbundling** should be the target model for hydrogen transmission network operation activities
- **ITO model as approved by NRA** could be offered when its development would be hampered

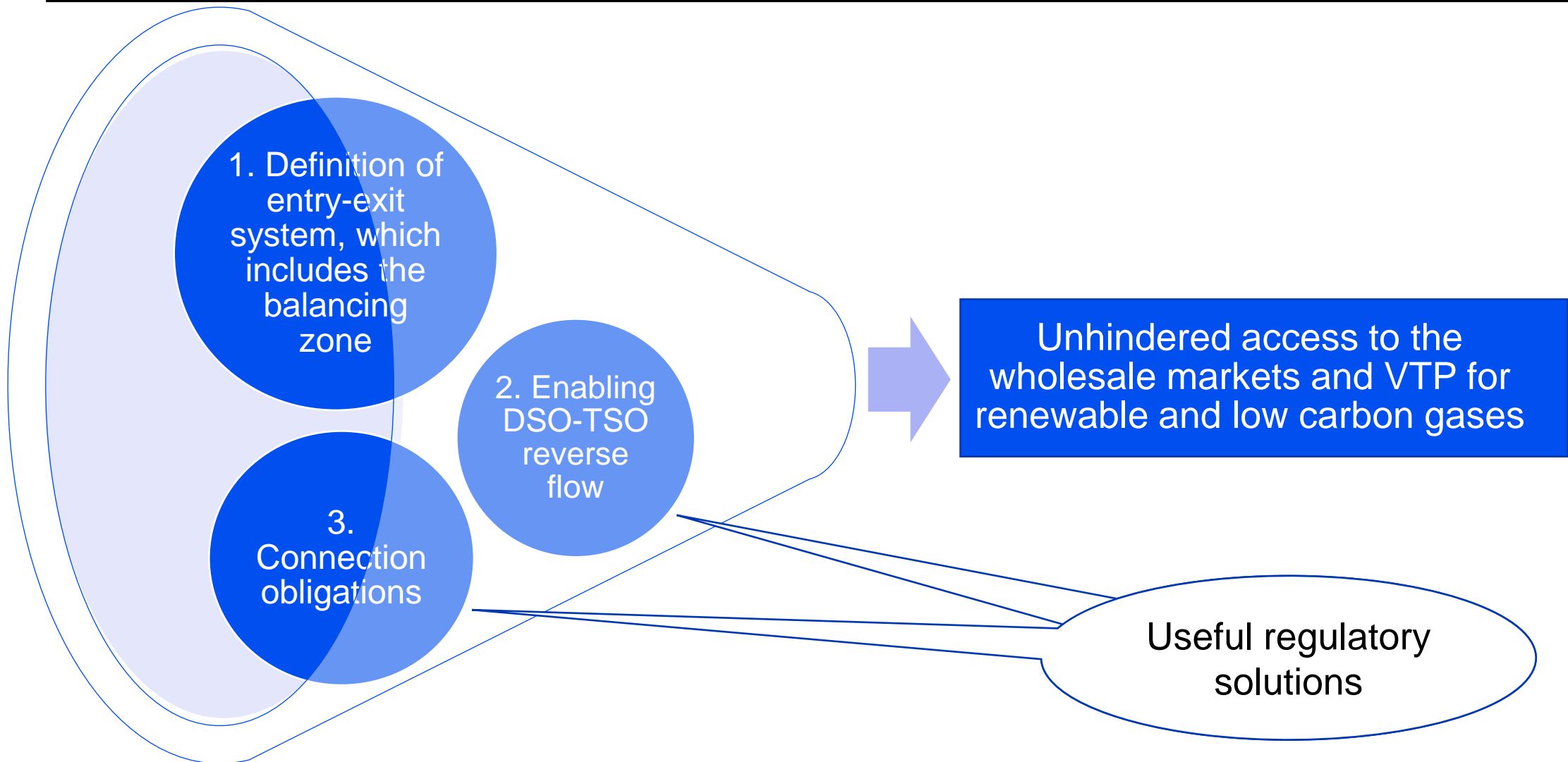
## Coordination on gas quality

- **Maximum acceptability threshold (e.g. 5%) with the possibility to lower the threshold** if costs are excessive compared to the benefits
- Regular revision of the threshold could be considered

# Ensure that NRAs have a role in the governance



# Clarify the scope of “entry-exit systems”



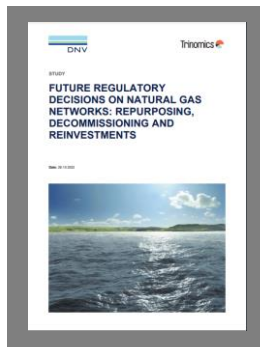
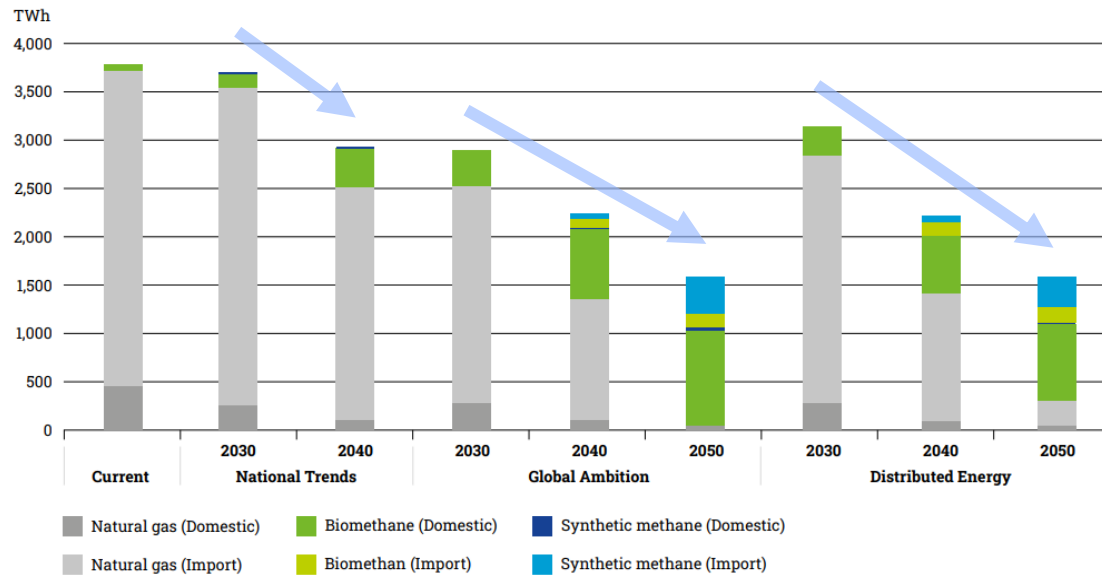
# The three pillars of infrastructure: repurposing, decommissioning, reinvestment

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ACER's study with DNV



Methane supply to EU27. Source: ENTSOG/ENTSOE, TYNDP 2022, Scenario Report.



## 2022 ACER study:

Future Regulatory Decisions on Natural Gas Networks: Repurposing, Decommissioning and Reinvestments (DNV)

## Setting the scene

- Policy targets imply a decrease in natural gas demand
- Uncertainty on Russian flows can accelerate the trend
- Asset removals from the TSO networks (decommissioning & repurposing)
- Investments shift from new capacity to asset replacements

## Future use of natural gas transmission assets

- Current natural gas infrastructure will be used to transport RES gases (biomethane, hydrogen)
- Uncertainty about future utilisation rates

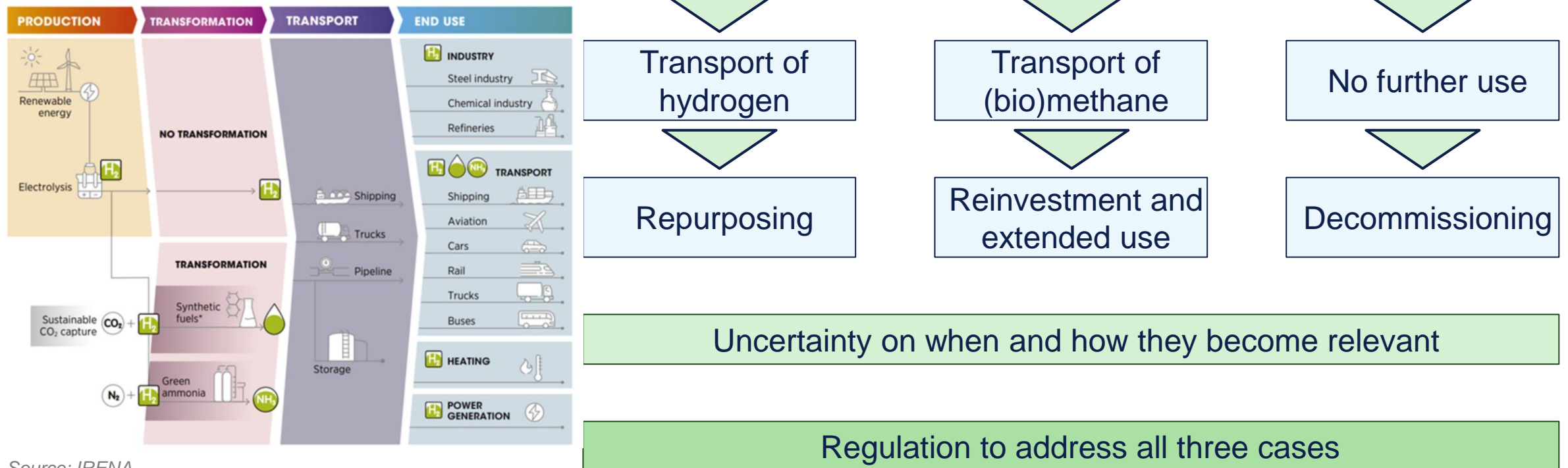
## Hydrogen and Decarbonised Gas Market Package foresees:

- Repurposing of natural gas pipelines
- Forecast of potential increases in natural gas transmission tariffs
- TSO cost benchmarking
- Transparency on TSO costs

# Natural gas assets: three paths going forward

Partial replacement of natural gas by renewable gases (biomethane and green hydrogen) and partial substitution by electrification and energy efficiency

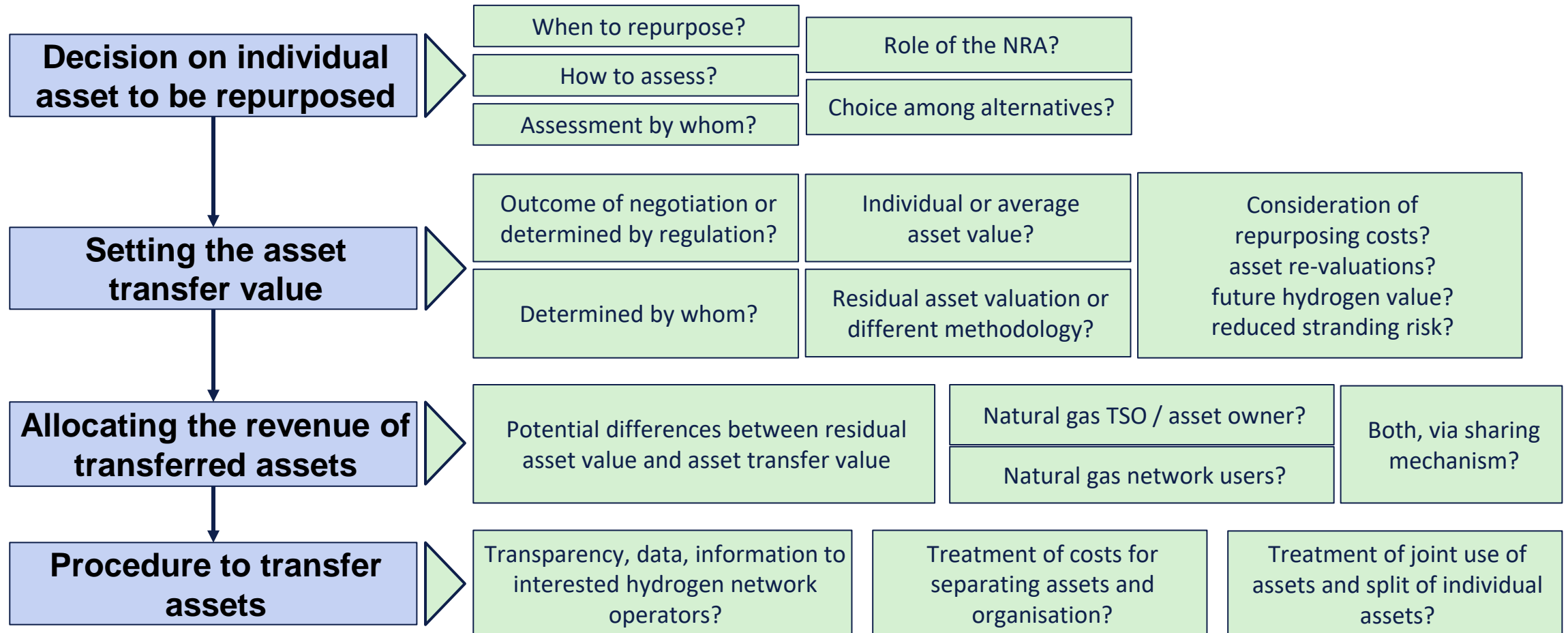
## Future use of natural gas transmission network assets



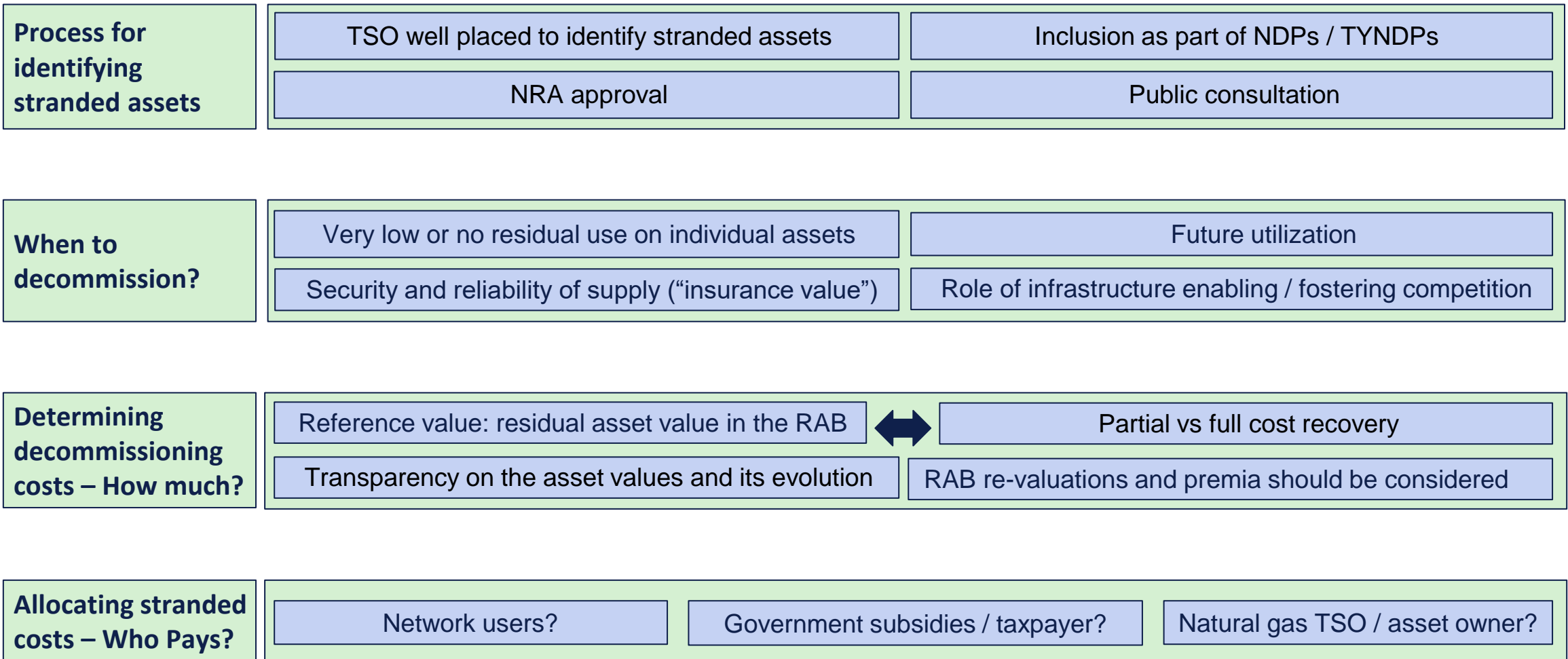
Source: IRENA

# Repurposing: Regulatory challenges

## Individual natural gas network asset for transport of hydrogen and transfer of asset to hydrogen network operator



# Decommissioning: Regulatory challenges

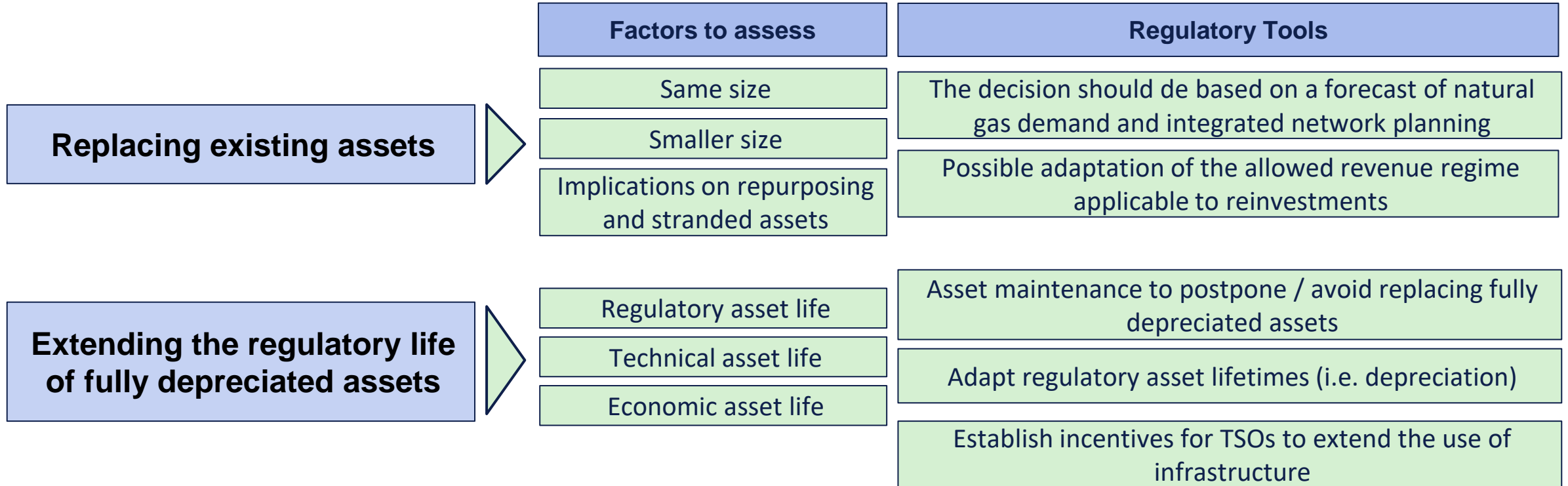


\* An extensive analysis of these options is part of the ACER 2022 Study

# Reinvestments: Regulatory challenges

**Choice between replacing existing assets (reinvestments) or keeping the assets in operation after the end of the regulatory asset life (when technically feasible and safe)**

- TSO investments shifting from new capacity to asset replacements
- TSOs have an interest in replacing fully depreciated assets (Capex intensive)



- **Improve network planning**
  - Establish network utilisation targets and trajectories based on current decarbonisation policies
  - Identify and quantify stranded asset risks based on joint scenarios (e.g. considering repurposing, biomethane, SoS, competition, access to networks, etc)
- **Financial aspects**
  - How much will it cost?
  - Who will pay for it?
- **Maximise infrastructure utilisation**
  - Establish regulatory mechanisms and incentives to extend the operation of fully depreciated assets
  - Manage information asymmetry with transparency and scrutiny
- **Future regulation**
  - Ensure consistency across national rules
  - Address cross-border impact and identify EU-wide relevant actions
  - NRA competences should be adapted
  - For repurposing use the approach designed by the Gas Decarbonisation Package (*‘financial transfer’*)

# Thank you.



# Questions?



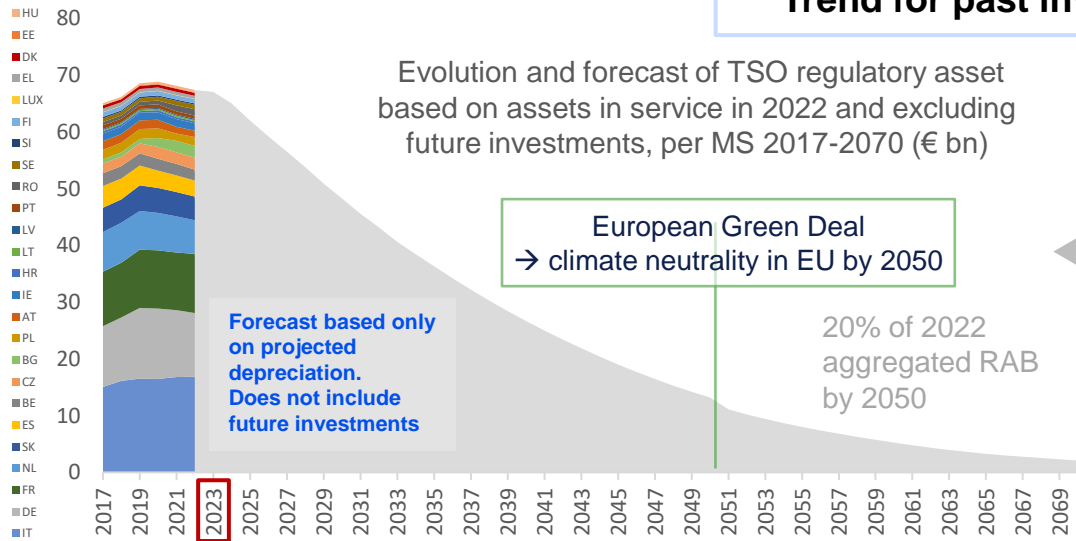
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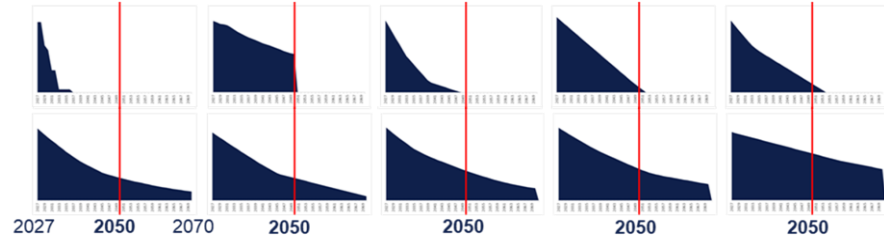


# Infrastructure will depreciate over time: think of asset replacements on time

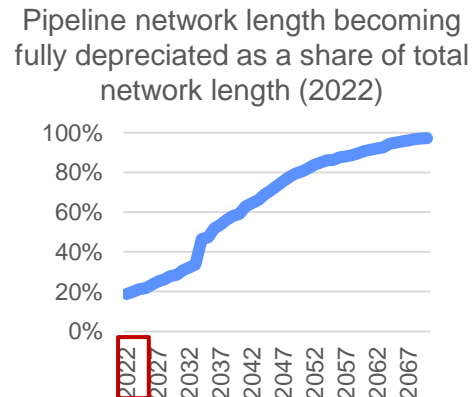
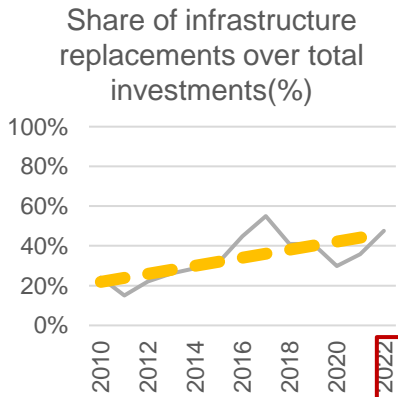
## Trend for past investments: Depreciation



Selected TSOs RAB per Member State (without future investments) – anonymized. Units on the vertical axis (€) differ across graphs



## Future investment trend: Reinvestments



- EU aggregate TSO RAB costs are consistent with 2050 objectives
- But, depreciation profiles vary greatly across the networks
- Allowed revenue methodologies key for ensuring the consistency of TSO costs with EU decarbonisation targets

- EU's Methane Action Plan supports the Global Methane Pledge (GMP) to reduce global emissions by 30% by 2030.
  1. The agriculture sector represents 54% of methane emissions — the largest source of methane emissions in the EU. Emissions in this sector have been reduced by 21% compared to 1990 levels.
  2. **The energy sector** has the smallest contribution of **17%** of methane emissions in the EU due to mitigation efforts in the fuel industry contributing a 60% reduction.
  3. The waste management sector is also mentioned, representing 27% of methane emissions and a 37% reduction.
- A selection of measures that regulators promoted:
  1. Start with prescriptive measuring and mitigation requirements in order to establish first robust measurement and reporting scheme;
  2. EU-level harmonised approach to methane emissions monitoring and detection, based in particular on mandatory monitoring of methane emissions by all gas infrastructure operators;
  3. Favour initiatives at EU level for a harmonised regulatory approach to methane emissions abatement cost recovery (cost-efficiency and effectiveness).