Gas Infrastructure Europe

IENE Conference 2021

Case Studies from Europe –

Case Studies from Europe - The strategic, commercial and technical journey to replace coal with hydrogen

2 December 2021

Boyana Achovski,
GIE Secretary General

Gas Infrastructure Europe

Europe on its way to become climate-neutral by 2050

FINANCIAL TIMES

Opinion **European Union**

Europe's Green Deal could be the most important in a generation

EU leaders must take this opportunity to set a new course for growth, climate change and inequality

The Guardian

For 200 years, a

Proposed EU-wide 'climate law' would set net-zero carbon target by 2050

Plan is part of 'green new deal' but campaigners say it is not enough to tackle climate crisis

▲ Ursula von der Leyen, the European commission president-elect, has pledged to bring forward the proposal within 100 days of taking office. Photograph: Vincent Kessler/Reuters

The New York Times

E.U. Agrees to Slash Carbon Emissions by 2030

The agreement calls for European Union countries to cut their collective greenhouse gas emissions by 55 percent from 1990 levels, a more substantial reduction than previously proposed.

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Net Emissions by 2050

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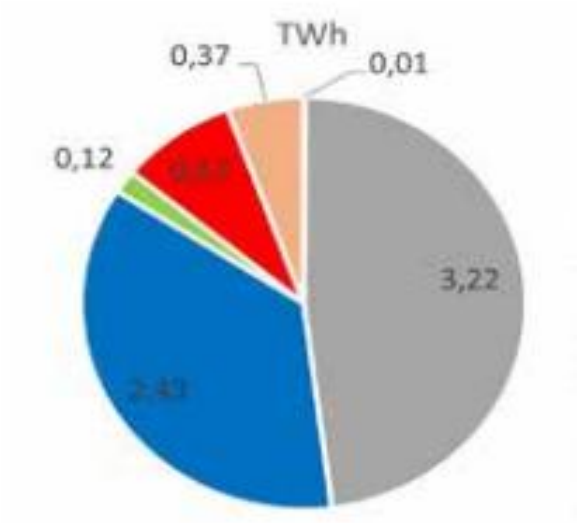
-55%

Greenhouse Gas Emission by 2030

EU countries are in very different positions

Gross Electricity Production (2019):

LATVIA

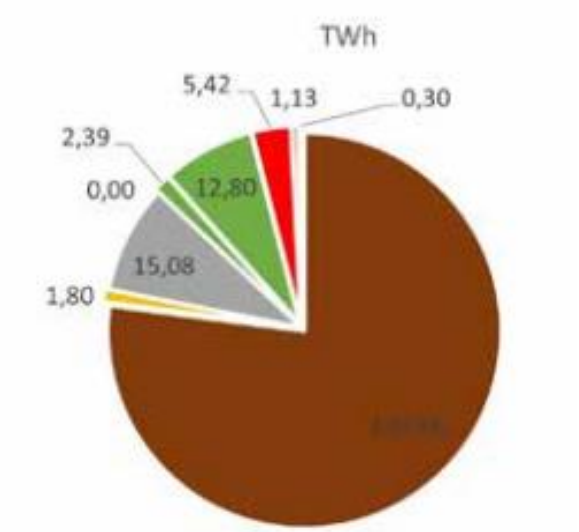


Large Share

Renwables

(e.g. hydro)

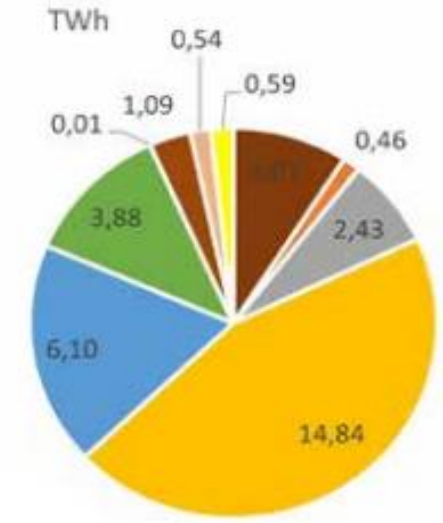
POLAND



Large Share

Coal

SLOVAKIA



Large Share

Nuclear

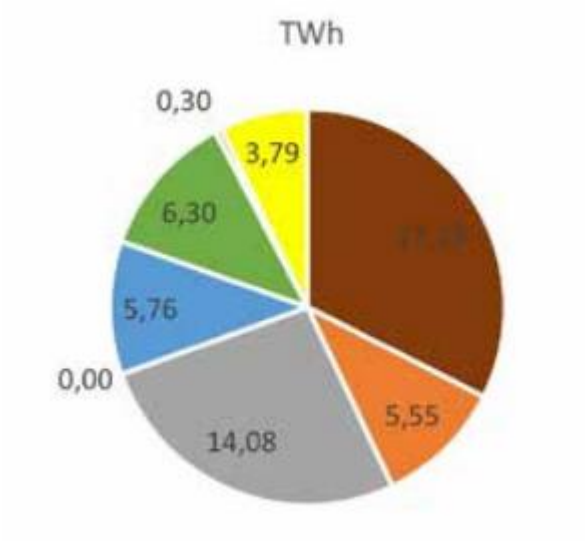
- **Hydro**
- **Coal**
- **Nuclear**
- **Natural Gas**
- **[….]**

Source: ENERGY STATISTICS, Energy datasheets: EU countries version 20 July 2020, EU Commission, DG Energy, Unit, gross electricity generation

EU countries are in very different positions

Gross Electricity Production (2019):

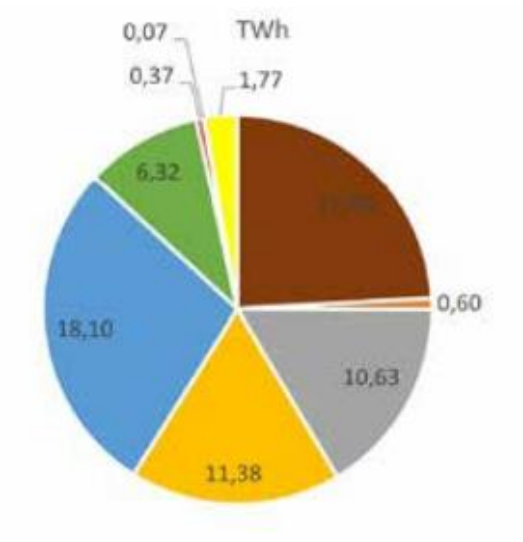
GREECE



Large Share

Solid Fossil Fuels

ROMANIA



Large Share

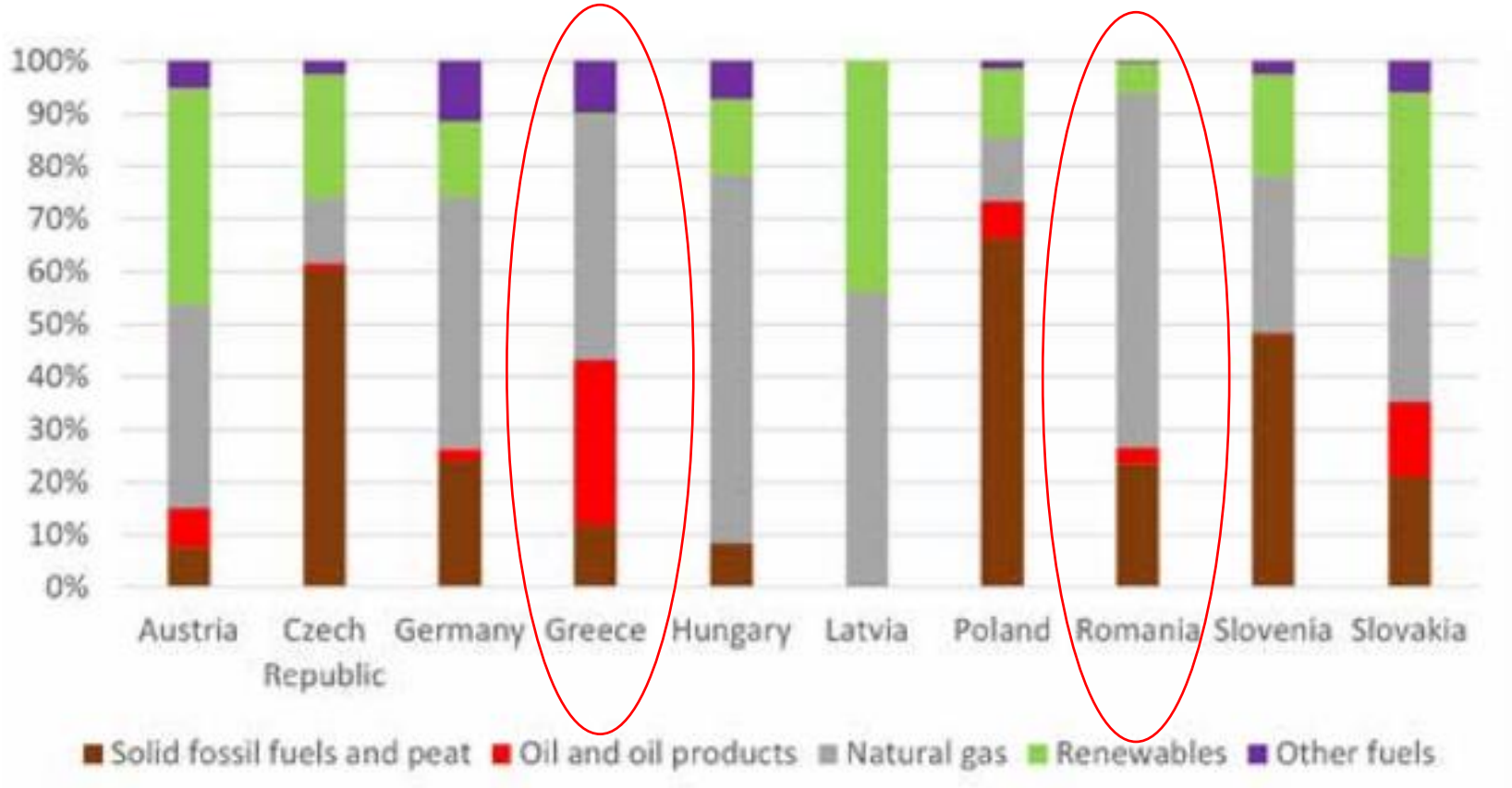
Hydro Power

- **Hydro**
- **Coal**
- **Nuclear**
- **Natural Gas**
- **[….]**

Source: ENERGY STATISTICS, Energy datasheets: EU countries version 20 July 2020, EU Commission, DG Energy, Unit, gross electricity generation

Relevant Role of Natural Gas in Heating Sector in CEE & SEE Countries

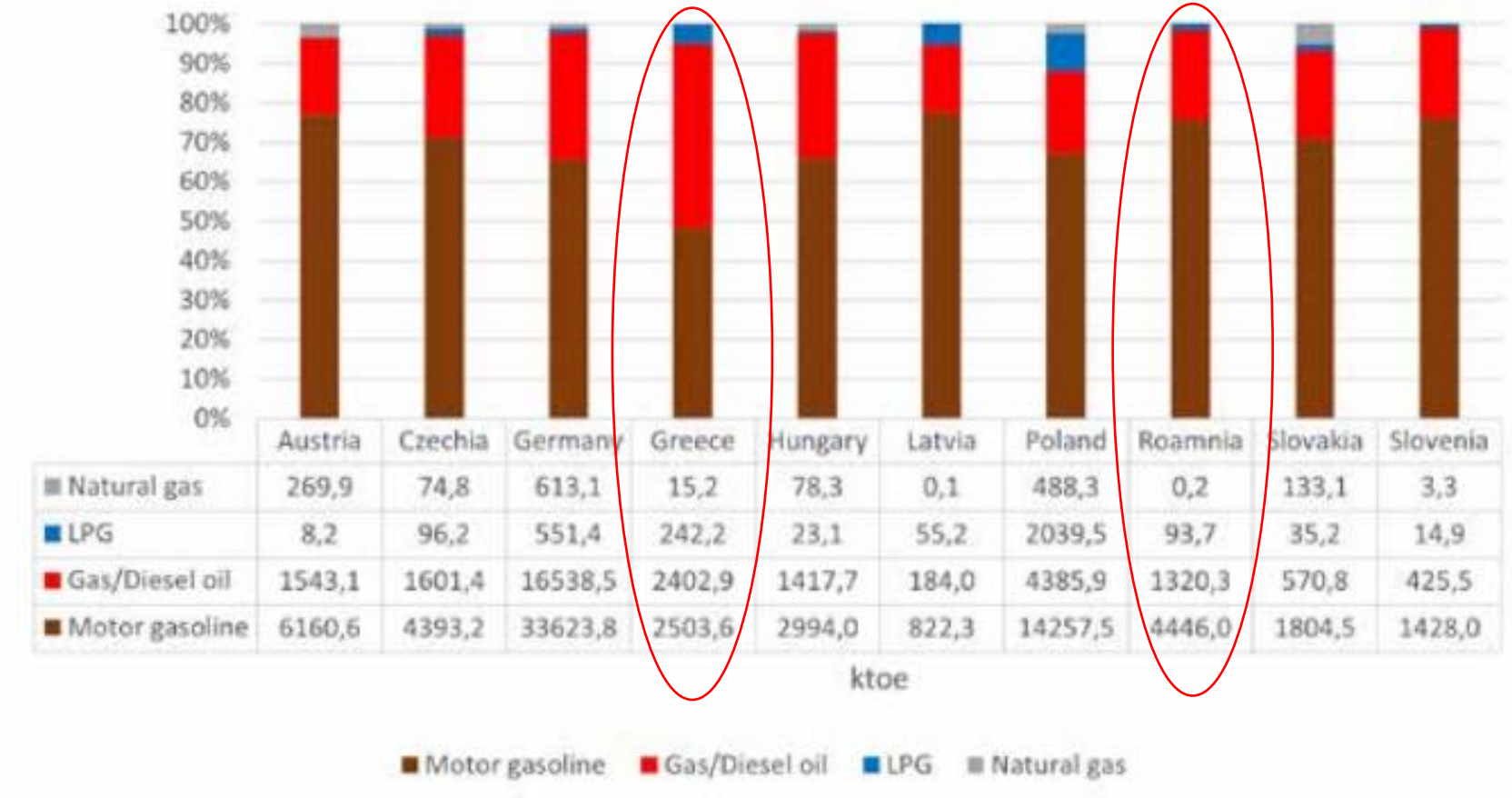
Heat Generation in selected countries:



Source: EUROSTAT 2018

Current use of transport fuels provides opportunities for quick decarbonisation wins

Final Consumption of oil and gas in transport sector:



	Austria	Czechia	Germany	Greece	Hungary	Latvia	Poland	Roamnia	Slovakia	Slovenia
Natural gas	269,9	74,8	613,1	15,2	78,3	0,1	488,3	0,2	133,1	3,3
LPG	8,2	96,2	551,4	242,2	23,1	55,2	2039,5	93,7	35,2	14,9
Gas/Diesel oil	1543,1	1601,4	16538,5	2402,9	1417,7	184,0	4385,9	1320,3	570,8	425,5
Motor gasoline	6160,6	4393,2	33623,8	2503,6	2994,0	822,3	14257,5	4446,0	1804,5	1428,0

ktoe

Source: EUROSTAT 2018

Role of Coal and Gas

Greece:

- Strong reliance on coal and natural gas
- Share of natural gas in energy mix has increased in recent years and is predicted to further grow
- Natural gas to be transition fuel to renewable and low-carbon technologies

Romania:

- Balanced energy mix (coal, gas, hydro and nuclear)
- Modernisation and replacement of conventional power units increases share of renewables
- gross energy production from natural gas will increase

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Short- to mid-term perspective: decarbonisation potential by switching from coal to gas to H2

Replacing coal by natural gas and then to h2 enables quick and affordable decarbonisation wins

Ensuring acceptance of end-users and civil society for energy transition

Reducing reliance on coal improves air quality and health for citizens

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Benefits of the existing gas infrastructure to support the coal to gas to H2 switch

1. Using existing gas infrastructure allows **integration of higher shares of gases**
2. Limiting need for new energy infrastructure **saves costs for society**
3. Reducing costs for society **increases social acceptance** of energy transition

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Benefits of the existing gas infrastructure to support the coal to gas to H2 switch

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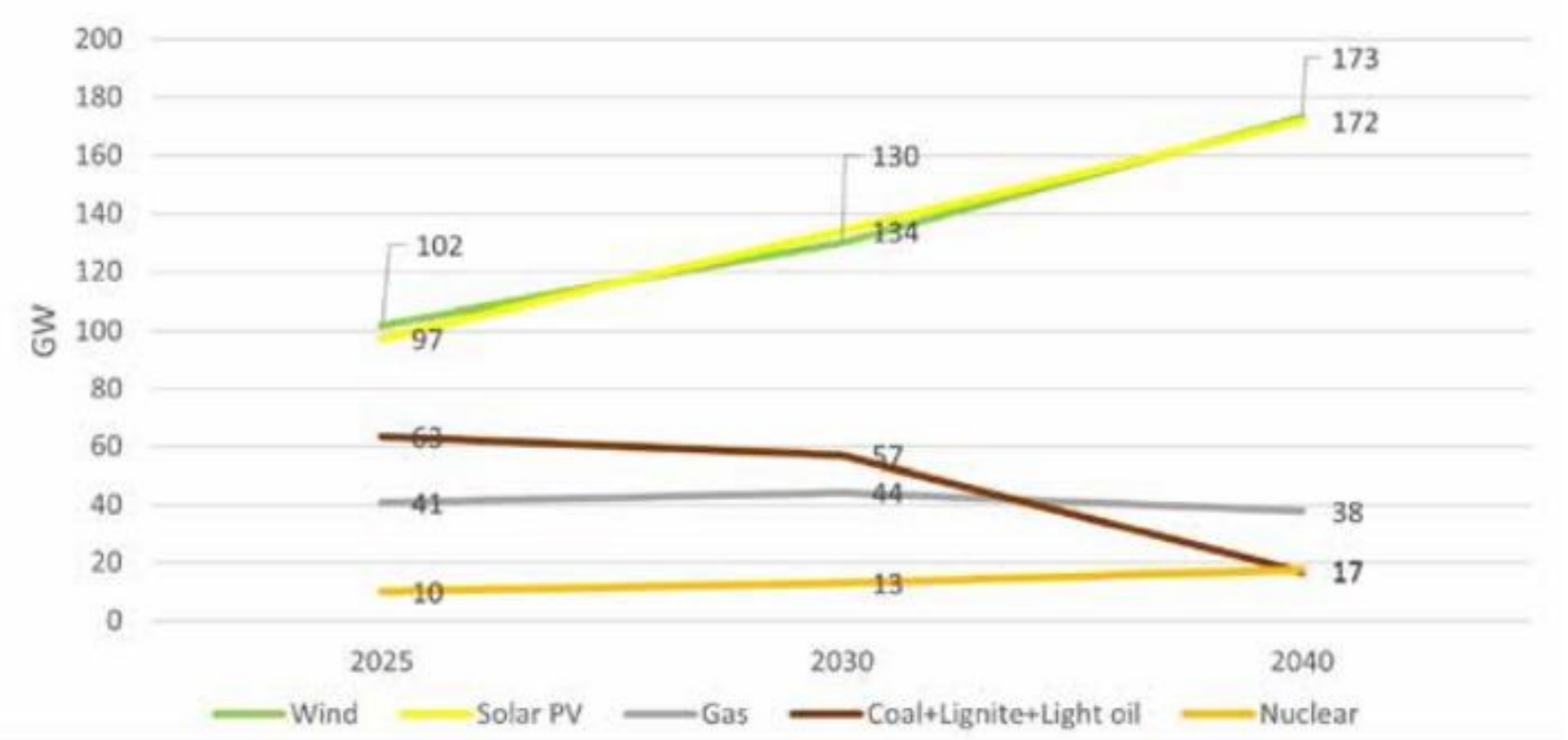
2. Limiting need for new energy infrastructure saves costs for society
3. Reducing costs for society increases social acceptance of energy transition

➔ Energy prices for citizens can be kept at affordable levels!

The energy landscape in the CEE & SEE region will change

Installed generation capacity in CEE & SEE countries from 2025 to 2040:



Source: ENTSOG, TYNDP 2020, National Trends Scenario

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Main takeaways from future energy scenarios

→Significant increase of wind and solar

→Steep decline in solid fossil fuels from 2030 onwards

→Natural Gas capacity is predicted to remain constant

Source: EUROSTAT 2018

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How can the gas infrastructure contribute to the EU climate targets in the mid- to long-term?

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Mid- to long-term perspective: integration of renewable gases

Renewable gases provide flexibility, long-term storage and efficiency to entire energy system

Renewable gases can rely on a well-developed gas infrastructure

Renewable gases can decarbonise hard-to-abate sectors

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The gas infrastructure is able to follow different pathways for the integration of renewable gases

Retrofitting

Enabling renewable gases (e.g. hydrogen) to be blended into natural gas

Repurposing

Using existing gas infrastructure to transport, store and import and export 100% renewable gases

Building new infrastructure

Gas Infrastructure companies have the expertise to build, own and operate infrastructure for renewable gases

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Benefits of the gas infrastructure for integrating hydrogen

Transmission Pipelines

- Single hydrogen pipeline can transport **10-20 times more energy** than an electricity cable
- Repurposing pipelines at **10-35% of costs** that would be required for newly built hydrogen pipeline

Storage Sites

- Salt caverns, depleted fields and acquifers in the EU could already today have a theoretical potential of storing **at least 60 TWh hydrogen**
- Gas storages are **at least 100 times cheaper** than electricity storage costs in batteries

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Benefits of the gas infrastructure for integrating hydrogen

LNG Terminals – our decarbonisation pathways

1. Upstream greenification → existing LNG infrastructure can import bio/synthetic LNG
2. Down-stream blue H2 → Existing LNG infrastructure to import LNG to produce blue H2
3. Upstream H2 → Possibility to convert LNG infrastructure to facilitate some H2 carriers
4. E-fuels → possibility to use/convert existing LNG infrastructure for ammonia/methanol

Gas Infrastructure Europe

An appropriate regulatory framework for hydrogen is needed

- **Coherent legislative framework** with the **existing EU Gas Legislation**!
- **Dynamic regulatory approach** at European level!
- **Joint Network Planning** for gas and power!
- **Financial framework** that guarantees support for infrastructure conversion and construction of new infrastructure!

THANK YOU

For your attention

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