# The rationale for power-to-gas and methanation



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# A realistic look at the EU energy picture

● ~70 % of the EU energy system covered by energy molecules in 2020

What might this look like in 2050?

• Eurelectric: maximum 60 % direct electrification

# **Applications for renwable gas**

- Seasonal shifting of renewable energy
- Heating
- Feedstock for chemical industry
- Transport



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## Green molecules can be transported via existing gas infrastructure

- Europe has a well developed and highly integrated gas supply system
  - 2.2 Mio km of gas pipelines
  - 100 billion m<sup>3</sup> of gas storage
- Highly efficient gas infrastructure
- The system can be used for efficient transport of energy (hydrogen & methane)



Source: Gas Infrastructure Europe, System Development Map



## **Process chain of PtG within the project STORE&GO**



Focus on methanation



# **STORE&GO Key Facts**

- Call LCE-09-2015: Large scale energy storage
- 27 partners from6 European countries
- **•** Runtime: 03/2016–02/2020





## **Project structure**

#### Management & Coordination WP 1

	Demonstration	Demonstration	Demonstration
	Site Falkenhagen	Site Solothurn	Site Troia
	Germany	Switzerland	Italy
	WP 2	WP 3	WP 4
Cross-cutting activities WP 5 - WP 8			

#### **Dissemination** WP 9

www.storeandgo.info

## The STORE&GO demo sites



# **Cross-cutting activities**

- Analysing 3 demo sites
  - Environmental impacts
  - Economic analysis
  - Environmental impact
  - Optimized Operation schemes for gas grids

- Impact of PtG on the energy system
  - Benefits for operating distribution networks
  - Cost savings in transmission networks
  - Energy system simulations

- Reducing barriers
  - Discovering legal and regulatory obstacles
  - Outlook on cost and technology development
  - Social acceptance





- Market uptake
  - Analysis of future demand of 'green gases'
  - Macro-economic costs and benefits of the PtG
- A European PtG roadmap

# **Dissemination activities**

- Website with a variety of freely accessible reports
- Various online publications and stakeholder information
- BRIDGE (<u>www.h2020-bridge.eu</u>)
  - Advisory platform for the European Commission by projects in the field of storage and smart grids
- Political events in the European Parliament
- Educational Training programme and public events
- Participation in conferences, trade fairs, expert discussions



## Main project targets

- Erect and operate three demo sites exhibit three different innovative methanation concepts integrated in existing energy infrastructure
- Achieve operation ≥ 24 months (4.000 h)
- Onstant gas grid quality (≥ 90 vol. % methane)
- Consider legal and regulatory framework
- Derive political recommendations
- Identify business cases