Madrid Forum

2.03 Facilitating and scaling up the injection of renewable gases

Topics

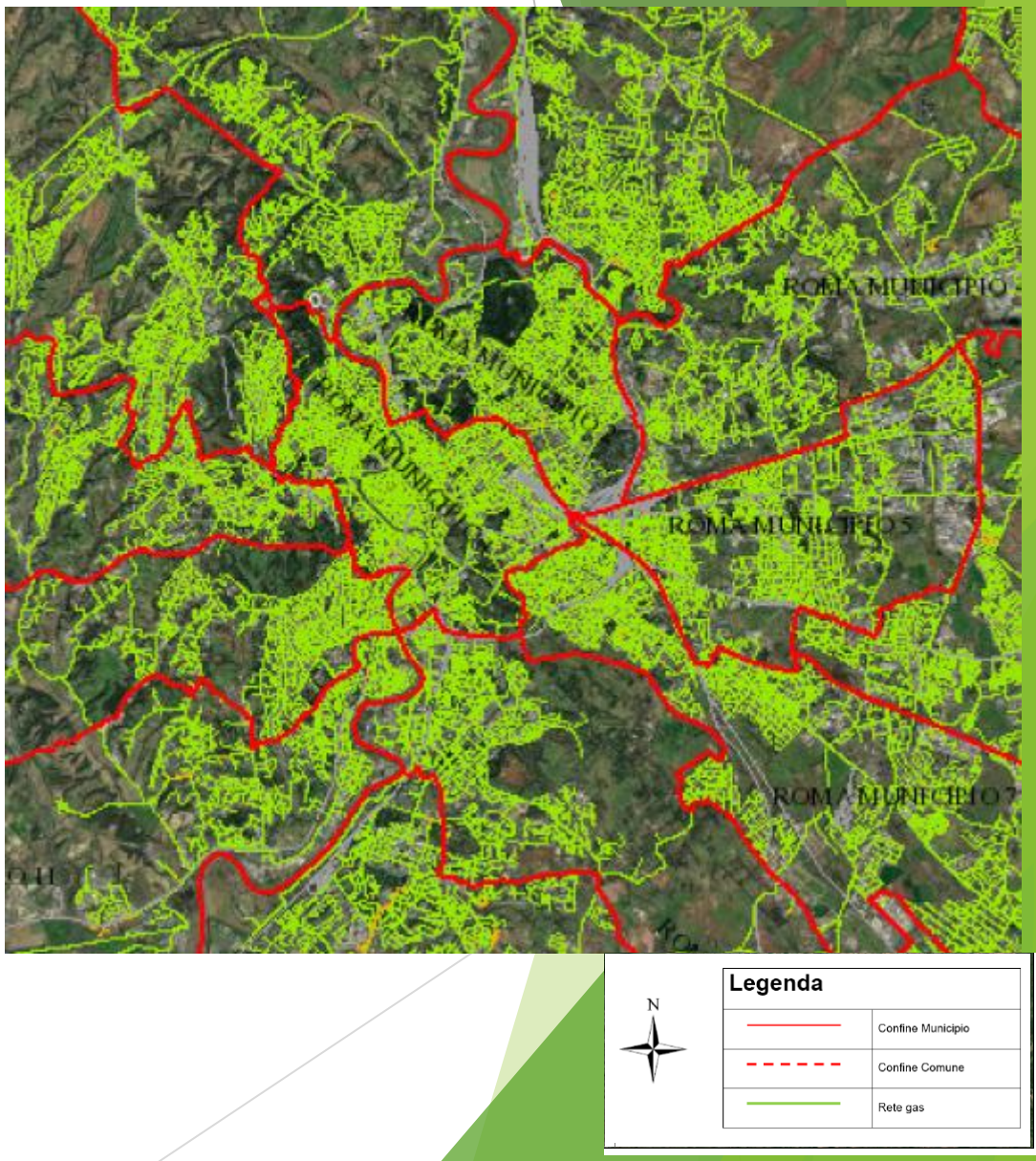
1. Decentralised production
2. Storage and flexibility solutions to renewable power generation
3. Different gas qualities for different end-user requirements
4. DSOs as neutral market facilitators

Decentralised production

1. **DSO grid is capillary around Europe:**
   a) Around **2 million km** of pipelines
   b) Totality of residential consumers and majority of industrial consumers and CHP - All types of gas consumption and production
   c) 1400 gas DSOs

2. **DSOs have knowledge of their grid and the local potential** for production → DSOs can help adequately evaluate the **optimal location** for the production/sourcing of renewable and low-carbon gases
   a) Linked to **balancing** and grid management
   b) Facilitated by **digitalisation** of grids, to improve understanding and piloting of flows

3. DSO alternatives to connect **decentralised production** in the most cost-effective way, including setting up a **virtual pipeline**



Storage and flexibility solutions to renewable power generation

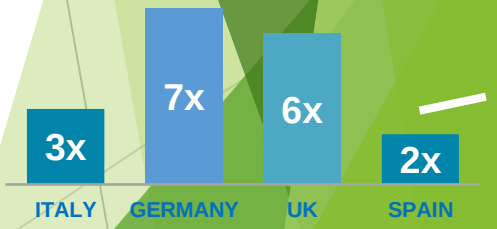
Gas distribution grids

TODAY
guarantee energy supply security

TOMORROW
Ensure flexibility and enable decarbonisation

- ✓ Around 2M km of networks across Europe, with linepack and local storage already able to **deliver and store large quantities of energy**
- ✓ In combination with other gas infrastructure allow **flexibility** in **managing seasonal demand fluctuations**
- ✓ Progressive joint planning & development of DSOs and TSOs (e.g. reverse flows) empower full exploitation of **locally produced renewable and low-carbon gas**
- ✓ Offer continuity of energy supply also during **prolonged weather conditions adverse to wind & solar** production

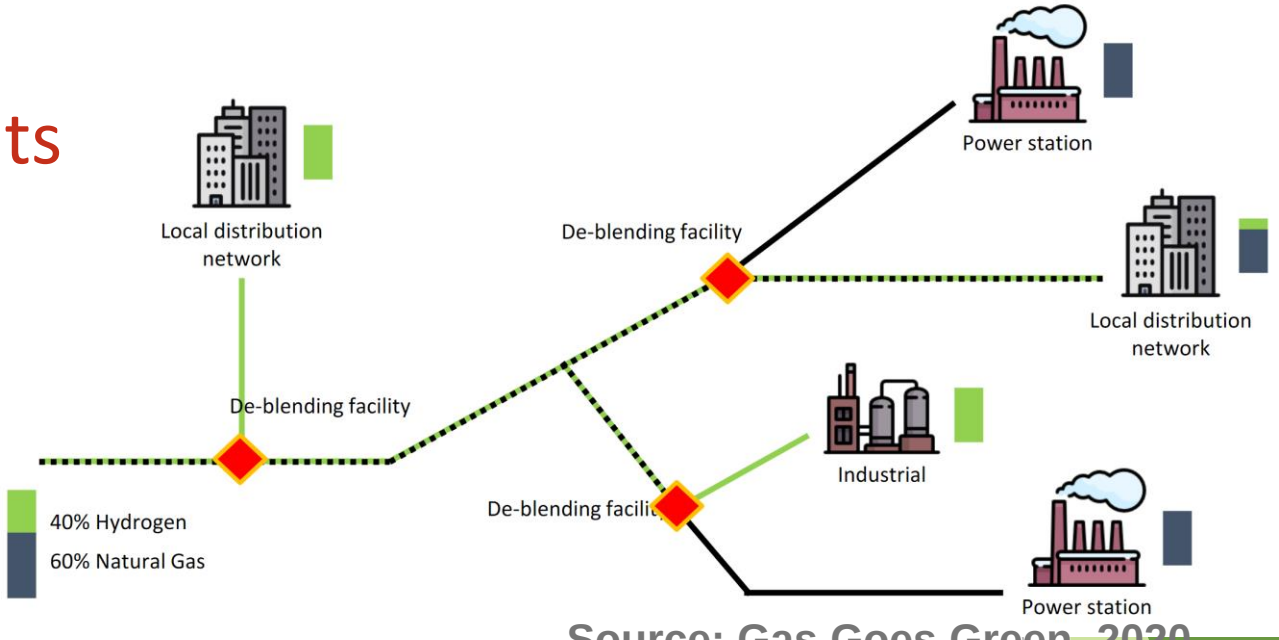
Gas winter summer demand fluctuations(1)



(1) EC statistical pocketbook, 2019

Different gas qualities for different end-user requirements

1. **Admixtures of biomethane & hydrogen**
   - **EN16723-1** – specifications for biomethane for injection in the natural gas network – no other issue
   - **Different effects of H2 admixture compensate each other** to a certain degree – THyGA project.



Source: Gas Goes Green, 2020

2. **DSOs are ready to scale up injection** of H2 into natural gas
   - **Limited technical barriers for H2 injection** in distribution grid (Marcogaz)
   - Distribution of **H2-natural gas blends can help decarbonise heat** (THyGA project)
   - **Certain end-user sectors** may need **special attention,** and the use of particular mitigation **solutions** to deal with higher levels of H2 in natural gas
   - **Prime Mover Group Gas Quality & H2 Handling**: Identifying & assessing the technical challenges and cost-effective solutions related to renewable and low-carbon gas injection in **blended and dedicated grids**

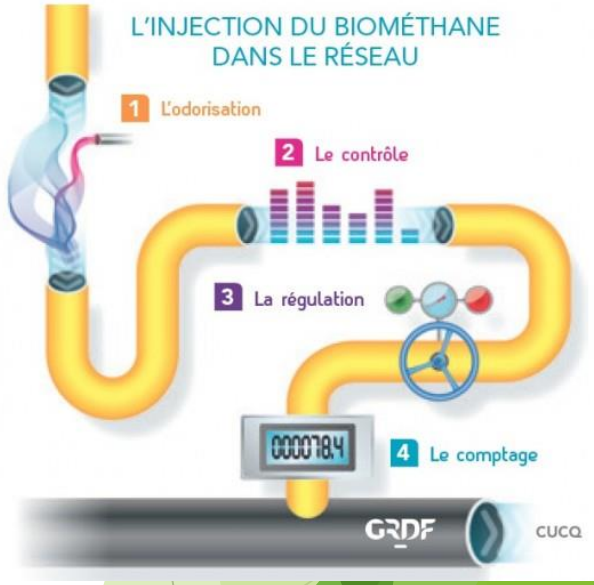
3. Different gas qualities require **active grid management** facilitated by **digitalisation** of the grid and increased data availability

DSOs as neutral market facilitators

1. DSOs are regulated entities and as such fulfil a **neutral market facilitator role**
   - Before producing and injecting, **capacity has to be planned** in the system, ensuring it is dimensioned adequately and sending market signals in case more capacity is needed;
   - DSOs should be **responsible for operating the injection points** which odorise, control the gas quality and meter the renewable/low-carbon gas before injection;
   - On the management of Guarantees of Origin (GOs), several DSOs and TSOs are **responsible for the GO registry** in their countries;
   - Once this gas is injected in the distribution grid or the transmission grid, the **GO** can be consumed anywhere in the system by any consumer, **helping develop a liquid market**.

2. For **hydrogen similar solutions will be required for injection**

3. A **clear terminology on gas types** will help accelerate market development



Recommendations

1. **Blending** is the easiest way to help **scale up** renewable and low-carbon markets and allow biomethane, hydrogen and other gases to be traded across Europe

2. **Joint planning** between TSOs and DSOs at European level in relation to the TYNDP process is necessary. At a decentralised level, a coordinated approach with local authorities will ensure that final customers can access the energy which they wish to consume **through blended or dedicated methane/H2 grids**

3. Ensure clear **gas quality rules** so DSOs can fulfil their **neutral market facilitator** role and ensure **renewable and low-carbon gases** can be injected and can be consumed across Europe

DSOs are essential actors in ensuring that renewable and low-carbon gases can be injected locally and traded across Europe