

H2 GAS ASSET READINESS

UN Group of Experts on Gas – March 22nd 2023



AGENDA:

1. **H2GAR – Organisation and Working Groups**
2. H2GAR – Why? How?
3. Working Groups overview
4. H2GAR – Information dissemination



H2GAR – Organisation and Working Groups

H2 Gas Asset Readiness – Steering Committee

Seven Founding Members



AGENDA:

1. H2GAR – Organisation and Working Groups
2. **H2GAR – Why? How?**
3. Working Groups overview
4. H2GAR – Information dissemination



H2GAR – Why? How?

1 Contribute to a robust development of new standards and technologies essential to the future gas transmission systems

3 Non overlapping with other ongoing works (in other organisations) and aimed to enable a smart and quick cooperation table for TSOs open to external contributions



2 Sharing current technical knowledge on H₂ gas asset readiness

4 Building a common view on the H₂ readiness of our infrastructures

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H2GAR – Working Group 1 - Pipeline

WG1 – Pipeline

Luca Bacchi - SNAM

Scope of Work

To investigate the **best knowledge of the pipeline materials** to provide **safe and reliable operations** of the current and future pipeline with **different H2NG blends**

Results:

- Preparation of and **Informative Annex for the EN1594**
- **Sharing of knowledge** among TSOS members about use of H2 in pipeline
- **Comparative analysis among TSOs** tests and activities: data collection



WG Members:

Enagas, Fluxys, Gasunie, GRTgaz, Oge, National Grid, Snam

Roadmap:

- **Collaboration with EPRG** in both **small- and full-scale tests** on both old and new pipeline to **assess material behaviour** within H2NG blends

Reports:

Ongoing

H2GAR – Working Group 2 – Compressor Stations

WG2 – Compressor Stations

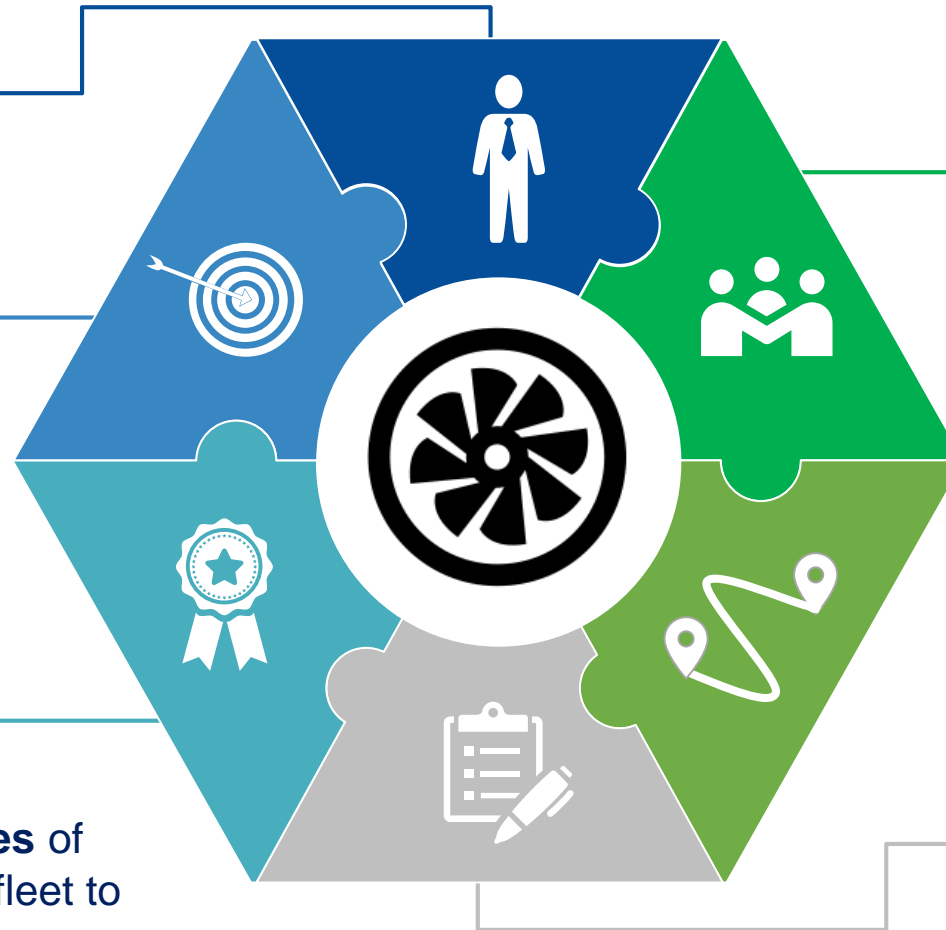
Francis Bainier - GRTgaz

Scope of Work

Define a common approach to assess the impact on gas drivers & compressors both with H2/NG varying percentage and 100% H2

Results:

- Adaptability & capability of the centrifugal compressors & turbines of the main manufacturers of the TSO fleet to the mixture
- Main manufacturers ready to the 100 % H2 and pledge (turbine & centrifugal)



WG Members:

Enagas, Fluxys, Gasunie, GRTgaz, National Grid, OGE, SNAM

Roadmap:

- Specification of scenario at different H2 concentration levels
- 100% H2: technology and design

Reports:

Ongoing

H2GAR – Working Group 3 – Separation Systems

WG3 – Separation Systems

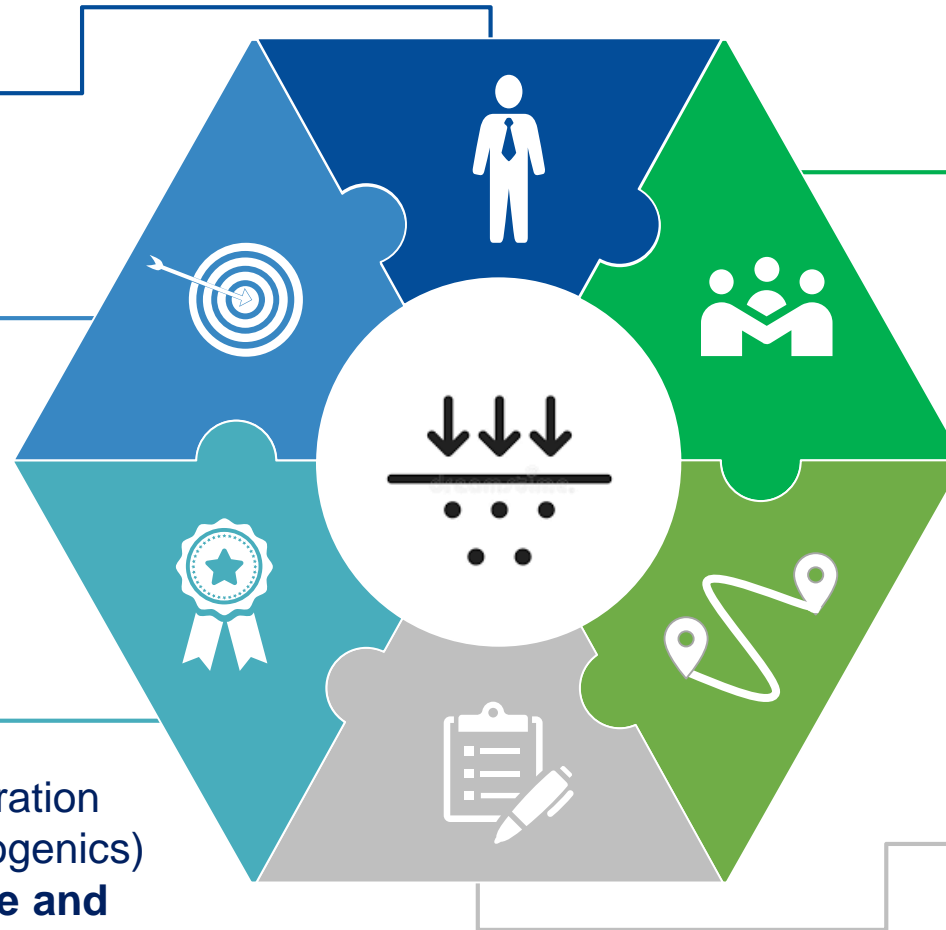
Marco Tarenzi- SNAM

Scope of Work

Feasibility study for a Polymeric Membranes Pilot Plant in the light of all relevant factors—including economic, technical, legal and scheduling

Results:

- **Comparative analysis** among Separation Systems (Membranes, PSA and Cryogenics)
- **Identification of most cost-effective and energy-efficient solutions** to separate hydrogen from a blend to **protect gas centered End User**



WG Members:

Enagas, Fluxys, Gasunie, GRTgaz, OGE, National Grid, Snam

Roadmap:

- Monitor **development both of current and new technologies**
- **WG3 internal assessment** including: marketplace analysis, staffing, timeline and financials. :

Reports:

Ongoing

H2GAR – Working Group 4 - Metering

WG4 – Metering

Jose Lana - Enagas

Scope of Work

To identify the main aspects of measurement of H2/NG mixtures (quantity/quality), focusing on devices and procedures for metering

Results:

- List of devices for metering of H2/NG blends or pure H2
- EoS status for utilisation with H2/NG blends
- Simulation of injection of H2 in pipelines
- List of international organisations



WG Members:

Enagas, Fluxys, Gasunie, GRTgaz, National Grid, OGE, Snam

Roadmap:

- To follow metering devices availability
- Option to upgrading NG cromas for H2/NG blend
- Readiness for H2/NG metering

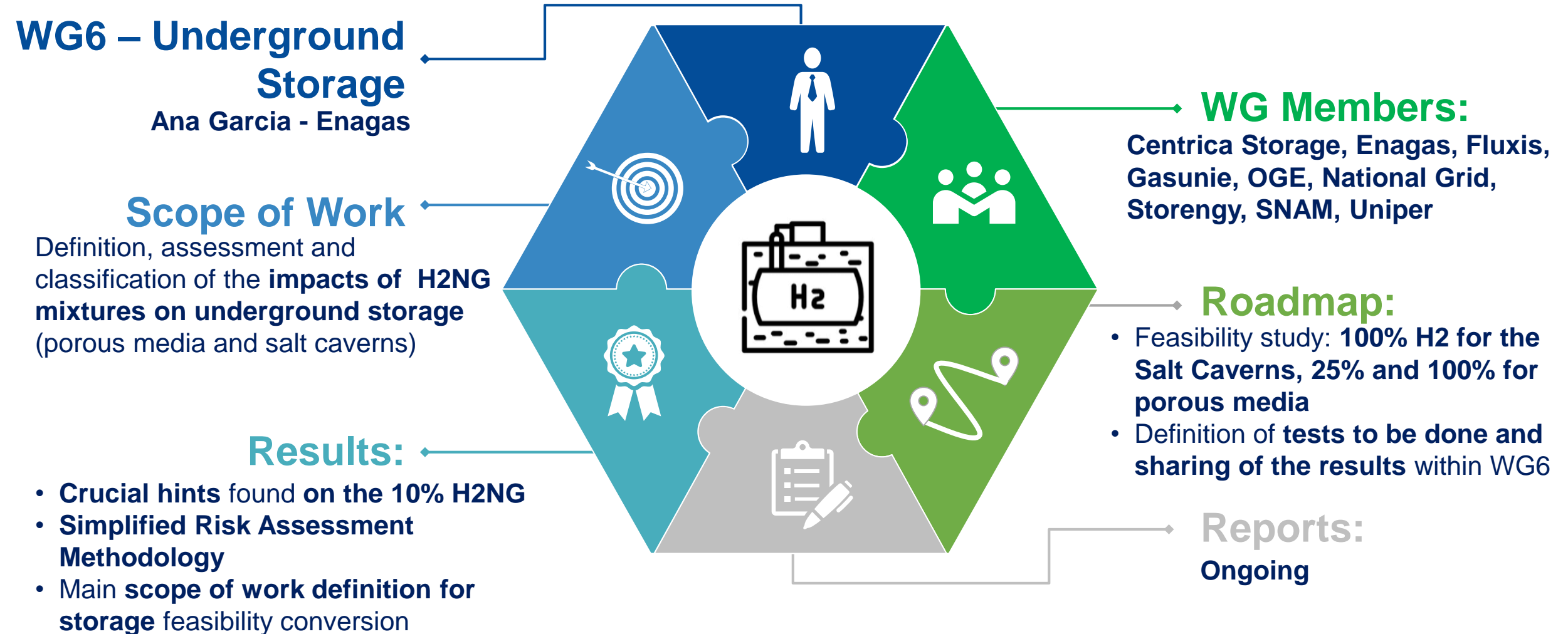
Reports:

Two public reports summarising main results till now

H2GAR – Working Group 5 - Safety



H2GAR – Working Group 6 – Underground Storage



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H2GAR – Information dissemination

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