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A flexible approach for handling varying gas qualities

ENTSOG's position

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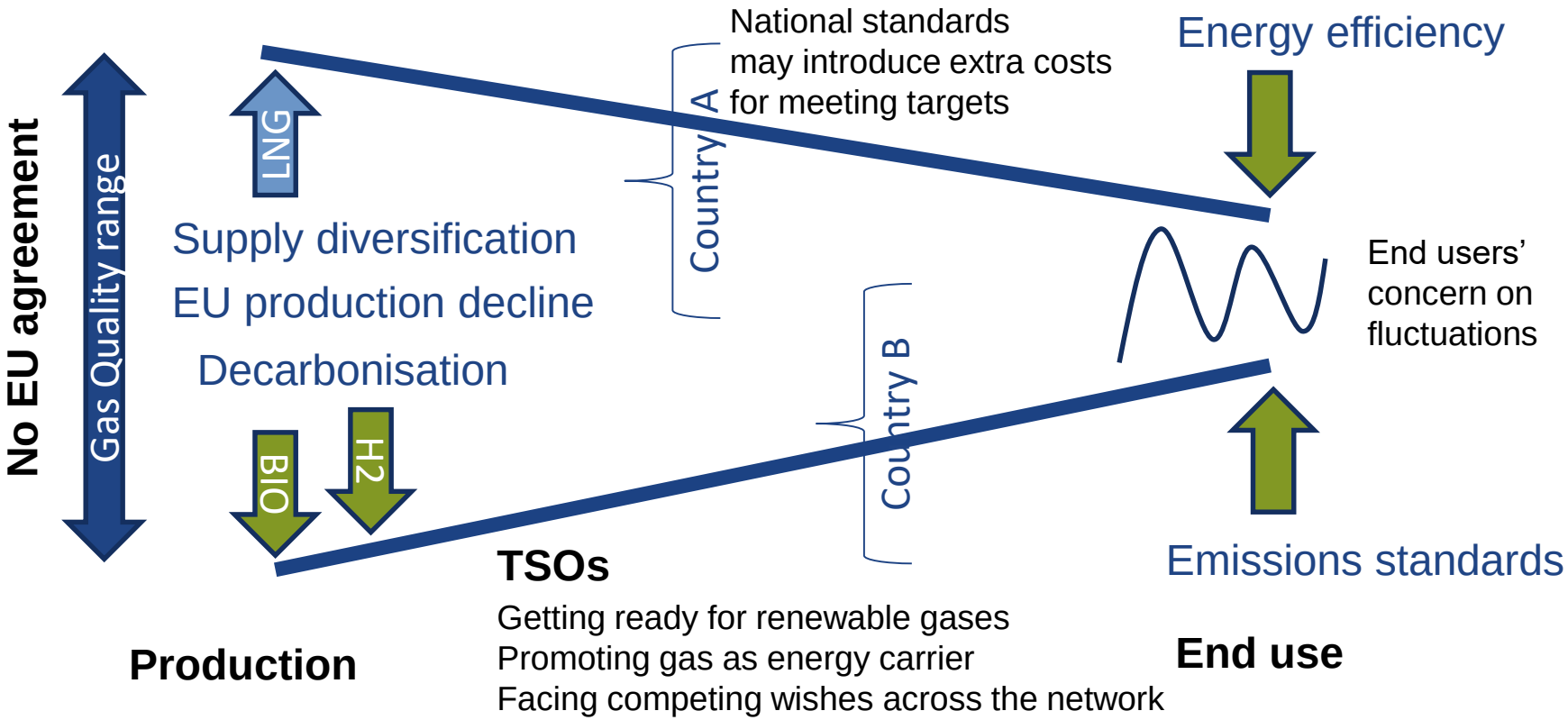
Image Courtesy of Thyssengas

INT1403-18_Rev_1

Flexibility for gas quality

Problem description – current challenges around gas quality



Solutions: Flexible standards + information provision

Flexibility for gas quality

The current situation

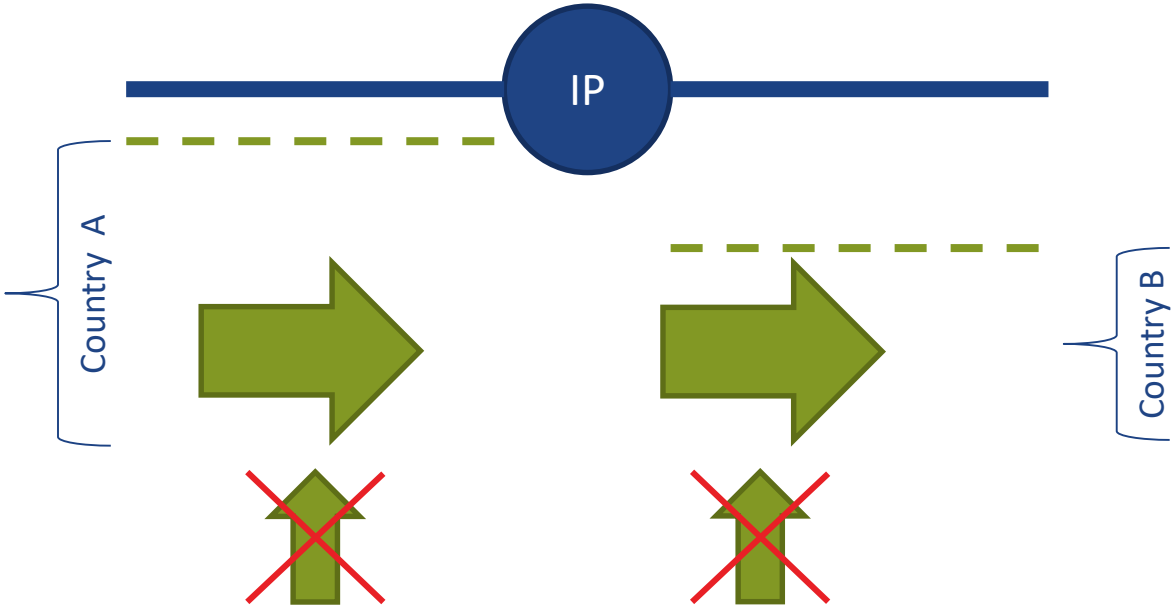
- Requests to TSOs to revise standards both at entry and exit points.
  - Suppliers request extending operational limits at entry points
  - End users ask to keep gas quality in a stable narrow band
- Transition to renewable gases (H2NG, biomethane, H2) will impact gas quality
  - TSOs studying how to adapt/convert their networks
  - Distributed and intermittent production points
  - Need for gas quality flexibility will increase in future
  - Gas quality standards may limit green gases injection
  - Competence for setting regulatory limits lays with national authorities
  - Difficult to offer all project promoters a non-discriminatory green gases capacity
- The technical challenge: how to share the flexibility and find a compromise between competing requests from market participants

Standards should be applied flexibly, so that costs for the actors in the value chain are minimized

Flexibility for gas quality

Cross-border trade restrictions for green gases

- Restrictions can appear when standards are different
- Today TSOs avoid restrictions by cooperating on the basis of INT NC
- Potential for cross-border (or national) restrictions may increase as renewable gases projects develop and compete for the renewable technical gap.
- Standards should not be a barrier for renewable gases



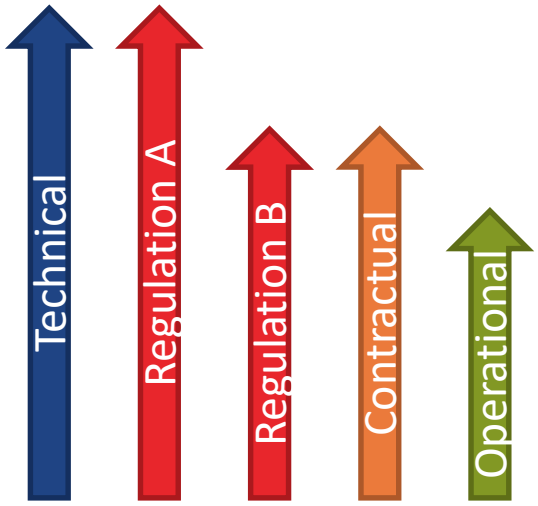
Country B's standard limits additional injection

Country A's project takes all the "green" gap (can happen within a country)

Flexibility for gas quality

Gas Quality specifications: standards, legislation and operational arrangements

- **technical limits** in standards according to safety/integrity/environment requirements of end use application and system integrity, sometimes, the common least denominator is taken or some other stakeholder agreement.
- **regulatory limits** in national legislation or network code. MS regulated gas quality as different corridors developed, resulting in a diverse range of specs.
- **contractual limits** and **operational limits** set between different operators according to best practice, often stricter than standards and regulation
- Mandate M-400 asked to develop the broadest possible standards within reasonable costs.
- EC announced at Madrid Forum 2016 not to pursue binding provisions for the gas quality standard at that point in time.



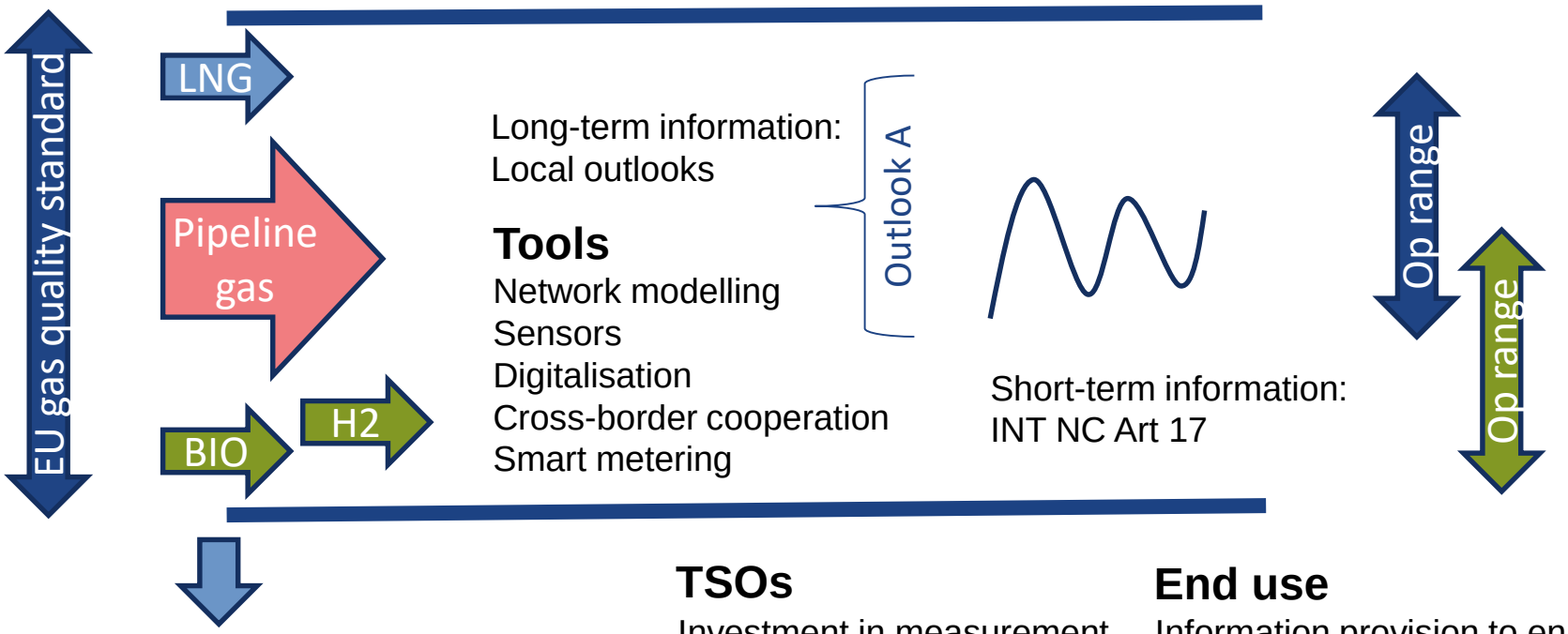
Flexibility for gas quality

Proposals and solutions at hand

- Facilitate renewable gas injection and diversification of supplies
- Keep gas as an attractive energy carrier for end users
- Prioritize information provision by TSOs –and DSOs - and data exchange over gas treatment
- Explore solutions for:
  - Sharing transmission network flexibility in a non-discriminatory way
  - Opening the network for increasing shares of renewable gases
  - Adopting regional and local solutions
  - Facilitating end user readiness
    - Short-term information provision (INT NC Art 17)
    - Long-term information: local and regional outlooks, historic data
- Gas quality innovation projects should be supported
- Support and facilitate agreement on a European standard that contributes to energy policy goals and advances the decarbonization
- Ensure cost recovery mechanisms when additional TSO investments are needed

Flexibility for gas quality

Solutions at hand: flexibility and information provision



Production

Non-discriminatory flexibility offer at entry points

TSOs

Investment in measurement and IT equipment for renewable gases.
Cost and benefit reflective recovery mechanisms.

End use

Information provision to enable risk analysis, optimization and mitigating measures

Flexibility for gas quality

Solutions at hand: flexibility and information provision

- The EU gas quality standard should be established with **end user application safety as bottom line**, but as a compromise between supply diversification and end user application optimization and performance.
- **Information provision**
  - Both long-term (quality outlooks) and short-term information provision (Article 17)
  - Renewable gases may require additional investments in measurement and forecasting.
- **Flexibility in the application of standards**
  - TSOs should be allowed to set less strict limits at entry points. Entry and exit point gas quality limits may be decoupled.
  - Flexibility is limited and not uniform for the different systems and users and requires a case by case analysis.
  - Flexibility to be offered in a non-discriminatory manner via strong stakeholder engagement process. Actors need to be aware of their competing requirements and the potential costs for all parties.
- All these solutions should be considered when drafting the standard and when designing any binding provisions.

Thank You for Your Attention

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Flexibility for gas quality

TSO innovation examples

- National Grid's CLoCC project aims to minimise the cost and time of new connections to the National Transmission System in the UK and is primarily pitched towards smaller and unconventional gas customers for whom connecting to the NTS under the current arrangements can be extremely challenging.
- Following the conclusions of the OBAN project, the Institute of Gas Engineers and Managers (IGEM) is looking at the review of the UK gas quality specification contained in the Gas Safety (Management) Regulations (GS(M)R).
- National Grid is starting to explore the potential for offering gas quality blending services at transmission entry points where more than one stream of gas is delivered. Safety assurance, technical, commercial and regulatory issues will be explored in an initial scoping phase.
- H2-PIMS: The partners of H2-PIMS project develop a pipeline integrity management to evaluate and guarantee safe and reliable transportation of hydrogen-natural gas-mixtures and pure hydrogen as well. This includes determination of relevant requirements to convert existing infrastructures such as ONTRAS very own grid. The project is part of the German HYPOS technology network.

Flexibility for gas quality

TSO innovation examples (II)

- At H2-MEM, Fraunhofer IKTS and DBI GUT aim to design and develop special carbon-based membranes to separate hydrogen-natural gas-mixtures. The project is part of the German HYPOS technology network.
- The GERG project 'trace components in biomethane', with the participation of SNAM, GRT-Gaz and Terega among other parties, aims at: sharing knowledge on biomethane quality & impacts; studying the real impact of biomethane quality on gas chain; and anticipating potential operational issues for gas operators.
- Gascade projects:
  - Oxygen-removal facility (including an drying unit) on basis of a catalytic process with use of LPG for the biomethane injection in Fuchswinkel (in the transportation pipeline RHG) in 2014.
  - Oxygen-removal facility on basis of a catalytic process under direct oxidation of Methane on the biomethane injection point Nonnendorf in the transmission-Pipeline JAGAL in 2015.