

## German Non-Paper - New Gas and Hydrogen Internal Market Directive

### Here: Integrated Gas and Hydrogen Network planning

Previous versions of Art. 51 of the new Gas and Hydrogen Internal Market Directive would have postponed mandatory hydrogen network plans up to the mid-2030s. Germany has continuously asked for more stringent provisions with regard to hydrogen network planning than in the original proposal. Therefore, Germany in principle welcomes the extension of Art. 51 para 1 to hydrogen. Nevertheless, we suggest to adapt the wording by adding the following red sentence:

*“There shall be at least one single network development plan per Member State for natural gas and at least one single network development plan per Member State for hydrogen.”*

*“This requirement is considered to be met if Member States ensure that coordination and consultation between the system operators on joint scenarios, appropriate network sizing and identifying cost-optimal potentials for conversion are conducted in a fair and transparent manner.”*

#### **Rationale:**

The condition of one single network development plan per member state for gas and for hydrogen, respectively, raises questions with regard to the precise implications of this provision and, most likely, a need for clarification and/or adaptation in Art. 51.

For hydrogen networks, Germany plans to set up full scale regular ten-year network development plans effectively beginning in 2025. These plans are to be set up in an integrated form for gas and hydrogen, to take account of the at least initially very large share of repurposed former gas lines in the hydrogen network as well as the extent and timeline of this transformation.

Looking at the history of the provisions in Art. 51, the aim of this Art. was to establish an „integrated network planning“. The key objectives, as set out in the Commission’s impact assessment are to „ensure transparent and inclusive infrastructure planning, provide transparency for repurposing existing gas networks, and enable cost efficient planning on the basis of scenarios that are in line with the climate target objectives“. <sup>1</sup> In its impact assessment, the Commission assessed different options, inter alia an option (Option 3) that would have required the „creation of a single system-wide network development plan at European level, covering all relevant energy carriers (electricity, methane gas, and hydrogen) per Member State.“ <sup>2</sup> Several stakeholders pointed out that a joint methane and hydrogen plan, keeping a separate electricity plan, would be the preferred option, while this was not being asked explicitly in the consultation opened by the Commission.

Germany advocates for an Art. 51 that actually enables this integrated „molecules planning“.

By a well-coordinated integrated planning, we do not suggest to give up the distinction between the networks, nor the differentiation between the different types of challenges these networks face. But we point to the obvious advantages that a joint scenario for gas and H<sub>2</sub> entails. While such advantages between electricity and hydrogen relate mostly to the system level (i.e. avoiding inefficiencies and optimizing transport of electrons or molecules in physically separate infrastructures) for gas and hydrogen, they relate – in large parts – to the convertible physical infrastructure and to ensuring energy security at the network level for two related energy carriers.

---

<sup>1</sup> [https://eur-lex.europa.eu/resource.html?uri=cellar:23b8497d-5d8b-11ec-9c6c-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:23b8497d-5d8b-11ec-9c6c-01aa75ed71a1.0001.02/DOC_1&format=PDF) p.33

<sup>2</sup> Ibid, p.58

For climate policy reasons as well as security of supply in both hydrogen and gas markets, the need for rapid development of a sufficient hydrogen infrastructure is indispensable. At the same time, the development of this infrastructure for market acceptance needs to be cost-effective. While the conversion from natural gas pipelines to hydrogen pipelines is generally more efficient than newly built infrastructure, the potentials of freed-up natural gas pipelines need to be identified, to make best use of existing potentials. To achieve these objectives, joint consideration of the key market factors is indispensable, both early in the scenario phase and in a later planning phase. Risks and disadvantages resulting from deviating or conflicting plan settings or demand assessments on the same corridors and lines in separate planning processes need to be avoided. As demonstrated in multiple studies, repurposing existing infrastructure for gaseous energy carriers is cost-effective and time-efficient compared to new build, with investment cost differences factoring between 5 and 10. At the same time, all member states will need the natural gas system during the transition and beyond for transporting methane and the NRA needs to ensure that the gas system can fulfil the security of supply conditions (cf. Art. 51 (5)).

Since there will ultimately be two separate networks, Germany currently aims that **two separate network models shall be calculated**, one each for hydrogen and natural gas. At the same time, the modeling of the two networks will be based on joint scenarios with specific assumptions for H<sub>2</sub> and gas, respectively. Against this background, the modelling of the two networks should be designed as an integrated network planning process. After all, the hydrogen network and the natural gas network are closely linked and the respective network planning processes are interrelated:

Modelling of the natural gas network is a prerequisite to determine which natural gas pipelines can be converted into hydrogen pipelines. Furthermore, small additions of natural gas pipelines can enable converting large parts of the gas grid into hydrogen pipelines and can help reduce the level of new built hydrogen pipelines and maximize the share of converted pipelines. For this cost-optimization process the most suitable approach, in our view, is an iterative design that enables integrative network planning. In this way, already existing expertise and an open process can be used at the same time in order to optimize both the gas network and the hydrogen network at the respective interfaces.

To avoid potential risks that have been described to justify strictly separate NDPs, as quoted in the compromise proposal, there are established procedures and processes: As described above, Germany values and implements transparency and reliability in a process that is published in each step and open to public consultation, with its scenarios, detailed plans, maps and tables. Compliance with these outlined standards is a prerequisite for the NRA to confirm the plan at the end of the formal review process. By integrated planning we prevent a risk of strategic overinvestment: reliable and demand assessment as well as efficient investment levels are at the core of the business model of TSOs and are closely monitored by the NRA. Precautions to keep the market open also for investment of newcomers will be addressed and taken in Germany's legislative plans. However, given the current situation with few to zero hydrogen network operators, this is not the most urgent problem and also not specific to integrated vs. strictly separate planning, as long as a cost-optimal strategy is pursued. Designing plan development separately as considered by the compromise proposal may become a preferred approach at a later stage with a more mature market, when the initial challenges have been met and new, more distinct challenges arise with optimizing the H<sub>2</sub> grid on the one hand and phasing out of natural gas on the other. However, for the current period of ramping up the hydrogen network swiftly, an iterative and integrative network planning in our view is indispensable and we therefore ask for more flexibility.



Council of the European Union  
General Secretariat

**Brussels, 28 September 2023**

**WK 12383/2023 INIT**

**LIMITE**

**ENER  
ENV  
CLIMA  
IND  
RECH  
COMPET  
ECOFIN  
CODEC**

*This is a paper intended for a specific community of recipients. Handling and further distribution are under the sole responsibility of community members.*

## **MEETING DOCUMENT**

From:	General Secretariat of the Council
To:	Working Party on Energy
Subject:	Updated Non-Paper from Germany: Integrated Gas and Hydrogen Network planning

Delegations will find in the annex the updated DE non-paper on the integrated Gas and Hydrogen Network planning.