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Public consultation on amendments to the gas network code on interoperability and data exchange

Fields marked with * are mandatory.

Introduction

The European gas market is evolving in response to ongoing policy and technological developments. This is essential to meet the decarbonisation and market integration objectives established under the European Green Deal.

To contribute to this goal — and following a mandate introduced by the 2024 Gas Decarbonisation Package — ACER has initiated a gradual review of all EU gas network codes. ACER's reviews started in 2024 with proposing amendments to the Capacity Allocation Network Code, currently under discussion in a comitology process with Member States.

Responses to the European Commission's latest Network Code Review Priority List survey, conducted in autumn 2024, highlighted the importance of looking into a possible revision the Interoperability and Data Exchange Network Code (INT NC) in second place after the CAM NC. The INT NC outlines the technical procedures applied by Transmission System Operators (TSOs) within the EU — and, where relevant, by operators in the Energy Community and non-EU neighbouring countries — to facilitate the coordinated operation of gas systems. The possible revision of the INT NC could help to better align the existing gas system operation rules with the Gas Decarbonisation Package policy ambitions but also with an evolving EU gas market.

Important in this context, the 39th Madrid Gas Regulatory Forum in April 2025 welcomed the new gas quality standard EN 16726 developed by the European Committee for Standardization (CEN), highlighting its importance in removing barriers to the free flow of natural gas within the internal energy market. The Forum called for a public consultation to assess the need, timing, and scope of a potential amendment to the Interoperability Network Code for ensuring consistent implementation of the standard across EU markets. This is a mandate ACER is fulfilling via this public consultation.

With this Public Consultation, ACER invites stakeholders to actively participate in the INT NC potential review, providing feedback on the proposed scope for improvement and submitting proposals on areas that could be

considered for amendment.

The input from the consultation will be used for the Agency's evaluation on the need for the amendment and in preparing a potential proposal to amend the code. Should the need for a revision be established, the actual proposals for amendment would be reviewed in a second public consultation.

1. Target group

This consultation is addressed to gas transmission system operators operating in the EU, gas network users, National Regulatory Authorities, consumers associations and government as well as any interested market participants. [...]

Deadline

Replies to this consultation should be sent: by ~~20 May~~ 10 June 2026, 23:59 hrs (CET)

2. Respondent's data

* **Name and Surname of the contact person**

[redacted]

Phone number

[redacted]

* **Email address**

[redacted]sedigas.es

* **Name of organisation / company**

Sedigas (Spanish Gas Association)

Type of organisation

- Gas transmission system operators (TSOs)
- Network users (e.g., gas shippers, traders, suppliers)
- Virtual Trading Point (VTP) operators
- Capacity booking platform operators
- Industry associations (e.g., ENTSOG, ETE, IFIEC, CEN, EASEE-gas, Marcogaz)
- Renewable gas and hydrogen producers
- Consumer and environmental organisations

- ( ) Academic and research institutions
- (•) Other interested stakeholders
- ( ) NRAs

*** Please specify "other"**

National gas association

*** Country**

- (•) EU-27
- ( ) Other

*** Please specify the country**

- ( ) AT - Austria
- ( ) BE - Belgium
- ( ) BG - Bulgaria
- ( ) HR - Croatia
- ( ) CY - Cyprus
- ( ) CZ - Czechia
- ( ) DK - Denmark
- ( ) EE - Estonia
- ( ) EU - European Union, for associations covering all EU
- ( ) FI - Finland
- ( ) FR - France
- ( ) DE - Germany
- ( ) EL - Greece
- ( ) HU - Hungary
- ( ) IE - Ireland
- ( ) IT - Italy
- ( ) LV - Latvia
- ( ) LT - Lithuania
- ( ) LU - Luxembourg
- ( ) MT - Malta
- ( ) NL - Netherlands
- ( ) PL - Poland
- ( ) PT - Portugal
- ( ) RO - Romania
- ( ) SK - Slovak Republic
- ( ) SI - Slovenia
- (•) ES - Spain
- ( ) SE - Sweden

3. Data protection

ACER will process personal data of the respondents in accordance with Regulation (EU) 2018/1725, taking into account that this processing is necessary for performing ACER's consultation tasks. More information on data protection is available on ACER's website and in ACER's data protection notice.

ACER will not publish personal data.

Consent to the processing of personal data

☑ Your personal data may be processed by the Agency.
Please refer to privacy statement to learn about such processing and your rights.

4. Confidentiality

Following this consultation, ACER will make public:

- the number of responses received;
- company names, unless they should be considered as confidential;
- all non-confidential responses; and
- ACER's evaluation of responses. In the evaluation, ACER may link responses to specific respondents or groups of respondents.

You may request that the name of your company or any information provided in your response is treated as confidential. To this aim, you need to explicitly indicate whether your response contains confidential information. **You will be asked this question at the end of the survey.**

☑ I have read the information on data protection and confidentiality provided in this section.

5. Related documents

- Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators.
- Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast).
- Directive (EU) 2024/1788 of the European Parliament and of the Council of 13 June 2024 on common rules for the internal markets for renewable gas, natural gas and hydrogen, (recast).
- Regulation (EU) 2024/1789 of the European Parliament and of the Council of 13 June 2024 on the internal markets for renewable gas, natural gas and hydrogen (recast).

- Commission Regulation (EU) 2015/703 of 30 April 2015 establishing a network code on interoperability and data exchange rules.
- EN 16726:2026 (CEN) – standard on gas infrastructure - quality of gas - group H superseding EN 16726:2015+A1:2018.
- ENTSOG Network Code on Interoperability and Data Exchange Rules – 5th Implementation Monitoring Report
- Functionality Platform (FUNC) issues:
    - 01/2018 on Communication protocol and encryption, reported by: GasTerra B.V.
    - 02/2018 on Communication protocol and encryption, reported by: ENGIE
    - 06/2018 on Communication protocol and encryption, reported by: EASEE-gas
    - 01/2019 on on Missing harmonisation of interfaces on capacity platforms, reported by: Equinor ASA

- CREG decision (B) 2738 - Décision relative à la proposition d'Interconnector Limited visant à modifier le contrat d'accès Interconnector (IAA), le règlement d'accès Interconnector (IAC) et le programme d' accès Interconnector (IAAS), 2024.
- ACER Guidance Note on Consultations

6. Document Structure

To help identify the scope of any potential amendment to the INT NC, ACER has conducted since June 2025 a series of stakeholder workshops and technical consultations. These engagements resulted in the identification of three core areas for potential refinement:

- Two identified topics pertain to areas already addressed within the current code, namely **1. Gas Quality** and **2. Data Exchange**
- The third topic introduces an element not directly addressed by the current code: **3. Liability provisions in Interconnection Agreements.**

Accordingly, this consultation is structured into three chapters, each focusing on one of these core areas.

It is important to underline that this initial consultation is not a formal document setting out concrete legal proposals to revise the rules governing gas transmission interoperability and data exchange in Europe. Instead, the consultation adopts an exploratory and discussion-oriented approach to explore the actual needs of the different market participants and the system in general. The intention is to ensure that any future regulatory framework is firmly grounded in operational realities and the expectations of different stakeholders.

Each chapter begins with an introduction describing the relevant provisions of the existing code. This is followed by an assessment of the implementation status and/or a description of the technical options chosen when implementing those provisions at the different EU systems. In doing so, ACER mostly but not only relies on the recently published INT NC implementation monitoring report prepared by ENTSOG and published in

March 2026 (Network Code on Interoperability and Data Exchange Rules – 5th Implementation Monitoring Report).

The chapters then outline how the current provisions could be progressed, and they close with questions addressed to stakeholders on whether there is a need to revise the current provisions or whether the existing framework should be maintained, possibly complemented by targeted adjustments and/or non-binding guidance.

7. Liabilities provisions in Interconnection Agreements

7.1 Introduction

General liabilities, including those related to off-specification gas quality, are not currently covered in the INT NC. Nevertheless, during the assessment of potential amendments to the INT NC, this issue was raised with ACER. In turn, ACER requested that ENTSOG include the topic of liabilities for off-spec gas quality in the Network Code on Interoperability and Data Exchange Rules – 5th Implementation Monitoring Report. At this stage, two key points from the report can be highlighted:

1. Off spec gas quality can occur within EU gas systems; however, such cases remain infrequent.
2. In 2018 liability discussions were extensively deliberated upon during the development of the GT&C template,

In what the review of the INT NC is concerned, if that is the need/option of the stakeholders it could aim to set clearer EU wide-harmonised guidance to address liability concerns arising from the exposure of market participants - be it end-users, shippers or TSOs - to penalties or losses resulting from the delivery and redelivery of non-compliant gases that need to be aligned to agreed standards. Further guidance could be particularly offered to situations when deviations arise at the transportation of gas through interconnection points, and aspect that could be addressed via a review of Interconnection Agreements (IAs).

7.2 Market Status and Identified Issues

Interconnection Agreements, transmissions agreements, national regulations and/or gas contracts General Terms & Conditions (GT&C) [1] define the general duties and responsibilities among gas TSOs on the one hand, and between TSOs, shippers and users on the other hand. The IA provisions among TSOs as detailed in Article 3 of the INT NC must include rules for flow control; measurement principles for gas quantities and quality; rules for the matching process; rules for the allocation of gas quantities; communication procedures in case of exceptional events and settlement of disputes; and amendment process for the IAs themselves. Since it is not in their remit of scope, they lack specific liability provisions related to shippers (e.g., liabilities in the event of an operational failure resulting from non-compliant gas quality, after entering the system with the proper specification, as those will be covered by gas contracts or national law, not IAs). Regarding TSOs,

liability provisions between the IAs signatories (adjacent TSOs) are included in many IAs. The EU picture is diverse, since it is not mandated by the code's Article 3.

The absence of specific provisions or general principles effectively reflecting responsibilities and potentially implied liability of involved parties in such cases could affect the non-discriminatory operation of the system and – depending on the scale of the deviations and the cost of the correction measures needed – may also have certain local impact on the affected markets. ACER has knowledge of only one case where concerns related to the above mention issue were raised - CREG decision (B) 2738 paragraph 141 to 145.

According to the latest ENTSOG Implementation Monitoring Report, , IAs are generally considered stable and functional instruments that support the management of technical constraints and the smooth operation of cross-border points. The report states that off-spec gas quality cases seldom lead to disputes or disruptions - three contained examples have been cited in ENTSOG's report that required some TSO interventions but did not constitute disruptions to the normal functioning of the system.

The question on possibly harmonising broader liability regimes was previously discussed during the development of the GT&Cs [2] of gas transport contracts in 2018. Then, it was concluded that no harmonisation was possible as liability frameworks vary widely across Member States due to national laws. ACER Opinion No 06-2018 [3] on Template for main terms & conditions for bundled capacity products for Gas stated at the time, mentioned that while the topic was not suitable for harmonisation in that template, it should be foreseen at least as a subject to be covered in the individual contracts. Likewise, the same thinking could be extrapolated to IAs; if harmonisation is not possible, at least IAs could mention the key provisions governing liabilities. ACER's opinion No 06-2018 also underscored that, wherever possible, best practises should be provided, which could apply for the case of liabilities.

Although the ENTSOG GT&C gas contracts' template as said does not include a chapter on liabilities, it indicates the overall responsibilities regarding gas quality, as follows:

1. Responsibility for fulfilling the gas quality specifications at the entry point of the transmission system lied with the network user.
2. Responsibility for fulfilling the gas quality specifications at the exit point of the national transmission system subject to the country and the TSO's network specific conditions of any sort (statutory and contractual conditions, operational constraints, etc.) lied with the TSO.

The ENTSOG report also tables information about the current liability clauses for gas quality issues and their application:

- 85% of TSO–shipper contracts define gas quality liability provisions in the General Terms and Conditions of the contracts, even in cases when national legislation also applies. Overall, 58% of TSOs rely on both national law and contractual liability rules, 27% relies solely on defined contractual liability rules while the last 15% of them rely solely on national legislation.

- 65% of TSOs already apply gas quality liability clauses in at least in one of their agreed Interconnection Agreement, with other TSOs.

[1] ENTSOG Template Contract of Main terms and conditions for the offer of bundled capacity products in accordance with article 20 of Commission Regulation (EU) 2017/459 establishing a network code on capacity allocation mechanism in gas transmission systems ("CAM NC") (link)

[2] ENTSOG Template Contract of Main terms and conditions for the offer of bundled capacity products in accordance with article 20 of Commission Regulation (EU) 2017/459 establishing a network code on capacity allocation mechanism in gas transmission systems ("CAM NC") (link)

[3] ACER Opinion 06-2018 on Template for main terms & conditions for bundled capacity products_Gas.pdf

7.3 Areas for Improvement and Potential Regulatory Options

Some stakeholders have expressed interest in clearer repartitions of responsibilities and underlying liabilities, as well as in developing general rules translating the principle of making parties responsible for the tasks on which they truly have control, particularly regarding gas quality aspects.

Ahead of exploring the more detailed views of market participants in Section 7.4, regarding potential regulatory options, including a 'business-as-usual' scenario, ACER puts forward an initial practical suggestion on how a potential amendment to the Network Code could tackle the liability question:

Update Article 3, Article 4 and Article 5 to include liability for gas quality matters

- **Article 3 on IAs General Provisions** could include, an additional paragraph (h) requiring operators to include in their interconnection agreements information regarding the liability regime applicable for gas quality issues, among operators involved in the interconnection agreement.
- Complementarily, **Article 5 of IAs Template** could be amended accordingly, so that the IA template includes a section on liabilities in which TSOs could include information on the liability regime applicable among operators for gas quality issues (general and non-confidential provisions).
- Finally, **Article 4,** requires that before concluding or amending an Interconnection Agreement TSOs shall seek network users' comments, for the rules referred to in Article 3(c), (d) and (e). This article could be amended accordingly to extend the consultation to an additional paragraph (h) in Article 3 on liabilities.

These types of changes could potentially be formalise in the network code with the aim of increasing clarity among TSOs. However, this transparency enhancement proposal is without prejudice to the level of harmonisation and the scope of an EU-level framework versus more general guidance, which are addressed in the following set of questions.

7.4 Proposed Public Consultation Questions

Question 1 — Assessment of Current Functioning

1. Do you consider that the liability provisions in the current contractual and legal framework – set out in current IAs or included in the transport contracts and national law – and particularly, those related to gas quality are fit for purpose?
In your response, please describe, if possible, the relevant framework governing liabilities and explain how it informs your view.

The current liability framework, as defined through Interconnection Agreements (IAs), national legislation, and transport contracts, is generally fit for purpose.

From an operational perspective, the existing framework provides sufficient flexibility to accommodate the diversity of legal systems, contractual practices, and risk allocation mechanisms across Member States. Liability related to gas quality is already effectively addressed through a combination of contractual arrangements and national legal provisions, which are better suited to reflect local system characteristics and legal environments.

Evidence from implementation shows that off-spec gas quality incidents are rare and have not led to systemic issues or market disruptions, indicating that the current framework functions adequately.

Introducing further harmonisation at EU level would risk oversimplifying complex legal frameworks and could inadvertently reduce clarity rather than improve it.

In addition, it is important to recognise that while liability frameworks are primarily defined at TSO level, gas quality aspects at TSO–DSO interconnection points may have downstream implications for DSOs and end-users, who typically have no operational means to adjust parameters such as Wobbe Index or oxygen content, and therefore rely on stable upstream specifications and clear allocation of responsibilities.

Question 1.1 – Potential gaps in current framework; including IAs design and scope affecting TSOs, as well as related national law and transport contract provisions extending to shippers

1.1. What are the most important liability related elements that are missing in the current framework, if any? Should possible gaps chiefly be addressed with respect to (a) liabilities among TSOs via IAs review and/or (b) liabilities between TSOs and shippers at the national law and transport contracts and/or (c) conflicts between the two?

No major structural gaps are identified that would justify regulatory intervention at EU level.

Where improvements could be considered, they relate mainly to:
- Clarity and transparency within existing agreements, rather than new rules;
- Ensuring that roles and responsibilities are clearly described within contractual frameworks.

These aspects are best addressed:
- Primarily at IA level between TSOs (a) through bilateral agreements;
- And within national legal and contractual frameworks (b) for TSO–shipper relations.

There is no evidence of significant conflicts (c) between these players that would require harmonisation through the INT NC.

Question 2 — Is this a concern?

2. Do you know of any circumstance where a liability regime/ provision, or the lack of it related to gas quality, and/or other operational aspects was an issue? Please describe the case and how it ended in terms of liability taken.

There is no evidence of recurring or systemic issues where liability provisions related to gas quality have caused operational or market problems.

Known cases have been isolated and effectively managed within existing frameworks, without disruption to cross-border flows or market functioning.

This confirms that the current arrangements are robust and proportionate.

Question 3 — Scope of Potential Amendments on Liabilities relating Gas Quality

3. Regarding the potential treatment of liability in relation to gas quality, what are your views on the following options when/if considering amendments to the Network Code?

A) **Do nothing:** Neither the INT NC nor non-binding EU guidelines are appropriate avenues for establishing a TSO liability framework within all EU interconnection agreements. Therefore, no action will be taken.

Please explain your views on this approach.

This is the preferred option.

The current framework already:

- Works effectively in practice;
- Reflects national legal specificities;
- Provides sufficient flexibility to manage rare events.

No regulatory gap has been identified that would justify amendments to the INT NC.

B) **Standardised EU liability framework:** Introduce a standardised, case-based liability framework within all EU interconnection agreements, establishing a formal EU-level framework that governs liabilities at interconnection points. This framework would further define responsibilities between TSOs and should not be

diminished by contracts signed between TSOs with shippers.

Please explain your views on the feasibility, advantages, and challenges of this approach, and how it could be implemented.

This option is not supported.

A harmonised EU liability regime would:

- Be difficult to implement due to differing national legal systems;
- Risk conflicts with national legislation;
- Reduce contractual flexibility;
- Potentially introduce legal uncertainty.

Past discussions have already demonstrated that such harmonisation is not feasible nor necessary.

C) Non-binding guiding EU measures: Adopt non-binding measures (e.g. guidance, best-practice documents, or improved IA templates) to support TSOs in interconnection agreements and enhance clarity and consistency on liability provisions, without introducing formal EU-level amendments to the Network Code.

Please explain your views on the feasibility, advantages, and challenges of this approach, and how it could be implemented.

This option could be acceptable only if strictly limited.

Non-binding guidance may:

- Support exchange of best practices;
- Improve transparency and understanding.

However, it should:

- Remain fully voluntary;
- Avoid creating de facto obligations;
- Not duplicate existing contractual or national provisions.

D) **Transparency-focused approach:** Do not develop an EU liability framework, nor non-binding measures but require TSOs to include greater transparency in interconnection agreements regarding existing liability arrangements between TSOs. Furthermore, and while IAs do not govern contracts between TSOs and shippers, references could be brought into the IA about the terms and responsibilities agreed by TSOs with shippers.

Please explain your views on the feasibility, advantages, and challenges of this approach, and how it could be implemented.

This is a reasonable and proportionate approach, provided it remains limited.

Requiring TSOs to clarify existing liability arrangements in IAs could:
- Improve transparency;
- Support understanding between adjacent operators.
- Promote the development of low carbone-gases.

However:

- It should not impose harmonisation;

It should avoid referencing TSO–shipper contracts in a way that creates legal ambiguity.

8. Gas quality

8.1 Introduction

Gas quality considerations are primarily addressed in Chapter IV of the INT NC, which establishes a reference framework for managing gas quality (Article 15) and odourisation (Article 19) at IPs in the gas transmission system across the EU. Although not highly prescriptive, the main objective of these provisions is to enhance cooperation and ensure that technical differences in gas quality and odourisation practices do not create barriers to the free flow of gas in the EU.

Complementarily, Article 17 sets out how TSOs may identify the parties that shall be informed about variations in gas quality, enabling end users to align their processes, mitigate potential impacts, and make more informed operational decisions. Distribution system operators (DSOs), storage system operators (SSOs), and directly connected final customers are entitled to receive indicative information regarding such changes.

Overall, Member States and/or TSOs maintain their respective competences in these two areas, with the INT NC generally mandating reinforced cooperation.

Chapter IV further establishes monitoring obligations for TSOs and ENTSOG, aimed at ensuring that gas networks operation remain transparent, resilient, and adaptable. TSOs are required to publish updates on gas quality parameters at their websites at least once per hour during the gas day (Article 16). While Article 18 mandates ENTSOG to publish a long-term gas quality monitoring outlook every two years, providing projections on potential trends and variability over a ten-year horizon (the latest from 2024 can be consulted here: ENTSOG Gas Quality Outlook).

8.2 Market Status and Identified Issues

When assessing the current market status and potential issues around gas quality, this public consultation focuses on two key questions:

- First, whether the existing rules governing gas quality parameters and ranges at system entry points may hinder cross-border flows or decarbonised gases uptake.
- Second, whether the mechanisms used to identify and supply gas quality-sensitive users — who require clear gas quality information and/or follow stricter gas quality specifications at exit points — should be revised.

The CEN standard EN 16726 provides proposals on both aspects. Accordingly, this section of the public consultation firstly assesses the status of these two aspects, while section 8.4. will seek to determine whether a revised framework is necessary and supported by stakeholders, including possibly amending the code for implementing the CEN standard across EU systems. It should be noted that the scope of the INT NC primarily focuses on IPs and is mostly directed at TSOs, whereas elements of the standard call for a broader framework - at either national or EU level - covering points beyond IPs and entities other than TSOs.

The new CEN standard proposes a twofold distinction for Wobbe Index limits.

1. For gas entries into the system (H-gas) – including biomethane – the standard recommends a broad entry Wobbe Index range of 46.44 MJ/m^3 to 54.00 MJ/m^3, to allow EU imports from most different supply origins.
2. For exit points out the system, the standard defines two possible classes of users. Class Specified would be assigned to exit points (or a cluster of exit points) where the Wobbe index bandwidth shall be maintained ≤ 3,7 MJ/m3, within a total range of 46,44 MJ/m3 to 53,00 MJ/m3 [15°C / 15°C at 1013,25 mbar].

- Alternatively, Class Extended would be assigned to all other exit points (or a cluster of exit points) outside the specification covered by Class Specified. At those points, the recommended entry range of 46.44 MJ/m^3 to 54.00 MJ/m^3 should be maintained. Allocating Class Extended to exit points (or clusters of exit points) would then require: unbiased assessment of the presence of users' applications sensitive to Wobbe index at the concerned exit point or cluster of exit points and, if any, the implementation of appropriate mitigating measures in cooperation with all parties involved.[4]

Downstream sectors and relevant end-users should be informed about the assigned class of their relevant exit points, as well as about the lower and upper Wobbe index limit values. Exceeding the upper and lower limits of the defined class Wobbe index values (deviations) can occur provided information and action is taken as following:

1. Short-term temporary deviation: Downstream sectors or relevant end-users shall be informed of deviations as soon as information is available. Stakeholders involved should cooperate to identify the appropriate mitigation measures to limit the impact of the temporary deviation.
2. Long-lasting or permanent deviation resulting in a possible class change: Downstream sectors and/or relevant end-users shall be informed of upcoming long lasting or permanent Wobbe index changes. An

assessment of the consequences of the change of class in cooperation with the stakeholders involved shall be carried out. The downstream sectors or relevant end-users shall be informed about the assignation of the new class with an appropriate notice period.

ENTSOG report has analysed several key aspects connected to these gas quality aspects, whilst revising the Wobbe Index, oxygen, and sulphur limits currently in place at the different national systems and borders. Furthermore, it examined some of the broader issues the CEN standard aims to resolve, including a) if cross-border flow restrictions had been caused by gas quality divergences in the past and b) the prevailing mechanism used to implement Article 17 regarding information for on short-term gas quality variability, the number of sensitive end-users per system and examples of mechanisms to serve them.

Of the 115 Interconnection Agreements at Interconnection Points covered by the ENTSOG report, 100 specify gas quality ranges. Most IAs have a Wobbe index range within the recommend entry range limits, while 10 IAs exceed the maximum limit and around 20 are below the low- limit specified in the standard. As a general rule systems with higher relative presence of LNG see their maximum limits increase, while IPs with higher relative presence of biomethane see their lower limits decrease, deviations of these conclusions are nevertheless possible. While changes in gas quality ranges can take place across borders, these differences do not create critical problems as identified by ENTSOG.

CEN and gas appliance producers associations, have stressed the need to adhere to narrow range limits at exit points to reduce emissions and avoid efficiency losses and/or appliances malfunctions. On the one hand, sudden quality variations are perceived as more disruptive than static ones, while a gradual WI shift over an extended period is easier to manage, enabling users to adjust equipment. This would underscore the need of for proper access to gas quality data and/or a firmer definition of system user classes. On the other hand, gas producer associations warn that too rigid limits should not supress domestic gas production, nor hinder the diversity of gas import sources, especially in regions with more variable gas compositions. This can be the case for Central and South-Eastern Europe Energy Connectivity (CESEC) countries, where WI limits tend to differ most from EN 16726, as shown in Figure 1.

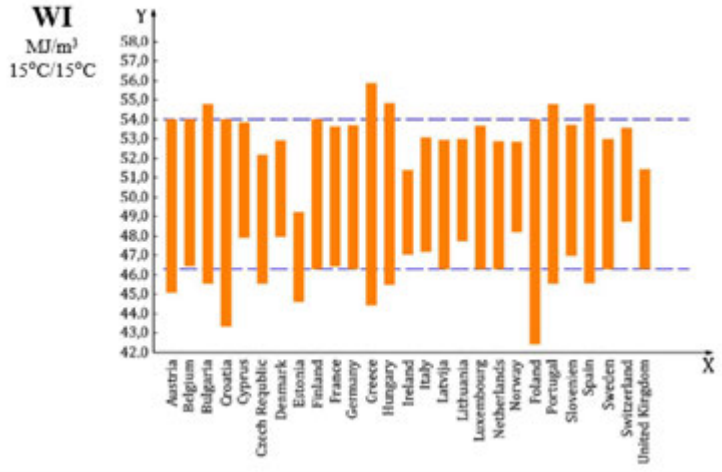


Figure 1 - National WI ranges as in Annex E revised EN16726 (October 2024)

Regarding oxygen, the new CEN standard establishes a 1% concentration limit, with provisions for stricter thresholds (ranging from 0.001% to 1%) if gas flows to sensitive units. The ENTSOG report reveals that limits currently set in IAs can be significantly smaller than the ones set in the new standard. Nevertheless, two points are worth considering when making the comparison, these limits were set in line with the old EN16726 – that set a default value of 10ppm - and that the reason for these stricter limits is unknow and might be related to questions of safety or system integrity. Specifically, 50% of surveyed IAs cap oxygen concentration at 100 ppm (0.01%), 24% at 10 ppm (0.001%), and only 21% allow up to 200 ppm (0.02%). More restrictive limits can hinder the adoption and cross-border use of biomethane. Nevertheless, technical solutions can exist; for example, Energinet in Denmark utilizes a double piping system to satisfy the strict 0.001% limit at the German border, using one pipeline for exporting natural gas with limited amount of oxygen, while the other pipeline handles biomethane delivery to Danish consumers in that area.

On sulphur most IAs contain limits equal to the ones set in the CEN standard – 20 and 30 mgS/m3 – there is nevertheless IAs with different limits.

Regarding sensitive users requiring short-term flow quality information under Article 17, most TSOs report having fewer than 10 users receiving gas quality information. Five TSOs report between 10 and 30 users and only one TSO reports to more than 100 users.

It is also worth highlighting that the process to identify users that receive gas quality information is done on a case-by-case analysis. Sensitive users can be identified through public consultations or bilateral discussions at the request of such users.

[4] If a Class Extended allocated to a specific exit point (or to a cluster of exit points) is proven by confirmation with historical data to be a continuously experienced case (see 3.18), then no assessment for the presence of applications sensitive to Wobbe index is needed. This can also apply for exit points (or for a cluster of exit points) having the same application technologies as in another area with continuously experienced gas quality variations (demonstrated by initial assessment).

8.3 Areas for Improvement and Potential Regulatory Options

The integration of the CEN standard EN 16726 is the primary issue of this public consultation. The consultation specifically seeks to determine what kind of approach to foster the standard implementation, is more appropriate.

The CEN standard and gas quality aspects need to be also pondered with the aim to advance the decarbonization of the gas sector. The integration of hydrogen blends and biomethane will result in larger gas quality variations requiring higher system oxygen limits and increased Wobbe index ranges,. These changes might also lead to variation in gas quality, requiring more precise identification and handling of sensitive users. EN 16726:2025 standard aims at providing support for increasing renewable gas adoption, while enhancing security of supply at network entry points and protecting vulnerable consumers from significant Wobbe Index fluctuations at exit points.

While the adoption of the new quality CEN standard is voluntary, it calls for a corresponding national/European framework to support the implementation of the Wobbe index classification, mentioning that the system shall only be applied if the framework exists. This system should cover at least the assessment procedure for identification of applications sensitive to Wobbe index, the assignation and change of classes, related time scales and responsibilities need to be stipulated to enable an implementation of the classification system. In order to pursue this requirement and in what the INT NC is concerned four possible approaches are generalised and put forward:

1. **Do nothing**: Neither the INT NC nor non-binding EU guidelines are appropriate avenues for establishing the European framework required for the Wobbe index classification system. Therefore, no action will be taken to create the framework mandated by the standard.
2. **Non-binding approach:** The gas sector (i.e., relevant associations and NRAs) could develop non-binding EU guidelines outlining key principles and elements that Member States should consider when determining entry ranges at IPs and when establishing mechanisms to identify and supply sensitive users within their national systems. These non-binding guidelines should take the CEN standard as the main reference but can also propose other options.
3. **Roadmap approach:** The non-binding guidelines described in Option 2 could also serve as a basis for establishing CEN standard implementation roadmaps. These roadmaps could be supported and referenced in the INT NC and, over time, provided the proper consultation is done in each individual national system, evolve into a mandatory and harmonised implementation of the standard across national systems.
4. **More prescriptive approach:** The INT NC could be amended to establish an EU regulatory framework ensuring mandatory and harmonised implementation of the standard across national systems (this is, for exit classes, while IPs entry Wobbe Index ranges remain recommendations within the standard). The framework, developed by new INT NC provisions, would define key principles and elements for implementation, including cost distribution, class allocation responsibilities, governance arrangements, and compliance mechanisms.

In regards to the last two options different suggestions on how to integrate the standard in the INT NC are discussed next.

Since the entry-level provisions are non-binding recommendations in the standard itself, ACER suggests that the INT NC amendments are focused on the changes to the exit-level classification system. This could involve, but may not be limited to:

- Defining timelines and stakeholders' responsibilities,
- Procedures for assessing applications sensitive to Wobbe Index changes,
- Assigning and updating classes,
- General principles on cost assignments,
- Establishing mitigation measures [5].

Potential amendments to address those aspects could be the following:

1. **Article 15 of the INT NC** addresses the management of cross-border trade restrictions arising from gas quality differences. Article 21 of the new Gas Regulation (EU) 2024/1789 builds further on this by assigning clearer roles and responsibilities - for example, stipulating that if TSOs fail to agree on a solution, the matter is escalated to the relevant NRAs and possibly to ACER. Hence, Article 15 of the INT NC could be either deleted, or further developed in light of Article 21, by providing more detailed implementation guidance, such as elaborating on the cost-benefit analysis requirements or any further mitigation actions required and its handling in case of deviations.
2. The CEN standard exit-class considerations could be implemented as referred in a more binding or less binding manner.

- **a more prescriptive approach** would require adding new articles to address aspects related to exit users' classification. For example, a new full article could be included – or alternatively considerations integrated in the current Article 17 – to enforce the assignment of exit classes tied to the CEN standard definitions, including the principles to follow in doing necessary assessments and the procedures to liaise among stakeholders when assigning case classes and information sharing for sensitive users. (e. g., TSOs and/or DSOs shall assign 'Class Specified' or 'Class Extended' to each exit point or a cluster of points in accordance with the definitions given in the CEN standard (…); In doing so, national authorities, TSOs and DSOs should jointly evaluate the technical options of their systems and establish a clear and transparent mechanism for sensitive users to declare their preferences built on (…); Regarding the cost assignment to implement the relevant classes, the following key principles should be maintained (…); Moreover, regarding biomethane, Article 17 could be deepened to deal with identification of oxygen sensitive users. Additionally, Article 16 could be changed to support the information require in case of short term temporary deviation of class and to establish a process of Deviation of Classes in case of long-lasting or permanent deviation of the original class, resulting in a need for a class change.

- **a Roadmap approach,** which would require the introduction of a new article in the INT NC mandating relevant associations and/or NRAs, to develop non-binding EU guidelines outlining key principles and elements that Member States should consider when determining entry ranges at IPs and when establishing mechanisms to identify and supply sensitive users within their national systems. These non-binding guidelines should take the CEN standard as the primary reference while also allowing for alternative implementation options where appropriate. Those non-binding guidelines could become binding after a few years, if, national authorities opt so, also following further consultation, a cost benefit analysis as well as pondering if more challenging issues are identified during the period.

[5] Mitigation measure is defined in the new standard as 'any measure to prevent or reduce significant adverse effects of gas quality changes.

8.4 Proposed Public Consultation Questions

Question 4 — Assessment of Current Functioning

4. Do you consider that the current practices related to gas quality provisions either related to the current Interconnection Agreements or through other means are fit for purpose?

In your response, please describe, if possible, the relevant framework governing gas quality aspects and explain how it informs your view.

Current gas quality provisions under the INT NC and IAs are fit for purpose.

The framework:

- Ensures stable and reliable cross-border flows;
- Provides sufficient flexibility for system-specific conditions;
- Is supported by effective cooperation between TSOs.

Operational experience demonstrates that:

- Gas quality differences rarely create barriers;
- Existing mechanisms successfully manage variability.

Question 5 — Concerns

5. Do you know of any circumstance where different gas quality requirements hindered cross-border flows? If yes, please provide more details? What solutions solved/could effectively solve such matters?

There have been isolated cases where gas quality differences have required operational solutions, but these have not resulted in structural or long-term barriers to cross-border trade.

A relevant example concerns oxygen limits at the border between Germany and Denmark. The German system applies very strict oxygen specifications, primarily driven by downstream infrastructure and industrial requirements, while the Danish system has been more accommodating, particularly in the context of biomethane integration, which can introduce higher oxygen levels.

This difference created a technical constraint for cross-border flows, as gas compliant in Denmark could exceed the stricter German limits.

Sulfur compounds, which result from odorization, are also a major contaminant in natural gas. They are taken into account in the IA, if necessary, because some EU countries, such as Spain and France, odorize natural gas in the transmission network.

However, rather than leading to market disruption, the issue was effectively addressed through technical and operational solutions, most notably:

- The implementation of infrastructure adaptations (e.g. parallel pipeline configurations / flow segregation);
- Operational measures ensuring that gas exported to Germany complies with the stricter specification.

This example demonstrates that:

- Gas quality differences can arise in practice;
- However, they are manageable through targeted, system-specific solutions;
- Existing cooperation between TSOs allows for efficient resolution without regulatory intervention.

Therefore, ensuring gas quality in the context of renewable gas development requires investments to monitor threshold levels and manage gas flows in accordance with the sensitivities of customers and adjacent operators.

Overall, such cases confirm that the current framework:

- Does not prevent cross-border flows;
- Provides sufficient flexibility to address technical constraints pragmatically.

Question 6 – Decarbonisation

6. With the progressive growth of low-carbon gases and hydrogen blends, do you consider the current practices related to gas quality remain effective? Would you expect rising concerns in respect to cross-border flows impediments or biomethane injections related to gas quality, and would you have specific suggestions to address those?

Given the significant efforts being made toward decarbonization, including the injection of biomethane into gas networks, the oxygen content of biomethane could be a determining factor at interconnection points. Oxygen has no impact on the normal use of gas as a fuel, but impacts are possible in certain parts of the network, in underground storage facilities, and for the use of gas as a feedstock, for example in the chemical industry (see Annex I of EN 16726). At the same time, it should be recognised that distribution system operators (DSOs) typically do not have the technical means to modify or manage gas quality parameters, including oxygen content, and therefore rely on upstream specifications. In this context, overly restrictive oxygen thresholds for biomethane could create significant cost implications, either for DSOs or for biomethane producers, potentially affecting the development of renewable gases. A balanced approach is therefore needed, including cost–benefit assessments, clear allocation of responsibilities among stakeholders, and a gradual evolution of oxygen limits in line with technological progress.

With regard to the blending of hydrogen (H_2) into natural gas, there is currently no harmonized approach among EU Member States, although a maximum limit of 2% by moles in the natural gas stream may apply at interconnection points, as provided for in Article 21 of Regulation (EU) No. 2024/1789 (which is part of the 2024 “Gas Package”). However, adjacent transmission system operators must remain free to agree on a higher or lower hydrogen blending level for cross-border interconnection points (in accordance with Recital 74 of the Regulation). H_2 would nevertheless remain a compound to be considered alongside e-methane in the gas network.

Several countries are now prioritizing the development of dedicated H_2 networks over H_2 injection, which remains an obvious option for distribution system operators (DSOs). The issue of H_2 networks highlights the importance of developing harmonized specifications for H_2 quality in Europe.

Thus, the current framework remains effective in supporting the integration of low-carbon gases, including biomethane and emerging hydrogen blends.

While variability in gas quality may increase:

- The existing system provides sufficient flexibility to adapt;
- Challenges can be addressed through technical solutions and cooperation, not regulatory overhaul.

At this stage:

- There is no evidence that current rules hinder decarbonisation;
- Any concerns should be addressed through incremental, case-by-case solutions.

Question 7 — Fostering the implementation of the CEN standard

This block of 5 questions tests the views about the CEN standard EN 16726 requiring a prescriptive implementation grounded on a defined EU-wide regulatory framework or instead promoting a non-binding approach, possibly followed by a Roadmap, as discussed in Section 8.3.

7.1 In relation to the CEN standard EN 16726, do you support i. do nothing approach, ii. a non-binding approach or iii. a roadmap approach or iv. a prescriptive implementation approach – as discussed in Section 8.3.

The preferred approach is (i) “Do nothing”, with a limited complementary (ii) non-binding approach, which could be complemented by a roadmap, (both) strictly confined to Wobbe Index classification aspects and O2.

There are also some concerns regarding the safe integration of renewable gases into high-pressure networks in the absence of greater harmonization of gas quality parameters. In this context, a non-binding approach, based on guidelines taking the CEN standard as the main reference, could be a useful option.

7.2 What are the reasons behind your preference?

The Wobbe Index (WI) is one of the key indicators of gas quality, with a relatively wide range at network entry points and a narrower range at exit points. In general, network operators recognize the need for and benefits of harmonization and common specifications regarding these aspects of gas quality at the European level, particularly given the diversity of gas sources. However, despite recent changes in gas supply, the situation has been managed effectively so far, with no major operational or safety issues related to gas quality reported by end-users, and only limited localized adjustments having been necessary.

The wide variety of WI range in Europe can facilitate the supply of gas from different sources, thereby contributing to security of supply. IAs between operators in neighboring countries are essential to ensure the smooth flow of cross-border gas. The INT NC regulatory framework defines the minimum conditions that must be included in interconnection agreements. It is also necessary to take into account the implications of the diversity of gas infrastructure and its evolution, depending on end uses.

In addition to the Wobbe Index (WI), oxygen content (O_2) is increasingly relevant in the context of renewable gas integration, particularly biomethane. However, O_2 remains a more complex and system-specific parameter, as its impacts may differ depending on infrastructure characteristics, underground storage facilities, industrial uses, and local operational conditions. While the primary focus of any potential non-binding guidance should remain on WI classification aspects, voluntary exchanges of practices and experience related to O_2 could be useful, provided these remain nonbinding, proportionate, and based on case-by-case assessment.

Thus, the current framework under Commission Regulation (EU) 2015/703 is fit for purpose and continues to ensure secure and efficient cross-border gas flows.

A key consideration is security of supply, particularly in the current market context where the EU relies on diversified gas sources, including LNG imports with varying gas qualities. Maintaining flexibility in gas quality management is essential to:

- Enable the acceptance of a wide range of supply sources;
- Avoid creating unnecessary barriers to LNG cargo utilisation;
- Preserve the ability of systems to adapt quickly to changing supply patterns.

Introducing binding or prescriptive measures at EU level could:

- Constrain this flexibility;
- Risk limiting access to certain supply sources;
- Ultimately negatively impact security of supply.

At the same time, a limited, non-binding approach could be useful exclusively in relation to Wobbe Index classification, with the aim of:

- Supporting a common understanding of possible approaches;
- Facilitating information sharing and best practices;
- Assisting stakeholders where relevant, on a voluntary basis.

It is also important to recognise that the practical implications of any new framework remain uncertain for different stakeholders, particularly in the absence of clearly defined roles and responsibilities across the value chain. In this context, a stepwise and evidence-based approach would be beneficial, including the use of pilot projects or practical implementation exercises to assess feasibility, costs, and operational impacts under real conditions. The outcomes of such pilots could support the development of non-binding guidance and best practices, ensuring that any future evolution is grounded in demonstrated benefits and operational experience.

Such guidance should:

- Remain strictly non-binding;
- Be narrowly scoped to Wobbe Index classification;
- Avoid extending to broader gas quality parameters or introducing indirect obligations.

7.3 Do you believe that the INT NC is the right venue for a prescriptive action?

The INT NC is not the appropriate instrument for introducing prescriptive gas quality frameworks.

Its scope should remain focused on interoperability at interconnection points, without extending into broader gas quality regulation. Introducing binding provisions would:

- Risk overregulation;
- Interfere with national competences;
- Reduce the flexibility required to manage diverse gas supply sources, including LNG.

7.4 If you would opt for a non-binding approach possibly resulting in a roadmap – which would be referenced in the INT NC? Please check 4 options below.

7.4. a) With whom do you think the decision to make any implementation mandatory should hold, the national regulatory authority and/or the national ministry – both conducting a public consultation -, an independent impact assessment, other

Limited to Wobbe Index classification, implementation decisions should remain at national level (NRAs and/or Member States), following appropriate consultation and impact assessment. Nonbinding exchanges of practices related to O_2 could also be useful, provided they remain voluntary and based on system-specific assessments.

7.4. b) What is the timeline that you consider could be established to make any implementation mandatory?

No harmonised EU timeline should be imposed. Any uptake should be gradual and driven by national system needs.

7.4.c) Would you be concerned if deviations were taking place across national systems in the establishment of exit classes? If yes, what deviations seem to you to be of concern and how would you mitigate those?

Gas quality specifications are currently set by each European country, with WI ranges or concentration limits for certain components often varying from one country to another. Divergence between national systems should be considered acceptable and, in some cases, necessary, reflecting:

- Differences in infrastructure;
- Supply portfolios (including LNG);
- Demand profiles.

Any issues arising from such divergence should continue to be addressed through:

- TSO cooperation;
- Operational and technical solutions;
- Transparency and communication mechanisms.

7.5 How do you perceive the consequences to end-users in the short and long term if a well-defined regulatory framework, either created by amending the INT NC or by other means, for the identification of exit classes as well as other limits, namely for oxygen is not implemented?

Oxygen has no impact on the normal use of gas as a fuel, but impacts are possible in underground storage facilities and for the use of gas as a feedstock, for example in the chemical industry. These operational impacts directly attributable to O_2 generally remain limited and localized. The reported cases mainly involve the formation of deposits or impacts on specific facilities. Although studies are ongoing, no systemic issues affecting the entire network have been identified. Solutions could be implemented locally to protect sensitive facilities.

In the absence of a binding EU regulatory framework, no adverse consequences are expected.

The European gas market has successfully operated for decades without a formal Wobbe Index classification framework, demonstrating that:

- Existing arrangements are robust and effective;
- Cross-border trade can function efficiently without additional regulatory structures;
- Gas quality variability can be managed through operational cooperation and existing contractual mechanisms.

Maintaining the current approach continues to:

- Support security of supply, particularly in a context of diversified LNG imports with varying gas qualities;
- Preserve the flexibility needed to accommodate different supply sources and system conditions;
- Avoid unnecessary regulatory complexity and costs.

While a limited, non-binding guidance on Wobbe Index classification could provide additional support where useful, it should remain purely voluntary at the initial stages.

Question 8 – Application of EN 16726 – key elements and principles

This block of questions revolves around the key principles that will need to be defined for implementing the CEN standard exit classes classification, either in a more prescriptive or in a non-binding approach. Those principles would relate to aspects such as e.g., distribution of costs, governance aspects, responsibilities and obligations of TSOs, NRAs and final users.

8.1 Are you aware of the specific impact that the adoption of the CEN standard has in the Member State in which you are located? For example, if this might be implemented into National Law? Please describe your view.

It is not foreseen to implement such the CEN standard into our national legislation by means of a direct reference. However, at this time the gas quality parameters set up in our national legislation are in line or quite similar to those described in the EN 16726:2025. Nevertheless, it has been realized that at least those requirements related to oxygen must be reviewed, otherwise, it will hinder the development of the biomethane industry and the injection of biomethane into the gas grid.

8.2 Would you have proposals / how would you plan to proceed in the identification and assignment of exit classes within your purview of future activities? Please explain the changes you could expect in your specific role in your answer.

At this stage, no prescriptive or binding framework for exit class identification is considered necessary.

If further work is pursued, it should be limited to non-binding guidance strictly focused on Wobbe Index classification, aimed at:

- Supporting voluntary approaches;
- Facilitating exchange of practices;
- Providing high-level orientation without imposing obligations.

In practical terms, the identification and assignment of exit classes, where considered relevant, should be based on:

- Historical gas quality data at the specific exit point; and/or
- Data from comparable or similar exit points, where appropriate.

Given the complexity of identifying and assigning exit classes, practical pilot projects or implementation exercises could be useful, where relevant, to test approaches under real conditions. Such pilots could support the development of pragmatic procedures, improve understanding of potential impacts, and facilitate cooperation between TSOs, DSOs and other stakeholders, taking into account both current and future gas quality developments.

Such an approach would:

- Reflect real operational conditions;
- Avoid unnecessary theoretical assumptions;
- Support pragmatic and evidence-based decision-making.

Any implementation should remain:

- Optional;
- Driven at national level;
- Adapted to system-specific conditions.

8.3 Do you have any reflections on the potential cost allocation and cost distribution considerations that the assignment of classes might entail? For example, what would be your view as regards of applying differentiated exit fees among users based on differences in assigned gas quality classes?

The introduction of cost allocation mechanisms linked to gas quality classes could:
- Create additional complexity;
- Lead to potential market distortions;
- Raise concerns regarding fairness and proportionality.

Cost allocation frameworks should remain:
- Nationally defined;
- Based on existing regulatory and contractual arrangements.

No EU-level harmonisation or differentiation of tariffs based on gas quality classes is considered necessary.

8.4 How should the interactions between the different players (TSO, DSOs, shippers, end-users) proceed in respect to the identification of classes?

The current approach for other subjects that is based on:
- Bilateral and multilateral cooperation;
- Case-by-case assessments;
- Existing consultation mechanisms

is considered effective and sufficient.

Any additional guidance, if developed, should:
- Be non-binding;
- Be strictly limited to Wobbe Index classification aspects;
- Avoid introducing formalised procedures that could reduce operational flexibility.

8.5 Please provide any additional information and views that you think relevant when considering mechanisms and rationale to implement a system of exit classes.

From a European perspective, the priority should remain:
- Ensuring security of supply;
- Preserving system flexibility to accommodate diverse gas sources;
- Supporting efficient cross-border trade without introducing unnecessary regulatory burdens.

The current framework has proven its effectiveness over time.

Any further developments should therefore:
- Avoid amendments to the INT NC;
- Be limited, where appropriate, to non-binding guidance strictly focused on Wobbe Index classification;
- Respect the diversity of national systems and market conditions.

It is also recognised that, where discussions on exit class definition take place, TSOs and DSOs would play an important role in facilitating stakeholder dialogue, based on their knowledge of historical, current, and expected gas quality conditions. Such discussions should take into account system-specific conditions and practical experience, including where relevant historically observed gas quality variations and their applicability to comparable systems, while ensuring that end-user impacts are assessed in a proportionate and pragmatic

manner. Any related considerations on end-user sensitivity should remain part of a case-by-case technical assessment, supported by existing mitigation solutions where applicable.

Question 9 – Other gas quality topics

9. Are there gas quality improvements, non-related to the CEN standard that you would foresee, as relevant? Which ones? Please argue your point. They can also revolve around topics not currently covered in the INT NC.

N/A

9. Data exchange

9.1 Introduction

Chapter V of the interoperability network code establishes the framework for operational-data exchange within the European gas market. These provisions are designed to fulfil data exchange requirements between TSOs and their counterparties, which the Regulation defines as network users active either at interconnection points or at both interconnection points and virtual trading points. By harmonizing the way information is shared, the code helps to facilitate smoother cross-border transmission activities.

The INT NC mandates the use of common data exchange solutions that standardize the protocols, data formats, and the network (universally specified as the internet). Depending on the specific operational requirements, operators may implement one or more of three distinct types of data exchange options described in Article 21 of the code.

1. The first is document-based data exchange, where data is wrapped into a file and automatically exchanged between the respective IT systems.
2. The second is integrated data exchange, which allows data to be exchanged directly between two applications on their respective IT systems.
3. The third option is interactive data exchange, where data is exchanged interactively through a web application via a browser.

To maintain a high degree of interoperability, the document-based and integrated exchanges rely on standardized formats such as Edig@s-XML, or an equivalent data format published by ENTSOG. While protocols for document based, integrated and interactive data exchange are ENTSOG AS4 Profile, HTTP/S-SOAP and HTTP/S respectively.

The code also mandates stringent security and availability measures trough Article 22. Operators and counterparties must secure communication chains using encryption and signatures, proactively prevent unauthorized IT access, and promptly report any breaches. Additionally, transmission system operators must

guarantee system availability by preventing single points of failure and minimizing maintenance downtime.

Finally, while these common solutions are the standard, existing legacy data exchange systems may be retained if they meet the new security requirements, undergo network user consultation, and receive national regulatory approval as described in Article 23. In that regard, and to ensure long-term adaptability, ENTSOG is tasked with developing Common Network Operation Tools (CNOTs) [6] and managing necessary technological updates (through Article 24 of the code). Any future changes to these data exchange solutions must be driven by transparent processes, including cost-benefit analyses and comprehensive public consultations.

[6] CNOTs (Common Network Operation Tools) are technical standards developed by ENTSOG (European Network of Transmission System Operators for Gas) to ensure harmonized data exchange between gas transmission system operators (TSOs) and their counterparties. They define the technical, operational, and communication rules necessary to implement European network codes, specifically regarding data formats and protocols.

9.2 Market status and Identified issues

ENTSOG reports that data-exchange processes remain mature, fully interoperable, and compliant with the INT NC. The dominant setup across the sector is document-based data exchange, using Edig@s 5.1 as the main data format and AS4 as the communication protocol. However, a variety of alternative options remain in use across the industry.

Document-based exchange is clearly the most prevalent option, utilized by 80% of TSOs. Meanwhile, integrated data exchange is used by 25% of TSOs, and interactive data exchange by 20%.

For communication protocols, 85% of TSOs use the ENTSOG AS4 profile. Most TSOs currently rely on version 3.6 while version 4.0 is already available [7], while 5% still use AS2, which is now relegated to older, outlier implementations. To address this, the report states that there will be substantial, ongoing activity and support over the next few years by ENTSOG and EASEE-gas to facilitate the TSOs' migration to the latest ENTSOG AS4 version 4.0.

Finally, concerning data formats, TSOs frequently apply different Edig@s versions across various connections explaining the statistics overlap of the responses, which produce the following results: 90% of TSOs employ Edig@s XML 5.1, and 10% use Edig@s XML 6.1. Additionally, 35% of TSOs still utilize Edig@s 4, a legacy message format.

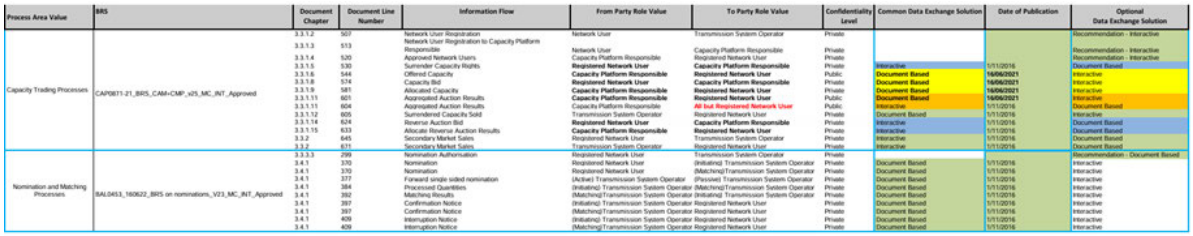
Even without full harmonization, the lack of uniformity is not perceived a barrier to reliable cross-border data exchange. It is also worth noting that the current application of CNOTs provides guidance on data exchange topics. While 70% of TSOs consider this current guidance sufficient, 20% believe it could be more specific to foster greater harmonization, something that would be valuable.

While the TSOs consensus is that no substantial changes are required, and while various market participants tend to agree that current standardization and guidance are sufficient, some stakeholders have also flagged

that the actual adherence to common / primary solutions could be improved. This is because the alternative solutions defined in the CNOTs - the optional data exchange solutions in column 11 in Table 1 - might be preferred over the implementation of the primary solution - the common data exchange solution column 9 in Table 1. Nevertheless, it is worth pointing out that no evidence exists that this behaviour has caused inefficiencies and/or market harm, so further action would require a cost-benefit analyses.

Additionally, another topic that warrants amendment is extending the network code's data exchange rules to capacity booking platforms and clarifying how they apply to the virtual trading point operator throughout the relevant articles. The later has already been added into the network code remit, based on the solution for FUNC issues 01/2018, 02/2018 and 06/2018. The addition of booking platforms was also previously discussed into the FUNC case on Missing Harmonisation on interfaces on capacity platforms (01/2019) and prompted the review of the CNOTs table to include booking platforms. However, the amendment of the network code is missing, meaning that operators can still use their reference tools without the mandate from Union law. (See FUNC cases 01/2018, 02/2018, 06/2018 and 01/2019 links, and the update CNOT table below).

Table 1 CNOTs table (For better visibility please check this link)



Process Area Value	BRS	Document Chapter	Document Line Number	Information Flow	From Party Role Value	To Party Role Value	Confidentiality Level	Common Data Exchange Solution	Date of Publication	Optional Data Exchange Solution
Capacity Trading Processes	CAP0871-21_BRS_CAM+CMP_v25_MC_INT_Approved	3.3.1.2	507	Network User Registration	Network User	Transmission System Operator	Private			Recommendation - Interactive
		3.3.1.3	513	Network User Registration to Capacity Platform Responsible	Network User	Capacity Platform Responsible	Private			Recommendation - Interactive
		3.3.1.4	520	Approved Network Users	Capacity Platform Responsible	Registered Network User	Private			Recommendation - Interactive
		3.3.1.5	530	Surrender Capacity Rights	**Registered Network User**	**Capacity Platform Responsible**	Private	Interactive	1/11/2016	Document Based
		3.3.1.6	544	Offered Capacity	**Capacity Platform Responsible**	**Registered Network User**	Public	**Document Based**	**16/06/2021**	Interactive
		3.3.1.8	574	Capacity Bid	**Registered Network User**	**Capacity Platform Responsible**	Private	**Document Based**	**16/06/2021**	Interactive
		3.3.1.9	581	Allocated Capacity	**Capacity Platform Responsible**	**Registered Network User**	Private	**Document Based**	**16/06/2021**	Interactive
		3.3.1.11	601	Aggregated Auction Results	**Capacity Platform Responsible**	**Registered Network User**	Public	**Document Based**	**16/06/2021**	Interactive
		3.3.1.11	604	Aggregated Auction Results	Capacity Platform Responsible	All but Registered Network User	Public	Interactive	1/11/2016	Document Based
		3.3.1.12	605	Surrendered Capacity Sold	Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive
		3.3.1.14	624	Reverse Auction Bid	**Registered Network User**	**Capacity Platform Responsible**	Private	Interactive	1/11/2016	Document Based
		3.3.1.15	633	Allocate Reverse Auction Results	**Capacity Platform Responsible**	**Registered Network User**	Private	Interactive	1/11/2016	Document Based
		3.3.2	645	Secondary Market Sales	Registered Network User	Transmission System Operator	Private	Interactive	1/11/2016	Document Based
		3.3.2	671	Secondary Market Sales	Transmission System Operator	Registered Network User	Private	Interactive	1/11/2016	Document Based
Nomination and Matching Processes	BAL0453_160622_BRS on nominations_V23_MC_INT_Approved	3.3.3.3	299	Nomination Authorisation	Registered Network User	Transmission System Operator	Private			Recommendation - Document Based
		3.4.1	370	Nomination	Registered Network User	(Initiating) Transmission System Operator	Private	Document Based	1/11/2016	Interactive
		3.4.1	370	Nomination	Registered Network User	(Matching)Transmission System Operator	Private	Document Based	1/11/2016	Interactive
		3.4.1	377	Forward single sided nomination	(Active) Transmission System Operator	(Passive) Transmission System Operator	Private	Document Based	1/11/2016	Interactive
		3.4.1	384	Processed Quantities	(Initiating) Transmission System Operator	(Matching)Transmission System Operator	Private	Document Based	1/11/2016	Interactive
		3.4.1	392	Matching Results	(Matching)Transmission System Operator	(Initiating) Transmission System Operator	Private	Document Based	1/11/2016	Interactive
		3.4.1	397	Confirmation Notice	(Initiating) Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive
		3.4.1	397	Confirmation Notice	(Matching)Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive
		3.4.1	409	Interruption Notice	(Initiating) Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive
		3.4.1	409	Interruption Notice	(Matching)Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive

[7] The observation that many TSOs still use AS4 v3.6 does not indicate non-compliance. Version 4.0 is recent, depends on vendor readiness, certificate lifecycle constraints and ETSI library availability of EdDSA.

9.3 Areas for Improvement and Potential Regulatory Options

The discussions and status described in the previous chapter leads ACER to identify the following possible areas of improvement.

1. The introduction of capacity booking platforms as points where the INT NC defined protocols should be implemented and used by network users, as mentioned in article 20. This addition would lead to the amendment of articles 20 and 23. Where the application would be extended to be “between transmission system operators and from transmission system operators, VTP Operators or Capacity Booking Platforms to their counterparties shall be fulfilled by common data exchange solutions set out in Article 21.
2. Article 24 could be modified to a stricter and more binding wording, mentioning that the CNOTs “shall” also include business requirement specifications, release management and implementation guidelines, contributing in this way to further harmonize the common solutions used.

9.4 Proposed Public Consultation Questions

Question 10 — Assessment of Current Functioning

10. Do you consider the current data exchange provisions defined in the code fit for purpose? If not, where do you see potential for enhancing operation?

The current data exchange provisions are fully fit for purpose. It was found that no major issues had been identified, that data exchange between the TSOs was well managed, and that the system was adapted to the realities associated with the new gases.

They:

- Ensure high interoperability;
- Support secure and reliable communication;
- Allow flexibility for technological evolution.

It is also recognised that, beyond TSO-to-TSO exchanges, data exchange considerations are relevant in the broader gas value chain, including interactions between TSOs, DSOs, and end-users, particularly in the context of implementing evolving gas quality frameworks. These aspects are generally addressed through existing national arrangements and operational practices and should continue to be considered within their respective frameworks without implying changes to the current INT NC provisions.

Question 11 — Value of further harmonisation

This block of questions revolves around the need and benefits of reducing the optionality in the code data exchange solutions, and enforcing the harmonisation of more common practices:

11.1 Do you believe that the optional data-type exchange solutions in the CNOTs are being preferred in excess over the common data exchange solution? Is this an issue that should be tackled to enable further harmonization? If tackled, what do you see could be the costs and gains?

No evidence that optional solutions create inefficiencies.
No regulatory intervention is needed.

11.2 What do you see could be the potential gains from a further harmonization of the types of data exchange solutions? For example, would you see value in reducing the types of data exchange solutions – e.g., to only document based and interactive data exchange solutions?

Limited benefits compared to:

- Implementation costs;
- Loss of flexibility.

11.3 Do you consider that the harmonisation levels for data protocols and data formats versions should be enhanced? What do you see could be the potential gains and costs from a further harmonization of these solutions?

Current level of harmonisation is sufficient.

11.4 What would be the most efficient way to achieve those possible harmonisations? Do you believe the process described in Article 21(3) and 24 – granting ENTSOG, on its own initiative or at the request of ACER, the role of revising the common data exchange solutions and the CNOTs in case of detected needs and technological developments is still fit for purpose?

The existing process involving ENTSOG remains fit for purpose and should be maintained.

11.5 Would you prefer a 'business-as-usual' scenario" where no change is introduced with the aim of supporting further harmonization?

Yes.

Question 12 — Other data exchange possible amendments

12. Are there other amendments you would see fit related to data exchange?

N/A

11. Other

11.1 Proposed Public Consultation Questions

Question 13 — Other potential amendments

13. Have you identified other possible improvements to the network code? If so, what do they entail? Please describe in as much detail as possible.

At this stage, no additional amendments to the Interoperability Network Code as established by Commission Regulation (EU) 2015/703 are considered necessary.

Question 14 – Priority List

14. Have you identified other possible improvements to the network code? If so, what do they entail? Please describe in as much detail as possible.

No priority amendments to the INT NC are identified at this stage.

Question 15 - Any other comments?

15. Do you have any other comments you would like to share with us?

The current Interoperability Network Code has proven to be a robust and effective framework, supporting the functioning of the internal gas market over time.

Question on confidentiality

* **ACER evaluates and may publish the received input. Do you consent that the submitted input is published?**

- (●) Yes, ACER may publish the submitted replies.
- ( ) Yes, ACER may publish the submitted replies **anonymously**.
- ( ) No, ACER may not publish the submitted replies.

* **Does your submission contain confidential information?**

- ( ) Yes
- (●) No

Thank you!

Contact

Contact Form