

Introduction

ENTSOG has accepted the invitation to carry out an impact analysis and subsequently draft an **amendment to the Network Code on interoperability and data exchange rules in conjunction with the CEN standard EN 16726**.

EC foresees making the standard legally binding by including it in the network code and invites ENTSOG to prepare a detailed analysis –on the entire gas value chain in all relevant Member States- on the impacts and issues associated with codifying the standard and subsequently submit to ACER a proposal to amend the Network Code by 30 June 2017.

ENTSOG shares EC's remark that a broad involvement of stakeholder is crucial to provide fundamental input to the analysis, especially on those issues outside the fields of expertise of our member transmission system operators.

ENTSOG has invited stakeholders to contribute to the process from the earliest stage by organising a first public consultation closed on 15 July 2016. The [outcome](#) of the first public consultation and the [way forward](#) for the process were presented at the workshop held in Cologne on 13 September 2016.

Structure

This questionnaire consists of three sections:

- **Contact details** and questions on the segment(s) and country(ies) represented by the respondent.
- **Impact assessment of refined scenarios**. This section presents the principles of the way forward proposed by
- ENTSOG and the details of the refined scenarios.
- **General questions** on certain policies and possible improvements to the CEN standard.

In addition to the answers, any complementary information can be sent to interoperability@entsog.eu from the same e-mail address as indicated in the contact details for this questionnaire.

Based on the answers received, ENTSOG will present on 16 November 2016 an analysis of the 3 refined scenarios. ENTSOG will finalise the impact assessment and publish its view of the most appropriate scenario in December 2016. If an amendment of the network code is proposed, ENTSOG will develop text in conjunction with stakeholders during Q1 and Q2 2017 and will be open for any further support to ACER and EC in this case.

Respondents to this public consultation are highly encouraged to:

- Support the answers to the questions with fact-based evidence
- As far as possible, liaise with the relevant European stakeholder organisation

The public consultation will be open until **21 October 2016**

Notice: Please print out your completed questionnaire before pressing the button "Done" at the very end of the questionnaire. After pressing the button your answers will be submitted and changes are not possible any more. Otherwise you will have to fill in the complete questionnaire once again.

To print out a page right click on it and select "Print". If you would like to a copy of your answers as submitted to ENTSOG, please send an e-mail to interoperability@entsog.eu indicating "Copy of public consultation reply" in the subject line.

In order to facilitate the preparation of your answers a pdf version of this survey is available on ENTSOG website. Please, note that replies to this questionnaire sent by e-mail will not be accepted.

Questionnaire¹

Contact details

1. Contact Details * - mandatory fields

First and Last name: **Phil Hobbins**

Company Name: **National Grid Gas Transmission**

Will you be representing an association (please specify): **No**

Email: **philip.hobbins@nationalgrid.com**

2. Contact Details - optional

Job Title: **Code Development Manager**

Tel: **01926 653432**

Mobile: **07966 865623**

Street: **Gallows Hill**

Postal Code: **CV34 6DA**

City: **Warwick**

Country: **England**

3. Would you like the answers to the following questions to be kept confidential and be reported only in an aggregate manner? *

Yes

No

Comments:

4. Which EU Member State * do you represent?

- Austria
- Belgium
- Bulgaria
- Croatia
- Republic of Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France

¹ In multiple choice questions, where options are preceded by a circle, only one choice is possible and where by a square, then more than one option can be selected on the online survey.

- Germany
- Greece
- Hungary
- Comments
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- The Netherlands
- Poland
- Portugal
- Romania
- Slovakia
- Slovenia
- Spain
- Sweden
- United Kingdom
- Non-EU Member State, please specify below
- European interests (stakeholder association), please specify below

5. Which segment² (s) of the gas value chain do * you represent? [1]

- Production
- Upstream operator
- LNG terminal operator
- Storage operator
- Transmission system operator
- Distribution system operator
- Trader/shipper/supplier
- Industrial equipment manufacturer/end user
- Power generation
- Biomethane production
- Domestic appliances

² Segment refers to different parts of the gas value chain: production, LNG terminals, transmission, distribution, storage, electricity generations, industrial consumption, domestic/commercial use, mobility, etc,

- Mobility
- National authority
- Other (please specify below):

Refined implementation scenarios

Principles

Competence and subsidiarity

- ENTSOG's understanding of the current legal framework is that the adoption of a technical standard is voluntary unless it is enforced by European or national legislation.
- Even in case of a European standard that is made legally binding, Member States would be entitled to define any additional parameter that is not covered by the European law (such as, in this case, Wobbe Index).

Scope

- The scope of application will implicitly define who is responsible for delivering the gas compliant to the standard.
- The scope of the INT NC is mainly limited to interconnection points. The impact assessment will include an analysis of the legal tools that each scenario may require.

Governance of changes

To provide stability in the legal framework, if the INT NC is amended, the reference to the standard will be linked to the 2015 version, preventing any revision to become automatically binding.

A-Deviations

If the standard is made legally binding, within the binding scope, A-deviations wouldn't be applicable after the defined implementation period.

Legal framework for parameters not defined in the standard

- Regardless of any amendment to the INT NC, national specifications for other parameters should still be valid (otherwise the safe use of gas would be not defined).

- Operators should be entitled to refuse gas that meets the standard but not the other parameters defined nationally and not covered by the standard (e.g. Wobbe Index, hydrogen, methane content)

In the example shown in the table below, if gas is delivered to an entry point that is within 0.55-0.7 RD but outside the national WI range of 14.00-15.20 kWh/m³, the network operator would be entitled to refuse the entry of that gas.

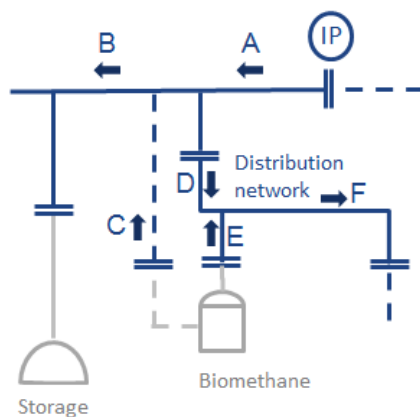
Parameter	National spec	EN16726:2015	Harmonised national spec
Relative density	0.6 – 0.65	0.55 – 0.7	0.55 - 0.7
Wobbe Index	14.00 – 15.20	No value defined	14.00 – 15.20
Hydrogen	2%	No value defined	2%

'Flexible' limits in CEN standard, e.g. O₂ :

"At network entry points and interconnection points the mole fraction of oxygen shall be no more than 0,001 %, expressed as a moving 24 hour average. However, where the gas can be demonstrated not to flow to installations sensitive to higher levels of oxygen, e.g. underground storage systems, a higher limit of up to 1 % may be applied."

(Similar wording applies for CO₂, with a range of 2.5% to 4.0%)

ENTSOG understanding of flexible limits in the standard is the following:



- The background for this flexibility in the standard is facilitating biomethane injection

- The effect of a sensitive installation on the limits to be set for a network (or network entry point) is to be studied on a case by case basis. The agreed limit may be anywhere between the low and the high limits set in the standard (e.g. 3% for CO₂)

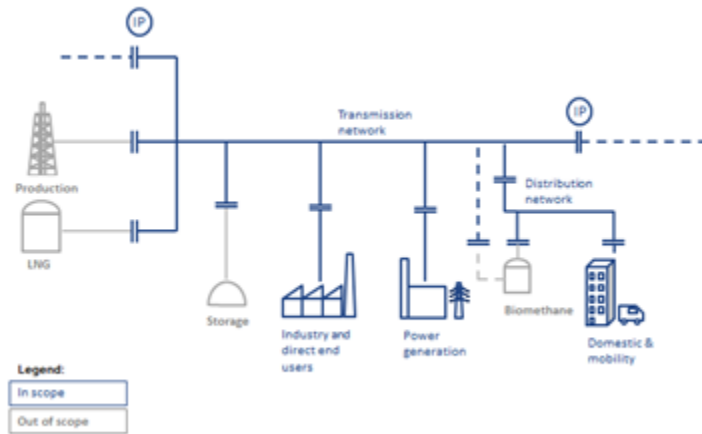
- When gas is off-spec, co-mingling practices and /or flow commitment arrangements could be used in order to bring the resulting flow into specs.

- In the example graph below:

- Flow in C will be restricted so that flow in B is below the agreed limit (sensitive installation downstream)

- Flow in E will be restricted so that flow in F is below the highest limits (no sensitive installations)

Refined implementation scenarios: Scenario 1: whole EU chain



- **Description:** parties injecting gas in gas networks need to ensure compliance of the gas with the CEN standard.

National requirements/network code will be fully valid and enforceable for parameters not included in the standard, e.g. Wobbe Index, sulfur in end-use (also for end users directly connected to TSOs), hydrogen and any other.

- **Scope:** same as EN16726. TSOs, SSOs and all downstream segments

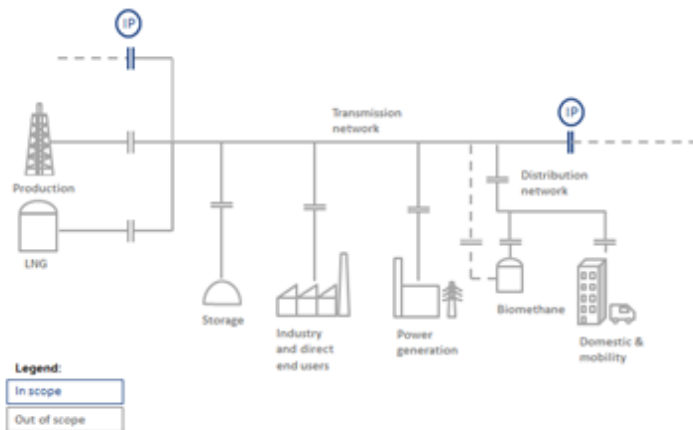
will receive standard gas. It shall also apply at entry points to EU.

- **Impacted parties:** producers/infrastructure operators delivering gas into TSO/DSO networks (all gas supplies) and consumers /infrastructures receiving gas from those networks.
- **Implementation timing:** fixed and equal for all countries and segments. This scenario will fully apply after a fixed transition period (to be consulted) after INT NC amendment.
- **Interaction with NC:** After the transition period, article 15 will not apply for the parameters covered in the standard.
- **In-spec gas:** Any gas meeting the standard shall be accepted provided that national requirements for additional parameters are also met.
- **Off-spec gas:** Any gas not meeting the standard shall be refused.
- **A-deviations:** Applicable up to the date on which compliance with the standard is required but not afterwards.
- **Flexible limits:** See principles above.

Note: Scenario 2 (Transmission networks) is intentionally omitted.

Refined implementation scenarios

Scenario 3: At IPs only



- **Description:** only when a restriction to cross-border trade is recognised, TSO will analyse, via the process set out in

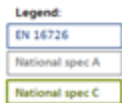
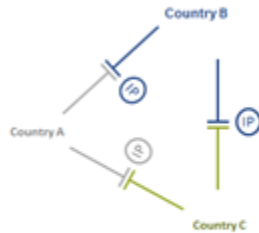
- Article 15, feasible solutions (flow commitments, gas treatment) without changing specs and, as another possibility, adopting EN16276:2015 for the conflicting parameter.

- This scenario does not have as a prerequisite a full harmonisation of national legislation.

- **Scope:** interconnection points between EU Member States.
- **Impacted parties:** transmission system operators
- **Implementation timing:** as described in Article 15, the best timeframe will be determined on case by case basis by the involved TSOs and competent authorities.
- **Interaction with NC:** CEN standard will neither substitute nor act as a fall-back (default rule) for Article 15. On the contrary, the application of the standard for the parameter causing the restriction, together with retaining national specs, will be subject to the cost-benefit analysis and public consultation process described in the network code.
- **In-spec gas:** If the adoption of the standard for the conflicting parameter comes out as the optimal solution, any gas meeting the standard shall be accepted provided that national requirements for any other parameter than the one causing the barrier are met.
- **Off-spec gas:** If the adoption of the standard for the conflicting parameter comes out as the optimal solution, TSOs will retain flexibility they have today to cope with gas not meeting the standard by swapping or co-mingling (Article 15(1)).
- **A-deviations** will not be applicable at those IPs where the standard is applied
- **Flexible limits:** See principles above. The cost benefit analysis will determine the required flexibility to apply the standard (or the national requirements).

Refined implementation scenarios

Scenario 4: Voluntary adoption



Description: This scenario means that ENTSOG would propose not to amend the INT NC, If there is any crossborder trade restriction due to gas quality, Article 15 will be applied.

6. Rank the scenarios in order of preference

- Whole EU chain - 3
- At IPS - 2
- Voluntary adoption - 1

Impact analysis for scenario 1: Whole EU chain

Could you please summarise for this scenario the following aspects? If you would so prefer, you can refer to the answers provided to the first public consultation.

7. Impacts:

As stated in our response to the first consultation, we are not aware of any specific technical condition that would prevent the application of the standard on our GB transmission network, nor have we identified any adverse impact on the integrity of our pipelines and other operational assets as a consequence of applying the standard. We would, however, need to amend the gas quality schedule in approximately 30 operational agreements with upstream parties and storage operators that deliver gas to our transmission network.

One technical difficulty that we identified in relation to the 'whole chain' option in our response to the first consultation has been removed in the refined scenario in this second consultation. This was that a relative density range of 0.555 to 0.7 (as defined in the CEN standard) implies a Wobbe Index range that is greater than the current GB legal range. The refined scenario in this second consultation makes clear that TSOs would be entitled to refuse gas that meets the standard but does not meet other parameters that are defined nationally that are not covered by the standard.

As stated in our response to the first consultation, we have conducted analysis which shows that 20% of GB supplies would have been refused entry to our transmission system if the base limits for CO₂ and O₂ of 2.5% and 10ppm in the CEN standard had been applied at all GB entry points during calendar year 2015. We believe that such a material adverse impact to GB security of supply would be inconsistent with the Commission's objectives and with the UK government's strategy of maximising indigenous gas production.

From a wider EU level perspective, we are unsure how implementation of the 'whole chain' option could work at interconnection points with countries that are not EU member states. Whilst the EU member state would be legally bound to implement the CEN standard limits at such points, the non EU member state could not be compelled to agree to such limits.

8. Benefits/savings:

Implementation of the 'whole chain' option would standardise natural gas as a product within the EU. Upstream parties would be clear what specification would have to be met to land gas at any EU entry point and any potential barriers to the conveyance of gas within the EU would not arise.

Specifically for us as a TSO, such a situation would be consistent with our transportation licence objective to not unduly discriminate in the terms we offer to parties wishing to access our network.

9. Costs:

The 20% of UK supply that risks being locked out of GB if the CEN standard were implemented as currently drafted, roughly equates to £2billion.

We would also note from the first consultation that, at present, there do not appear to be any barriers to the conveyance of gas across IPs caused by different gas quality specifications that are not capable of being addressed locally by the parties involved.

10. Time (number of years):

We estimate that it would take approximately 3 years to renegotiate all our contracts with upstream parties and amend our operational systems in order to implement the 'whole chain' option.

11. Is this given scenario feasible for your segment/organisation/country?

- Yes
- ~~No~~

Comments

The 'whole chain' scenario is feasible in the sense that it could be implemented. However, on balance, we regard this option as undesirable because of the wider implications – chief among which is the potential detrimental impact to GB security of supply and the lack of any clear benefits to counter that impact. We feel that it would also constrain the flexibility of member states to evolve their gas quality specification to meet future challenges. Indeed, it seems to us that one needs to have a vision of the future of EU gas transmission and design the gas quality specification to fit that future scenario, whereas our understanding is that the current CEN standard is one that was negotiated based on what countries considered they could cope with today.

Impact analysis for scenario 3: At IPs only

Could you please summarise for this scenario the following aspects? If you would so prefer, you can refer to the answers provided to the first public consultation.

12. Impacts:

We note that this 'IPs only' scenario is significantly different from that contained in the first consultation. This option in the first consultation was to mandate the application of the CEN standard at IPs but not at any other network entry or exit point which would have been unworkable for us as a TSO because we would receive gas from parties who would not be bound by the standard and that gas would flow to an IP which would.

The refined scenario is more acceptable because it would avoid this situation and it would provide an option for TSOs to discuss in the event of a parameter being a barrier to cross border flow. However, whilst it may serve as a starting / reference point for TSO discussions in such a situation, we would question its value because an Article 15 process being triggered must implicitly mean that the TSOs had been able to agree on a common value for that particular parameter at the IP in question.

13. Benefits/savings:

Whilst we see limited practical value in this scenario for the reason explained in the paragraph above, it would bring greater clarity to the Interoperability Code by explaining how Recital 5 and Article 15 work together.

14. Costs:

We would not incur any costs if this option were implemented.

15. Time (number of years)

We would not require any implementation lead-time.

16. Is this given scenario feasible for your segment/organisation/country?

- Yes
- ~~No~~

Comments:

Impact analysis for scenario 4: Voluntary adoption

Could you please summarise for this scenario the following aspects? If you would so prefer, you can refer to the answers provided to the first public consultation.

17. Impacts:

Since the standard would be voluntary there would be no impacts. It is expected that the GB gas industry will shortly begin to consider the potential for widening the GB gas quality specification and this would be able to continue unhindered by the potential constraints of CEN standard compliance.

18. Benefits/savings:

Member states would be free to deal with gas quality requirements locally and have the flexibility to adjust them in response to changing requirements within their MS. Any constraints caused by gas quality at cross border points would be dealt with by the process set out in Article 15 of the Interoperability Code.

19. Costs:

No costs would be incurred under this option.

20. Time (number of years)

Not applicable, since there would nothing to necessarily implement.

21. Is this given scenario feasible for your segment/organisation/country?

- Yes
- ~~No~~

Comments: This is our preferred scenario.

General questions

22. Would you propose any amendments to the refined scenarios proposed by ENTSOG?

- Yes
- No

Comments:

23. To provide stability in the legal framework, if the INT NC is amended, the reference to the standard will be linked to the 2015 version, preventing any revision to become automatically binding. Do you agree with this approach?

- Yes
- No

Comments:

24. For the “At IPs only scenario”, would you agree to use the CEN standard as default rule when TSOs do not reach an agreement on a solution?

- Yes
- No

Comments: This would be undesirable in our view because it could skew the negotiation between the TSOs involved if, say, the CEN standard was a close match to what one TSO wanted but not the other.

25. Would you recommend the revision of the current requirements of the CEN standard?

- Yes
- No

26. Only if answer to question 25 is affirmative, for which parameter, term or condition?

- Relative density
- Total sulfur without odorant
- Hydrogen sulfide + Carbonyl sulfide (as sulfur)
- Mercaptan sulfur without odorant (as sulfur)
- Oxygen
- Carbon dioxide
- Hydro carbon dew point
- Water dew point
- Methane number
- Other

What would be the value proposed? Can you provide evidence for that?

We do not propose any particular alternative value but refer to our answer to Q7 of this consultation which shows the potential detrimental impact that these parameters could have to GB security of supply.

As stated in our response to the first consultation, we consider the current flexible wording for these two parameters to be unworkable for the following reasons:

- It is not clear who has the obligation to determine whether sensitive sites would be affected. We assume that this duty would fall upon TSOs.
- It is impossible to establish definitively how far gas from a particular source of supply will penetrate into a TSO's network. The answer will be different depending on the supply and demand assumptions that are used in the network modelling. The uncertainty of this is exacerbated for a pipeline network like the UK's which has multiple sources of geographically dispersed supply and where demand off the transmission system can be dynamic within the gas day in response to a number of factors such as changes in weather patterns, gas price movements in different European markets and other operational and commercially driven impacts from the electricity market.
- Even if it *were* possible to establish a definitive area of penetration, we are unsure how any higher limits would be managed over time as flow patterns change and new connection requests are made. For example, if it were agreed that an entry point could have a 4% CO₂ limit but then in a few years' time the TSO receives a connection from a salt cavity storage operator close to that source of supply, the TSO would either have to renegotiate the 4% down to 2.5% or refuse the connection request. In our view, this would contribute instability to the EU regulatory environment that would be to the detriment of investor confidence.
- It is not clear what the definition of a 'sensitive site' is. It may be possible to establish an answer on this point technically, but other parties could also be affected commercially.
- We would also highlight that applying the oxygen limit as a 'daily average' rather than instantaneously does not fit with NGGT's gas quality excursion management procedures. If the gas quality being delivered to our network by an upstream party goes outside of the agreed specification, we as the TSO need to take curtailment action straight away, not wait until the end of the day to see if the average of all measurements taken within the day was within the limit.

27. Only if answer to question 25 is affirmative, would such revision change your preference for the scenarios?

Such revision would not change our scenario preference.

Which one would you choose?

- Whole EU chain

- At IPs only
- Voluntary adoption

28. Do you agree to amend the INT NC to include a reference to the gas quality standard (i.e. you support "whole EU chain" scenario and/or "At IPs only")?

- Yes
- No

Comments: Our preference remains as 'voluntary adoption'. To underline our answer to Q11 of this consultation, in our view, a vision of the future of EU gas transmission is needed first, which gas quality specification(s) should then be designed to fit, whereas the current CEN standard is one that appears largely to have been negotiated based on what EU countries considered they could cope with today.