entsog
european network
of transmission system operators
for gas

Brussels 16-11-2016

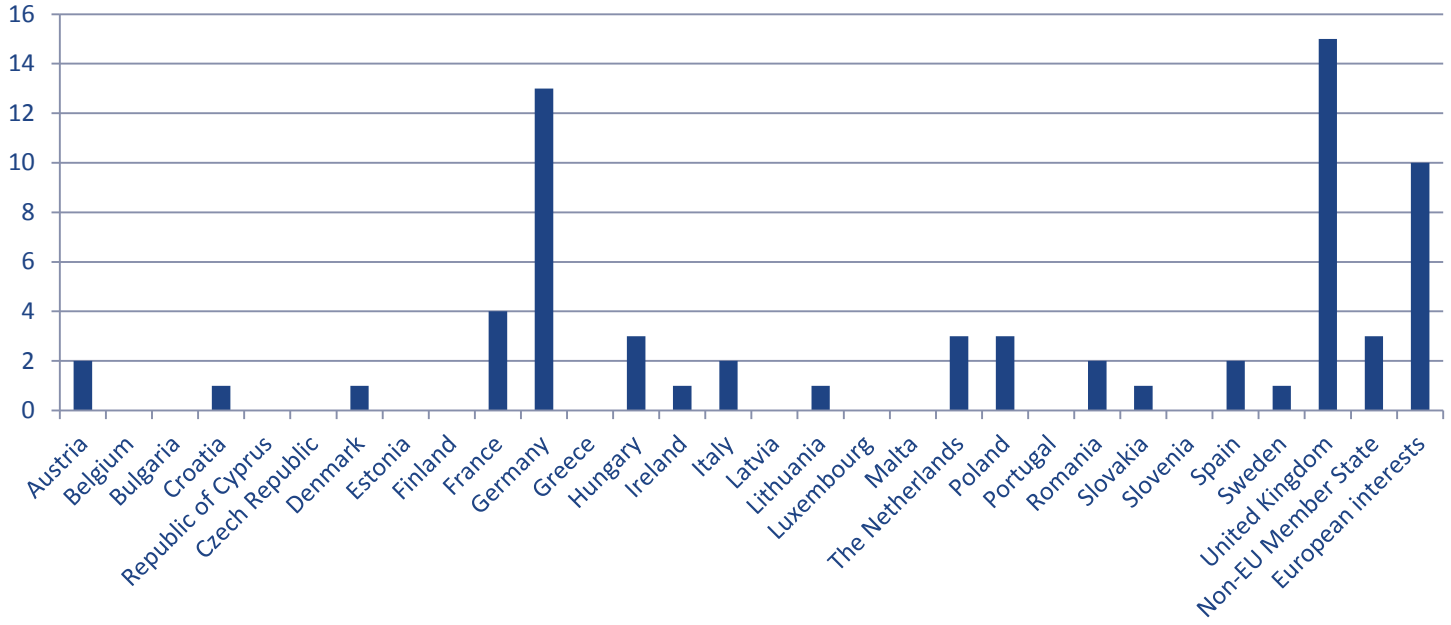
Outcome of 2nd PC on EN16726 impacts

Analysis of replies by segment and MS

Antonio Gómez Bruque
Interoperability Adviser/System Operations

Image Courtesy of Thyssengas

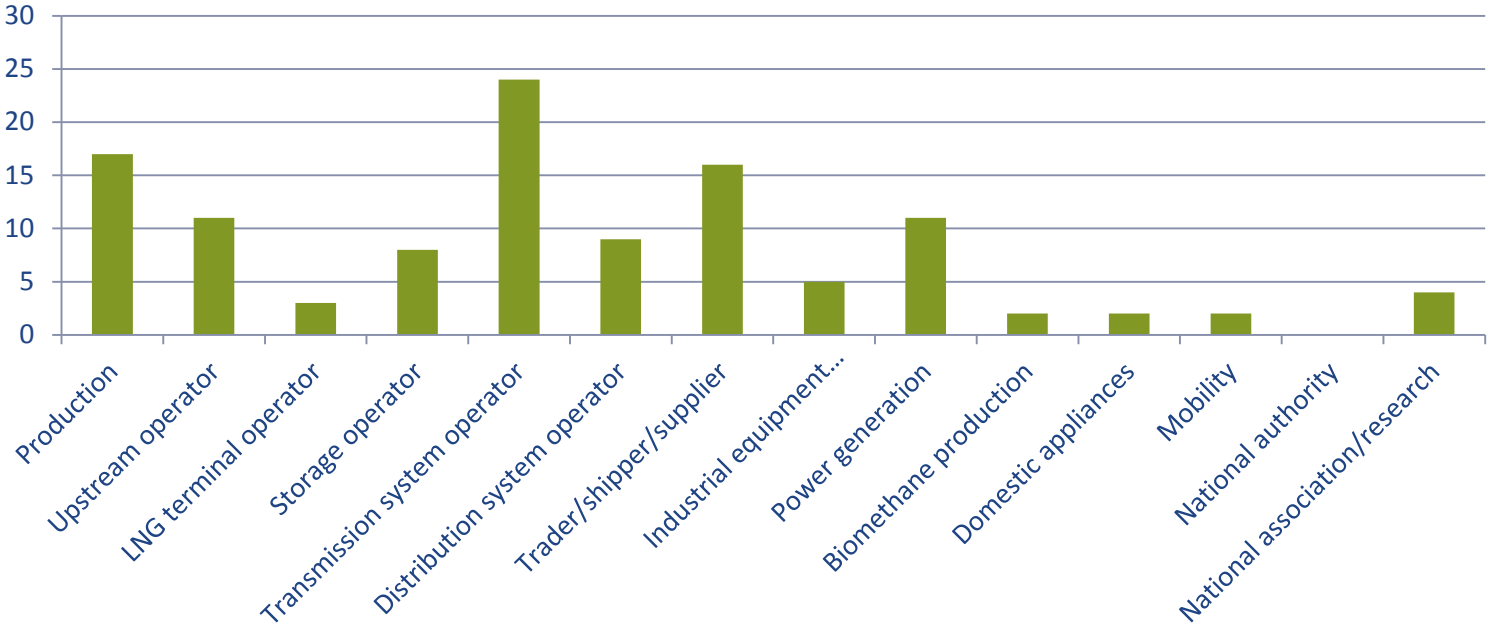
2nd PC on EN16726 impacts



Participation by country

- 68 replies
- 16 EU Member States
- 2 non EU countries

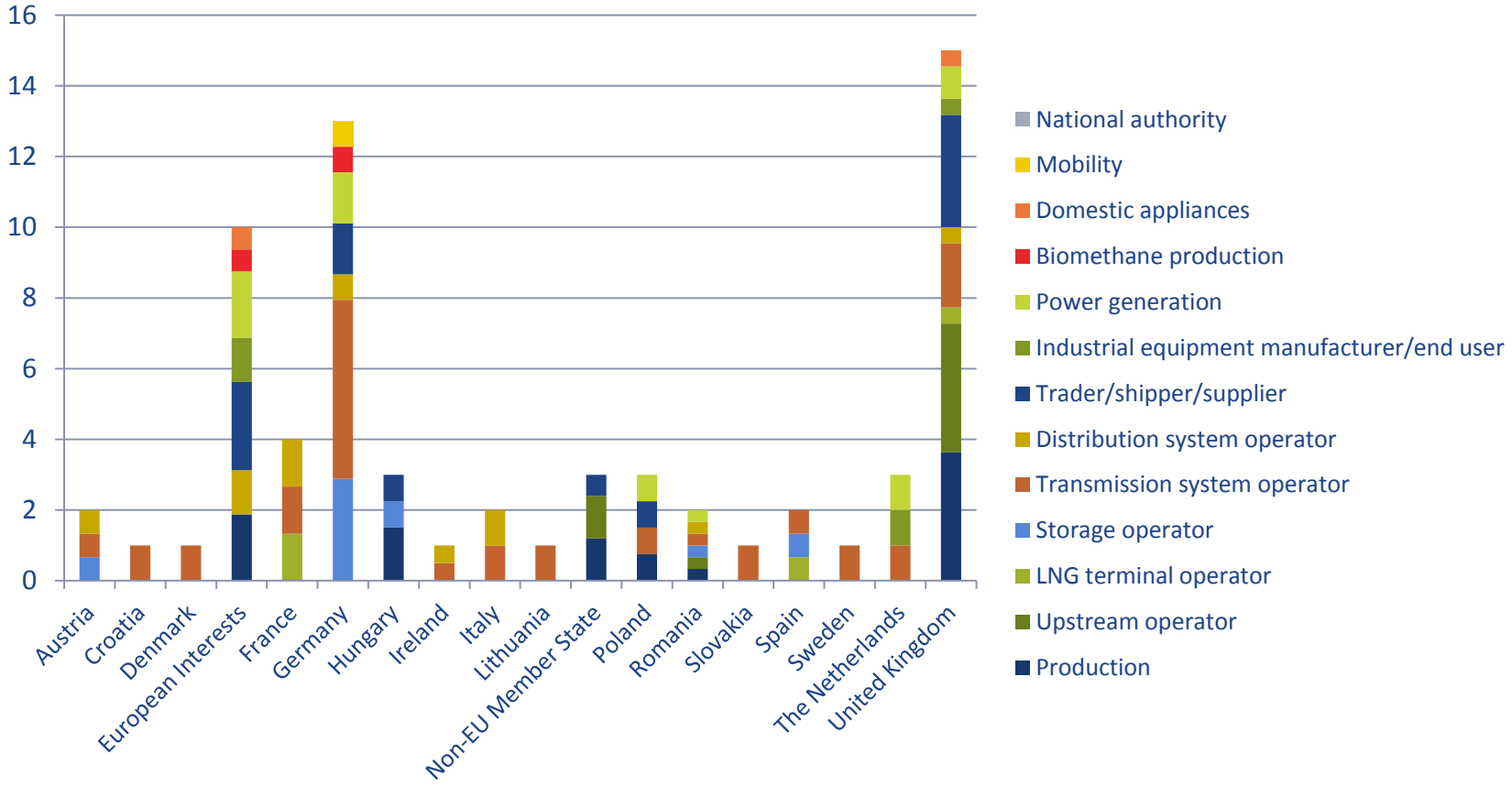
2nd PC on EN16726 impacts



Participation by segment

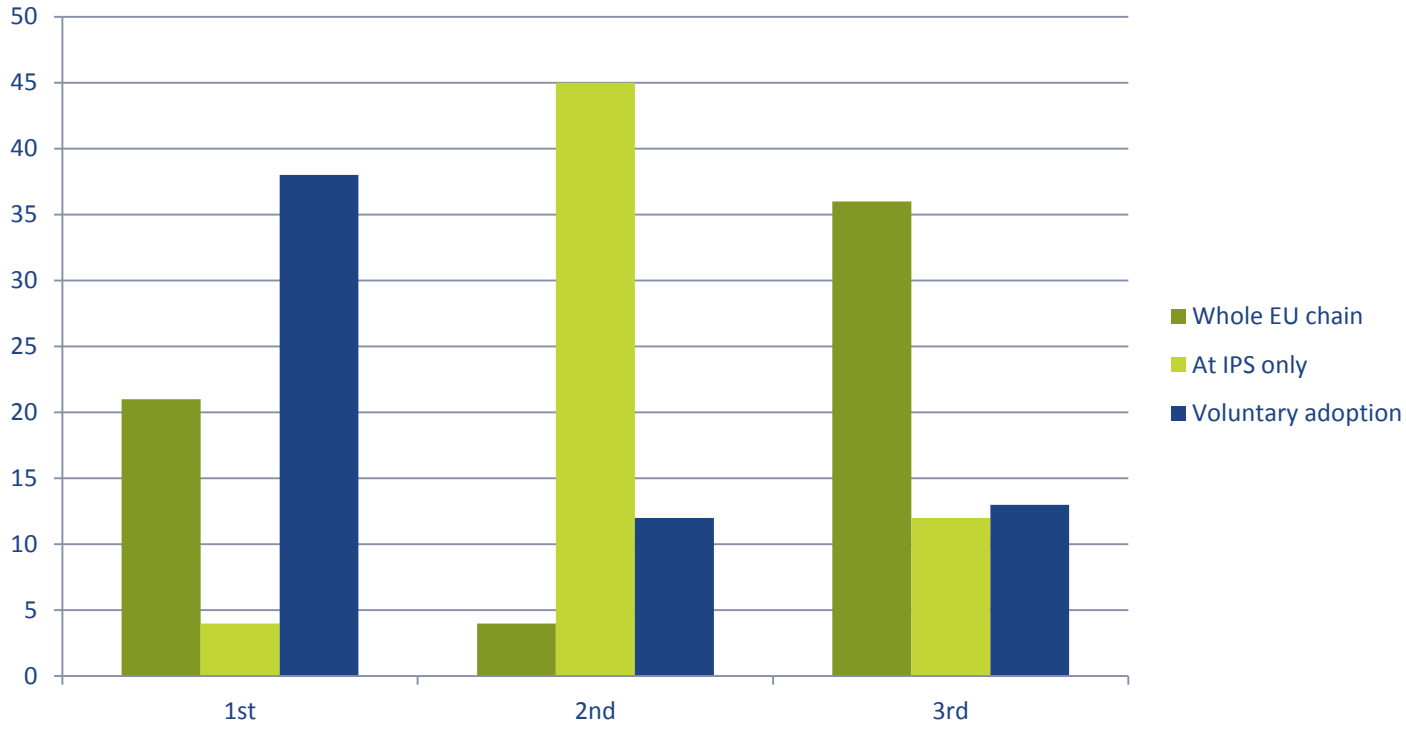
- 68 replies covering 13 categories
- Associations: EUROGAS, IFIEC, IOGP, EUROMOT, EBA, EHI

2nd PC on EN16726 impacts



Participation by country and segment

2nd PC on EN16726 impacts

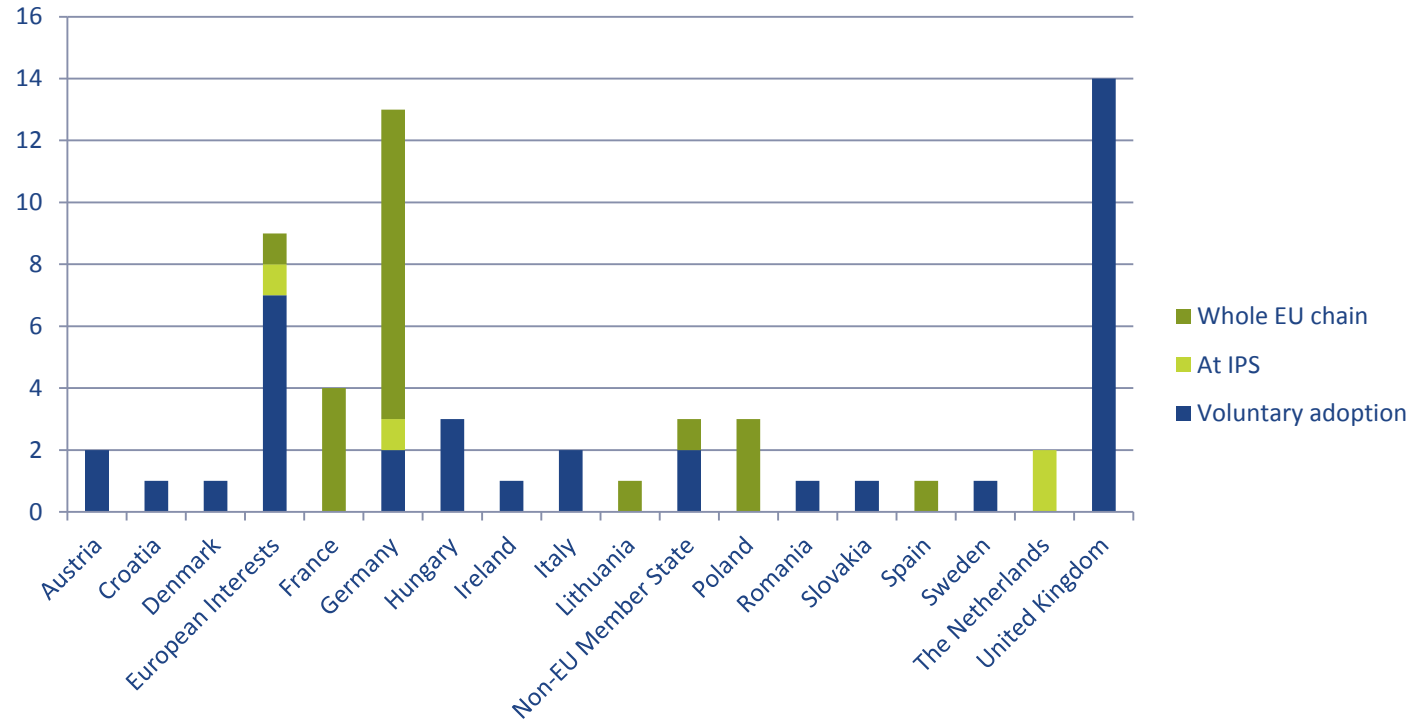


Q6 Scenario preference: overall results

> 60% in favour of voluntary adoption

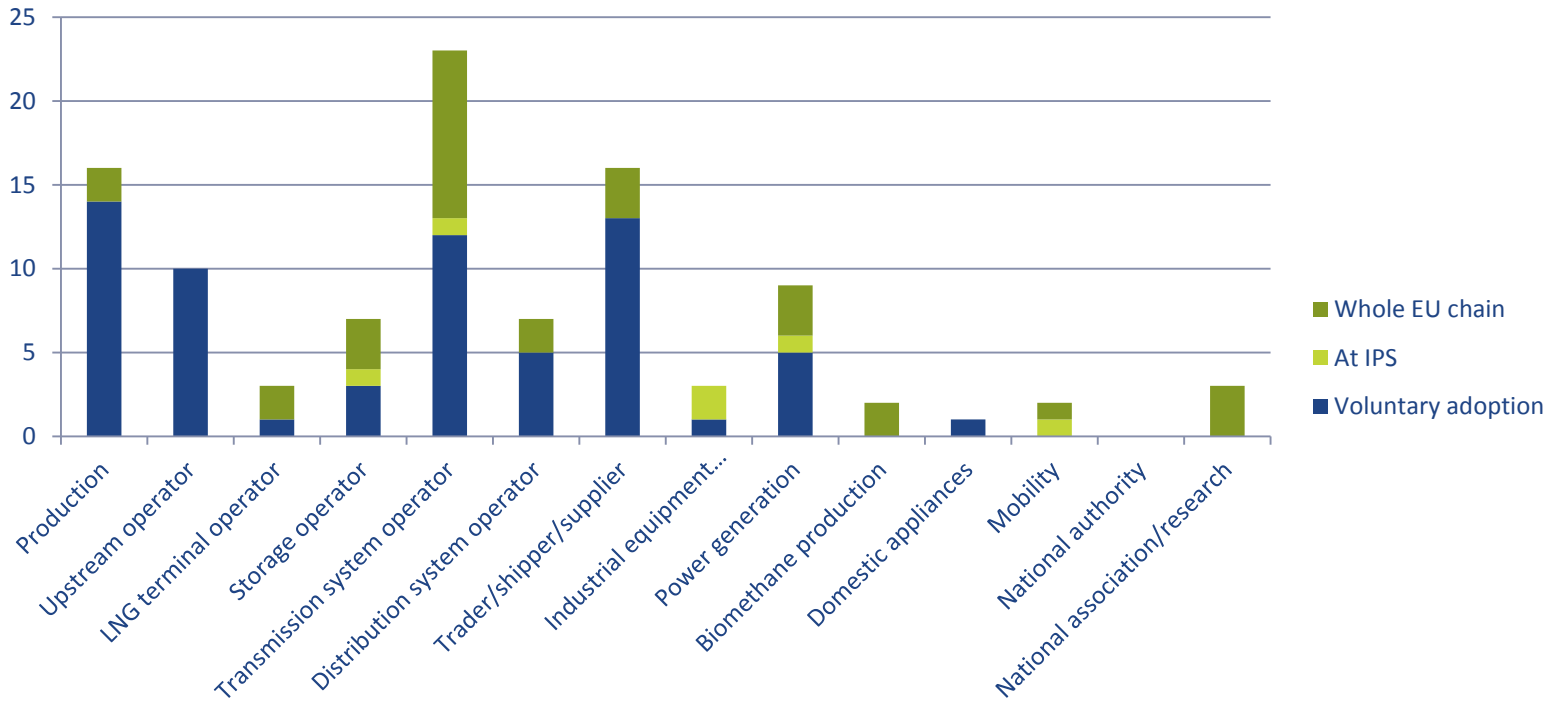
> At IPs seen mainly as compromise solution

2nd PC on EN16726 impacts



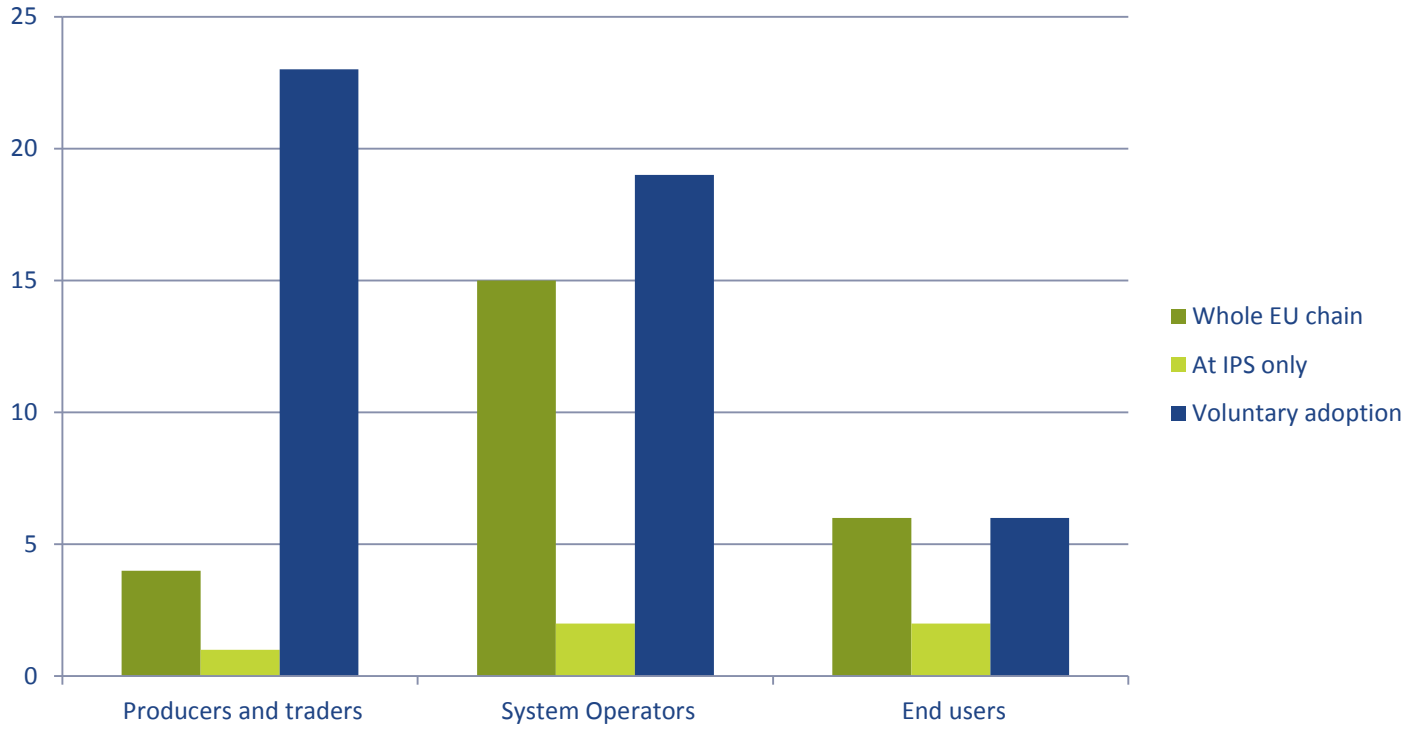
Q6 Scenario preference: First choice by country

2nd PC on EN16726 impacts



Q6 Scenario preference: First choice by segment

2nd PC on EN16726 impacts



Q6 Scenario preference: key groups of stakeholders

> Producers and traders includes also upstream operators and biomethane producers

> System Operators includes: TSOs, LSOs, SSOs and DSOs

Scenario assessment: Whole EU chain

Benefits by segment and MS as reported by stakeholders

- Producers and upstream operators:
  - EU: No benefits at all are expected. There has been no attempt to identify or substantiate possible benefits of amending the INT NC
  - EU: No cross-border trade issues linked to gas quality, work stream not needed
- LNG terminal operators:
  - UK: no benefits
  - ES, FR: high degree of control in gas qualities
- Storage system operators
  - AT: no benefits
  - DE: clear rules and increased legal security
  - HU: higher degree of protection thanks to low limits in O2, CO2 and H2S.

Scenario assessment: Whole EU chain

Benefits by segment and MS as reported by stakeholders

> Transmission system operators

- AT, DE: problems to sign IA can be solved by referring to the standard
- DE:
  - Safe reliable transmission ensured to all downstream systems
  - Clear rules and legal security
  - Flexibility for national situations
  - 1 TSO: feasible only if the standard defines common least denominator
- DK: no benefits, little flexibility to use gas efficiently
- IE, FR, SE, NL, SK: no benefits. Article 15 more elegant (NL). Users are satisfied today (SK).
- IT: removal of any potential barrier
- PL: centralised gas treatment
- UK:
  - Standardisation of natural gas as a product for EU
  - Clarity for upstream parties on spec to be applied
  - Consistent with non-discriminatory access rules

Scenario assessment: Whole EU chain

Benefits by segment and MS as reported by stakeholders

- Distribution system operators
  - EU: no benefits
  - DE: reliability in gas quality
  - FR: the most consistent scenario, homogeneous gas quality (especially sulfur level)
- Traders/shippers/suppliers (see also producers)
  - HU: ensure free flow across segments and EU regions also in case of disruption and eliminate contracting difficulties. However, no direct benefit.
  - EU: no benefit.
- Industrial equipment manufacturer/end user
  - EU: no benefits
- Power generation and Mobility:
  - EU: benefits would only be a fraction of costs for end users and manufacturers

Scenario assessment: Whole EU chain

Benefits by segment and MS as reported by stakeholders

- Biomethane production:
  - Make cross border trade of biomethane easier
- Domestic appliances:
  - No benefit in the current situation with incomplete standard
- National associations/research:
  - DE: single market for appliances, cheaper prices
  - ES: full harmonisation and higher degree of gas quality control
  - FR: free flow of gas, SoS, development of new sources and mobility, single market for appliances.
  - UK: None.

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

> Producers and upstream operators:

- EU: Rejection of gas that is currently accepted and co-mingled:
  - UK: 15.9 bcm (€ 2 billion, 20% of UK supplies) from existing developed offshore fields in the UK and Norway would have been off-spec in 2015 due to CO_2 (2.5%) and O_2 (10 ppm) limits (13.8 and 2.1 bcm respectively).
- EU: Restriction of flows in interconnectors (e.g. UK-IE) and less efficient cross-border trade
- EU: Elimination of flexibility to apply less stringent criteria at entry and exit points
- EU: Reduced security of supply and market liquidity
- EU: Economic impairment of future gas projects
- HU: investment needed for sweetening units for fields at end of life cycle
- RU: Worsening of current terms of operation for gas transit
- RU: Existing different technological requirements across gas value chain may be a barrier for implementation

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

> Producers and upstream operators (cont.):
  - SE, DK: Shut-in of source in the Danish North Sea with a gas with low methane number
  - UK: Increased CO2 emissions and fuel gas consumption at upstream processing terminals

> LNG terminal operators
  - UK: Barrier for LNG imports due to sulfur, H_2S and O_2 (10 ppm) limits.

> Storage system operators
  - AT: Stricter values for e.g. dew point do not have any value for Segment/country.
  - AT, DE: extra cost for monitoring and treatment.
  - NL: extra costs for storage operators as end users

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

> Transmission system operators*

- DE:
  - Potential increase in sulfur emissions (German regulation more strict)
  - Curtailment of CNG stations
- DK, SE:
  - Increased biomethane injection costs (O_2)
- ES: renegotiation of IA with Morocco
- IT: impact on competitiveness of gas as energy source, security of supply and sustainability (renewable gases)
- IT: the different limits for sulfur depending on odourisation (20 vs. 30 mg/m^3) introduce unjustifiable asymmetry
- NL:
  - TSO would loose ability to accept off-spec gas by co-mingling
  - national legal framework would need a new setup
- PL: how to implement? INT NC only sets obligations to TSOs

**Some TSO comments have been transferred to the relevant segment*

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

> Transmission system operators (cont.)

- SK:
  - Security of supply affected.
  - Creation of administrative barriers at IPs for off-spec gas currently accepted
  - Outside scope of NC
- UK:
  - 20% of UK gas supplies above 2.5% CO_2 and 10 ppm O_2
  - Inconsistency with EC objectives
  - Revision of oxygen and sulfur in some Interconnection Agreements (IA)
- UK, IE: implementation and monitoring costs
- UK, NL: need to amend gas quality terms in existing agreements
- UK, NL, SK: On EU perspective, uncertainty on how this scenario would work at EU borders IPs. Non EU countries cannot be compelled to accept.

**Some TSO comments have been transferred to the relevant segment*

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

- Distribution system operators
  - DE: concerns on reinjection of biogas into transport in combination with O2 and CO2 limits
  - IT: The sulfur limit of 30 mg/m^3 will conflict with legal odourisation requirements for DSOs, who cannot intervene on gas quality.
- Traders/shippers/suppliers (see also producers summary)
  - EU: Setting such tight standard (e.g. sulfur) will make EU loose ability to attract gas from different routes
  - ES: existing long term contracts exceed some EN16276 requirements. Impact on SoS and gas price.
  - HU: required investments will lead to higher spreads between hubs. No need to harmonise all regions.
  - PL: financial impact of implementing stricter total sulfur and water dew point
  - UK: detrimental to competition, reduced liquidity and impact on electricity markets. Being blocked to a standard may limit new sources (LNG, biomethane, shale).

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

> Industrial equipment manufacturer/end user
  - EU: Regional exceptions should be allowed in case they are beneficial for all parties in the chain
  - EU: Existing national regulations and netcodes (WI, sulfur in end use, etc.) are often much too wide and do not safeguard interests of network users and expose appliance to safety risks, performance issues and higher emissions (NOx)
  - EU: Inability to meet different national environmental requirements without A-deviations

> Power generation:
  - NL: Wide quality band in combination with instant step changes may lead to power disruption and increased gas consumption
  - NL: High sulfur content is very unfavourable to catalytic flue gas cleaning

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

- Biomethane producers
  - EU: Best scenario however, only under the condition that flexible limits according to ENTSOG are applied.
- Domestic appliances
  - UK: little evidence that EN16726 is safe to use and no obvious benefit. Potential appliance conversion or replacement costs.
- Mobility
  - EU: Lower performance: probably 98% of all gases in Europe have a methane number higher than 70, but standard requires to accept 65
  - EU: The maximum sulfur content of 30 mg/m^3 makes it impossible to use oxidation catalysts (corrosion and acidifying emissions)
  - EU: Wide relative density range in the standard is unacceptable for most gas using equipment and processes

Scenario assessment: Whole EU chain

Impacts by segment and MS reported by stakeholders

> National associations/research

- FR: the inability of TSO to accept off-spec gas will be detrimental to all segments
- FR: EN162726 may conflict with Dir 98/70/EC: *Quality of petrol and diesel fuels* and Dir 2009/125/EC: *Ecodesign*
- DE: operators should be entitled to accept off-spec gas and receiving party to refuse it
- PL: gas infrastructure and quality systems not ready at this time

Scenario assessment: Whole EU chain

Costs by segment and MS as reported by stakeholders

> Producers and upstream operators:

- EU: costs are prohibitive (e.g. Teesside Final Modification Report shows that increasing CO_2 limit from to 2.9% to 4.0% is the most efficient solution. Costs of CO_2 removal estimated in £200 million)
- EU: legal issues should rule out whole chain
- EU: additional pipeline projects are needed to blend gas below 2.5% CO_2.
- HU: amine sweetening unit: CAPEX: 350€/(m^3/h) OPEX: 0,031€/m^3
- RU: increased production and transportation costs
- UK: Prohibitive CAPEX and OPEX. Production loses would account for €2 billion in 2015.
- UK: The most efficient solutions would give the TSOs a role (and incentive) to use the flexibility of the transmission system for co-mingling and blending
- *More figures were provided on confidential basis.*

Scenario assessment: Whole EU chain

Costs by segment and MS as reported by stakeholders

> LNG terminal operators: no figures.

> Storage system operators:

- AT: 15 M€
- DE: Costs would lead to economic inefficiency of storages

> Transmission system operators:

- AT: 2 M€
- DE: substantially lower than other scenarios. Measurement equipment may be needed.
- DK, SE: costs to bring O_2 down 10 ppm in biomethane injection
- ES: 15 bcm of imports being rejected, leading to reduced liquidity
- FR: no costs
- NL: potential gas treatment costs for EU TSOs at EU borders
- SK: costs to achieve water dew point requirements

Scenario assessment: Whole EU chain

Costs by segment and MS as reported by stakeholders

- Distribution system operators:
  - DE: linked to potential treatment for biogas, difficult to estimate.
  - IT: instruments to control gas quality
  - FR: no extra costs foreseen
- Traders/shippers/suppliers (see also producers summary)
  - HU: no direct costs. Administrative costs, linked to renegotiation. Margins reduced by investment costs on other segments
  - ES: scenario implies significant costs
- Industrial equipment manufacturers and end users
  - EU: high costs for mitigation measures against too wide ranges
- Power generation and mobility:
  - EU: efficiency losses, emissions and frequent trips linked to wide relative density
- Biomethane production:
  - EU: no costs if flexibility is granted.

Scenario assessment: Whole EU chain

Costs by segment and MS as reported by stakeholders

- Domestic appliances
  - EU: linked to environmental impact.
- National associations/research
  - FR: no costs, already compliant
  - ES: significant due to the volumes involved
  - UK: mandate was to define standard “as broad as possible within reasonable costs” to facilitate EU SoS. If there is no flexibility to accept off-spec gas, this objective is not met.

Scenario assessment: Whole EU chain

Implementation time by segment and MS as reported by stakeholders

- Producers and upstream operators:
  - EU: considerable time in view of the barriers: economic (welfare loss), operational (equipment) and legal (beyond scope of INT NC and third package).
  - HU: at least 3 years
  - NO: not feasible until mid-20s
  - PL: at least 3 years
  - RU: at least 2 years
  - UK: 3 to 5 years (investment in treatment plants). Legal/contractual issues may cause further delay.
- LNG terminal operators: many years (UK)
- Storage system operators:
  - AT: 2-3 years
  - DE: at least 2 years

Scenario assessment: Whole EU chain

Implementation time by segment and MS as reported by stakeholders

- Transmission system operators
  - AT: 2-3 years
  - DE: several years
  - DK, SE: >10 years
  - ES: 3-5 years
  - FR: immediate
  - NL: 5 to 6 years
  - UK: at least 3 years
  - SK: 5 years
- Distribution system operators
  - EU: Fixed timing seems inappropriate
  - DE: 10 years for industrial and big commercial
  - FR: 5 years for sensitive segments
  - IT: 10 years

Scenario assessment: Whole EU chain

Implementation time by segment and MS as reported by stakeholders

- Traders/shippers/suppliers (see also producers summary)
  - HU: 3-5 years to adapt contracts
  - ES: long time to adapt contracts
  - UK: unknown
- Industrial equipment manufacturer and end users/power generation: N/A
- Biomethane production: N/A
- Domestic appliances: Unknown
- Mobility: negative consequences will continue over time
- National associations/research:
  - DE: 10 years
  - ES: several years depending on permits
  - FR: immediate
  - PL: 3 to 5

Scenario assessment: At IPS only

Benefits by segment and MS as reported by stakeholders

> Producers and upstream operators:
  - EU, NO:
    - No benefits and no evidence to identify them.
    - Article 15 and 19 effective enough.
    - Nothing prevents TSOs to consider the standard as solution for IP issues
  - UK:
    - A weak mention to the CEN standard has no practical or legal purpose
    - Member states are already able voluntarily to adopt the CEN standard

> LNG terminal operators:
  - FR: status quo situation

> Storage operators:
  - DE: no benefits as only applies to IPs

Scenario assessment: At IPS only

Benefits by segment and MS as reported by stakeholders

> Transmission system operators:

- AT: simplifies IAs
- DE: probably no benefit, only deals with IPs. It will help to agree IA but without secured Entry and Exit spec on national level
- DK: barriers would be solved efficiently
- ES: this scenario allows retaining national specs
- FR: having a reference value for each parameter
- IT: TSOs retain flexibility. Only one segment involved making the identification of obstacles easier
- NL: no real benefits but it's natural way to implement the standard in the current framework
- PL: only necessary costs incurred
- SE, IE, SK: no benefits foreseen
- UK: limited practical value but greater clarity to the INT NC by explaining how Recital 5 and Article 15 work together

Scenario assessment: At IPS only

Benefits by segment and MS as reported by stakeholders

- Distribution system operators:
  - DE, FR: no benefits
  - IT: clearness of rules
  - EU: no benefits
- Traders/shippers/suppliers (see producers summary):
  - ES: less constraints than scenario 1
  - HU: no direct benefit but ensures free flows in case of disruption.
  - EU: more harmonized scenario at a lower cost
- Industrial equipment manufacturers and end users
  - EU: No benefits foreseen
- Power generation: NL: status quo, no benefits
- Biomethane production: N/A
- Domestic appliances: EU: no benefits
- Mobility: it's good for users allows the upstream sector to feed in gas of deviating qualities

Scenario assessment: At IPS only

Benefits by segment and MS as reported by stakeholders

> National association/research
  - DE, UK: None
  - ES: Fewer constraints than whole EU chain
  - FR: Equivalent to status quo

Scenario assessment: At IPS only

Impacts/costs/time by segment and MS as reported by stakeholders

> Producers and upstream operators:
  - EU: Added value of the reference to standard is zero.
  - EU: By amending the NC, risk that flexibility proposed now by ENTSOG is reduced.
  - EU: Predefining the application of CEN standard might predetermine suboptimal solution (tunnel-vision).
  - UK: Standard is unlikely to be the solution for restriction. Risk of unintended consequences at other IPs. NC should be allowed to work.
  - HU: same impacts as whole chain
  - Costs: for each TSO to say. TSOs' costs will be passed to network users
  - Time: for each TSO to say.

> LNG terminal operators:
  - FR: no harmonisation means for variation for end users.
  - Costs: N/A
  - Time: no transition needed

Scenario assessment: At IPS only

Impacts/costs/time by segment and MS as reported by stakeholders

> Storage system operators
  - AT: as for whole chain
  - DE: raise of transmission and storage risks and undefined gas quality
  - HU: this scenario can't work alone with regard to storages

> Transmission system operators
  - AT, IE: extra costs for monitorisation.
  - IT: all costs born by TSOs. If the standard were the default rule the TSO closest to the standard may take uncooperative stance.
  - DE: raise of transmission risks and no defined downstream quality. TSO (and consumers) to bear the costs of the treatment from CEN to national quality.
  - DK: technically not justified limit O_2 for injection in storages may lead to suboptimal decisions
  - ES, NL: no significant barrier or impact
  - FR: this would allow different TSO/DSO specs, no flexible flows and cost increase.
  - UK: refined scenario more acceptable but value is questionable
  - SK: challenging to harmonise without including third countries

Scenario assessment: At IPS only

Impacts/costs/time by segment and MS as reported by stakeholders

> Transmission system operators (cont)

- Costs:
  - AT: 1M€
  - DE: average IP (500,000 m^3/h): 75 M€
  - DK: none if parties doing the CBA do participate actively
  - ES, NL, SE, UK: no additional costs
  - PL: depending on CBA
  - SK: gas drying facility required
- Time:
  - AT: 2-3 years
  - DE: several years
  - DK, SE: 1-2 years
  - ES, NL, UK: no transition needed
  - PL, FR: 5 years
  - SK: 5 years

Scenario assessment: At IPS only

Impacts/costs/time by segment and MS as reported by stakeholders

- Distribution system operators:
  - DE: if national specification are more strict (sulfur) gas treatment will be imposed to operators and finally to customers
  - IT: less flexible than voluntary adoption
  - FR: concerning sulfur: storage withdrawn gas nor meeting the standard may have an impact on distribution grid
  - EU: extra layer of administration with little material benefits
  - Time: DE: 10 years
- Traders/shippers/suppliers:
  - EU: risk that TSOs shift the burden from IP to entry points or to tariffs
  - HU: comingling capacity for national production may not be enough before reaching the IP, leading to investment costs for TSOs or producers
  - UK: flexible but potentially biased approach towards the standard

Scenario assessment: At IPS only

Impacts/costs/time by segment and MS as reported by stakeholders

- Industrial equipment manufacturer/end user:
  - EU: end users still exposed to national legislation (including WI) that could seriously harm the interests. Mitigation measures needed
- Power generation:
  - NL: no impact if local gas qualities remain applicable. Status quo, thus no costs.
- Biomethane production
  - EU: it allows cross-border trade would make biomethane injection difficult
- Domestic appliances:
  - EU: no impact and no costs
- Mobility
  - EU: impact is for TSOs (0.2 cts/m^3). Implementation of the standard should not mean that gas leaving the IP should be compliant but only when received but the users.

Scenario assessment: At IPS only

Impacts/costs/time by segment and MS as reported by stakeholders

> National standardisation/research:

- FR: different TSO/DSO specs create unwanted barriers. Costs related to gas treatment facilities.
- ES: No significant barriers. Potential consequences on transit.
- UK: question on the value added
- DE: no impact, immediate application

Scenario assessment: Voluntary adoption

Benefits and impacts by segment and MS as reported by stakeholders

- Producers and upstream operators:
  - EU, NO:
    - Member states wishing to adopt the standard should run CBA.
    - Application of standard would eliminate flexibility at entry points, including IPs
    - Loss of flexibility to accept off-spec gas in a case-by-case basis where this could be efficient and safe.
  - UK:
    - Member states are best placed to take proper account of consumer safety, SoS and regulatory framework.
    - This allows gas quality parameters to be revised more effectively and at a lower cost.
    - The only scenario that avoids unintended consequences and predetermined solutions
  - RU: this scenario is not acceptable since it allows for different terms than the ones in the standard.
- LNG terminal operators: no impacts expected.

Scenario assessment: Voluntary adoption

Benefits and impacts by segment and MS as reported by stakeholders

> Storage system operators:
  - AT: no impacts
  - DE: no technical security for cross-border transmission, supply and storage
  - HU: voluntary adoption will not provide enough security for SSOs

> Transmission system operators
  - AT, IE, SK: no impacts, status quo.
  - IT, UK: no direct negative impact. Flexibility and access to sources retained. Article 15 would be used if needed.
  - DE: interruptions may occur, no possibility to agree on a common standard, current unsecure legal situation will continue
  - DK, SE: system of bilateral agreements preserved leading to efficient solutions
  - ES, NL: potential negative impacts if standard adopted unilaterally without consulting neighbours. Article 15 would be applied
  - FR: potential restrictions not prevented
  - PL: standard implemented (5 years) only where feasible

Scenario assessment: Voluntary adoption

Benefits and impacts by segment and MS as reported by stakeholders

- Distribution system operators
  - DE: no progress will be achieved, multiple regulations will confuse the market. Costs difficult to estimate
  - FR: no benefits in this scenario
  - IT: maximum flexibility preserved
  - EU: standard ready to be used if so decided, no unnecessary barriers introduced
- Traders/shippers/suppliers
  - HU: No direct costs if the standard is not adopted. SoS risks in disruption event. Legal uncertainty prevails in case of dispute over responsibility.
  - UK: most practical approach. Leaves to NRA to decide whether apply the standard and Article 15 for cross-border trade issues
  - EU: no impact. Risks and costs are avoided

Scenario assessment: Voluntary adoption

Benefits and impacts by segment and MS as reported by stakeholders

- Industrial equipment manufacturer and end user
  - voluntary adoption could lead to different national regulations with even more uncertainty and risks and/or infringement on European competitive level playing field. Mitigation measures for wide ranges still needed
- Power generation
  - NL: status quo, no impacts on engines provided local gas qualities remain applicable
- Biomethane production
  - EU: If EN16726 not binding, the too tight injection limits of EN 16723-1 for biomethane could not be discussed with DSOs.
- Domestic appliances:
  - EU: no significant costs and voluntary adoption would grant higher environmental protection

Scenario assessment: Voluntary adoption

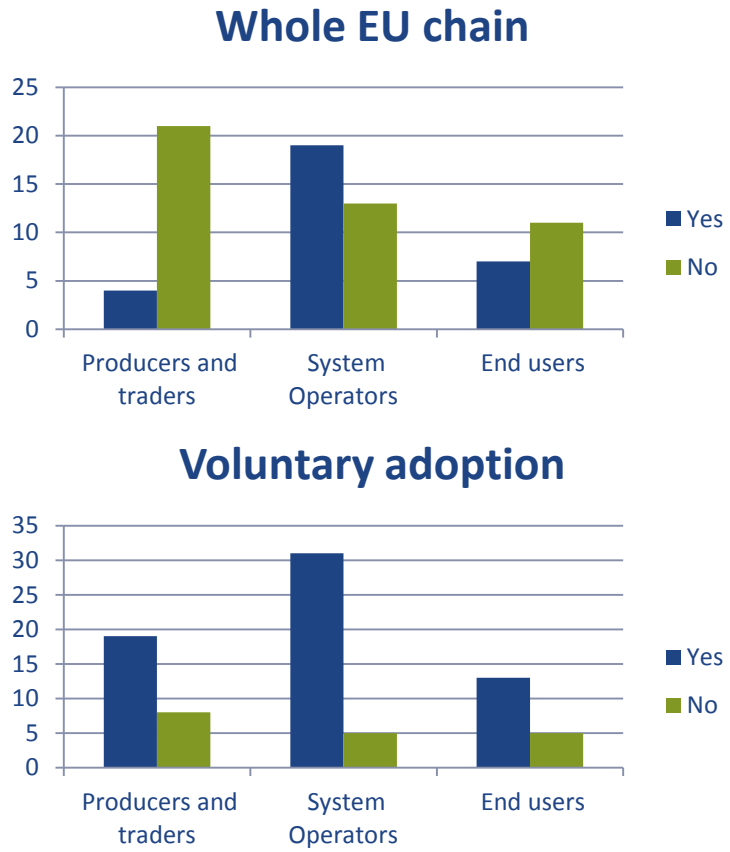
Benefits and impacts by segment and MS as reported by stakeholders

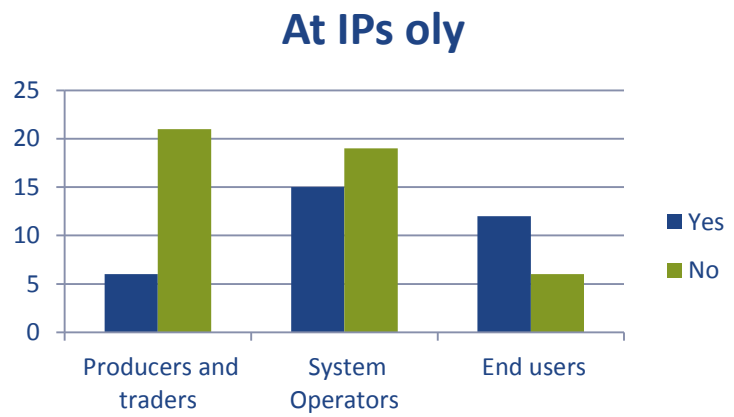
- Mobility
  - EU: voluntary adoption is the same as having no standard. Nevertheless, the EN 16726:2015 does not guarantee that quality gas is delivered to the users. No benefits and high costs from this scenario.
- National associations/research
  - DE: standard would be for the bin
  - ES: no specific impacts, Article 15 will provide solutions
  - FR: no benefit at all, free flows impaired, costs of gas upgrading will rise.
  - PL: no certainty for end users, limitations to trading
  - UK: very few impacts. Expected widening of GB specs unhindered by the CEN standard. Any constraints may be removed by Article 15.

Scenario assessment: summary table

Policy issue	Scenario 1: Whole chain implementation	Scenario 3: At IPs only	Scenario 4: Voluntary adoption
Benefits	Clear rules for whole EU chain Standardised gas in EU No barriers in SoS crisis Storage integrity	Certainty on a proportionate application of the standard Flexibility retained	Maximum MS flexibility Avoids immediate unintended consequences
Impacts	Elimination of flexibility Indigenous production shut-in Restrictions at interconnectors and import points Barrier for biomethane and LNG End user uncertainty	No immediate impacts Limited added value Unsymmetrical entry-exit specs Risk of biasing Article 15 (no thing forbids now considering EN16726) End user uncertainty	No immediate impacts If the standard is adopted, loss of flexibility, scenario 1 at national level. End user uncertainty
Barriers	Economic, operational, legal (conflicts with national specs and outside third package scope)	No barriers	No barriers
Costs	Welfare loses > €2 billion @2015 Prohibitive for small fields and some storages Reduced market liquidity	No immediate costs Depending on CBA for Article 15 triggered projects (reported example costs of 75 M€ per IP)	No immediate costs Depending on national situation if the standard is adopted
Time	From 3 to 10 years Not reachable until mid 20s in some corridors	Immediate 3 to 5 years for Article 15 triggered projects	No time, status quo. Up to 5 if standard is adopted
Feasibility	Not feasible for the majority of producers /traders and end users	Not feasible for the majority producers/traders and SOs	Feasible for the majority of stakeholders

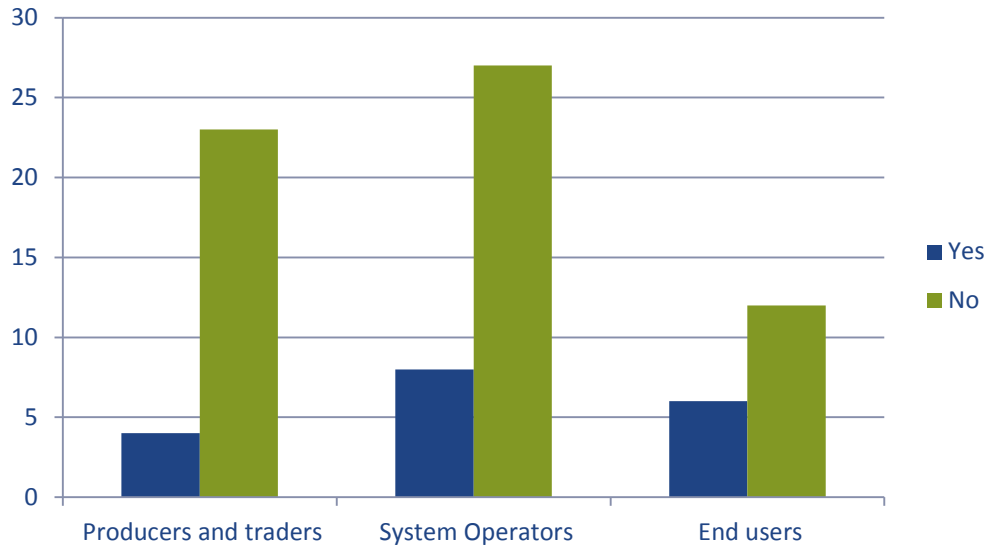
2nd PC on EN16726 impacts





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

2nd PC on EN16726 impacts



Q22: Would you propose any amendments to the refined scenarios proposed by ENTSOG?

2nd PC on EN16726 impacts

Comments on refined scenarios

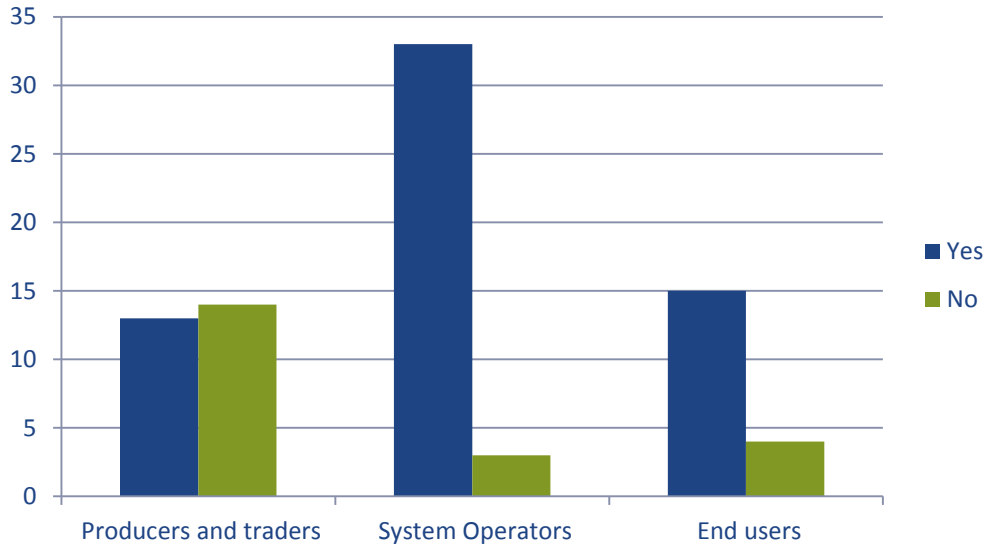
- Producers, upstream operators, traders & shippers
  - RU: Operators should be allowed to agree on less strict limits than standard
  - EU, UK: Scenarios are defined clearly
  - EU, UK, HU: Standard should be made based on good quality data. TSOs should be given an incentive to use flexibility of the system for co-mingling and blending
- End users
  - EU: Gas should be treated at entry points (e.g. LNG terminal), role of TSO in gas treatment options should be more clearly specified
  - NL: TSO should be obliged to treat gas to match specs

2nd PC on EN16726 impacts

Comments on refined scenarios

- Storage Operator
  - DE: consider a scenario that includes whole chain without consumers (injectors ensure quality at injection, TSO at IP, may still agree on less strict limits)
- TSO/DSO
  - TSO/DSO AT: Whole chain excluding production on DSO level
  - TSO ES, NL and DSO FR: “Whole chain” with the addition allowing to accept off-spec gas on own criteria (e.g to bring it into spec range via mixing)
  - TSO UK: For “IP only”, standard should be primary arrangement not just an additional option
- National association/research
  - FR: Allowing off-spec gas in “whole chain”; “IP only” should account for every connection between TSOs, not only cross-border ones between MSs.

2nd PC on EN16726 impacts



Q23: 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?

2nd PC on EN16726 impacts

Comments on fixed (not dynamic) reference to EN16726:2015

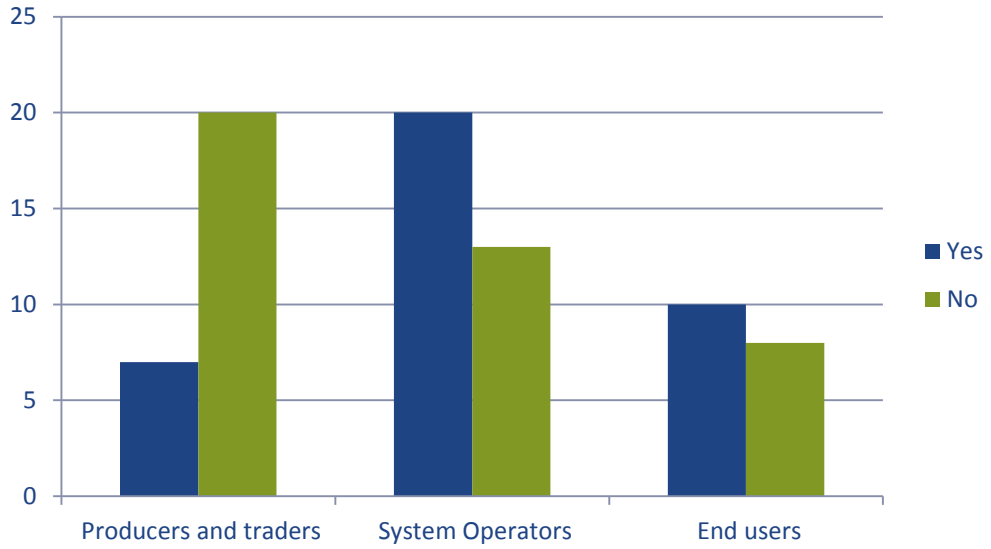
- Producers, upstream operators, traders & shippers
  - General: “no” meant as a no to amendment itself (11/13 comments)
  - EU: Under the mechanism as described in articles 15 and 19 of the network code there is nothing that prevents TSOs to consider whether an IP issue could be solved by adopting the 2015 version of the CEN standard for the conflicting parameter or any revision of the CEN standard. This would be another reason not to select scenario 3
  - HU: No changes should be automatically binding
- End users
  - Mobility, EU: Revisions can only improve the standard (should be automatically binding)

2nd PC on EN16726 impacts

Comments on fixed (not dynamic) reference to EN16726:2015

- LNG
  - FR: A standard not yet written should not become legally binding by default
- Storage
  - DE: If an agreement on WI is made, a new consultation should take place
- TSO
  - DK: Standard was developed as a voluntary standard (should not be part of law)
  - DE: Yes to static reference but not to the 2015 standard as it is
  - UK: If reference, then static (not to change without consultation) / A reference to current standard may undermine fair assessment of future revisions as a suitable reference
- National Association
  - DE, FR: subject is too sensitive for standard to be adopted uncontrolled

2nd PC on EN16726 impacts



Q24: 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?

2nd PC on EN16726 impacts

Comments on standard as default rule

- Producers, upstream operators, traders & shippers - No
  - EU: Predefining the application of the CEN standard at IPs where there is a gas quality issue as a default rule, even if subject to a CBA, may create tunnel-vision and predetermine a given suboptimal solution.
  - UK: Implementing a default might put one of the negotiating parties in an advantage (hinder negotiation process) / Non-consensual decision making progress implies friction / Referring to a code could discourage innovative solutions

2nd PC on EN16726 impacts

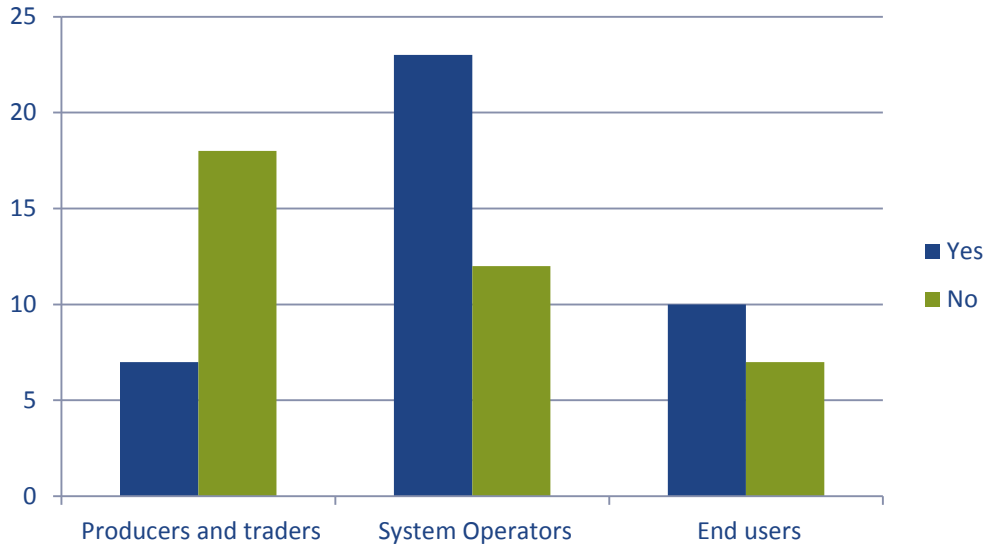
Comments on standard as default rule

Clarification: the current “At IPs only” scenario does not give any prevalence to the CEN standard with respect to national ones. That wouldn’t be the case if the CEN standard is set as default rule, i.e., the standard is imposed when TSOs fail to agree

> TSO

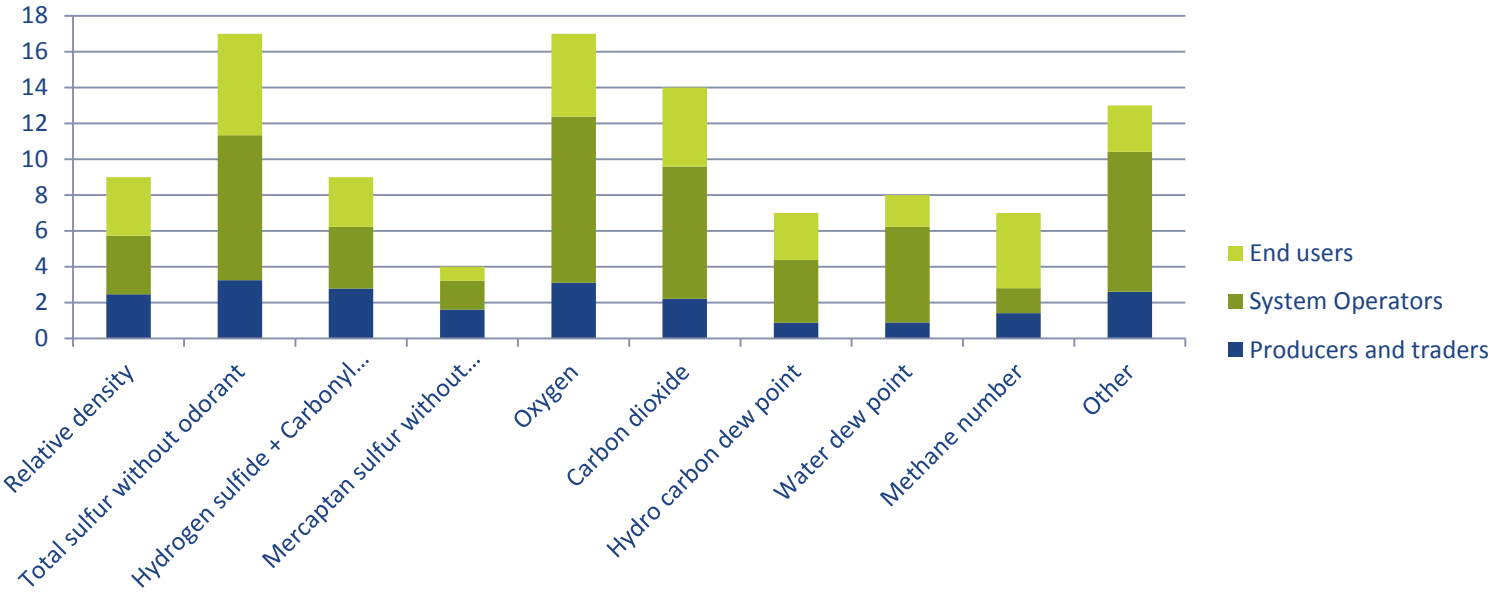
- UK: If applied, standard should be primary rule rather than default
- PL, IE, DK, IT, UK: putting one of the parties in a better position might hamper negotiations.
- SK: It might force unreasonable investments for TSOs
- DE: Local impact assessment should be the default rule

2nd PC on EN16726 impacts



Q25: Would you recommend the revision of the current requirements of the CEN standard?

2nd PC on EN16726 impacts



Q26: For which parameter, term or condition?

2nd PC on EN16726 impacts

Requirements in EN16726:2015

Parameter	Unit	Min	Max
Relative density	-	0,555	0,700
Total sulfur	mg/m^3	-	20 (30*)
H2S + COS	mg/m^3	-	5
Mercaptan sulfur	mg/m^3	-	6
Oxygen	mol/mol	-	10 ppm to 1%
CO2	mol/mol	-	2.5% to 4%
HC dew point	°C	-	-2
Water dew point	°C	-	-8
Methane number	-	65	-

This European standard specifies gas quality characteristics, parameters and their limits, for gases classified as group H that are to be transmitted, injected into and from storages, distributed and utilized.

2nd PC on EN16726 impacts

Comments on improvements for CEN standard requirements

- Relative density:
  - Mobility, EU: RD range is disturbing; WI limits for specific locations, ration of change of WI and limit to amplitude of plug flow should be implemented
  - Producer, RU: no limits in RD
- Total sulfur:
  - Producer, RU: < 30 mg/m^3
  - Power generation, NL: <10mg/m^3
  - TSO, DE: total sulfur with odourant should be included
- H2S + COS
  - Producer, RU: < 7 mg/m^3
- Mercaptan sulfur
  - Producer, RU: < 16 mg/m^3
- Oxygen:
  - Producer, RU: < 200 ppm
  - TSO, SE: ≤ 0.5% for TSOs; ≤ 1% for DSOs

2nd PC on EN16726 impacts

Comments on improvements for CEN standard requirements

- Carbon dioxide:
  - TSO UK: flexible limits on Oxygen and Carbon dioxide are unworkable / definition of a 'sensitive site' is not clear /moving daily average is not available
- HC dew point
  - TSO, SK: Hydro carbon dew point of -8 ˚C at 4.0MPa
- Water dew point
  - TSO DE: Standard is not precise about water dew point because the absolute water content is not a fixed parameter
- Methane number:
  - Power generation, NL: MN>70; rate of change ≤ 0.3 MN/s;
  - National association, UK: MN>80 for ICE
  - Biomethane production, EU: MN>60

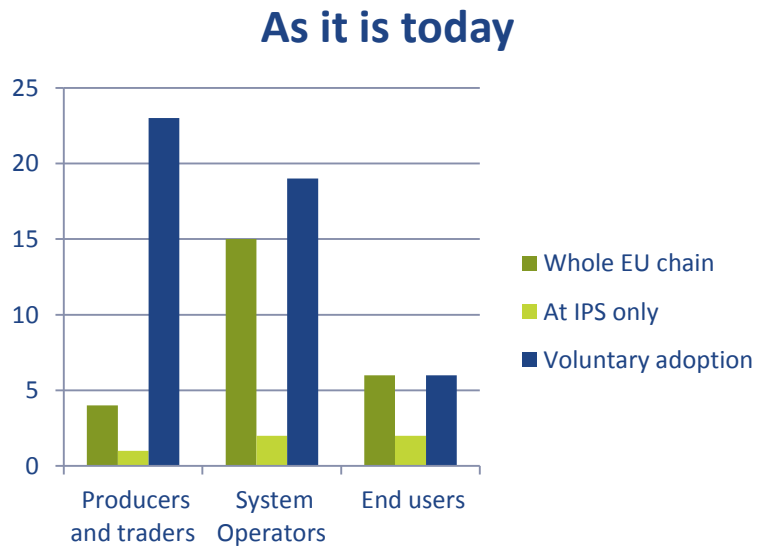
2nd PC on EN16726 impacts

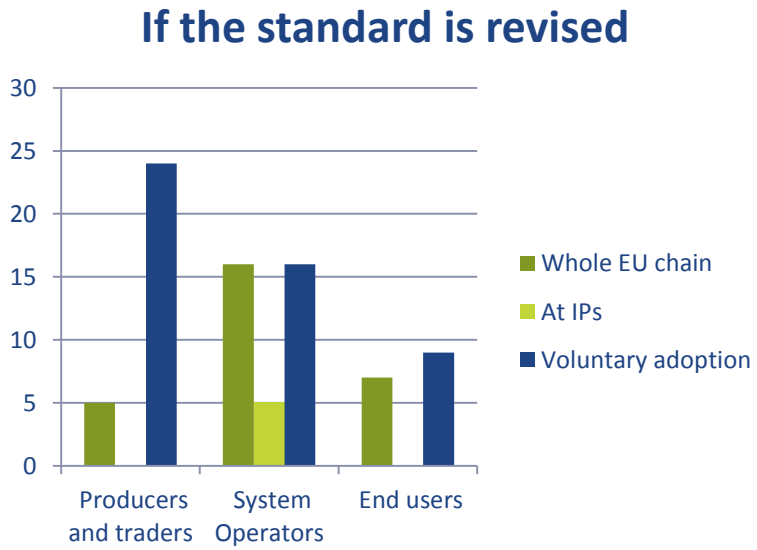
Comments on improvements for CEN standard requirements

> Further comments

- End users: Wobbe Index should be included
- Biomethane production, EU: WI that allows Biomethane (WI>12.5kWh/m^3)
- PL: hydrogen content should be included
- TSO DE: A forecast for not only WI and GCV, but for all parameters should be made for all gas flows in Europe
- TSO, IT: a wider GQ range than EN describes does not affect their system negatively (benefits in terms of diversification and SoS)

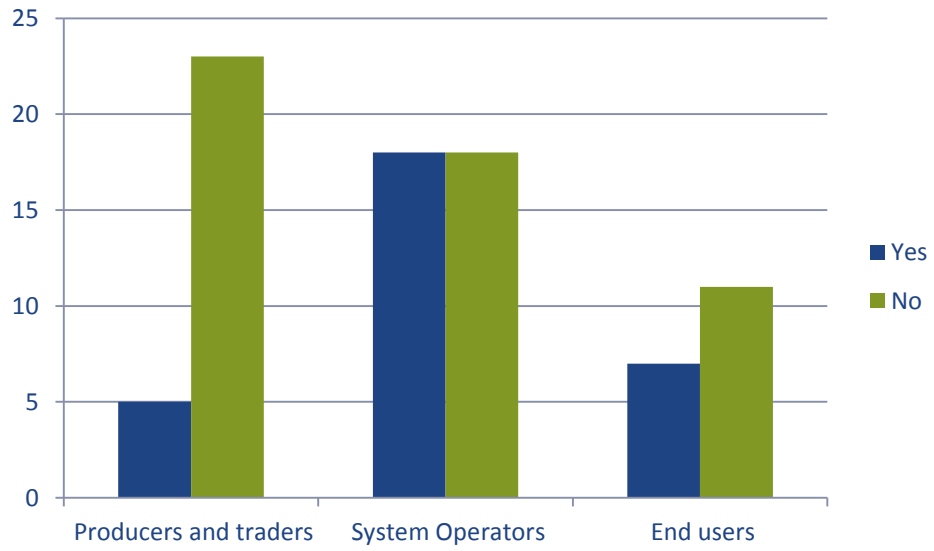
2nd PC on EN16726 impacts





Q27: Would such revision change your preference for the scenarios? Which one would you choose?

2nd PC on EN16726 impacts



Q28: 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")?

2nd PC on EN16726 impacts

Comments on whether the INT NC should be amended

> Producers, upstream operators, traders & Shippers
  - PL: Yes, after revision of the standard.
  - UK: No, neither approach would be an improvement / As much diversity of supply as possible should be allowed (not narrowing the range of acceptable gas by this standard)

> End User
  - Power generation, NL: no, the standard should be adjusted in cooperation with technology suppliers and end users and then TSOs should take measures to adjust gas quality.
  - Mobility, EU: No, only if the standard guarantees quality gas is available

2nd PC on EN16726 impacts

Comments on whether the INT NC should be amended

- TSOs
  - ES: Yes, if standard would include WI, the code should be amended
  - NL: It is questionable if the EU directive provides legal basis for regulating the gas quality of the whole EU chain und a Network Code.
  - UK: standard is not made with vision of future needs, but based on what is considered manageable today by the EU countries
  - UK: arrangements have been in place for 18 years to allow gas flow in the UK (with different specifications applying in the systems and without a mandatory standard)
  - DK: The standard was developed and approved as a voluntary one, no parties part of the process were informed it could be binding in the future.
  - SE: Yes, for scenario “At IPs only”
- Storage operators
  - AT: Implementation of standard causes no benefits

Thank You for Your Attention

Antonio Gómez Bruque
Interoperability Adviser/System Operations

ENTSOG -- European Network of Transmission System Operators for Gas
Avenue de Cortenbergh 100, B-1000 Brussels

EML: Antonio.gomez@entsog.eu
WWW: www.entsog.eu