Council of the European Union
General Secretariat

Brussels, 09 March 2022

WK 3471/2022 INIT

LIMITE

ENER

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

MEETING DOCUMENT

From:	General Secretariat of the Council
To:	Working Party on Energy
Subject:	Hydrogen and gas markets, decarbonisation package - presentation of the impact assessment

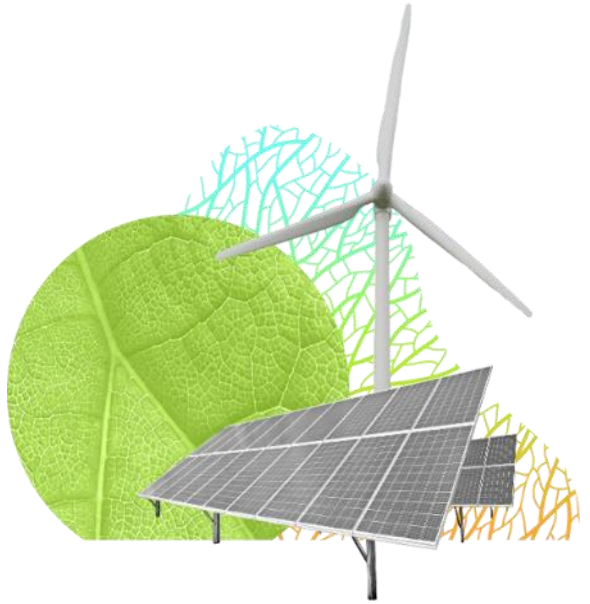
Delegations will find in the annex the presentation of the impact assessement of the Hydrogen and gas markets, decarbonisation package.

Fit for 55 package

HYDROGEN AND GAS MARKETS DECARBONISATION PACKAGE

PRESENTATION IMPACT ASSESSMENT

Agenda today's presentation



Problem definition, problem drivers, policy options and their impact

i. Problem Area I: Hydrogen infrastructure and markets

ii. Problem Area II: Renewable and low-carbon gases in the existing gas infrastructure and markets, and energy security

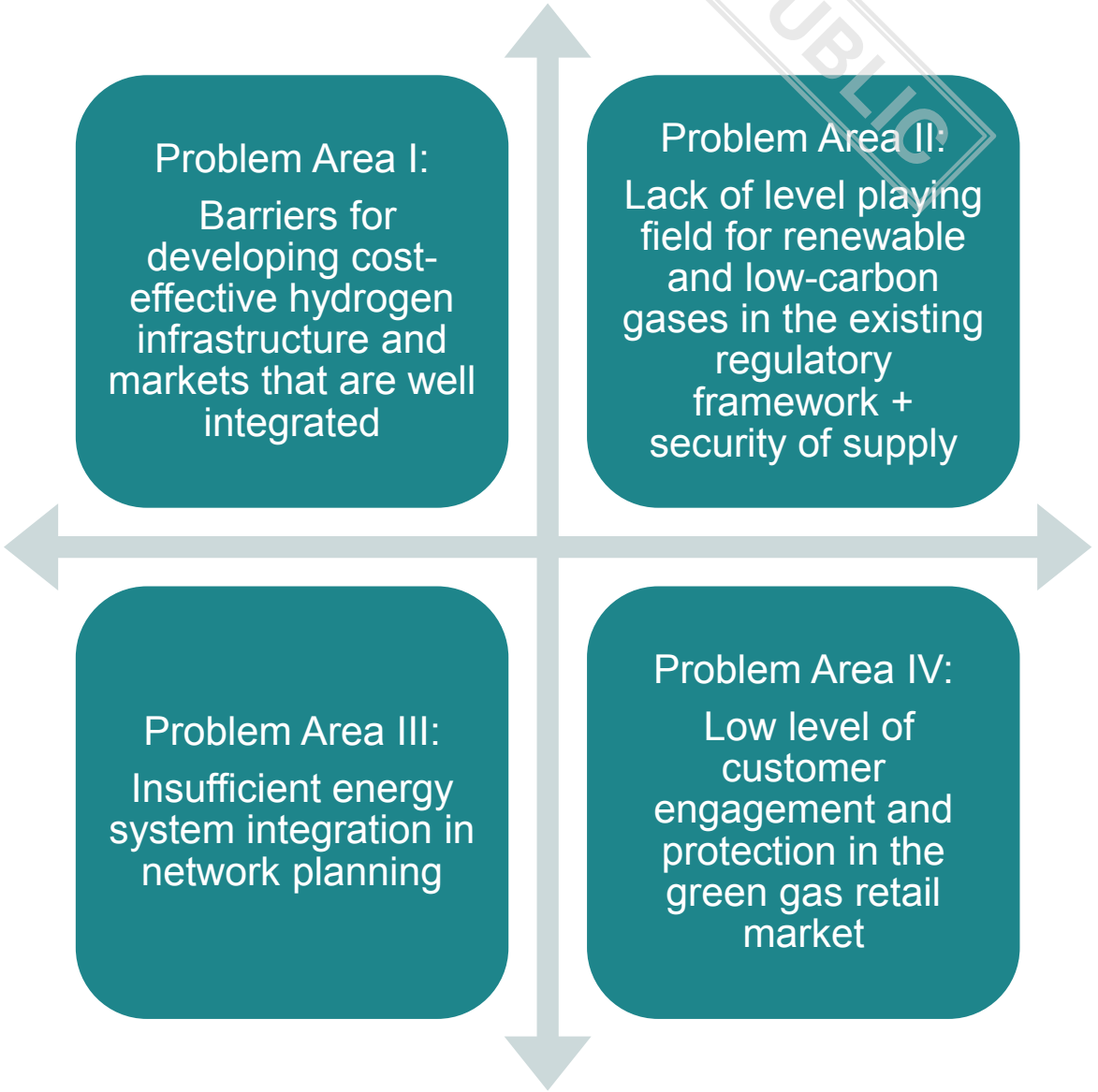
iii. Problem Area III: Network planning

iv. Problem Area IV: Low level of customer engagement and protection in the green gas retail market

Problem areas and justification of EU action

European Commission

Impact Assessment focuses on four problem areas



Why should the EU act

Legal basis

The planned measures are to be adopted on the basis of Article 194 (2) TFEU

Subsidiarity: necessity of EU action

To achieve EU decarbonisation goals it will be necessary to gradually replace fossil gas by decarbonised energy carriers including decarbonised gases – current regulatory framework not fit for purpose

Subsidiarity: added value of EU action

The challenges cannot be addressed as efficiently by individual Member States as fostering more efficient and integrated EU markets for gases requires harmonised and coordinated approaches by all Member States; which can only be achieved by EU action

General policy objective

Contribute to the EU's decarbonisation within the framework of the Fit-for-55 package to implement the European Green Deal in a cost-effective manner by facilitating the creation of a European hydrogen market and the gradual decarbonisation of gaseous fuels markets

Problem Area I: Hydrogen infrastructure and markets

European Commission

Problem, its drivers and options

PROBLEM

Barriers for developing cost-effective hydrogen infrastructure and markets that are well integrated

DRIVERS

- Decarbonisation will result in emergence of European hydrogen value chain reliant on a cross-border hydrogen market
- Lack of infrastructure investments hinders market development (favourable production locations not (always) next to consumer centres)
- H2 infrastructure likely to constitute a natural monopoly leading to non-competitive market structures
- Diverging H2 quality rules may hinder (cross-border) flows and incur costs

OBJECTIVES

- Enable the emergence of an efficient, integrated EU hydrogen market
- Remove barriers and ensure incentives to invest in hydrogen infrastructure
- Address risk that the natural monopoly character of hydrogen infrastructure gives rise to non-competitive market structures
- Ensure cross-border integration (including on borders with third countries), unhindered hydrogen (cross-border) flows and required hydrogen quality for end-users

POLICY OPTIONS

- Option 0: No measures/business as usual
- Option 1: Rights for network operation tendered
- Option 2a. Main regulatory principles only
- **Option 2b: Main regulatory principles with a vision**
- Option 3a: Hydrogen rules by ‘big bang’
- Option 3b: Hydrogen rules by a ‘big bang +’

European Commission

Policy options considered

Option 0: No measures/business as usual

- No rules or restrictions at EU level on the ownership or operation of hydrogen infrastructure, or its financing.

Option 1: Tender rights

- Member States tender the rights for investments in and the operation and ownership of future hydrogen networks to market participants.

Option 2a: Main regulatory principles only

- Set main regulatory principles for ramp up phase (2030) but not yet for mature market phase (after 2030).

Option 2b: Main regulatory principles with a vision

- **A regulatory framework for the ramp-up of a hydrogen value chain until 2030 + perspective on the main regulatory principles that will govern a more mature hydrogen value chain beyond 2030.**

Option 3a: Hydrogen rules by big bang

- No distinction between rules applicable to a ramp-up and more mature development phase. Comparable with the current regulatory framework for natural gas.

Option 3b: Hydrogen rules by big bang plus

- Option 3 a + introduction of EU ISO Model.

INCREASE IN TERMS OF DENSITY AND DETAIL OF REGULATORY OPTION

General stakeholder feedback [see Annex 2 IA]

- A large majority support the introduction of stepwise regulation commensurate with the H2 market development
- Stakeholders were divided over question of allowing cross subsidization
- A majority of respondents against introduction of an H2 EU ISO

Option 2b is most in line with stakeholder feedback

Discarded policy options

- **Approach of 'dynamic regulation':** NRAs decide when possible regulation of hydrogen networks should kick-in based on periodic market monitoring focused on an assessment of the market circumstance. Intervention, if and when required, should be based on pre-defined EU-wide regulatory principles.

Why discarded?

- Ex-post regulation creates lack of legal certainty + risk of regulatory fragmentation.
- Small minority of respondents in the public consultation supported this option. Large majority supports clear ex-ante rules.

- **Option 1: Rights for network operation tendered**

Why discarded?

- Only minority of respondents in the public consultation supported this option.
- Respondents who supported the introduction of regulation of H2 markets and networks stated that a suitable regulatory model should be developed at EU level rather than at national level.
- Few benefits relative to base-line scenario

Overview of key measures in policy options considered

	Vertical unbundling	Horizontal unbundling	Regulated Asset Base	Third Party Access	Transition period: Exemptions & Derogations to regulatory principles	Low-carbon H2 Certification & Methodology	...
Option 2a.	OU/ITO/ISO	Combined H2/CH4 TSO	Joint RAB allowed	• nTPA pipelines • nTPA H2-storage • no TPA rules terminals	• Individual exemptions new and/or existing infrastructure • Derogations for geographically confined networks	Terminology and light GOs-based certification	Other regulatory measures: see annex VI of the Impact Assessment
Option 2b.	**OU/ISO + ITO possible until 2030**	**Legal and accounts unbundling**	**Separate RAB with transfers under conditions**	• **rTPA+ no cross border tariffs + nTPA possible until 2030** • **rTPA for H2 storage, nTPA for H2 terminals**	• **Individual exemptions new/existing infrastructure + convergence criteria + voluntary opt-in** • **Derogations for geographically confined networks + convergence criteria**	**Terminology and certification based on life-cycle analyses and mass-balance approach through voluntary schemes**	**....**
Option 3a.	OU	Legal and functional unbundling	Separate RAB	• rTPA + no cross border tariffs • rTPA H2 storage and terminals	Idem option 2b	Idem option 2b	….
Option 3b.	EU TSO (ISO model)	Idem option 3a	Idem option 3a	Idem option 3a	Idem option 2b	Idem option 2b	…

Vertical unbundling

- The preferred policy option is most effective in safeguarding competition. ISO model allows vertically integrated hydrogen producers to retain ownership of existing hydrogen networks, while providing adequate safeguards for third-party users of these networks. Use of ITO model until 2030 creates greater flexibility in the ramp up phase.

Policy option	Option 2a: All unbundling models are possible	Option 2b: OU and ISO default models. ITO allowed until 2030.	Option 3a: Only OU	3b: EU TSO (ISO model)
Advantages	• Carry-over of current unbundling models of natural gas TSOs to hydrogen simplifies implementation of principle. • No costs for change in unbundling regime incurred by incumbent ISO/ITO organized natural gas network operators if they want to pursue hydrogen transport activities	• OU ensures that H2 network operators do not have incentive to discriminate among users of their network. • Low regulatory costs: vertical integration in H2 currently limited. • ISO model allows vertically integrated hydrogen producers to retain ownership of existing hydrogen networks, while providing adequate safeguards for third party users of these networks.	• Only OU model for hydrogen networks could allow for less stringent TPA requirements.	• Allows existing vertically integrated hydrogen producers to retain ownership of existing hydrogen networks [idem 2b]. • EU TSO well placed for EU-level network planning and development. • Facilitates ITC mechanism (needed if for rTPA without crossborder tariffs
Disadvantages	• Missed opportunity to introduce a structural unbundling model at low cost due to small number of existing vertically integrated hydrogen producers. • ISO and ITO modes associated with higher regulatory costs and administrative burden for operators and monitoring authorities.	• Limits commercial freedom of hydrogen producers/suppliers and hydrogen network operators. • ISO/ITO models are associated with a higher regulatory cost and administrative burden for operators and monitoring authorities.	• Would require divestment of existing hydrogen networks by vertically integrated hydrogen producers.	• May require ITC mechanism to allocate revenues. • Enabling certain functions (e.g. EU-level network planning) would require imposing financing obligations on networks owners (similar to ITO/ISO unbundling models).
Stakeholder Feedback	Vast majority of stakeholders consider it (very) important to set rules at an early stage to ensure the neutrality of hydrogen network operations and that network operations should be in a distinct legal entity, half of them supporting OU from the start, half of them in support of ITO model. Majority against creation of EU H2 TSO.			

Horizontal unbundling

- The choice of horizontal unbundling requirements is linked to the rules on the regulated asset base (RAB) , since a joint asset base is possible only in the absence of horizontal unbundling requirements.

- Where a separate RAB is the preferred option, this allows for the choice of different horizontal unbundling requirements (from accounts unbundling up to ownership unbundling).

- Preferred policy option (2b): Compared to vertical integration, the risk of conflicts of interests as a result of combined operatorship of different types of networks is present but less severe. Remaining risks can be managed effectively via monitoring and approval by regulatory authorities. Therefore, legal and accounts unbundling (but without functional unbundling), as a low level of horizontal unbundling, can be considered sufficient. This allows for the combined operation of natural gas and hydrogen networks within a group of undertakings (i.e. by creating a subsidiary).

Policy option	2a. No horizontal unbundling	2b. Horizontal legal + accounts unbundling	3a. Horizontal legal + functional unbundling	3b. Accounts unbundling (assets operated by EU TSO (ISO)
Advantages	No additional administrative burden (as BAU for natural gas). Facilitates repurposing of natural gas network.	• Reduces risk of conflicts of interest regarding repurposing and de-commissioning of gas network infrastructure. • Gas TSOs can retain ownership of repurposed gas pipelines within company group structure.	• Considerably reduces risk of conflicts of interest regarding repurposing and decommissioning of gas network infrastructure. • Gas TSOs can retain ownership of repurposed gas pipelines within company group structure.	Idem 3A
Disadvantages	Risk of conflicts of interest regarding repurposing and decommissioning of gas network infrastructure	Administrative burden and regulatory cost for operation and monitoring, but relatively low.	Higher administrative burden and regulatory costs for operation and monitoring.	Idem 3A
Stakeholder Feedback	Respondents divided over the question whether or not to introduce horizontal unbundling rules at EU level as they linked it to the question of allowing cross-subsidization or not (see next slide).			

Regulated Asset Base

- IA examines advantages and disadvantages of a joint RAB and a separate RAB for gas and hydrogen networks, as well as options to implement both policy options including 'in between' options (see annex VI).
- Difficult to quantify impact. Accordingly, IA includes sample calculation on impact joint or separate RAB on natural gas and hydrogen tariffs.
- IA leaves alternative option of subsidizing infrastructure ramp-up via national support schemes out of scope.
- Preferred policy option (2b) aims to combine best of both worlds: separate RABs + temporary financial flows between sectors could be envisaged during the hydrogen ramp-up phase + appropriate regulatory safeguards to ensure transparency and to avoid an adverse effect on cross-border trade.

Policy option	Joint RAB allowed: enabling financing of hydrogen network via cross-subsidies by methane network users	Separate RAB: network assets H2 and natural gas on which allowed revenues are based separated
Advantages	• Reduces administrative burden and regulatory costs. • Enables lower network tariffs in hydrogen ramp-up phase	• Cost-effectiveness/economic efficiency • Prevents cross-subsidisation between gas and hydrogen network users. • Separate RABs from start facilitates valuation transferred assets
Disadvantages	• Distributional effect between different consumer groups. No cost-reflectiveness. • Competition distortion among incumbent and new hydrogen network operators. • In view of cross-border tariffs in natural gas: risk that domestic hydrogen network development is financed by consumers in other Member States. • No exist strategy to separate RAB	• Need for transfer of assets for repurposing may complicate repurposing. • Regulatory costs
Sample calculation impact on ffs	Natural gas tariffs are considerably lower in a separate RAB scenario than the unitary methane/hydrogen network tariff in the joint RAB scenario	
Stakeholder feedback	In favour: Natural gas TSOs and DSOs + associated stakeholder organisations, the majority of industrial energy consumers + associated stakeholder organizations.	In favour: NRA's, NGO's, consumer associations, research institutions and existing private H2-pipeline operators.

Third Party Access to hydrogen system

- The table below applies to the TPA policy options for H2 networks.
- rTPA regime for large scale H2 storage sites justified: expected to be scarce (especially during the hydrogen ramp-up phase) and only available in certain member states due to geological conditions + important techno-economic function for H2 system.
- nTPA seems justified for H2 import terminals. Less risk of a natural monopoly in light of various options to import H2.
- The preferred option (2b) envisages greater flexibility in the ramp-up phase in the form of negotiated TPA. The pre-set date for the transition to regulated TPA provides visibility for investors and network users on the regulatory end regime.

Policy option	2a. negotiated TPA (nTPA) for networks	2b. Regulated TPA (rTPA) + no cross-border tariffs + nTPA possible until 2030 for networks	3a. Regulated TPA + no cross-border tariffs for networks
Advantages	• Provides room for network operators to enter into long term transport contracts that could increase investment certainty/incentives in networks • Assures minimum degree of non-discriminatory third party use of hydrogen networks, thereby enabling competition. • Lower regulatory burden than rTPA.	• Ensures non-discriminatory third-party use of hydrogen networks, enabling competition. Ensures cost-reflectiveness of access tariffs. • Harmonised TPA regimes would facilitate interconnections and thereby cross-border trade. • Possibility of nTPA until 2030 would allow for more flexibility in market ramp-up phase • Prohibition of cross-border tariffs fosters cross-border trade/level playing field.	Idem 2b
Disadvantages	• Monitoring by regulatory authority required • nTPA more prone to abuse in absence of regulated access tariffs. • Risk of competition distortion between Member States if national rules envisage rTPA	• Limits the commercial freedom of hydrogen producers/suppliers and hydrogen network operators • Will require ITC mechanism/cross-border cost allocation.	No flexibility in transition phase like under option 2b
Stakeholder Feedback	Clear rules on TPA were considered important by stakeholders.		

Low carbon hydrogen: certification and methodology

- No definition and certification methodology for low carbon hydrogen (LCH) and low carbon fuels (LCF) in the revised RED II
- The preferred policy option (2b) ensures that all related GHG emissions are correctly accounted for in a life-cycle analyses approach

Option	2a. Introduction of common EU terminology and a light GOs-based certification system for low carbon fuels and low carbon hydrogen would be introduced	2b. Introduction of common EU terminology. But -unlike Option 2a- certification will be based on life cycle analyses and a mass-balance approach through voluntary schemes.	3a. Idem 2b.	3b. Idem 2b
Advantages	• Introduction of a definition for LCF and LCH will allow for certification. • The light GOs approach for certification will be less costly for suppliers to implement	• Mass-balance approach best ensures traceability and supports sustainability • Can build upon best practices RED II (voluntary schemes) • Global system, so less risks of competitive disadvantages and carbon leakage. • Avoids inconsistencies with RFNBO and RCF certification • Synergies with other elements of the package: the proposed extension of the entry-exit system to DSO level and the abolition of cross-border tariffs for renewables and low carbon methane gas.	Idem 2b	Idem 2b
Disadvantages	• Using this certification system might have negative effects on RES fuels and RES Hydrogen, which will be certified against the more complex methodology under the life-cycle analyses approach of RED II.	• More difficult and costly to implement		
Stakeholder Feedback	In stakeholder workshops the necessity to have a certification system for LCH and LCFs was acknowledged.			

Transition period: derogations regulatory principles

- Existing and future local hydrogen clusters are important building block of the EU hydrogen system. Such clusters could benefit from simplified regulatory requirements during the ramp-up phase of the hydrogen market if competition concerns are less likely.
- The preferred policy option (2b) envisages exemptions for **existing private networks** whilst avoiding that regulatory barriers develop as a result of different regulatory regimes once **existing private networks** become part of a meshed, interconnected hydrogen network.

Option	2a. Individual exemptions for new and/or existing infrastructure	2b. Conditional exemptions for infrastructure to ensure convergence on main regulatory principles	3a. Only new infrastructure can be exempted	3b. Idem option 3a.
Advantages	• Allows for assessment of market impact of each exemption. • comprehensive applicability of regulatory requirements, reduces potential distortions of competition	• Requirement of convergence avoids regulatory barriers once network become more interconnected. It assures level playing field and avoids cherry picking. • Creates clarity for private network operators	• Lower regulatory costs as principles immediately apply throughout network.	Idem 3a.
Disadvantages	• Since most hydrogen infrastructure will be new or repurposed, a large share of future hydrogen infrastructure may be eligible for exemptions. • Delayed convergence in regulated structure when network gets more integrated. • Potential of regulatory barriers once network is extended/integrated. • Regulatory costs	• Regulatory costs.	• Disruption to operation and financing structure of existing hydrogen networks.	Idem 3a.

Transition period: derogations from regulatory principles

- Derogations reduce the regulatory burden for infrastructure that is typically less relevant for general market access.
- The preferred policy option (2b) envisages derogations for **geographically confined hydrogen networks** to reduce the regulatory burden on these types of assets during the market ramp-up and in situations where competition concerns are less likely

Option	2a. Individual exemptions for new and/or existing infrastructure	2b. Conditional exemptions for infrastructure to ensure convergence on main regulatory principles	3a. Only new infrastructure can be exempted	3b. Idem option 3a.
Advantages	• Allows vertical integration and non-regulated operation in situations where need for TPA is less likely. May incentivise investments in hydrogen infrastructure.	• May incentivise investments in hydrogen infrastructure. • Requirement of compliance once additional producers connect or network becomes part of wider meshed network avoids cherry picking, assures level playing field and fosters convergence.	• Idem 2b	Idem 2b.
Disadvantages	• Potential of regulatory barriers once network is extended/integrated.	• Requires clear rules on connection rights for new network users to address moral hazard (i.e. remaining isolated to avoid regulation). Increased regulatory costs for monitoring.	• Idem 2b	Idem 2b.
Stakeholder Feedback	A few companies/business organisations, and half of the public administrations, and citizens that responded consider that future private networks should be left unregulated. A large share of respondents considers that the default rule should be that they are regulated but that exemptions can be considered under conditions			

Summary: impact of the options (chapter 7 IA)

Options relative to BAU		Option 2a	Option 2b	Option 3a	Option 3b
Economic impacts		+	+++	+/++	++
Environmental		+	++	+	+
Efficiency		+	++	+	+
Effectiveness on sub-objectives as described in paragraph 5.2					
	- Enable the emergence of an efficient, integrated EU hydrogen market	+	++	++	+++
	- Remove barriers and ensure incentives to invest in hydrogen infrastructure	++	+++	++	++
	- Address risk that the natural monopoly character of hydrogen infrastructure gives rise to non-competitive market structures	+	++	++	++
	- Ensure cross-border integration, unhindered hydrogen (cross-border) flows and required quality for end-users	+	++	++	++

+, ++, +++: positive impact (from moderately to highly positive)
0: neutral or very limited impact
-, --, ---: negative impact (from moderately to highly negative)

Problem Area II: Renewable and low-carbon gases in the existing gas infrastructure and markets, and energy security

European Commission

Problem and its drivers

PROBLEM

Untapped potential of RES gases and barriers blocking the access of biomethane to gas market and infrastructure

DRIVERS

- Constrained market and grid access for local producers of biomethane connected to the distribution grids.
- Divergence of rules regarding obligation to connect and costs of grid connection for renewable and low carbon gases.
- Intra-EU entry/exit tariffs hinder the establishment of a fully integrated, liquid and interoperable EU internal gas market.
- Differences in gas quality and hydrogen blending levels can negatively impact cross-border flows and end-users, current gas quality rules not fit to deal with future developments.
- LNG terminals equipped to receive mainly natural gas, limited access for new gases to LNG terminals.
- Long term supply contracts for unabated natural gas may lock-in natural gas and hinder supply of renewable gases towards 2050.
- Current energy security arrangements only address risks related to the supply of natural gas and not of renewable and low carbon gases.

OBJECTIVES

POLICY OPTIONS

European Commission

Objectives

OBJECTIVES

- Facilitating access of local production of biomethane to the gas markets across EU
- Facilitating connection rules and injection
- Ensuring access to LNG terminals for RES&LC gases
- Ensure unhindered cross-border flows for RES&LC gases
- Tackle risk of negative impact on end-users in terms of gas quality
- Avoid lock-in into long term contracts for unabated fossil gas
- Improve the resilience to relevant threats of the future gas system integrating renewable and low carbon gases

POLICY OPTIONS

Policy options

Each of the options addresses all drivers with increasing depth of the intervention.

Option 0: no measures/business as usual

Option 1: Allow renewable and low carbon gases full market access

Option 2: Promote market access and security of renewable and low carbon gases

Option 3: Allow and promote renewable and low carbon gases full market access, and security, and tackle issue of long term supply natural gas contracts

Option 4: Allow and promote full renewable and low carbon gases market access, and security, tackle issue of long term supply natural gas contracts, remove border tariffs and set EU gas quality standard

General stakeholder feedback
[*see chapter 5 and annex 2of IA*]

✓ All stakeholders from all categories agreed on a need to revise current regulatory framework to help to achieve decarbonisation objectives, and on the need to align the SoS Regulation

✓ **In light of IA the preferred option is Option 3**

➢ It contains maximum of measures to support renewable and low carbon gases, without the market impacts, complexity of the measures (and related administrative costs) and uncertain impacts on renewable and low carbon gases, included in Option 4. As Option 3 builds on the previous options, it includes elements of Option 2.

European Commission

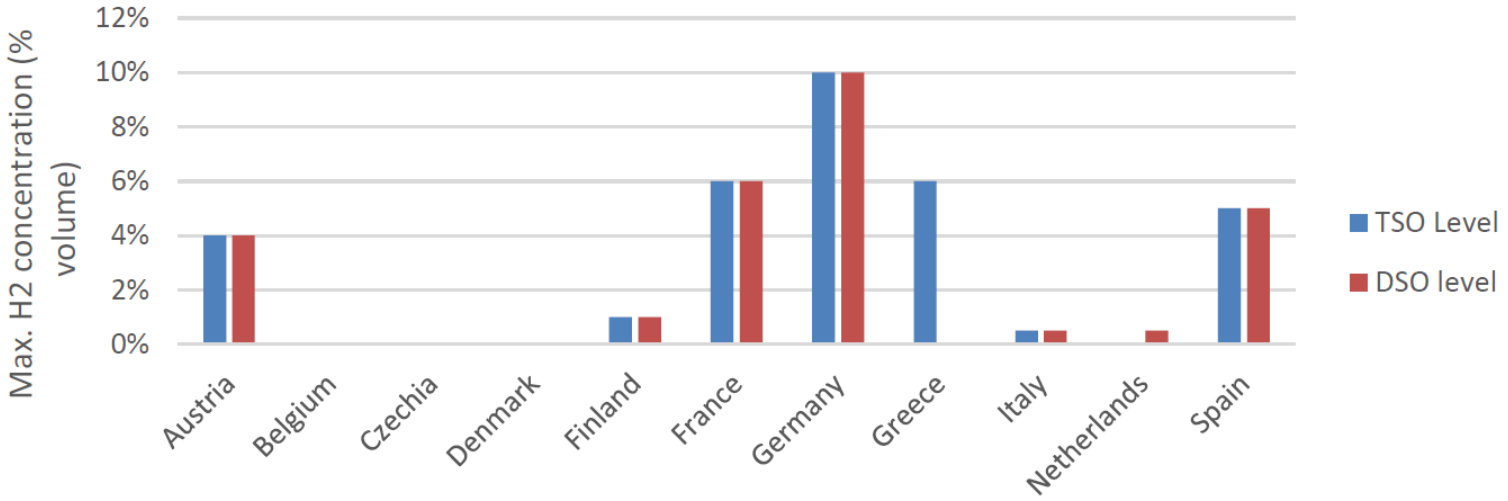
Key measures in options considered

Measure / Option	Access of RES&LC gases to hubs and transmission grids	Treatment of cross-border tariffs	Long term contracts for gas	Gas quality	Hydrogen blending cross-border framework	LNG terminals	Energy security
Option 1	Access to the hubs and transmission grid enabling physical reverse flows	Cross-border tariffs set on interconnection points between MS.	No sector specific rules	Reinforce cross-border coordination on gas quality management and transparency	Reinforced cross-border coordination and transparency on national hydrogen blending levels.	Principles concerning transparency supported by EU guidance.	EC non-binding guidance on: Extending the scope of the emergency tools to new gases and risks + minimum cybersecurity requirements for the gas sector
Option 2	Connection obligation with firm. Reducing costs of injection for RES/LC gases	As option 1	As option 1	Setting EU principles or detailed rules (variant) for gas quality management (processes, roles, cost recovery and allocation, regulatory oversight)	EU rules setting an allowed cap for hydrogen blends that Member States must accept at cross-border interconnection points and reinforced cross-border coordination	Binding legal framework at EU level for transparency, congestion and access rules	Amend the gas SoS Regulation to address the needs and risks of the decarbonised gas sector + develop rules for gas cybersecurity
Option 3	**As in option 2**	**Removing cross-border tariffs for RES&LC gases only. Facilitating regional integration. Transparency of allowed revenues benchmarking.**	**Limit duration of such contracts to 2049.**	**As option 2**	**As option 2**	**Option 2 plus: market screening and development plans for LNG terminals (and gas storage) for RES&LC gases.**	**As option 2**
Option 4	As in option 2	Removing cross-border tariffs for all gases.	Introduce time limit before 2050.	EU-level harmonisation of gas quality standards for cross-border interconnection points based on quality parameters of natural gas or biomethane (variant)	As Option 2/3 + prohibition against the acceptance of blending levels above maximum cap of hydrogen blends at cross-border IPs	Option 3 plus: Removing the entry tariff discount in favour of (fossil) LNG.	As option 2

Differences in gas quality and hydrogen blending levels can negatively impact cross-border flows and end-users, current gas quality rules not fit to deal with future developments

- Today, gas quality is defined by European Committee for Standardization (CEN) - standards and at national level
- The quality of gases transported and consumed in Europe is changing due to increased injection of renewable and low-carbon gases (incl. biomethane and hydrogen).
- This can have negative impacts on cross-border flows and can cause problems and additional costs for system operators and end-users.
- The future gas mix will lead to changes and more frequent fluctuations of the gas quality, making gas quality management in the existing gas network more complex and costly.
- Currently, allowed hydrogen blending rates are determined only in few Member States and vary significantly.

Maximum hydrogen concentration regulation or objective



Source: (ACER, 2020), (FCHJU, 2021)

European Commission

Preferred policy option

- Gas quality governed by harmonised EU cross-border approach: **allowed cap for hydrogen blends set at 5% for all EU cross-border interconnection points**.
- No mandatory blending.
- TSOs obliged to accept blending levels below this cap at IPs and might accept higher blends on a voluntary basis.
- Flexibility for Member States on the application of gas quality standards in their domestic networks (i.e. without interfering with the specificities of domestic gas production).

The 5% EU allowed cap for hydrogen blends at IPs represents a level that is:

- cost-efficient in terms of adaptation and abatement costs;
- supports the integration of 70 TWh/year renewable and low-carbon hydrogen into the network;
- at an adaptation cost of EUR 3.6 bn/year, leading to 8 Mt CO2/year avoided emissions at an abatement cost of EUR 445/tCO2.

Stakeholder support for cross-border coordination while leaving national blending levels flexible.

Summary of the modelling results

Blending level	No measure (BAU)	Measure 1: XB coordination	Option 2 – 5% blending cap	10% blending cap	20% blending cap	30% blending cap
Adaptation cost (Bn€/year)	2.6	3.6	**3.6**	5.4	12.5	37.4
Avoided emissions (MtCO2/year)	4	6	**8**	10	21	33
Abatement costs (€/tCO2)	612	532	**445**	524	582	1124
H2 integrated (TWh/year)	45	60	**70**	95	195	305

European Commission

Source: Artelys, Trinomics, Frauenhofer, JRC, 2021

Access of RES&LC gases to hubs and transmission grids *(Annex 7 of IA)*

Access of RES&LC gases to hubs and transmission grids	Objective	Enable access of local production of biomethane to the markets			
	BAU **No additional measures**	Option 1	Option 2	Option 3	Option 4
Measures	Access of RES gas is not explicitly dealt with in the current framework. General principle of non-discrimination and the objective for NRAs to help to integrate production of gas from renewable energy sources in both transmission and distribution.	Access of locally produced gases to the hubs and the transmission grid. Enabling physical reverse flows between DSO and TSO.	As Option 1 plus: Connection obligation with firm capacity for new RES&LC gases. Reducing costs of injection for renewable and low carbon gases		
Pros	Limited administrative burden as no new legislation is introduced.	Compliance with the 55% GHG emission reduction target. Improved marketing options.	Biomethane production might be realised at lower total costs as in Option 1. State aid less needed.		
Cons	Patchwork of various provisions in the Member States will persist	Investments costs for reverse flows compressors.	Reducing injection tariff and access tariff is not respecting fully the principle of costs-reflectivity. Connection costs may increase the abatement costs by some €15 to 30/t (from a level of €400/t).		
Most suitable option	**Option 3**	The option contains maximum of measures to support renewable gases. Some elements will be also imported from other options, namely rules on citizens energy communities included from the discarder option and assessed under Problem Area IV. The costs of biomethane production would be lowered (slightly) by a possibility to release producers from injection and connection costs.			

A majority of stakeholders consider it important to ensure full market access and facilitate the injection of RES&LC gases into the existing gas grid.

European Commission

Summary: impact of the options *(Chapter 7 of IA)*

Options relative to BAU	Option 1	Option 2	Option 3	Option 4
Economic impacts	+	+	++	++
Environmental	++	++	+++	+++
Efficiency	+/-	+	+	-
Effectiveness on sub-objectives as described in paragraph 5.2 - Facilitating access of local production of biomethane to the gas markets across EU	+/-	+	+	++
- Facilitating connection rules and injections	+	++	++	++
- Ensuring access to LNG terminals for RES&LC gases	0	+	++	+++
- Tackle risk of negative impact on end-user in terms of gas quality	+	++	++	+++
- Avoid lock-in into LTCs for natural unabated gas	0	0	+	+
- Improve the resilience to relevant threats of the future gas system integrating renewable and low carbon gases.	0	++	++	+++

+, ++, +++: positive impact (from moderately to highly positive)
0: neutral or very limited impact
-, --, ---: negative impact (from moderately to highly negative)

European Commission

Problem Area III: Network planning

European Commission

Problem and its drivers

PROBLEM

Insufficient energy system integration in network planning

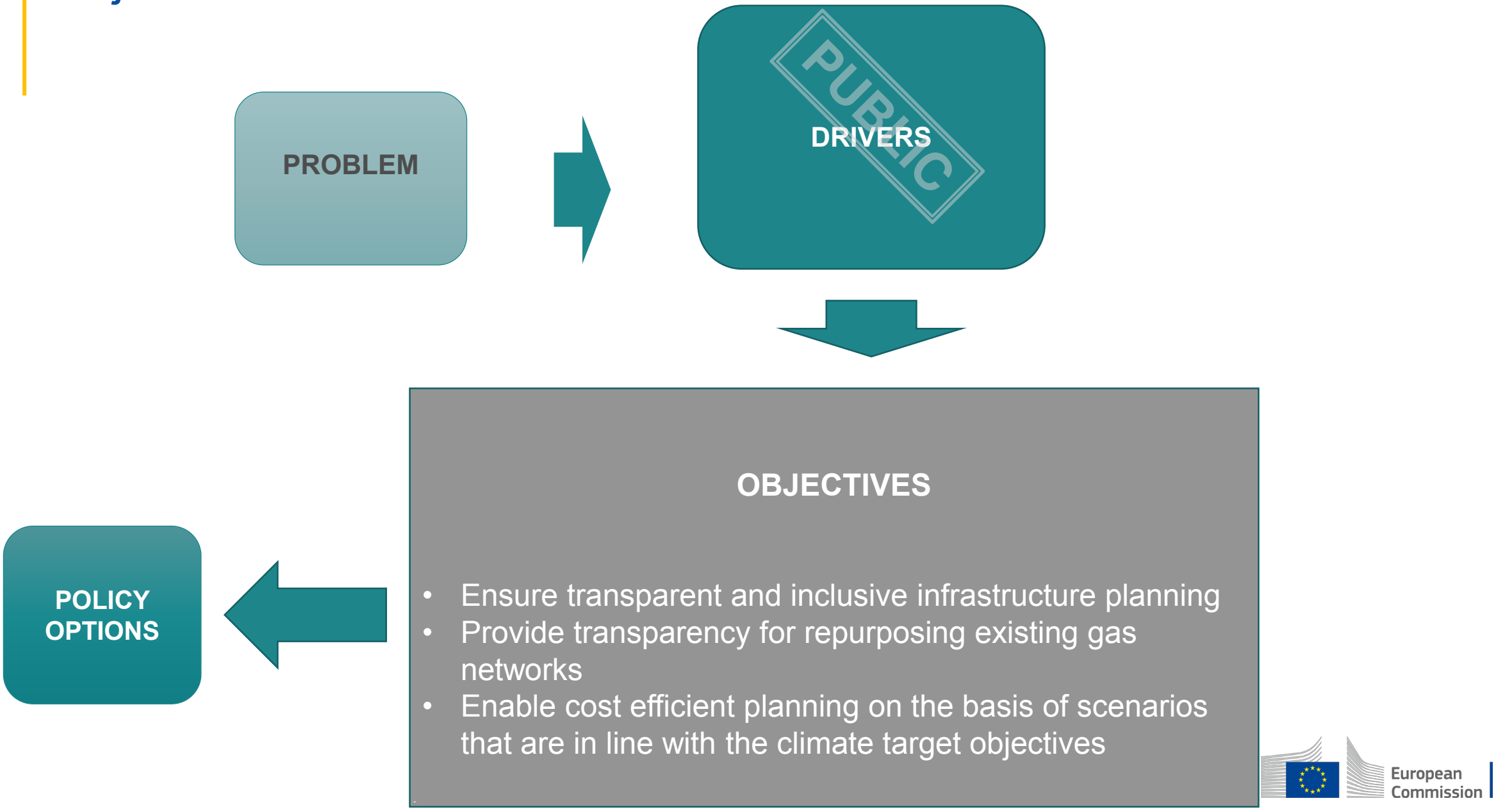
DRIVERS:

- Network planning varies between Member States and TSOs, separate planning for electricity and gas
- No transparency on potential of existing infrastructure for repurposing or decommissioning.
- DSOs not explicitly included in TSO planning

OBJECTIVES

POLICY OPTIONS

Objectives



European Commission

Options considered

Each of the options addresses all drivers with increasing depth of the intervention.

Option 0: no measures/business as usual

Option 1: National Planning

Option 2: National Planning based on European Scenarios

Option 3: European Planning

General stakeholder feedback
[*see chapter 5 and annex 2of IA*]

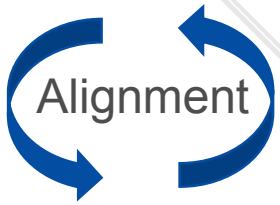
✓ Strong stakeholders support from all categories on closer integration of planning between sectors.

✓ **In light of IA the preferred option is Option 2**

➢ Option provides the best balance in terms of achieving the objective of more integrated planning, **allowing for a conceptual energy system plan** potentially indicating areas where sector coupling technologies are best located from a network perspective, but **leaving the required level of detail sector specific**.

Fostering integrated network planning

EU Ten-Year-Network-Development-Plans



National Network Development Plans

	EU-level	National level (current)	National level (proposed)
Scenarios	Joint scenarios (gas, electricity, poss. hydrogen)	Separate scenarios	**Joint scenarios (gas, electricity, poss. hydrogen)**
	Alignment with climate objectives		**Alignment with climate objectives**
	Involvement of relevant stakeholders		**Involvement of relevant stakeholders (DSOs & others)**
Network plans	Separate plans (gas, electricity, hydrogen)	Separate plans (gas, electricity, hydrogen)	**Separate plans (gas, electricity, hydrogen) → potential for further integration**
	New Projects of Common Interest only for hydrogen	Investment in gas and possibly hydrogen infrastructure	**Investment & decommissioning of gas infrastructure**
			Location of power to gas assets
	All TSOs	Only ISO and ITO	**All TSOs**
	Every two years	Every year	**Every two years**

Summary: impact of the options *(Chapter 7 of IA)*

Options relative to BAU	Option 1	Option 2	Option 3
Economic	+	++	+++
Environmental	+	++	+++
Efficiency	+++	+++	++
Effectiveness on sub-objectives			
- Provide transparency for repurposing existing gas networks	+	++	++
- Enable cost efficient planning on the basis of scenarios that are in line with the climate target objectives	+	+++	+++

+, ++, +++: positive impact (from moderately to highly positive)
0: neutral or very limited impact
-, --, ---: negative impact (from moderately to highly negative)

Problem Area IV: Low level of customer engagement and protection in the green gas retail market

European Commission

Problem, its drivers, options

PROBLEM: The provisions on consumer engagement and protection in gas legislation **have not been adapted to the needs of the energy transition yet**

- Inadequate level of consumer protection
- Low consumer empowerment including for innovative and green products
- Untapped competition potential in retail markets

OBJECTIVES:

- Give consumers tools to choose the cheapest decarbonisation options
- Increase competition in retail renewable and low carbon gas markets by also addressing price regulation
- Strengthening consumer engagement in such market
- Ensure an adequate level of consumer protection

OPTIONS:
Option 0: Business as Usual (BAU)
Option 1: Non-regulatory approach, strengthened enforcement and soft implementation measures
Option 2 Non-regulatory approach, strengthened enforcement, enhanced implementation measures and intense consultations with stakeholders
Option 3: Flexible legislation addressing all problem drivers
Option 4: 4 Harmonization and extensive safeguards for customer addressing all problem drivers

Option 0: no measures/business as usual – Discarded

No change to the current situation. Some Member States, national regulators and/or network operators may adopt additional measures

Option 1: Non-regulatory approach, srengthened enforcement and soft implementation measures

No legislative measures adopted. Reinforced administrative cooperation and guidance from the Commission.

Option 2: Non-regulatory approach: strengthened enforcement, enhanced implementation measures, and intense consultation with the Member States

Better enforcement: reinforced administrative cooperation with and between national authorities, capacity building and guidance (interpretative notes), Commission recommendations on price regulation, billing information and price comparison tools.

Option 3 Flexible legislation addressing all problem drivers – Preferred one

Mirroring the electricity market directive, contractual conditions, faster switching, active customers and citizen energy communities, FW for price regulation; vulnerable and energy poor households other instrument are referenced; enhanced smart metering rollout

Option 4 Harmonization and extensive safeguards for customer addressing all problem drivers

Rollout of gas smart metering mandatory, switching-related fees banned, energy bills harmonised, CEC harmonised, phase out price regulation

Stakeholders' feed-back

- No support for 0 option. Vast majority of respondents from all categories consider that there is a need to be more ambitious than enhanced enforcement
- The vast majority of the stakeholders support the introduction of new legislation mirroring provisions in the electricity market.
- Stakeholders from all categories expressed the need for switching to be reinforced, free-of-charge access to price comparison tools, information on switching possibilities as well as the deployment of smart meters.

Measure	Contractual conditions	Energy communities	Switching, price comparison tools and billing	Energy poverty and vulnerable customers	Smart metering systems	Data management	Price regulation
Option 0	No measures	No measures	No measures	No measures	No measures	No measures	No measures
Option 1	Step up enforcement legislation on contractual conditions	Step up enforcement of existing legislation on renewable energy communities	Step up enforcement on switching and billing + interpr. notes	Sharing of good practices	Step up enforcement of existing legislation	Step up enforcement of existing legislation	Step up enforcement of existing legislation on price regulation
Option 2	Improved EU guidance and Recommendation on basic contractual conditions	Option 1 + interpretative note on renewable energy communities flanked by existing initiatives (Energy Community Repository, etc.)	Improved EU guidance and Recommend. facilitating switching, PCTs and billing	Support to the EU Energy Poverty Advisory Hub is enhanced	Option 1 + consolidating all smart metering provisions in one single legislative act (but not introducing extra regulatory requirements)	Option 1 + further promoting best practices, while data management arrangements left with MS	Option 1 + consultations with MS to phase out price regulation + COM Recommendation on price regul.
Option 3	Mirroring Electricity Directive:	The concept and enabling framework for 'citizen energy communities' is mirrored into EU gas legislation	Mirroring Electricity Directive:	The recast EED definitions and requirements for energy poverty and vulnerable customers are cross-referenced	Decision for deployment remains with MS; additional smart metering requirements are adopted for an enhanced deployment	EU data management rules are set up	Phase out blanket price regulation. Exemptions = electricity market directive
Option 4	Banning all switching-related fees, including contract-termination fees	Option 3 + concept of 'citizen energy communities' is made more citizen-centred and the enabling framework coupled to additional support measures	Switching requir. beyond electricity: ban fees; harmonis. format and content of energy bills across MS	Option 3 + additional sector specific provisions to protect energy poor and vulnerable. Stronger restrictions on disconnections included.	Mandatory rollout in EU with fixed functionalities mirroring electricity smart metering systems, irrespectively of the national cost-benefit assessment	One single data handling model in EU along with standardised formats for exchange of data	Phase out blanket price regulation. Exemptions for vulnerable and energy poor households defined at the EU level

Summary: impact of the options *(chapter 7 of IA)*

Options relative to BAU	Option 1	Option 2	Option 3	Option 4
Economic	+	+	+++	++
Environmental	+	+	+++	+++
Efficiency	+	+	+++	+
Effectiveness on sub-objectives as described in 4.2.:				
- Increase competition in retail renewable and low carbon gas markets	+/-	+	++	+++
- Strengthening consumer engagement in such market	+/-	+	++	++
- Ensure an adequate level of consumer protection	+/-	+	++	+++

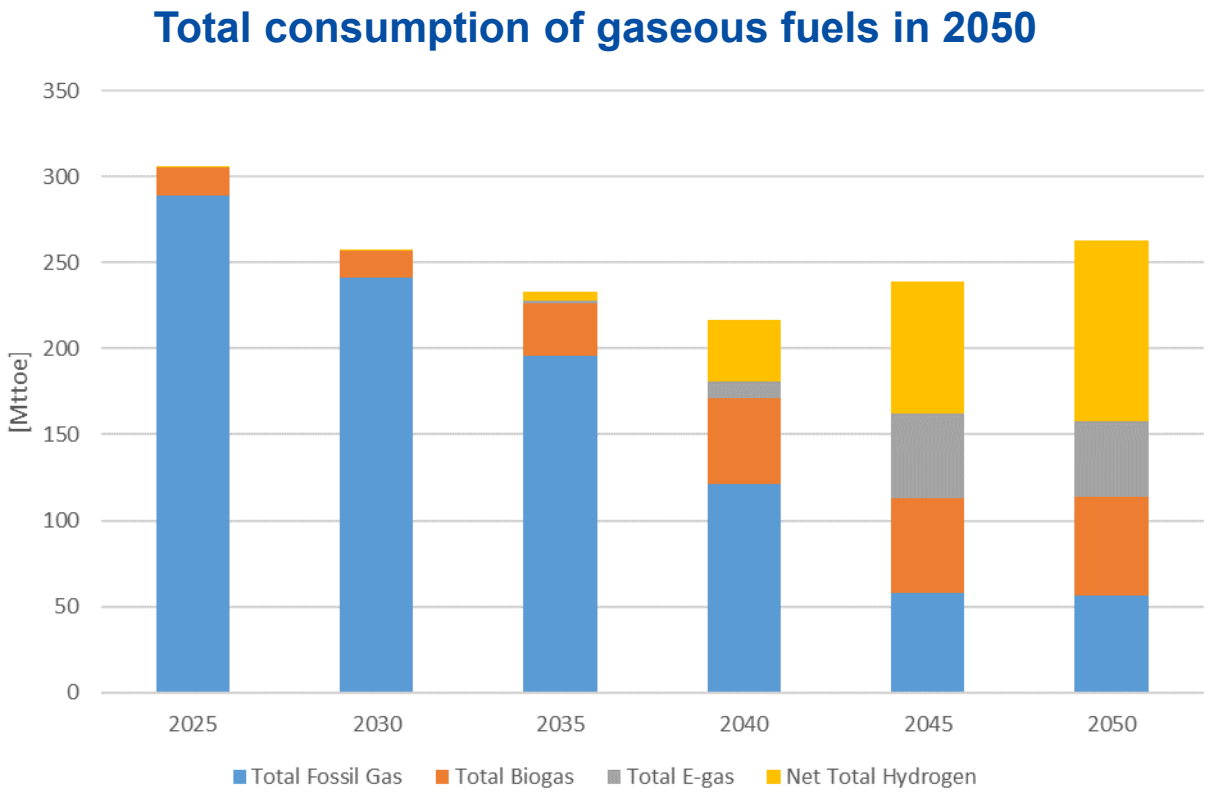
+, ++, +++: positive impact (from moderately to highly positive)
0: neutral or very limited impact
-, --, ---: negative impact (from moderately to highly negative)

European Commission


European
Commission
PUBLIC
Thank you

Background slides context IA

Scope and alignment with Climate Target Plan



- Gaseous fuels will represent approximately 20% of final energy consumption in 2050
- Shift from unabated fossil gas towards renewable and low-carbon gases
- Gaseous fuels in 2050 to include mainly biogas, bio-methane, renewable and low-carbon hydrogen as well as synthetic methane

Source: European Commission PRIMES, MIX scenario

Interlinkages between final package and Fit-for-55 proposals

Relevant proposals	Impact of respective proposal on HGMDP	Impact of HGMDP on respective proposal
RED	RED promotes the uptake of renewable fuels, such as renewable hydrogen in industry and transport, with additional targets.	Will enable the emergence of infrastructure enable deployment of renewable hydrogen in industry and transport. Certification rules for low-carbon gas and its derivatives will complement the certification schemes for renewable fuels and gases proposed in the RED.
EED & EPBD	EED and EPBD affect the level and structure of gas demand. As gaseous fuels are currently dominating the European heating and cooling supply and the cogeneration plants, their efficient use stays at the core of the energy efficiency measures.	The proposed package is coherent with the energy efficiency first principle by focusing hydrogen deployment in hard-to-abate-sectors
ETS	ETS-scheme increases the price of using fossil fuels relative to renewable and low-carbon gases and, thus, fosters the demand for such gases and investments in related production technology.	All hydrogen production facilities are included in the proposal for the new emissions trading system for road transport and buildings. This aims to make hydrogen marketable, which is supported by investments from the Innovation Fund.
ETD	Under the ETD, products are ranked according to their environmental performance and it sets the minimum level of tax to renewable and low-carbon hydrogen fuels. This supports the HGMDP's objective of creating a level playing field between low-carbon and renewable fuels, and natural gas.	The proposed package seeks to foster efficient markets for gaseous energy carriers in which market participants can take operational and investment decisions based on price signals.
TEN-E Regulation	The regulation introduces hydrogen infrastructure as a new infrastructure category for European Network Development.	The proposed package is complementary as it focuses on alignment of the national plans with the requirements of the European Network Development plan
Alternative Fuel Infrastructure Directive	Aims at infrastructure investments in publicly available refuel and recharging stations for alternative fuel vehicles and vessels (such as hydrogen). But not part of infrastructure of infrastructure operated by network operator. AFID requires hydrogen refueling stations.	Focus on network infrastructure, which could be used to accommodate (largest part of) hydrogen supply to hydrogen refuel and recharging stations

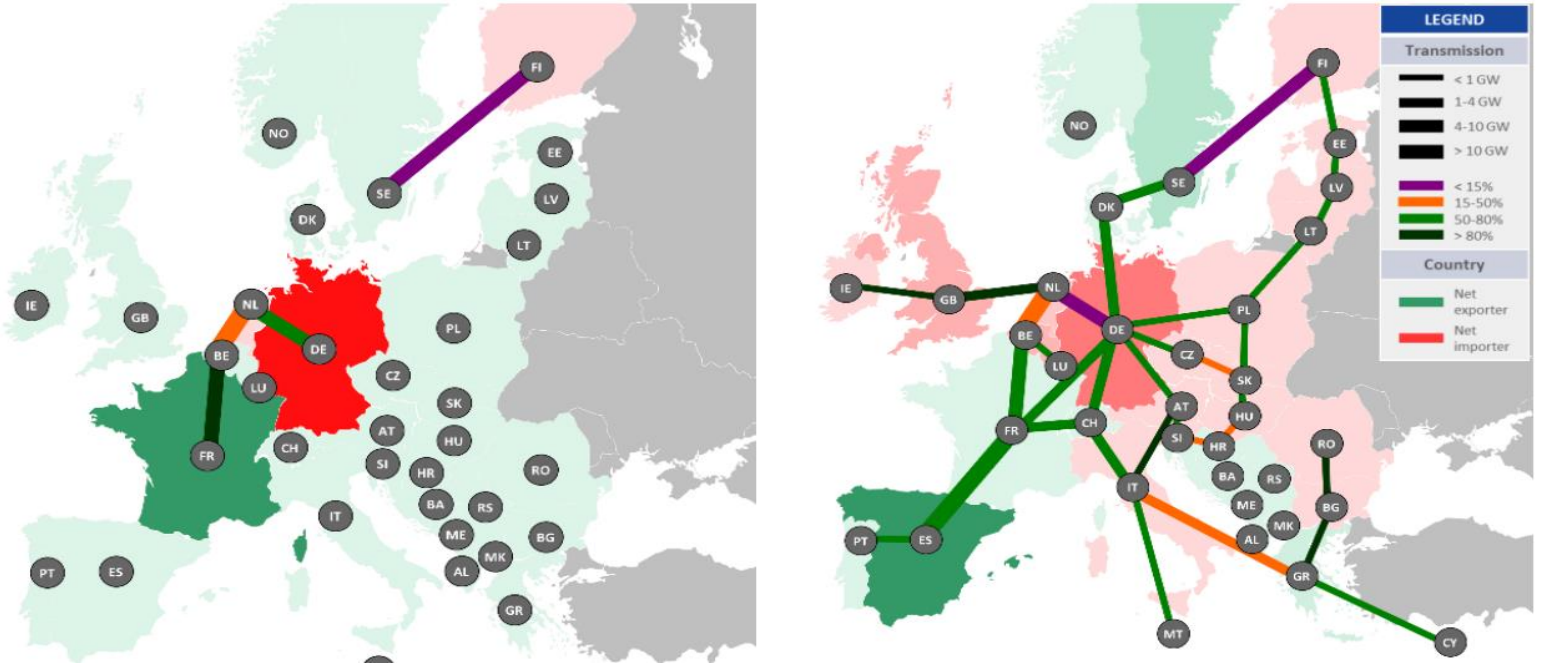
Methodological interlinkage Impact Assessment with other Fit-for-55 proposals

- All model-based analysis for Fit-for-55 proposals based on common set of scenarios and baselines. So demand and supply assumptions in this Impact Assessment are equal to the one underpinning the other Fit-for-55 initiatives: PRIMES MIX H2 scenario.
- Analysis related to hydrogen and renewable and low-carbon gases based on scenario meeting the goals of the EU hydrogen strategy.
- IA focusses on policy measures required for optimum infrastructure and efficient decarbonised gas and hydrogen markets while Renewable Energy Directive proposes measures to promote the production of renewable hydrogen and RFNBOs.
- PRIMES MIX H2 scenario sees no efficiency goals from an integrated European approach to hydrogen infrastructure while policy scenarios study increasing integration of future EU wide markets.

Background slides Problem Area I

Modelling approach problem area 1

- In the IA four different network scenarios are considered for the development of the European hydrogen grid. They reflect the expected situation under the different policy options.
- The IA scenarios take minimum network capacities as reported in the European Hydrogen Backbone study as the point of departure.
- Within METIS the development of these capacities are re-optimized, amongst others on the basis of the demand and supply assumptions in the PRIMES-MIX H2 scenarios (see figure 15 of IA below).



Background slides problem Area II

Treatment of cross- border tariffs *(Annex 7 of IA)*

Treatment of cross-border tariffs (pancaking)	Objective	Ensure unhindered cross-border flow and trade of new gases			
	BAU No additional measures	Option 1	Option 2	Option 3	Option 4
Measures	Cross-border tariffs for transport of gases are set on interconnection points between MS. No detailed rules to facilitate regional mergers.			Removing cross-border tariffs from interconnection points within EU for RES&LC gases only. Eligibility would be based on presenting the GOs to the TSO. Facilitating voluntary regional gas market mergers (Guidance by the Commission). Measures for transparency of allowed revenues, costs benchmarking.	Removing cross-border and der tariffs from interconnection points within EU for all gases in the methane network.
Pros	Limited administrative burden as no new legislation is introduced, No need to negotiate an ITC mechanism between TSOs and NRAs.			Costs of RES&LC gases reduced. RES&LC gases can move more freely across the borders than natural methane. Assistance for Member States voluntarily engaging in market mergers. Measures on allowed revenues will reduce the outliers on cross-border tariffs. May help tracking RES&LC consumption.	Overall welfare increase for consumers. More gas-to-gas competition Wholesale prices in the S-E EU will fall. Exit tariffs will need to increase in most MSs. Peer review for allowed revenues. Gas market design closer to the electricity market.
Cons	No promotion of regional mergers, no changes to current tariff system. Issue of pancaking is not addressed.			Option to address tariffs removal only on a regional level.	Significant impact on the European gas market. Most TSOs will lose revenues, ITC will be necessary. Administrative costs related to ITC mechanism which will be higher than in electricity. Uncertainty for the gas-consuming industry. Risk of gas to coal switch in power production in PL and NL.
Most suitable option	**Option 3**	The option would contribute to integrate RES&LC as it would allow transporting these gases free of cross-borders tariffs (avoiding pancaking for RES&LC). On top this options aims to introduce, measures for transparency of allowed revenue, and costs benchmarking as well as guidance facilitating voluntary market mergers.			

Few stakeholders in the public consultation supported an option to remove intra-EU cross-border tariffs. Many respondents were, however, sceptical about such solution arguing that that current cross-border tariff setting is satisfactory and does not require fundamental design change.

European Commission

Long term contracts for fossil gas *(Annex 7 of IA)*

Long term contracts (LTC)	Objective	Ensure long-term clarity for decarbonisation for gas sector and avoid lock-in effects, in line with climate-neutrality objective until 2050.			
	BAU **No additional measures**	Option 1 **Allow RES&LC full market access**	Option 2 **Allow and promote RES&LC gases full market access**	Option 3 **Allow and promote RES&LC gases full market access, tackle issue of long term supply natural gas contracts and remove cross-border tariffs for RES&LC gases**	Option 4 **Allow and promote RES&LC gases full market access, tackle issue of long term supply natural gas contracts, EU standards for gas quality and remove cross-border tariffs for all gases**
Measures	No sector specific rules exist as regards gas supply contracts in terms of their duration. Derogations from third party access possible on the take-or-pay obligations concluded in long-term supply contracts (Art. 35 and 48).			As Status Quo plus: Remove privileges (derogations) for new long-term natural gas contracts, signed after [entry into force of the GR], and limit duration of such contracts to 2049.	As Option 3 plus: Introduce time limit for new long-term contracts already before 2050.
Pros	No administrative burden.			Tendency to increase the market price for natural gas. Increase the volume risk of the LTC buyer of natural gas. Clear long-term signal to the industry. Energy security maintained as short-term contracts still possible.	Similar as Option 3 but duration of contracts limited as from near future.
Cons	No clear signal to the industry. New LTC can be signed and can run after 2050, no time limits. Derogations for LTCs are maintained. Negative impact on decarbonisation objectives.			Consumers would see a slight increase of their gas bill on a long term. LTCs can still be signed for a long duration (e.g. 25 years). No full ban of natural gas.	Consumers would see a slight increase of their gas bill on a long term. No full ban of natural gas.
Most suitable option	**Option 3**	Removing the privileges for long term contracts and limiting their duration to 2049 will give a clear long-term signal to the industry towards decarbonisation at the same time maintaining energy security as short-term contracts will be still possible. This option may as well lead to a slight increase of wholesale gas prices with a long-term effect in terms of organising the energy transition.			

Some stakeholders, represented by a majority of NGOs, some business associations, some companies/business organisations, and half of public authorities and academia that responded, argued for measures that disincentivise the use of unabated fossil gases. Moreover, a few directly highlighted that long-term contracts can foreclose the market.

European Commission

LNG terminals *(Annex 7 of IA)*

LNG terminals	Objective	Ensure transparent access to LNG terminals for imported RES gases, including liquid hydrogen.			
	BAU **No additional measures**	Option 1 **Allow RES&LC gases full market access**	Option 2 **Allow and promote RES&LC gases full market access**	Option 3 **Allow and promote RES&LC gases full market access, tackle issue of long term supply natural gas contracts and remove cross-border tariffs for RE&LC gases**	Option 4 **Allow and promote full RES gases market access, tackle issue of long term supply natural gas contracts, EU standards for gas quality and remove crossborder tariffs for all gases**
Measures	LNG terminals are regulated with third party access (exemptions are possible). No clear rules on capacity allocation and congestion management. Tariff discounts may be granted. Underutilization of capacities in some cases.	Principles concerning transparency, voluntary (e.g. led by industry) initiatives and supported by EU guidance.	Binding legal framework at EU level for transparency, congestion and access rules (secondary trading).	As Option 2 plus: Mandatory market test/screening and development plans for LNG terminals (and gas storage) to receive RES&LC gases.	As Option 3 plus: Removing the entry tariff discount in favour of LNG natural gas or extending existing discount also to RES&LC gases.
Pros	Small administrative cost	No need for a regulatory intervention, just legally non-binding action as guidelines by the EC. Transparency may be improved (voluntarily).	Improvement of transparency, market access and congestion management – more efficient utilization of the terminals + additional available capacities for RES&LC gases	Obligation to consider the RES&LC gases imports. Matching supply and demand (exporters and importers) by market tests. More transparency which capacities are available for RES&LC gases.	If discount for RES&LC gases added, imports of these gases are incentivised.
Cons	Underutilization may remain. Congestion may occur due to high volumes to be imported. Mainly imports of natural gas.	Only transparency would be improved, only limited impact on RES&LC gases. As it is voluntary action, the effects are less certain.	Need to adjust current regulatory framework - some burden for LSOs – 'cost to adjust'.	Need to adjust current regulatory framework - some burden for LSOs 'cost to adjust'.	If discount is removed, it can negatively impact energy supply of some MS. Risks of cross-subsidization.
Most suitable option	**Option 3**	A mandatory market test/screening mechanism and development plans bring incentive to prepare for the imports of RES&LC gases. These mechanisms will contribute to match supply and demand and increase transparency on which capacities are available for RES&LC gases.			

A majority, composed of companies/business organisations, business associations and half of the public authorities that responded, supports as well the improvement of the transparency framework for LNG terminals

*See as well: *Study on gas market upgrading and modernisation - Regulatory framework for LNG terminal,* May 2020

Published https://op.europa.eu/en/publication-detail/-/publication/efa4d335-a155-11ea-9d2d-01aa75ed71a1/language-en

European Commission

Delegated act on cybersecurity

Why?

- Cybersecurity incidents the energy sector more than doubled (109 %) from 2019 to 2020 (43 in 2019 to 90 in 2020).

- A harmonised approach on cybersecurity in gas would
  - strengthen security specific requirements for the gas companies
  - unify risk management approaches in the domain of digitalisation of gas infrastructure
  - provide an adapted list of key security measures

Stakeholder consultation

- The majority of the respondents consider gas-specific security challenges and cyber-security measures as important.

Making solidarity effective

Where do we come from?

- GCG discussions started already in 2016 (even before Regulation adoption)
- 40 bilateral solidarity arrangements needed by December 2018
- 2018 Commission Recommendation (solidarity guidelines) on expected content of the solidarity arrangements.
- November 2019 – workshop to identify difficulties
  - ad hoc GCG solidarity sessions: 3x in 2020 + 1 in 2021
- 3 x questionnaires to Member States in 2020/ 2021
  - support for action at EU level
- Many bilateral meetings + EC participation as observer at negotiating sessions
- 1 bilateral agreement signed by the time of the Commission proposal
- 2 other signed early 2022
- 37 agreements pending to date

Making solidarity effective

Why?

- Improve resilience and security of supply
- Limited progress with bilateral solidarity arrangements (due by 12/2018)
- Ensure effective solidarity mechanisms in case of extreme gas situations
- Guarantee supply of 'solidarity protected customers' (i.e. households, hospitals)

How?

- Providing backup arrangements immediately applicable if no bilateral agreement in place :
  - Clear protocol: "who does what, when and how"

Making solidarity effective

Where do we come from?

- GCG discussions started already in 2016 (even before Regulation adoption)
- 40 bilateral solidarity arrangements needed by December 2018
- 2018 Commission Recommendation (solidarity guidelines) on expected content of the solidarity arrangements.
- November 2019 – workshop to identify difficulties
  - ad hoc GCG solidarity sessions: 3x in 2020 + 1 in 2021
- 3 x questionnaires to Member States in 2020/ 2021
  - support for action at EU level
- Many bilateral meetings + EC participation as observer at negotiating sessions
- 1 bilateral agreement signed by the time of the Commission proposal
- 2 other signed early 2022
- 37 agreements pending to date

Making solidarity effective

"A solidarity measure shall be a last resort measure…"

Common step by step procedure

Common templates to request and offer 'solidarity' gas (replace bilateral agreements if not signed)

Compensation costs

Basic method to calculate in common template

Ex–post control of cost claimed by independent authorities, incl. to rectify

"…declared an emergency state…" (art 13.3(a))

"…exhausted all market-based [and] non-market based measures…" (art 13.3(c))

"…notified an explicit request…" (art 13.3(d))

CONDITIONS

"…ex-post control by the Regulatory Authority and/or the Competition Authority of the Providing Member State, within three months… Conclusions … shall be transmitted to the Commission…" (art 13.10)

CONTROL

Art 10.14: "…if Member States fail to agree… Annex IX shall apply…"

Annex IX

DEFAULT

European Commission