

Tinne Van der Straeten

Minister van Energie



FPS Economy, S.M.E.s, Self-employed and Energy

Public consultation on the envisaged regulatory model for hydrogen transport by pipeline

January 25th 2022

Table of contents

Abbreviations	3
Lexicon	3
1. Introduction.....	5
2. General context.....	5
2.1. Hydrogen networks.....	5
2.2. Regulatory context	6
3. Objectives.....	8
4. Proposed regulatory model.....	9
4.1. Hydrogen network operator (HNO).....	9
4.1.1. Role and responsibilities.....	10
4.1.2. Vertical unbundling.....	10
4.1.3. Horizontal unbundling and separation of accounts.....	10
4.1.4. Certification of HNO candidates.....	11
4.1.5. Designation of the HNO.....	11
4.2. Exemptions and transitional measures.....	11
4.2.1. Direct lines.....	11
4.2.2. Existing hydrogen networks.....	12
4.3. Regulatory principles for import and storage	13
4.3.1. Import.....	14
4.3.2. Storage.....	14
4.4. Network Development Plan	14
4.5. Network tariffs.....	15
4.6. Remuneration and cash flows.....	15
4.6.1. Revenues allocation.....	15
4.6.2. Regulatory account.....	16
4.7. Gas quality standard	17
4.8. Production and supply licenses.....	17
4.9. The role of the regulator	17
5. Public consultation	18
6. Next steps	18

Abbreviations

HNO	Hydrogen Network Operator
ISO-model	Model with "Independent System Operator"
ITO-model	Model with "Independent Transmission Operator"
OU-model	Model with "Ownership unbundling"
NDP	Network development plan
RAB	Regulatory Asset Base
TPA	Third-Party Access
TSO	Transmission System Operator

Lexicon

TPA (Third-Party Access): Imposing TPA on an infrastructure implies that access to that infrastructure must be offered to any actor requesting it on transparent and non-discriminatory terms, within the limits of the available capacity. Access conditions may be either negotiated (negotiated TPA) or regulated (regulated TPA).

- Negotiated TPA: The regulator sets the general guidelines that the operator of the infrastructure must follow to fulfil the TPA requirements. This methodology may include criteria and technical features to differentiate price and access conditions, as well as caps on the return on investment generated by the operation of such infrastructure;
- Regulated TPA: the regulator establishes a tariff methodology defining the approach to be followed for charging for access to the infrastructure. The infrastructure operator submits a tariff proposal to the regulator for approval based on flow forecasts, revenue forecasts and an estimated return on investment.

Unbundling: The term "unbundling" refers to the separation of activities carried out by an operator of an energy transmission infrastructure from other activities. More specifically, vertical unbundling refers to the unbundling of the infrastructure operator from the activities of generation and supply of energy, and horizontal unbundling to the separation of transmission activities for different energy carriers.

OU-model: An ownership unbundling model is a vertical unbundling model in which the infrastructure operator is also the owner of the infrastructure. The infrastructure operator may not be controlled by persons (natural and/or legal) with an interest in the production and/or supply of energy. This model is defined for the transport of natural gas in Directive 2009/73/EC.

ISO-model: An Independent System Operator model is a vertical unbundling model where the operation of an infrastructure which was previously owned by a vertically integrated undertaking is transferred to an independent operator. The infrastructure operator may not be controlled by persons (natural and/or legal) with an interest in the production and/or

supply of energy. The vertically integrated company remains the owner of the infrastructure. This model is defined for the transport of natural gas in Directive 2009/73/EC.

ITO-model: An Independent Transmission Operator model is a vertical unbundling model whereby the operation of infrastructure formerly owned by a vertically integrated undertaking is transferred to an independent operator. The operator is a subsidiary of the vertically integrated undertaking. Its independence from the vertically integrated undertaking is guaranteed by various governance and information exchange measures. The vertically integrated undertaking remains the owner of the infrastructure. This model is defined for the transport of natural gas in Directive 2009/73/EC.

RAB: The "Regulatory Asset Base" is a register of all regulated infrastructure of a network operator. The present value of each asset is recorded and depreciated annually. The sum of the present values of the assets in this register can be used by the regulator to determine a maximum allowed income for the network operator.

1. Introduction

Renewable hydrogen offers new opportunities in the energy transition of certain sectors. In addition to further scaling up the production and direct consumption of renewable electricity, the federal government has major ambitions for hydrogen and its derivatives, particularly in industry and the transport sector as announced in the federal hydrogen vision and strategy published on October 29th, 2021.

These ambitions require the development of a robust hydrogen market supported by the expansion of hydrogen transport infrastructure. The Federal Minister of Energy is convinced that such a hydrogen network will become an essential facility for the future energy system. She shares the opinion of many stakeholders that the transport of hydrogen by pipeline needs to be regulated in order to guarantee open access to this network under non-discriminatory conditions.

Such regulation can take various forms. In this note, the Minister of Energy describes the regulatory principles and choices she wishes to make to regulate the transport of hydrogen by pipeline. All interested parties are invited to share their feedback on this document, and in particular on the questions raised in chapter 5, with the FPS Economy, SMEs, Self-employed and Energy. This feedback will be used to better identify the stakeholders' expectations regarding the envisaged regulation and to adjust this regulation where necessary.

2. General context

2.1. Hydrogen networks

According to the International Energy Agency, about 5.000 km of pipeline are currently dedicated worldwide to the transport of hydrogen of which just over 1.600 km is located in Europe¹. This network is mainly owned and operated by industrial players. The use of hydrogen as a renewable energy carrier for the energy transition requires an expansion of this infrastructure, both in terms of capacity as in geographical scope. ETNSO-g's latest Ten-Year Network Development Plan (TYNDP) estimates that approximately 1.100 km of natural gas pipeline can be converted for hydrogen transport in Europe by 2030.

With about 570 km of hydrogen pipeline on its territory, Belgium is a historical center for the development of such infrastructure². The Belgian network is mostly exploited by Air Liquide. It connects the industrial clusters of Ghent, Antwerp, Mons and Charleroi, as well as other areas in France and the Netherlands.

The presence of such a network on the national territory makes the Belgian context unique compared to other European countries. This can facilitate the development of an open

¹ IEA, (2021), Global Hydrogen Review, <https://www.iea.org/reports/global-hydrogen-review-2021>

² CREG, (2021), Studie betreffende een regulerend kader voor vervoer van waterstof, <https://www.creg.be/nl/publicaties/studie-f2291>

access backbone, provided that sufficient attention is paid to the existing players and their networks. Additional hydrogen pipelines (newly constructed and/or converted natural gas pipelines) are also needed to bring this energy carrier as close as possible to (future) demand. The integration of existing networks with newly developed networks is crucial to maximize the benefits of this opportunity.

2.2. Regulatory context

On July 8th, 2022, **the European Commission published its hydrogen strategy**³. It sets out the guidelines for the development of hydrogen as an energy carrier in Europe and for the organization of the hydrogen market, including the development of the necessary hydrogen (transport) infrastructure. The European Commission indicates that access to such infrastructure must be open, without discrimination, in order to facilitate the development of a liquid hydrogen market with sufficient competition.

Since then, several public institutions have expressed their opinion about the extent to which and the way in which the European hydrogen market, and particularly hydrogen transport networks, should be regulated. The main orientations of some of the leading actors are summarized hereafter.

In their joint **White paper on regulation of hydrogen networks, ACER and CEER**⁴ start from the observation that the market and infrastructure for hydrogen as an energy carrier still largely needs to be developed, while for natural gas and electricity extensive networks already existed when regulation was gradually applied to them. This justifies to deviate from the framework historically established for natural gas and electricity to elaborate the regulatory framework for hydrogen networks. ACER and CEER point out the importance of regulation in network sectors, where ex-post adjustments through competition law are not sufficient to prevent potential abuse of a dominant position. Specifically for hydrogen networks, ACER and CEER recommend a dynamic and phased form of regulation, based on market monitoring by national regulators and on the growth rate of the hydrogen market. At the same time, it is important to provide investors with the necessary certainty by immediately clarifying the guiding regulatory principles and the foreseen timing (e.g. third-party access, unbundling, transparency, supervision). The approach to existing industrial (B2B) point-to-point hydrogen networks should also be clarified soon. Finally, ACER and CEER recommend cost-reflective tariffs, keeping the Regulatory Asset Bases (RABs) for hydrogen and natural gas separate and avoiding cross-subsidization.

In their **Joint Position Paper on the regulatory framework for hydrogen** of September 2021 the member states of the **Pentalateral Energy Forum** shared their combined recommendations

³ https://ec.europa.eu/energy/topics/energy-system-integration/hydrogen_en

⁴ <https://documents.acer.europa.eu/Media/News/Pages/ACER-and-CEER-recommend-when-and-how-to-regulate-pure-hydrogen-networks.aspx>

for the regulation of the hydrogen market with the European policy makers⁵. The Penta countries insisted on leaving sufficient flexibility to national governments to develop the regulatory framework at their own pace, considering the local context and market development. In addition, there is a broad consensus on the need to establish guidelines for regulation of hydrogen networks at the European level in the short term. Commercial hydrogen networks of a B2B nature, often linked to long-term contracts, can be exempted from regulation under strict conditions, although this should not prevent the connection of local hydrogen clusters in the longer term. Where transitional arrangements seem appropriate for existing networks, exemptions for future networks could be based on the frameworks for direct lines and closed distribution networks for other energy sectors. Finally, the importance of integrated network planning between electricity and hydrogen, as well as coordination with natural gas to encourage the reallocation of natural gas pipelines, is also stressed.

On October 29th, 2021, the federal government published its **federal vision and strategy on hydrogen**⁶, building on the study **The role of clean gas in a climate neutral Belgium** which was conducted earlier as commissioned by the FPS Economy, SMEs, Self-employed and Energy⁷. The expansion of a robust hydrogen market and the associated gradual development of European interconnected, non-discriminatory accessible hydrogen transport infrastructure are central to this. A first phase of this is being implemented with the construction of hydrogen transport pipelines and/or the reallocation of natural gas pipelines, partly financed by a budget of EUR 95 million originating from the Belgian National Recovery and Resilience Plan. The introduction of regulation for the transport of hydrogen by pipeline and the accompanying public consultation will also support the development of this infrastructure.

At the request of the Minister of Energy the **CREG** examined the current situation and future perspectives of the Belgian hydrogen market to evaluate the need for regulation. The CREG published its findings in its **study regarding a regulation framework for the transport of hydrogen**⁸. This document was published the 8th of November 2021 and delivers the three following key messages:

- Firstly, the CREG emphasizes that the production method and destination of the hydrogen transported have no impact on the chemical and physical characteristics of the molecules. These aspects therefore cannot be used to justify the development of separate markets. CREG is also of the opinion that a single unique gas quality

5

https://benelux.int/files/9516/3273/7777/Joint_Penta_Position_Paper_on_the_regulatory_framework_for_hydrogen_Final_20210910_Signatories_with_logo.pdf

⁶ <https://economie.fgov.be/fr/themes/energie/transition-energetique/strategie-nationale-belge-pour>

⁷ <https://economie.fgov.be/fr/publications/le-role-des-vecteurs>

⁸ <https://www.creg.be/fr/publications/etude-f229>

standard must be guaranteed on the grid and should be harmonized with our neighbouring countries.

- Secondly, the CREG notes the existence of several obstacles on the hydrogen market (cf. paragraph 148 of this study) that are hampering the achievement of the Belgian objectives that were announced in the federal hydrogen strategy, including the objectives of becoming a leader in hydrogen technology and of positioning itself as an import and transit hub for renewable molecules in Europe. The CREG recommends the gradual introduction of a regulatory framework that provides for regulated third-party access, transparent tariffs, a coordinated approach to future investments, non-discrimination and unbundling between network operation and other activities, in accordance with the European framework.
- Finally, exceptions for specific existing installations and/or direct lines remain possible, under specific and clear conditions.

In general, the CREG is of the opinion that a regulated supervision will guarantee cost efficiency of the future system and will avoid unnecessary investments.

The **European Commission** published on the 15th of December 2021 its **Decarbonization Package**⁹, including a proposal to revise Directive 2009/73/EC and a proposal to revise Regulation 715/2009 in order to organize the internal market for renewable gases and hydrogen. These proposals represent the first formal position of the European Commission on the regulation of the hydrogen market and the desired regulatory model. They will be negotiated with the Council and the European Parliament before adoption. The provisions contained in the gas package may therefore still evolve.

The Decarbonization Package relies heavily on existing measures for the transport, storage and import of natural gas to regulate the hydrogen market. More specifically, it proposes to impose vertical unbundling between the transport of hydrogen and its production and supply, as well as horizontal unbundling between the transport of hydrogen and other energy carriers. The vertical unbundling models used for natural gas are reused for hydrogen, with a preference for the OU model and a deletion of the ITO model after 2030. The Decarbonization Package also provides for non-discriminatory treatment of all users of hydrogen transport, import and storage infrastructure under negotiated tariffs for imports (negotiated TPA) and regulated tariffs for transport and storage (regulated TPA). Certain exceptions to the unbundling and TPA obligations are envisaged for existing networks and geographically confined networks.

3. Objectives

It is necessary to develop a regulatory framework for the transport of hydrogen by pipeline to support the development of the hydrogen market and reap its benefits for the energy transition. Based on the elements developed above, Belgium can be a pioneer in this matter.

⁹ https://ec.europa.eu/energy/topics/markets-and-consumers/market-legislation/hydrogen-and-decarbonised-gas-market-package_en

Waiting for the final adoption of the Decarbonization Package (which may not be transposed into national law before 2025) is not desirable because it would slow down the development of the hydrogen market in Belgium.

This initiative aims to facilitate a rapid and efficient development of the Belgian hydrogen market, encourage investments in hydrogen infrastructure and promote cross-border trade. From this general and overarching objective, six more concrete objectives are derived which are presented and argued below.

1. Designate a single operator to exploit the hydrogen transport infrastructure, elaborate network development plans and manage commercial relations for hydrogen transport by pipeline. It shall ensure non-discriminatory and open access to the hydrogen transport network, shall offer transparent tariffs and shall be unbundled from production and supply of hydrogen molecules. The choice for a single operator should guarantee efficiency gains in the execution of these tasks & prevent cherry-picking of the more profitable hydrogen transport activities. Furthermore, the appointment of a single operator is justified by the limited size of our country;
2. Support the federal hydrogen strategy by creating a regulatory framework conducive to the development of a robust hydrogen market and the positioning of Belgium as an import and transit hub for renewable molecules. This includes efficient and responsible investment planning in line with other energy transport infrastructures;
3. Integrate existing market players and their infrastructure into the regulatory framework while showing respect for their ongoing contracts. Indeed, integration of the existing infrastructure can facilitate and accelerate the development of a hydrogen backbone;
4. Exploit the advantages of the reallocation of certain existing natural gas infrastructure, both financially and organizationally (e.g. in the context of permits and the definition of new routes);
5. Create a simple and clear framework that avoids additional & unnecessary work. This framework may evolve along with the market needs;
6. Align the regulatory model with the general guidelines of the European Commission from the outset, so that changes to the model are limited after the final adoption of the Gas Package.

4. Proposed regulatory model

In the following sections the proposed regulatory model for the transport of hydrogen by pipeline is presented for public consultation.

4.1. Hydrogen network operator (HNO)

A single operator of the hydrogen transport network is designated, and hereafter referred to as "HNO" (Hydrogen Network Operator).

4.1.1. Role and responsibilities

The HNO is responsible for the following tasks:

- Manage, maintain and develop the hydrogen transport network in a safe and economically viable way;
- Ensure that the capacity of the network can meet long-term demand, assessed based on reasonable assumptions (see Section 4.4), including the development of interconnections with other hydrogen pipeline networks, import terminals and storage facilities;
- Provide sufficient information to the operators of the networks to which it is connected to ensure coordinated development and enable interoperability of interconnected networks;
- Guarantee non-discriminatory access for all (potential) network users in the framework of a regulated TPA system;
- Provide network users with the necessary information to access the infrastructure;
- Take all reasonable measures to prevent hydrogen emissions and limit the environmental impact of its activities;
- Organize the secondary market where network users can trade capacity and flexibility;
- Meet the requirements set by the regulator within the framework of its responsibilities and powers as described in Section 4.9.

The HNO is the only actor authorized to operate hydrogen transport infrastructure by pipeline, except in the cases described in Section 4.2.

4.1.2. Vertical unbundling

Any legal entity owning and/or operating infrastructure for the transport of hydrogen by pipeline must be unbundled from the activities of production and supply of hydrogen molecules in the same way as a natural gas TSO according to the OU model as proposed by the European Commission in the Decarbonization Package through its proposal for revision of Directive 2009/73/EC. This means that the same person cannot directly or indirectly exercise any right or control over both the HNO or any legal person that owns infrastructure for the transport of hydrogen by pipeline, and any undertaking that is active in the production or supply of hydrogen molecules. The exceptions to this rule are described in section 4.2. The same unbundling principle is applied in a cross-sectoral manner to the production and supply of electricity and natural gas.

4.1.3. Horizontal unbundling and separation of accounts

The hydrogen transport activities of the HNO should be legally separated from any other activity developed by the HNO to avoid cross-subsidization. However, the same group can manage both the hydrogen transport network and the infrastructure for storing or importing hydrogen, provided this is done in legally separate entities and the group is never involved in the sale of hydrogen molecules. The same applies to the management of the natural gas transmission network, which must be carried out by a legal entity separate from the HNO.

These horizontal unbundling conditions are derived from a strict interpretation of the European Commission's proposals in the Decarbonization Package. The aim is to avoid a new certification and designation procedure for the HNO if the European rules were to be changed during the negotiation process.

4.1.4. Certification of HNO candidates

Any company that wishes to operate pipeline infrastructure for the transport of hydrogen that is subject to vertical and/or horizontal unbundling obligations must first be certified by the regulator to confirm that its legal and organizational structure complies with the applicable regulations.

Any company may apply for certification to the regulator, which must issue a decision within 60 days. It is emphasized that this certification procedure will be updated after the Decarbonization Package has been finally adopted, as this package provides for a procedure whereby provisional certification decisions are notified to the European Commission.

4.1.5. Designation of the HNO

In this paper, no assumption is made as to who will be designated as HNO. This designation will be done according to a transparent and impartial process that includes the following steps:

- Call for applications;
- Submission of application forms to the regulator;
- Evaluation of applications by the regulator & submission of advice to the Minister of Energy;
- Designation of HNO by the Minister of Energy.

The designation of the HNO will be organized after the Parliament's adoption of the draft law establishing the regulation of hydrogen transport by pipeline. Only companies who have submitted a certification form to the regulator may apply as HNO candidate (see section 4.1.4).

4.2. Exemptions and transitional measures

This regulation is applicable to all infrastructures for transport of hydrogen by pipeline. There are two exceptions to this rule that are presented hereafter.

4.2.1. Direct lines

A line is considered as "direct" if it connects two isolated injection and/or withdrawal points with each other over a limited distance. An injection and/or withdrawal point is considered "isolated" when it complies with the following conditions:

- The injection and/or withdrawal point is not connected with another installation for the transport of hydrogen by pipeline other than the direct line;
- The injection and/or withdrawal point is situated far from the hydrogen transport network.

Operators of direct lines for the transport of hydrogen may be exempted from the obligations of TPA and of vertical and horizontal unbundling. Moreover, these pipelines can be operated by other market participants than the HNO. This exemption is subject to the approval of the regulator confirming that the project concerns a direct line and that the route is not useful for the development of the hydrogen transport network. This exemption does not apply to direct lines managed by the HNO.

The regulator may decide to withdraw this exemption when one of the following situations occurs:

- The direct line is connected to a hydrogen transport network so that the line can no longer be considered as “direct”;
- The direct line simplifies the connection to the hydrogen transport network of an actor that asks for such a connection under the regulated access conditions that are applicable to the network that is managed by the HNO;
- The regulator can show that the operator of the direct line hasn’t complied with the obligations that are granted via this exemption.

In these cases, the corresponding line must be integrated into the regulatory model under the same conditions that apply to existing networks after the transition period (sale to the HNO or designation of the HNO to operate it, see section 4.2.2).

It should be noted that in the Decarbonization Package, the European Commission proposes not to exempt direct lines from the obligations on regulated TPA. If this indeed becomes the case in the final version of the revised directive, then operators and users of direct lines will have to comply with such a requirement.

4.2.2. Existing hydrogen networks

The term “existing network” refers to the hydrogen pipeline infrastructure already in use at the time of the introduction of these regulation.

During a transitional period until the 31st of December 2030 at the latest, existing networks are exempted from the unbundling obligations (vertical and horizontal) and can be operated by an actor other than the HNO. This exemption is granted in order to allow the owners of existing networks at the time of entry into force of these regulation to hold their ownership and continue to operate them to provide their customers with the services to which they have committed via their ongoing contracts.

Under this exemption, the operator of the existing network must comply with the following obligations:

- Disclose the remaining transport capacity that its network can transport under normal and safe operating conditions;
- Make the remaining transport capacity available to the market and to interested third parties under non-discriminatory, negotiated access conditions (negotiated TPA). The operator shall take the necessary steps to connect new customers who wish to make use of such services. However, the operator may refuse new

connections to its infrastructure which would result in the expiration of this exemption (cf. conditions below);

- Justify the calculation of the remaining transport capacity made available to the market (based on the volumes delivered under current contracts and the technical transport capacity of its network) to the regulator.

This exemption automatically expires on the 31st of December 2030, or earlier if one of the following situations occurs:

- If the owner of the infrastructure requests it and the regulator agrees after examining the file;
- If the infrastructure is resold to a legal person whose shareholding is no longer fully owned, directly or indirectly, by the group(s) that owned the infrastructure at the time of entry into force of this regulation;
- If the infrastructure is connected to another network for the transport of hydrogen by pipeline;
- When the infrastructure is extended or its capacity increased. The commissioning of a pipeline connecting the existing network to a single actor (producer or consumer) is not considered as an extension of the network or an increase in its capacity. The regulator is responsible for assessing this condition on a case-by-case basis;
- If the regulator can prove that the infrastructure operator has not complied with the obligations imposed on it by this exemption.

When this temporary exemption expires, the operators of the existing networks must comply to the rules of vertical and horizontal unbundling via one of the following two ways:

- resell their infrastructure to the HNO, who will then become the owner and operator of this infrastructure. These infrastructures are then fully integrated into the regulatory model, in the same way as newly built infrastructure, and no longer benefit from any exemption;
- Designate the HNO to operate and maintain their infrastructure under conditions similar to the ISO model for natural gas as described in Article 14 of Directive 2009/73/EC. This possibility is indeed proposed by the European Commission in the context of the Decarbonization Package. In such a case, the owner of the existing network is remunerated according to the revenues generated by the operation of its infrastructure. These revenues are calculated based on a risk and revenue allocation method established by the regulator to determine the share of the HNO's revenues attributable to the corresponding network (see section 4.6). In addition, volumes supplied under contracts in force at the end of the transitional period may be eligible for a negotiated tariff with the HNO instead of the regulated tariff, subject to the regulator's approval.

4.3. Regulatory principles for import and storage

In addition to a network infrastructure, a robust hydrogen market also requires the development of other assets such as import or storage infrastructure. The degree of

foreseen regulation (in particular regarding unbundling and TPA) is linked to specific characteristics such as the essential nature of these infrastructures, their duplicability, their strategic importance for security of supply and the efficient operation of the network infrastructure.

4.3.1. Import

Import infrastructure refers to 'infrastructure enabling the import of hydrogen, in the form of pure hydrogen, LOHC or hydrogen derivatives such as e-ammonia'. It therefore includes import terminals and facilities for converting the hydrogen carrier into gaseous hydrogen.

In the first phase of the hydrogen market's development, import infrastructure will contribute to the emergence of a robust market and promote competition among market players. In later stages, such infrastructure will be necessary to ensure our energy security.

All market players can build and/or operate such infrastructure. A company related to the HNO is also allowed to own and/or operate such infrastructure as long as this company does not sell molecules.

The regulator determines the general principles of the tariff methodology for the sale of import capacity of facilities connected to the network operated by the HNO. This tariff methodology can be based on a negotiated TPA or an auction mechanism and is renewed at least every four years.

4.3.2. Storage

In its Decarbonization Package the European Commission proposes to impose a regulated TPA obligation on large hydrogen storage infrastructures. This seems particularly useful for large infrastructures that are difficult to replicate and have little or no replication such as underground infrastructures because the small number of similar installations may not ensure sufficient competition among operators. This initiative will be discussed further at the European level.

However, it does not seem appropriate to regulate the operation of such infrastructure at this early stage of market development. It is therefore not foreseen to impose specific conditions at this stage.

4.4. Network Development Plan

The Network Development Plan (NDP) is drawn up every two years by the HNO under the supervision of the regulator. The required investments in the hydrogen pipeline infrastructure are mapped out for a period of 10 years. The plan is based on different scenarios, a cost-benefit analysis and an "open season" procedure. The scenarios used must be in line with the European scenarios and the Belgian climate objectives and must be approved by the Minister of Energy.

The scenarios are developed by the HNO based on the following elements:

- Consultation with the Belgian transmission system operators for electricity, natural gas and (if applicable) CO₂, leading as much as possible to common scenarios for the development of their respective network development plans;
- The latest developments in the planning of hydrogen, natural gas, electricity and CO₂ networks at the European level;
- The climate objectives of Belgium and the European Union;
- A public consultation on the intentions regarding the use of the infrastructure (volumes and injection points) and on the new investments desired by the market participants. This consultation is published on the HNO's website and remains open for at least one month. The owners of hydrogen transport infrastructure on Belgian territory, the customers of HNO and the HNOs in neighbouring countries are personally invited by the HNO to participate in this public consultation.

The regulator oversees the preparation of the NDP and is involved from the start of the elaboration of the scenarios. He gives an opinion to the Minister of Energy on the general quality of the NDP, its content and the process followed to draft it.

Based on the regulator's opinion, the NDP is submitted to the Minister of Energy for approval. After her approval, the HNO is responsible for implementing the plan and for taking appropriate preparatory measures sufficiently in advance. If new elements were to alter the conclusions of the NDP, the HNO submits an amendment proposal to the Minister of Energy for approval, based on an opinion from the regulator.

4.5. Network tariffs

The tariffs for access to the hydrogen transport network constitute one of the conditions under which the market participants can use this network. The HNO submits a tariff proposal to the regulator for approval, based on the tariff methodology established by the regulator. This tariff methodology is established in accordance with the guidelines laid down in the law and after consultation with the HNO. Both the tariff methodology and the tariffs themselves are updated before each new tariff period, i.e. every four years. The regulator may provide in its tariff methodology for a negotiated TPA for direct lines that would be operated by the HNO.

4.6. Remuneration and cash flows

4.6.1. Revenues allocation

When owners of existing infrastructures chose to appoint the HNO as operator of their infrastructure but hold the ownership of it, a revenue allocation method is required to fairly remunerate the different infrastructure owners. This allocation is done as follows:

- The network tariffs are charged by the HNO to the users of the hydrogen transport infrastructure that it operates;
- Based on this income, the HNO is primarily remunerated for its services in terms of dispatching, management, maintenance of the infrastructure and marketing of its transport capacity based on a "cost+" model. This means that all costs related to

these activities must be validated by the regulator in order to be reimbursed. The regulator can provide financial incentives to seek for service excellence;

- The remaining revenues are distributed to the infrastructure owners based on a methodology established by the regulator. This methodology should aim at a fair distribution of the revenues among the different owners and may provide for solidarity mechanisms to give investors more guarantees for future revenues. The methodology should prevent any risk of abuse of dominant position by the HNO in the dispatching of volumes when competing pipelines are owned by different actors.

If the HNO only operates pipelines that it owns, this allocation method is a priori not necessary. In that case, it is left to the regulator to decide whether or not to adopt such a method.

4.6.2. Regulatory account

The annual revenues of infrastructure owners from the operation of their facilities by the HNO and the revenues of the HNO for operating services rendered are limited to an allowed revenue determined in accordance with the tariff methodology. The return on investment is limited to a certain percentage of the value of their Regulatory Asset Base (RAB). This limit is set by the regulator. The value of the RAB is the present value of the assets of each infrastructure owner, which are depreciated annually. The RAB is kept up to date by the infrastructure owners under the supervision of the regulator. Any (additional) revenue in excess of this allowed revenue is deposited on a separate account in the name of the HNO (regulatory account).

The use of the regulatory account is subject to the regulator's control. The amounts deposited in this account must in general be used to reduce network tariffs in subsequent tariff periods so that the tariffs reflect the costs of developing and operating the network.

In specific situations, the use of the regulatory account to support the development of the hydrogen transport network may provide social benefits by speeding up its construction and enabling faster connection of new users. Therefore, the Minister of Energy can approve the use of the account to support new investments according to the modalities of the NDP (see section 4.4) if all the following conditions are met:

- The HNO specifies the exact modalities for the use of the regulatory account in its proposal of NDP submitted to the Minister of Energy for approval;
- The regulator, in its advice on the NDP submitted to the Minister of Energy, supports the use of the regulatory account according to these modalities;
- The hydrogen transport network is in an early development phase;
- By using the regulatory account an investment can be made earlier. This new investment would under any circumstances have been made, even without the use of the regulatory account.
- The acceleration of commissioning made possible using the regulatory account benefits at least to two network users;

- The benefits provided are proportional to the use of the regulatory account in the new investment.

Where the regulatory account is used to support new investments, the contribution from the regulatory account should be deducted from the value of the infrastructure when it is included in the RAB so that the capital in the regulatory account cannot be used to increase the return on investment of the HNO beyond the threshold set in the tariff methodology.

4.7. Gas quality standard

A single hydrogen quality standard is used for the entire hydrogen transport infrastructure. This standard is established by the HNO after consultation with the network users and the operators of the hydrogen networks in our neighbouring countries and based on the opinion of the regulator. The HNO guarantees that this standard is met. Certain pipelines may deviate from this quality standard under the conditions that the concerned users are consulted and the regulator issues a positive advice.

4.8. Production and supply licenses

Permits for the production and/or supply of hydrogen could be imposed to guarantee a high quality production and/or supply services and to prevent abuses. Without prejudice to the scope of existing authorizations and permits, such as those for the production and supply of natural gas and electricity, a specific authorization system for the hydrogen market will be analysed. The early stage of development of the hydrogen market will be taken into account.

4.9. The role of the regulator

Given its role in the regulation of the electricity and natural gas markets, the CREG seems to be the best actor to play a similar role for the hydrogen market. This role comes with the following tasks and responsibilities:

- Certification of HNO candidates and constant monitoring of compliance with these requirements
- Evaluation of the application forms to become the HNO;
- Assessment and granting of exemptions from the requirements related to vertical and horizontal unbundling in accordance with the rules as set out above;
- Network Development Plan: monitoring of development, evaluation of content and monitoring of implementation;
- Tariffs and remunerations;
 - Determination of tariff methodologies for hydrogen transport infrastructure managed and/or owned by the HNO, and for hydrogen import infrastructure subject to a TPA obligation;
 - Approval of the HNO's tariff proposal for hydrogen transport infrastructure subject to a regulated TPA obligation;
 - Monitoring and control of the conditions and tariffs offered to users of existing networks and direct lines not operated by the HNO;

- Determination of the method for revenue sharing between owners of hydrogen transport infrastructure managed by the HNO. When appropriate, control of HNO expenditure under the “cost+” regime;
- Monitoring and control of RAB of the hydrogen transport and import infrastructures subject to TPA obligation;
- Control of the regulatory account;
- Market operation: market monitoring and investigation, identification of market failures and possible remedial measures. As part of this task, after each federal election, the regulator must submit to the Minister of Energy a report on the functioning of the market and the regulatory model, with recommendations to address the shortcomings identified;
- Establishing access conditions and a code of conduct for the use of infrastructure owned and/or operated by the HNO, and monitoring their application.

5. Public consultation

Section 4 sets out the main elements of the envisaged model for regulating the transport of hydrogen by pipeline. This document submits these concepts for public consultation. All stakeholders are invited to give their views on the following questions:

1. In your opinion, are the objectives presented in section 3 justified? If not, why?
2. Are there other objectives than those listed in section 3 that you think should be taken into account when assessing the regulatory model? If so, which?
3. In your view, does the model submitted in section 4 meet the objectives of section 3? If not, why?
4. Which elements of this model do you consider particularly relevant?
5. Which elements of this model do you find less appropriate?
6. Would you make any adjustments to the envisaged model? If so, which and why?
7. Do you have any other comments?

This consultation is published on the website of the FPS Economy, SMEs, Self-employed and Energy as from 25 January 2022. Participants are requested to respond by e-mail until 22 February 2022 to the following address: h2regulering@economie.fgov.be

6. Next steps

Based on the responses received and the approach described above, the Minister of Energy will submit a draft law to the Government on regulating the transport of hydrogen by pipeline and the associated infrastructures. This draft law may be submitted to the Parliament. The designation of the HNO will then be organized after the draft law has been adopted by the Parliament.