

# Hydrogen Europe Position Paper

## A regulatory framework fit for a European hydrogen market

June 2022

## Introduction

Hydrogen is primary to climate-neutrality across all sectors of the economy and a resilient energy system. With the REPowerEU being a direct reaction to the Russian invasion of Ukraine, hydrogen has become core and centre to the energy transition with clear targets for the replacement of Russian gas until 2030. In 2050, renewable and low carbon hydrogen will not just have replaced unabated fossil hydrogen consumption, but also a large share of fossil fuels and feedstocks. This includes hard to electrify industrial sectors and mobility applications but is not just limited to those, supporting the decarbonisation of the power sector by providing an excellent form of flexibility to variable renewables and helping to replace natural gas in buildings alongside other clean technologies such as heat pumps.

Hydrogen Europe warmly welcomes the European efforts to move hydrogen legislation from an afterthought to a central pillar of the energy system. The Fit for 55 package is the first step into this direction laying down the rules for the production and use of renewable hydrogen. The Hydrogen and Decarbonised gas package (Hydrogen package) is the next steppingstone for enabling the production, transport and use of hydrogen at large scale and under a single European market. As such, the revision of the Gas Market Directive and Gas Network Regulation constitute the missing piece of a sound regulatory framework for hydrogen which needs to be finalised and implemented swiftly. A replacement strategy of this magnitude requires adequate starting conditions for investments in hydrogen networks.

### **Key policy recommendations:**

#### MARKET PRINCIPLES FIT FOR A NASCENT MARKET

1. Set clear definitions and GHG thresholds for hydrogen ASAP to avoid investment uncertainty and ensure policy coherence with the Fit for 55 package
2. Establish a sound certification system for all hydrogen types for a faster uptake of hydrogen by all users while avoiding double counting
3. Apply regulatory principles proportionately to encourage hydrogen market development: allow all unbundling models currently applied in the gas sector to co-exist and avoid overregulation with regards to horizontal unbundling in a nascent market
4. Factor in the specificities of existing and geographically confined hydrogen networks whilst ensuring the development of a pan-European hydrogen market

#### HYDROGEN INTEGRATION

5. Tariff discounts should benefit renewable and low carbon hydrogen rollout at all infrastructure levels
6. Create a supportive investment framework to accelerate the development of hydrogen infrastructure, particularly in the early stages
7. Allow limited amounts of blended hydrogen in cross-border interconnectors respecting gas quality standards and industry needs as a transitional solution

#### GRID DEVELOPMENT AND ITS GOVERNANCE

8. Set favourable conditions for the development of hydrogen grids both at transmission and distribution level, including effective strategies on the repurposing of existing gas infrastructure
9. Create ENNOH (European Network of Network Operators for Hydrogen) to accelerate the development and functioning of the internal market for hydrogen, including the preparation of integrated grid development plans

## 1. Market principles fit for a nascent market

### 1.1. Clear definitions and GHG thresholds for all hydrogen categories

Considering the accelerated ramp up the hydrogen sector needs with a view to decarbonise the EU's economy and replace Russian gas, Hydrogen Europe calls for clarity on definitions and methodologies. The definitions need to be coordinated across all legislative proposals that are currently being developed and should be the basis for relevant EU funding programs and financial support mechanism for hydrogen projects and trade with third countries.

**A standalone definition for renewable hydrogen:** Hydrogen Europe considers it essential to include a standalone definition for renewable hydrogen to ensure a harmonised approach across all legislative files. Furthermore, we ask for an explicit mention that hydrogen produced from bioenergy sources can be considered renewable hydrogen as long as it meets all related sustainability criteria. The Explanatory Memorandum of the Hydrogen Package states that the revised RED II “defines” renewable hydrogen as ‘renewable fuels of non-biological origin’ and ‘biomass fuels’ that meet a 70% greenhouse gas emission reduction compared to fossil fuels”. In fact, the RED II contains no such express definition. Furthermore, renewable hydrogen is also somewhat included in the definition of “renewable gas”<sup>1</sup> in the Proposed Gas Directive. Misleadingly, there is yet another definition in the EU Hydrogen Strategy stating that renewable hydrogen equals clean hydrogen.

**A clear definition for low-carbon hydrogen:** Hydrogen Europe welcomes the European Commission's proposal to clearly define low-carbon hydrogen and the respective 70% GHG emission reduction threshold. However, we raise deep concern on the deadline of 31 December 2024 to deliver the methodology behind the threshold in a separate Delegated Act. Considering the EU's ambitious decarbonisation objectives as well as the replacement strategy of the RePowerEU communication, the hydrogen industry calls on finalising the definition of low carbon hydrogen and including the main elements of the GHG emission threshold as well as the corresponding methodology within the Directive and not via a separate Delegated Act.

With regards to any targets proposed in different European legislations and strategies, the focus should be on renewable hydrogen first. However, as the targets might be challenging, it should be left to the discretion of Members States to fulfil those targets also with low-carbon hydrogen.

Hydrogen Europe calls also on the Commission to define in the Directive or assign CEN with the task of defining the term ‘high grade purity’ which is used in relation to hydrogen (Article 2 (5), (6), (7), (9), (20)).

### 1.2. A sound certification system for all hydrogen types and for all users

A harmonised approach is needed to Guarantees of Origin for all types of hydrogen expected to play a role in delivering emission reductions. Currently, the Renewable Energy Directive (RED) includes provisions on compulsory renewable hydrogen certification and voluntary certification for low-carbon hydrogen. We welcome the European Commission's intention to ensure that low-carbon hydrogen is certified in a compulsory manner. At the same time, Hydrogen Europe highlights that only a separate

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<sup>1</sup> The notion of “renewable gas” is defined in Article 2(2) PropGasDir by reference to definitions in RED II as including biogas, biomethane, and gaseous renewable fuels of non-biological origins “RFNBOs”

carrier for hydrogen and a clear approach to blending will create a reliable and trustworthy certification system that could be used for the purpose of buying and trading hydrogen.

### 1.3. Proportionate regulatory principles to encourage a hydrogen market development

Hydrogen Europe considers that a hydrogen market framework should gradually evolve in line with the maturity of the market and the development of infrastructure. In the long term, the hydrogen market should be regulated following the same principles applied today to regulated sectors such as the electricity and gas markets. There are 4 main concerns in the current proposal with regard to proportionality of principles:

- **Overregulation in the early stages:** overregulation will undermine the development of the nascent hydrogen sector; therefore, we question the European Commission's approach to propose even stricter unbundling rules than those applicable in the natural gas and electricity sectors at present – that of full ownership for vertical unbundling and legal unbundling for horizontal unbundling.
- **Unclear different approaches to unbundling across sectors:** we question the reason why the European Commission's proposal does not extend the various derogations from unbundling requirements contained in the Gas Directive in respect of natural gas to hydrogen.<sup>2</sup>
- **Transmission and Distribution differences:** Likewise, it is unclear on what basis it is proposed to combine transmission and distribution in the hydrogen sector. This well-established differentiation between "transmission" and "distribution" level has proven to work well for both the electricity and natural gas sector.
- **Stringent rules on accessing hydrogen storage sites.** Flexibility at Member State level will be important to reflect specific national circumstances.

#### All vertical unbundling models should co-exist

The Hydrogen Package proposes for hydrogen network operators (HNOs) to be ownership unbundled in accordance with the rules for natural gas TSOs. The ISO/ITO unbundling models are reflected in the hydrogen sector as Independent Hydrogen Network Operator (IHNO) and Integrated Hydrogen Network Operator. Unlike in the gas and electricity sectors, the Commission proposal foresees that the application of the ITO model for Hydrogen Network Operators is not permissible after 31 December 2030.

Hydrogen Europe questions why the two more flexible unbundling alternatives should be eliminated in the way proposed. The proposed full ownership unbundling is likely to delay the emergence of the hydrogen market: the ITO and ISO models should remain possible in the long term as long as they guarantee the necessary independence required for the operation of networks. By contrast with the situation with natural gas ITOs which are not subject to any time limit, integrated hydrogen network operators are seen as an alternative merely for a transitional period until 2030. This in turn will discourage companies to repurpose the natural gas assets for hydrogen as they would be forced to sell their assets before the end of 2030 or transfer the full operation and control to an independent ISO.

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<sup>2</sup> Gas Dir Art 49 For instance, the Gas Directive includes considerable derogations from unbundling requirements for "emergent and isolated markets" for a timespan of 10 years and up to 20 years for distribution.

We draw attention to the European Commission's and to the European energy regulators' feedback on the ITO model indicating it is equally effective in preventing market distortions.<sup>3,4</sup> Considering ownership, the ITO model continues being applied in the electricity and gas sector with 20 gas TSOs in Europe being certified as such. Hydrogen Europe raises deep concern on precluding hydrogen networks from this option.

Hydrogen Europe notes that a level playing field should be foreseen for all infrastructure group companies to ensure they can contribute to the creation and development speed of the hydrogen value chain, and as such, additional measures are needed for ownership unbundled group-companies to be involved in a potential system role.

### **At distribution level the existing unbundling rules should be extended to hydrogen**

Existing local distribution networks can be efficiently used to distribute hydrogen to industry, CHP plants, transport hubs and households. Therefore, they are central to the transformation of the energy system as many hydrogen production plants and industrial consumers (depending on the Member State) will be connected to the DSO level. Through the missing separation of hydrogen transmission and hydrogen distribution the same vertical unbundling rules have to be applied. This policy choice will disincentivise hydrogen uptake at distribution level, hinder local developments and slow down investments. The connection of local and regional hydrogen producers to the nearby distribution grid is an efficient way to bring hydrogen to the market. Separating the gas DSO from the hydrogen DSO will also prolong the process of conversion, increase cost and restrict communication between the two companies.

Furthermore, the EC's impact assessment does not substantiate such radical action. Hydrogen Europe would like to point towards the German gas sector as a clear example of market-based competition where no horizontal unbundling rules are applied. With 700 DSOs and more than 1000 gas suppliers, there is a very high level of competition across all regions. This showcases that it is not the unbundling regime that is relevant for the development of a market without discrimination and high liquidity, but the operational rules of the regulator e.g. clear provisions for a fully automatic supplier switch, standardized contracts for grid access, clear and simple processes/rules for connecting renewable gaseous facilities, etc.

For all these reasons we propose to extend all existing rules for the distribution of natural gas also to hydrogen.

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<sup>3</sup> [https://ec.europa.eu/energy/sites/ener/files/documents/2014\\_iem\\_communication\\_annex3.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/2014_iem_communication_annex3.pdf)

<sup>4</sup> <https://www.ceer.eu/documents/104400/-/-/8f18879a-411e-2fd8-c367-1fa66e3739ed>

## Horizontal unbundling<sup>5</sup> makes a big challenge even bigger

Under the Commission's proposal, gas and electricity TSOs and DSOs may be part of the same undertaking as HNOs, as long as legal<sup>6</sup>, accounts<sup>7</sup>, organisational<sup>8</sup> and information<sup>9</sup> unbundling is ensured. Whilst we understand the initiative to avoid conflict of interest to preserve the functioning of the market for gas, electricity and hydrogen, we raise deep concern as no equivalent requirements are imposed on natural gas and electricity networks.<sup>10</sup> These policy choices will have serious consequences on the build-up of necessary hydrogen infrastructure and complicate the repurposing of natural gas pipelines for hydrogen as the flow of information is key to organize these processes. To create transparency of costs the long practiced and continuously audited accounting unbundling in combination with regulatory oversight is fully sufficient.

The proposed rules regarding disclosure of commercially sensitive information and operation of joint services could result in a situation where some synergies between grid operators are prevented, even whilst being part of the same company. This would impact consumers and the wider society as costs would be increased. Limitations on information exchange and cooperation that could jeopardise effective infrastructure planning should be amended.<sup>11</sup>

Moreover, it is unclear why there should be greater potential for conflicts of interest as between electricity and hydrogen network operation (caught by the unbundling requirement) than between electricity and natural gas network operation (not subject to unbundling).

## Competition and access to storage sites, hydrogen terminals and pipelines

The European Commission takes the view that there will be too little competition in the hydrogen storage market for large-scale projects, hence a regulated third party access (TPA) regime would suit it best. However, a study developed by TNO<sup>12</sup> estimates that around 60 caverns will be needed in the Netherlands alone by 2050 therefore there could be enough competition similar as in the current natural gas storage market. It is therefore necessary to allow Member States to choose the appropriate TPA-model, as is currently the case for natural gas storage.

Furthermore, the same could be applied to hydrogen terminals considering these could play different roles in various Member States considering different national circumstances, competitive environments,

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<sup>5</sup> Horizontal unbundling requirements restrict the ability of a hydrogen network operators (HNOs) to engage in gas/electricity TSO/DSO activities, and vice versa.

<sup>6</sup> Article 63 PropGasDir: "Where a hydrogen network operator is part of an undertaking active in transmission or distribution of natural gas or electricity, it shall be independent at least in terms of its legal form"

<sup>7</sup> Article 64 PropGasDir: "Member States shall ensure that the accounts of hydrogen system operators are kept in accordance with Article 69."

<sup>8</sup> Article 36(1) PropGasDir "Member States shall ensure that the transmission system owner including, in the case of a combined operator, the distribution system operator, and the remaining part of the undertaking do not use joint services, such as joint legal services, apart from purely administrative or IT functions."

<sup>9</sup> Article 36(1) PropGasDir "each transmission, storage and/or LNG system operator, and each transmission system owner, shall preserve the confidentiality of commercially sensitive information [and when a network owner is involved] do not use joint services, such as joint legal services"

<sup>10</sup> The same company can operate natural gas and electricity networks, but not hydrogen networks.

<sup>11</sup> Prop Dir Art 36 and 50

<sup>12</sup> Ondergrondse Energieopslag in Nederland 2030 – 2050 Technische evaluatie van vraag en aanbod, Page 4

market conditions and import/export needs. Allowing flexibility for the Member States to decide on the TPA regime of their choice will facilitate a quicker deployment of renewable and low-carbon hydrogen.

**Avoiding retroactive changes for existing contracts:** Finally, negotiated third-party access (TPA) hydrogen networks completed prior to 2030, for which a final investment decision was taken prior to entry into force of the Directive and Regulation, should remain under a system of negotiated TPA for an extended period of time, to ensure long-term investor confidence and enable the recovery of the investment and the mitigation of the risks encountered made in a timely manner.

#### 1.4. Consider the specificities of existing and geographically confined hydrogen networks

In accordance with the European Commission's proposal, Member States may grant a derogation from unbundling requirements to *existing hydrogen networks* that belonged to a vertically integrated undertaking. The derogation must be limited in scope to the network capacity in operation on the date of entry into force, and its expiry is triggered amongst others where the network is connected to another hydrogen network, or where the network or its capacity are expanded only by 2030.<sup>13</sup>

Still, Hydrogen Europe considers the triggers for ending the derogation must be proportional and justified.<sup>14</sup> Leaving the decision to the Member States on granting a derogation could pose challenges for existing cross-border hydrogen networks, as such this should be coordinated at EU level with adequate oversight from NRAs. Therefore, an EU level guidance with respect to this grandfathering provision is needed considering the starting point of the hydrogen sector to ensure such derogations do not hamper the development of a liquid hydrogen market.

Hydrogen Europe underlines that there is no clear reason why the scope of the derogation for "geographically confined hydrogen networks" is drafted more narrowly than that for "existing hydrogen networks". Imposing conditions on all existing hydrogen pipelines without considering the different end-uses of transported hydrogen and its specificities could have negative impacts e.g., purity. Moreover, such assets are subject to massive private investment connecting to customers in the frame of private contracts and competitive bids. Such infrastructure was designed to fulfil customers' requirements in terms of quantities, quality, reliability, pressure and flexibility of supply, and, in many cases, not meant to be an open access infrastructure.

The above-mentioned elements need to be fully considered until the backbone can evolve to a regulated interconnected system. Against this background, the development of the hydrogen sector should be periodically monitored to identify the possible need for adaptation of the regulatory framework.

## 2. HYDROGEN INTEGRATION

### 2.1. Tariff discounts should benefit renewable and low carbon hydrogen rollout

The EC's impact assessment clearly highlighted that injection and cross-border network tariffs are an entry barrier. Hydrogen Europe welcomes the Commission's intention to address this issue by granting tariff discounts<sup>15</sup> for renewable and low carbon hydrogen on the entry point tariff and storage of

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<sup>13</sup> Article 47 PropGasDir

<sup>14</sup> See PropGasDir Art 47(2)(b) and (c)

<sup>15</sup> Article 16 Prop Gas Reg

renewable and low-carbon gases. At the same time, we raise concern on the complexity induced by the implementation of the tariff discounts and the Inter TSOs Compensation Mechanism (ITC).

Hydrogen Europe highlights that any supportive regulatory measures should be in line with previous legislative proposals and as such, renewable hydrogen should be prioritised.

To incentivise the connection of local and regional hydrogen production to the distribution or transmission grids, discounts on the connection costs must be allowed also in distributions grids.

## 2.2. Create an investment climate supportive of hydrogen infrastructure development

Avoiding prohibitively high infrastructure costs for hydrogen shippers is crucial for the emergence of a competitive European hydrogen market. Therefore, investors need a long-term funding and financing mechanism to facilitate the construction of new hydrogen infrastructure as well as the repurposing and retrofitting of existing gas infrastructure. As such, Hydrogen Europe welcomes the European Commission's intention to avoid cross-subsidies in the long term and allow its use in the ramp up phase as long as those cross-subsidies benefit early network users with predictable and affordable tariffs. REPowerEU emphasises the corresponding investments yet lacks clarity and precision about the concrete engagement of the EU.

## 2.3. Govern hydrogen blending only within the appropriate legal framework

The creation of a regulatory framework that takes into account the technical considerations and limitations of hydrogen blending in the natural gas system is crucial. In this sense, Hydrogen Europe welcomes the EC's attempt to establish a common EU-wide approach on hydrogen blending at transmission level, and in particular the requirement for TSOs to accept up to 5% H<sub>2</sub> blending at their interconnection points (IPs) by 1 October 2025.<sup>16</sup> Hydrogen Europe notes however that there are existing concerns on the final gas quality and its potential implications on industrial applications (e.g. chemical plants, steel furnaces directly connected to transmission lines).<sup>17</sup>

Furthermore, considering the 5% cap for hydrogen blends would incur costs in terms of adaptation, Hydrogen Europe considers opportune to conduct a 'hydrogen outlook' to identify the maximum level of hydrogen that can be accommodated in the grid after such investments are made. In addition, the 'hydrogen outlook' could indicate what investments are necessary in which Member States to fully repurpose existing pipelines, an assessment of supply and demand for renewable and low-carbon hydrogen, as well as a calculation of greenhouse gas emissions avoided.

Any investment into the retrofitting of a natural gas assets to allow higher blends of hydrogen should be in line with changes needed to make the asset fully ready to transport pure hydrogen and interoperable with neighbouring networks across borders. Investments should not lead to stranded assets by simply extending the life of natural gas assets.

In addition, Hydrogen Europe notes the intention of the EC to leave the decision of whether and how hydrogen should be injected within the competence of the Member States. At the same time, a clear

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<sup>16</sup> Prop Gas Reg

<sup>17</sup> The European Clean Hydrogen Alliance, October 2021, Reports of the Alliance Roundtables on Barriers and Mitigation Measures - [link](#)



and reliable mechanism for dispute settlement between Member States could be explored to ensure faster decision making.

### 3. GRID DEVELOPMENT AND ITS GOVERNANCE

#### 3.1. Set favourable conditions for the repurposing of existing gas infrastructure

Replacing one major commodity with another and doing so at the needed speed prompted by urgent environmental and security concerns is a major challenge. A replacement strategy of this magnitude starts with setting the right starting conditions for investments in both new and repurposed hydrogen networks. The Commission's proposal is a good step forward, defining the responsibilities of hydrogen network, storage and terminal operators<sup>18</sup> and providing a degree of flexibility for the development of existing<sup>19</sup> and geographically confined hydrogen networks. Likewise, Hydrogen Europe welcomes the European Commission's proposal requiring Member States to ensure that both authorisations under national law and contractual land-use rights for the construction and operation of natural gas pipelines and other network assets used for the transport of natural gas also cover hydrogen pipelines and network assets.

Repurposing will also play an important role in building up hydrogen infrastructure allowing for a timely and cost-efficient deployment of hydrogen grids using as a starting point the existing gas infrastructure. We note that investments in repurposing need to go hand in hand with projected demand patterns since not all the existing gas infrastructure will be converted to hydrogen (but probably an important part of it).

Considering the nascent nature of the current hydrogen market, it is important to ensure that all forms of hydrogen derivatives such as ammonia, methanol or LOHC, can be imported in addition to liquid hydrogen via hydrogen terminals. Since the hydrogen carrier market can experience significant technological developments in the next years, the EC should be able to review and update the list of hydrogen carriers through a Delegated Act. Clear guidelines should be foreseen allowing for a stakeholder consultation and an impact assessment should be conducted to factor in potential negative impacts e.g. carriers being subject to rules not relevant for them.

Hydrogen Europe draws attention to the importance to develop hydrogen terminals that can be used in the short term for LNG and not the other way around. This will ensure that no assets are stranded. At the same time, we highlight that a hydrogen terminal could co-exist in a single facility together with an LNG terminal and potentially be operated by the same legal entity as the one in charge of the LNG terminal. In addition, we note that hydrogen terminals could be used not only for imports but also for exports/reloading when necessary. The differentiation of services could be made based on an accounting unbundling.

As the hydrogen market develops, there is a need to anticipate and plan for the transportation of hydrogen over longer distances. The Prop Dir Art 52 introduces measures concerning the reporting of a network development plan for hydrogen by HNOs providing an overview of the hydrogen network infrastructure they aim to develop at regular intervals (determined by NRAs). Hydrogen Europe suggests

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<sup>18</sup> Art 46 Prop Gas Dir

<sup>19</sup> Art 47 Prop Gas Dir

focusing on demand and production trends as well as developing these outlooks with a view to 2030, 2040 and 2050.

### 3.2. ENNOH – critical to promote the development and functioning of the internal market for hydrogen

Hydrogen Europe considers that the establishment of a European Network of Network Operators for Hydrogen (ENNOH) is a very important instrument to address the urgent need to build hydrogen networks in the context of the [RePowerEU communication](#). ENNOH will provide HNOs with an independent body to promote the development and functioning of the internal market in hydrogen and cross-border trade and to ensure the optimal management, coordinated operation and technical evolution of the European hydrogen network. This is especially important as its composition will differ from that of ENTSOG.<sup>20</sup>

Hydrogen Europe raises concern on the following issues the EC proposes regarding ENNOH, as they will impede its effectiveness and will lead to a roll-out of a hydrogen network that is less tailored to the needs of hydrogen undertakings. As such, we recommend to:

- Revise the Ten-Year Network Development Plan (TYNDP) to include hydrogen stakeholders in the modelling of the integrated networks, including hydrogen networks to ensure proper scenario planning of future hydrogen demand in each Member State and map necessary infrastructure. <sup>21</sup> Hydrogen Europe questions why the modelling will continue to be prepared by TSOs after merely consulting other infrastructure operators (such HNOs). These provisions place the future development of the hydrogen network production infrastructure in the hands of existing electricity and gas operators.
- Include the planning of the financing mechanism for new cross-border hydrogen infrastructure in the TYNDP drafted by ENNOH. The current proposal suggests that such details are to be included in the EU-wide ten-year network development plan drafted by ENTSOG.

Indeed, ENTSOG could in principle accommodate HNOs. This would however require significant changes to its governance structure in view of the potentially divergent interests and clear policy objective of moving towards hydrogen. As such, hydrogen undertakings would have to be given a preponderant voice to repurpose ENTSOG into the primary vehicle with stewardship over decarbonisation and development of hydrogen. Such a radical restructuring could prove disruptive and undermine ENTSOG's ability to continue fulfilling its functions for the natural gas sector.

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<sup>20</sup> Article 40(1) PropGasReg

<sup>21</sup> Prop Gas Reg Article 23(4)



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