EASE Reply to the European Commission Public Consultation on a Future EU Strategy for Smart Sector Integration

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INTRODUCTION

The European Commission has launched a consultation on a future EU strategy on smart sector integration.

In order to meet the climate objectives, while also guaranteeing secure and affordable energy for consumers, the European Commission would like to understand how to better link up our energy system and exploit the synergies enabled by an integrated energy system.

At EASE, we believe this is a great chance to highlight barriers and opportunities related to smart sector integration and energy storage.

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1. What would be the main features of a truly integrated energy system to enable a climate neutral future? Where do you see benefits or synergies? Where do you see the biggest energy efficient and cost-efficient potential through system integration?

The upcoming strategy should be tied to clean and smart solutions that allow for the cheapest route to decarbonisation while supporting the competitiveness of European industry, to transition to a **renewables-based energy system supported by energy storage**. To achieve a truly integrated energy system, **energy storage** technologies are **key drivers for smart sector integration**. They can link different **energy and economic sectors**, thereby increasing the overall efficiency at energy system level while contributing positively to energy security.

Energy storage technologies contribute to increasing the share of renewable electricity used in the energy mix by reducing or avoiding curtailment (spillage) of renewable electricity generation. By shifting the use of excess renewable electricity forward in time to periods of deficit, RES essentially become dispatchable, which greatly facilitates their integration into the energy system, and ensures optimal use of installed RES capacities. Additionally, when optimally located, energy storage solutions can enhance the optimal use of the transmission grid avoiding congestions. Energy storage can help decarbonise the heating and cooling sectors, which are currently heavily dependent on fossil fuels. Finally, some of these technologies, for example Power-to-Gas (Ptg) and Power-to-Liquid (PtL), can be used to produce renewable or low-carbon fuels (e.g. synthetic methane, methanol) or chemicals (e.g. ammonia).

2. *What are the main barriers to energy system integration that need to be addressed in your view?*

To achieve sector integration, several barriers must be overcome. There are **economic, administrative, and regulatory barriers**.

The strategy should look into designing a framework for a large deployment of renewable power and electricity able to achieve decarbonisation across all economic sectors. The power sector can decarbonise provided that an investment framework for RES and carbon-neutral firm and flexible capacity, such as storage, is well designed. The Clean Energy Package has not fully addressed the issue of long-term price signals for investors. Consumers need to have proper price signals to perform their investment choices. The revision of the energy taxation directive should consider the climate impact of different fuels and carriers, and the possibility of removing undue taxes and levies may be studied by European regulators. A suitable form of carbon pricing should be looked into for all energy carriers. A **level playing field** for flexibility and balancing solutions across the energy system must be guaranteed: energy storage technologies, when possible, should compete on the market. The lack of appropriate taxes, grid fees, and levies placed on energy storage facilities that provide added value to the grid should also be addressed.

Barriers that hinder the integration of **heating and cooling** sector with other ones:

- ✓ Upfront costs for thermal storage.
- ✓ Lack of energy (electricity, heat) balancing markets and price signals: for an improved value proposition for different TES technologies, time-of-use tariffs. and price signals for time shifting would likely be a driver for the uptake of TES
- ✓ Slow uptake of renewable heating technologies.
- ✓ Regarding large scale seasonal thermal energy storage, there is a low penetration of district heating and slow uptake of renewable thermal sources.
- ✓ Lack of a clear coal replacement plan where Thermal Storage could re-use a portion of the steam equipment's and transform the plant in a renewable plant
- ✓ Knowledge and awareness in society, public sector, and industry.

Barriers that hinder the integration of **mobility** sector with other ones:

- *Vehicle-to-Grid (V2G) integration*:
- ✓ Energy tariffs and pricing structures.
- ✓ Access to the electricity market by aggregators.
- ✓ Lack of charging infrastructure allowing V2G schemes.
- ✓ Lack of clarity on business and aggregation models enabling V2G to capture the greatest economic value.

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- ✓ Lack of charging standards/protocols necessary to deliver grid services across different car brands.
- ✓ EV battery owners' concerns about loss of range/availability of their vehicles if engaged in V2G scheme.
- ✓ EV battery owners' concerns about battery degradation when operating in V2G mode.
- – *Fuel Cell Electric Vehicles*:
- ✓ The lack of refuelling infrastructure is one of the most prominent barriers to this business case. The EU has attempted to address this through the 2014 Alternative Fuels Infrastructure Directive (AFID)[1]. Under AFID, it is up to Member States to include hydrogen refuelling points – but there is no obligation on Member states to consider hydrogen refuelling points.
- ✓ The recent European Commission assessment of the Member State National Policy Frameworks (NPFs)[2] underlines that member states have radically different targets and visions for the hydrogen infrastructure. This means that hydrogen-powered vehicles will likely penetrate the national markets at different speeds.
- ✓ Several economic barriers will play a role in determining the economics, such as the price of the fuel cell vehicles; availability of FCEV models; the price of the hydrogen; and the cost of refuelling points. The price of the hydrogen is expected to decrease; still, future fuel cell costs and technology advancements are uncertain, which may affect investments.

Barriers that hinder the integration of **Industry** sector with other ones:

- ✓ The recast Renewable Energy Directive (REDII) does not focus on the use of hydrogen in important sectors, such as ammonia production and steel making. The lack of regulatory incentives for a higher intake of renewable and low-carbon hydrogen as feedstock is a barrier to the further deployment of the technology.
- ✓ Article 25 of the REDII requires Member States to take into account renewable liquid and gaseous transport fuels of non-biological origin (REFUNOBIO) such as hydrogen including in cases where they are used as intermediate products for the production of conventional fuels in their calculations to reach the 14% renewable energy target in transport. However, the methodology to qualify as a REFUNOBIO (article 27, para 3 of REDII) has not been defined yet, thereby creating uncertainty.
- ✓ Low-carbon and renewable hydrogen produced via electrolysis is more expensive than fossil-based hydrogen driven mainly by the high electricity costs and

[1] European Parliament and Council directive 2014/94/EU on the deployment of alternative fuels infrastructure, *Official Journal L 307*, 2014.

[2] European Commission, *Report on the Assessment of the Member States National Policy Frameworks*, 2019.

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electrolysis early stage supply chain in EU – in non-European countries electrolysis costs have the potential to soon achieve parity with SMR technology. For a larger development of low-carbon and renewable hydrogen produced via electrolysis, fossil fuel externalised cost should be internalized. Internalisation of external environmental costs for fossil-based fuels would create a more balanced cost structure. In particular, low-carbon and renewable hydrogen for high-temperature heat is more expensive than current fuels.

Barriers that hinder the integration of **gas** sector with other ones:

- ✓ Hydrogen can be stored in underground salt caverns and possibly in depleted gas fields/aquifers. Such storage facilities may either be classified as gas storage, and fall under the scope of the Gas Directive; or as energy (electricity) storage, and fall under the Electricity Directive (recast). Therefore, Power-to-Gas facilities could be subjected to two different and potentially conflicting regulatory regimes.
- ✓ Besides, while different gas qualities do not result in cross-border trade restrictions per se, according to the implementation monitoring reports of the Network Code on Interoperability and Data Exchange rules (NC INT) from ACER[3] and ENTSOG[4], cross border trade restrictions due to gas quality differences do not exist at the moment. Thus, different gas quality requirements and standards for blending across borders might create a further constraint in the future. Currently, no European standardisation on those issues exists. However, TSOs are required to cooperate at cross-border points (as defined by the NC INT).
- ✓ Finally, there are economic barriers. Power-to-Gas remains a relatively expensive technology due to its high capital costs, the price of electricity, and the lack of mass-scale electrolysers supply chain – compared to non-European countries. Also, the injection of hydrogen into the existing gas grid above certain quantities would require adaptations of the transmission and distribution infrastructure, downstream facilities, and end-user appliances. Therefore, it is important to assess the related safety and costs concerns. Moreover, the methanation process, which avoids blending concerns, is currently expensive.
- ✓ Regarding Power-to-Gas in the electricity system, such facilities are subject to a wide array of regulatory schemes; there is also legal uncertainty regarding PtG plants and the recognition of PtG facilities as a grid service/flexibility service provider

[3]ACER, *First Implementation Monitoring Report of the Network Code on Interoperability and Data Exchange*, 2017.
[4] ENTSOG, *Interoperability and Data Exchange Rules Network Code Second Report on Implementation Monitoring*, 2017.

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3. *More specifically:*

a. *How could electricity drive increase decarbonisation in other sectors? In which other sectors do you see a key role for electricity use? What role should electrification play in the integrated energy system?*

Electrification can lead to decarbonisation in several sectors. It is important that the EU continues the implementation and modernisation of policies to a.o. mainstream the deployment of renewable electricity, electrification and energy efficiency measure. The EU should push for the **decarbonisation of the power sector** and consider the direct electrification of final uses (a.o. heating and cooling, industry, and transport).

Electrification of transport based on low carbon and renewable energy sources will play a pivotal role in decarbonising the transport sector, contributing to the fight against air and noise pollution thanks to battery electric vehicles and fuel cell electric vehicles' electric drivetrains. However, the electrification of transport could impose significant stress and costs on the electricity system if managed poorly. Energy storage systems will be key to mitigate these effects thanks to e.g. Vehicle-Grid Integration through smart charging and vehicle-to-grid services. Regarding the the **heating and cooling sector**, thermal energy storage can reduce the carbon footprint of the heating and cooling sector using variable, flexible, and baseload renewable energy technologies. Heat storage not only increases the flexibility of the heating system, it also provides competitive flexibility to the electricity system in the EU as a whole through system integration options such as power-to-heat solutions (e.g. Smart Electric Thermal Storage). Thermal storage can play a key role in large scale **district heating and cooling** networks and **industrial applications** (e.g. heat storage and heat pumps combined for applications in the food industry), but also at a smaller scale for **commercial** buildings and **household** dwellings.

Direct electrification must be complemented by **indirect electrification** (P2X technologies) to decarbonise e.g. hard-to-abate sectors – different sectors require different solutions. Regarding indirect electrification in the context of **Industry**, the EU itself acknowledged energy storage and hydrogen's potential in its 2050 Long-term Decarbonisation Strategy. An electrolyser, powered by renewable electricity, will in the near future produce hydrogen that will then be incorporated into the conventional fuel production process. Renewable and low-carbon hydrogen could also be used in other projects to replace natural gas and other fossil fuels to produce high-grade heat (>650°C) via hydrogen combustion in hydrogen-specific burners, in e.g. cement and iron

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production. The EU should consider looking into promoting a renewable and low-carbon hydrogen economy as a reality that will justify and allow private capital flow, accelerating the deployment of a strong EU electrolysis supply chain later to be extended to the rest of the hydrogen value chain. Regarding **mobility**, in the context of especially heavy-duty vehicles, hydrogen fuel cells are an excellent substitute for fossil fuels. Hydrogen could also be used to produce e-fuels through a chemical process, in a manner similar to the production of synthetic natural gas. Such fuels can be used in conventional cars without the need to modify or replace the engine. Besides, regarding the **gas system**, as recognised by the European Commission's 2050 Long-Term Decarbonisation Strategy, electricity-generated hydrogen has the potential to replace natural gas as an energy carrier and substitute several uses of gas.

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b. *What role should renewable gases play in the integrated energy system?*

Renewable gases have the potential to play an important role in the integrated energy system. As stated in the previous answer, (renewable/low-carbon) hydrogen has the potential to replace natural gas as an energy carrier and substitute several uses of gas. Renewable gases will play a key role in the mobility, industry, gas, feedstock production, and electricity sectors. In the case of (renewable/low-carbon) hydrogen, it can safely be blended with natural gas in pipeline systems up to 20%[5] in volume. Blending limitations are avoided after a methanation process whereby hydrogen (H2) is combined with carbon dioxide (CO2), resulting in the creation of synthetic natural gas (CH4), which has the same properties as natural gas and can be freely injected into the gas grid.

Re-use of existing natural gas pipelines could lead to an increase in social welfare by mitigating the risk of stranded assets; still, infrastructure adaptation costs must be carefully explored.

Through Power-to-Gas renewable gases also have the potential to decarbonise the heating and cooling sector, which represents almost half of the EU's energy consumption. According to the Commission's in-depth analysis of the 2050 Long-term Decarbonisation Strategy, "in the future, hydrogen-fuelled heating could play a bigger role, especially in off-grid areas, where there are a limited number of flexibility sources that can ensure the balance in the heating system".

[5] NaturalHy Consortium, *NaturalHy project final report*, 2014.

c. What measures should be taken to promote decarbonised gases?

Measures should focus on accelerating the business models which are most valuable for Europe, based on (renewable/low-carbon) hydrogen, produced with grid-connected RES, and destined for different sectors. To support investment, clear regulatory changes for renewable and low-carbon gases (including hydrogen and Power-to-Gas fuels) are necessary.

1. Definition: develop a harmonised definition for renewable and/or low-carbon hydrogen based on a transparent methodology in order to avoid fragmentation of the market. **Hydrogen should be classified with reference to its carbon footprint** and the nature of the electricity used for its production, following the CertifHy project's recommendations.
2. Guarantees of Origin: develop a mutual recognition of Guarantee of Origins to facilitate cross border trade.
3. Registry: launch an EU-wide certification system and align it with national registries in a timely manner.
4. Administrative barriers: minimise administrative barriers to the certification of renewable and/or low-carbon hydrogen while also ensuring a robust certification system.
5. Level playing field: ensure fair and effective competition between technologies and energy carriers and between imported H2 and H2 produced in the EU.

In this context, an EU supply chain over the full hydrogen value chain could play a significant role. Importantly, the EU should not decarbonise its energy system by increasing emissions elsewhere. Hydrogen imports should be subjected to the same requirements and thresholds for certification that are applied in the EU. Otherwise, hydrogen production within the EU would be at a significant disadvantage compared to non-EU-based competitors in case these do not have to bear a comparable CO2 cost. To do so, on top of the previously mentioned Guarantee of Origin scheme, policy changes are due:

- ✓ a new system, revising existing arrangements regarding hydrogen imports, is necessary
- ✓ Implementation of a strong EU Emissions Trading Scheme to better value renewable and low-carbon hydrogen.

Besides, if it is a renewable source providing the energy content, then emissions from renewable fuels and gases should always be considered CO2 neutral: when fuels and gases are burned, the question arises of where the energy content is coming from. The source of the CO_2, which must be compatible with the provisions of the EU ETS, is not relevant as it is not an energy carrier: the energy carrier is the hydrogen-based part.

Further recommendations on decarbonised gases are present in the answer to the last question.

d. *What role should hydrogen play and how could its development and deployment be supported by the EU?*

Power-to-Gas and Power-to-Liquid technologies, by converting renewable and low-carbon electricity into other energy carriers, can contribute to the **higher integration of vRES**, bring additional and longer-duration flexibility to the energy system, and help in decarbonising the EU economy in line with the Paris Agreement. Power-to-Gas can help decarbonise high-value end-uses, such as part of the industrial applications and very heavy-duty transport.

In order to support the development of storage solutions capable of providing flexibility at a longer duration and/or through sector integration, it is essential to clarify the regulatory framework applicable to Power-to-Gas and Power-to-Liquid facilities and to create a supportive environment for the development and deployment of these technologies. To **support the deployment of power-to-gas**, the EU should address issues including clear definitions of renewable and low-carbon hydrogen, guarantees of origin, administrative barriers, strengthen the renewable and low-carbon hydrogen EU supply chain, and **ensure a level playing field** between different technologies.

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e. How could circular economy and the use of waste heat and other waste resources play a greater role in the integrated energy system? What concrete actions would you suggest to achieve this?

Making **greater use of waste heat** would contribute system efficiency and support the achievement of the EU's 2030 and 2050 targets. Thermal energy storage technologies can play an important role in this respect, by e.g. storing waste heat from **industrial processes.** Such storage of (waste) heat offers operational flexibility and efficiency gains to power plants and industrial processes allowing also for seasonal buffering of heat. Besides, thermal energy storage, in the form of Underground Thermal Energy Storage or combined with a heat pump, can integrate waste heat in **district heating**, increasing energy efficiency, reducing costs, and improving the environmental footprint.
To favour uptake of such solutions, policymakers' action is needed and timing is of the essence:

- ✓ Initiate **potential assessments and communication of the benefits** of thermal energy storage options for prosumers, industry, and communities; among other flexibility solutions.
- ✓ Steer towards achieving **non-discriminatory market** incentives and **regulatory frameworks** across the EU for flexibility solutions, with a focus on removing infrastructure access barriers for flexibility technologies and services. European Research Development & Innovation **(RD&I)** should also support and mirror the grand opportunities and challenges ahead for thermal energy storage technologies. In a nutshell, a **level playing field** for flexibility and balancing solutions is required.
- ✓ **Demonstrate and deploy support of (new) integrated solutions** where pre-commercial thermal energy storage options are implemented in smart energy systems to reach the required flexibility at the lowest system costs.

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f. How can energy markets contribute to a more integrated energy system?

Several key actions can be taken to ensure that energy markets support the development of a more integrated energy system:

- ✓ In a general sense, **technology neutral policies** that enable the deployment of energy storage solutions can support the development of sector integration.
- ✓ Developing **well-functioning markets for all required services**, including flexibility. Such markets should be open to the participation of all energy resources and should be neutral on whether such participation is direct (i.e. same energy carrier) or indirect (i.e. energy conversion to a different energy carrier). In particular, addressing the lack of energy (electricity, heat) balancing markets and price signals: for an improved value proposition for different energy storage technologies, time-of-use tariffs and price signals for time-shifting would likely be a driver for the uptake of ES.
- ✓ Develop **cost-reflective use-of-network tariffs** for all energy carriers, aligning the economic signals/incentives given to customers with the actual cost structure and ensuring that the total current tariff proceeds are sufficient to recover total current network costs.
- ✓ While respecting the "**polluter pays**" principle, harmonise the taxes and fees applied to all energy resources – i.e. national tax design according to the same principles; equitable allocation of energy policy-related costs among all energy carriers'/energy consumers.
- ✓ From an operational/physical perspective, develop appropriate **coordination between the different energy carriers** across all timeframes – i.e. coordination of infrastructure planning, risk preparedness, system operation, and so on.

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g. How can the cost-efficient use and development of energy infrastructure and digitalisation enable an integration of the energy system?

The EU should look into assessing demand and invest in infrastructures, **such as smart and digital electricity networks and EV charging infrastructure**. At the EU level, the upcoming revision of the TEN-E, TEN-T, AFID legislative files should support investments according to this vision. Regarding the latter, energy storage can act as a support for (fast) **charging infrastructures**, which should be rapidly and efficiently deployed to support the roll-out of EV: storage technologies (e.g. batteries, flywheels) coupled to EV chargers enable multiple vehicles to be charged at the same time, with power being supplied both by the grid and local RES.

Power grid infrastructure should be further enhanced through digitalisation and automation; this maximizes resilience and flexibility, enhancing energy storage contribution. Digitalisation, intertwined with storage, has the potential to play an important role in the transition to a low carbon, cost-efficient, secure, and consumer-centric energy system. But automation and digitalisation will play a key role across all of the energy supply chain. A smart, more integrated system will allow for the growing penetration of distributed generating and flexibility sources, such as energy storage.

A smart sector integration strategy requires a holistic approach across different infrastructures. This is particularly important as the industry shows increased interest in synergies, for instance through **energy storage/vehicle-to-grid**, to provide services to the grid thanks to innovative software and hardware platforms.

Smart heating and cooling infrastructures can play a central role in the transition to a smarter and more sustainable use of heating and cooling, as recognised by the scientific and industry communities. **Smart heating and cooling concepts**, including thermal storage concepts, have the potential to provide the needed flexibility options – storage, demand response, and smart operation – in the short term and at a relatively low cost.

Regarding **gas infrastructures**, it is important to take into account the evolution of the gas demand in the long run when assessing the investment decision, in order to ensure its economic efficiency/viability and to avoid stranded assets.

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4. Are there any best practices or concrete projects for an integrated energy system you would like to highlight?

Many EASE members are working on innovative projects. EASE itself is involved in the TSO 2020 project. TSO2020 is the largest Action approved in the first so-called Synergy call of proposal launched as part of the EU Connecting Europe Facility (CEF).

The project aims to exploit synergies between power storage solutions and alternative transport infrastructure needs. It will use existing power cable networks to dispatch the electricity flows from the Cobra cable PCI to a nearby major gas network facility. Existing gas storage facilities and the national gas pipeline network (power to gas) will be unlocked to absorb the H2. Local businesses will provide H2 distribution via road transport in the Netherlands and the western part of Germany.

An innovative pilot project is PosHYdon, which aims to build an offshore hydrogen plant. The Q13a oil and gas platform, located more than ten kilometres off the coast of The Hague, will house a plant that will produce green hydrogen from sustainable electricity that is generated by the sun and wind. The project highlights how the North Sea may playa an important role in future energy supply by integrating electricity and gas networks through (offshore) Power-to-Gas.

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5. What policy actions and legislative measures could the Commission take to foster an integration of the energy system?

In addition to the recommendation listed in previous answers, to favour smart sector integration as a whole, the EU regulatory framework should explicitly enable **revenue stacking** to allow for market-based development of energy storage able to provide multiple services for multiple sectors (e.g. selling hydrogen to industry/mobility sector, while also providing flexibility to the grid). Policymakers should ensure integrated **system planning and effective coordination between the different energy carriers** across all timeframes – i.e. coordination of infrastructure planning, risk preparedness, system operation, etc. to ensure a level playing field for both power-to-power and power-to-x technologies.

To favour the integration of the **heating and cooling** sector with others:

- ✓ Introduce non-discriminatory economic incentives for flexibility and balancing solutions. A level playing field could be achieved by equalising market incentives for flexibility solutions, for instance by ensuring that tax incentives (such as accelerated depreciation) also cover (thermal) energy storage technologies.
- ✓ Guarantee non-discriminatory regulatory framework for flexibility and balancing solutions. I.e. ensuring non-discriminatory access to energy grids; specifically including heating and cooling networks and electricity networks. In particular, EASE encourages facilitating access to district heating or cooling systems for heat or cold.
- ✓ Increase European Research Development & Innovation (RD&I) support and efforts, which should mirror the grand opportunities and challenges ahead for thermal energy storage technologies.

To favour the integration of **mobility** sector with other ones:

- *Regarding (fast) charging infrastructure supported by energy storage*
- ✓ Consider an evolution of fiscal rules and energy taxes for consumption/injection.
- ✓ Allow energy storage to access more easily the energy and ancillary markets.
- ✓ The EU must adopt a coordinated approach to defining grid connection conditions and electricity pricing configurations.
- ✓ EU funding programmes such as TEN-T or Connected Europe Facility (CEF) should provide support to the deployment of charging infrastructures coupled with energy storage.
- ✓ Clarify safety rules for indoor/outdoor stationary storage installations for charging infrastructures.
- ✓ Avoid legislation on EV charging leading to varying national implementation.

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- ✓ Charging of electric vehicles should be clearly defined as a service to avoid unnecessary barriers and allow market players to make cross border business in the EU
- *Regarding Vehicle-to-Grid*
- ✓ Implement interoperability, harmonised protocols, and standards among the infrastructures and systems.
- ✓ Energy tariffs and pricing structures smart and enable vehicle vehicle-grid integration.
- ✓ Avoid on double-charging of taxes and levies on electricity generated from storage facilities should be avoided.
- ✓ Allow aggregated EVs to participate in all electricity markets.
- ✓ Set ambitious requirements in public (as well as private) charging infrastructures to promote Vehicle-Grid Integration.
- ✓ Revise building codes to be more more e-mobility friendly and ensure the "right to charge" for building owners and tenants.
- ✓ Inform consumers on V2G.
- ✓ Provide support to new emerging transport means, mainly Battery Electric Vehicles and Fuel Cell Electric Vehicles, to support decarbonisation targets.
- *Regarding Fuel Cell Electric Vehicles*
- ✓ Provide further support for the deployment of hydrogen refuelling stations.
- ✓ Revise the Alternative Fuel Infrastructure Directive to include compulsory targets on recharging point infrastructure based on a sound methodology and a set of criteria able to address diverse recharging needs.

To favour the integration of **Industry** sector with other ones:

- ✓ Promote the uptake of renewable and low-carbon hydrogen generated through water electrolysis in energy-intensive industries. In particular, an explicit exemption of the application of the Industrial Emissions Directive (IED) to hydrogen produced from water electrolysis should be considered for IED recast.
- ✓ For the refining case, clarify the methodology to qualify as a REFUNOBIO in a way that will not hinder the development of Power-to-gas.
- ✓ Increase RD&D funding for hydrogen projects aimed at scaling up the technology and decreasing production costs and further develop the associated processes.

To favour the integration of **gas** sector with other ones:

- ✓ Regarding deployment of gas infrastructures, a **stronger oversight by ACER** (Agency for the Cooperation of Energy Regulators), which should set the planning methodology, and **national regulatory authorities** is necessary: the increasing importance of **links between gas and electricity infrastructure**

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should be reflected in a new requirement for joint grid planning/joint market activities, at both European and national levels.

- ✓ Support efforts to assess the maximum blending levels of hydrogen in national and local natural gas grids as well as the impact of hydrogen on end-user appliances.
- ✓ Support efforts to assess the re-use of existing natural gas infrastructure such as transmission and distribution pipelines and underground storage facilities (salt caverns, depleted fields) for transport and storage of hydrogen, either in a blend with natural gas or in pure form.
- ✓ Based on the results of the assessments listed in the first two points, further study the possibility of an EU-wide basis for injection of hydrogen into the natural gas grid based on common technical rules, standards and blending concentration.
- ✓ Based on the result of the assessments listed in the first two points, identify and remove legal and administrative barriers that prevent the injection of hydrogen into the national gas grid. Similarly, regulatory and market distortions should be identified and addressed.
- ✓ Simplify licensing requirements and authority approvals.
- ✓ Tailor tariff structures so that each grid user pays a price covering the costs it induces on the grid.

To favour the integration of the **electricity** sector with other ones:

- ✓ Ensure that the structure of electricity grid fees reflects the costs that each user induces on the grid: in other words, when storage facilities provide flexibility services that have value in terms of increasing the efficient operation of the grid, these facilities should not be penalised with unfair grid fees/tariff, and be treated in a level playing field as regards other substitute technologies.
- ✓ Ensure Power-to-Gas facilities are able to participate in different markets on a level playing field with other flexibility providers.

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About EASE

The European Association for Storage of Energy (EASE) is the voice of the energy storage community, actively promoting the use of energy storage in Europe and worldwide. It supports the deployment of energy storage as an indispensable instrument within the framework of the European energy and climate policy to deliver services to, and improve the flexibility of, the European energy system. EASE seeks to build a European platform for sharing and disseminating energy storage-related information and supports the transition towards a sustainable, flexible and stable energy system in Europe.

For more information please visit www.ease-storage.eu

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Disclaimer

This response was elaborated by EASE and reflects a consolidated view of its members from an energy storage point of view. Individual EASE members may adopt different positions on certain topics from their corporate standpoint.

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