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Delegations will find in the Annex the draft Council conclusions 'Towards a hydrogen market for Europe'.

ANNEX

Council conclusions

Towards a hydrogen market for Europe

THE COUNCIL OF THE EUROPEAN UNION

1 RECALLING

1.1 That the European Council at its meeting on 12 December 2019 endorsed the objective of achieving a climate-neutral EU by 2050 and in this context took note of the European Commission communication on the European Green Deal, which aims at making Europe the first climate-neutral continent by 2050, tackling biodiversity loss, pollution and reforming wasteful use of resources by moving to a more circular economy.

1.2 That with ratification of the Paris Agreement, the EU and its Member States have agreed to ~~develop action plans~~ **submit nationally determined contributions** to rapidly reduce their greenhouse gas emissions to limit the global temperature increase to well below 2°C above pre-industrial levels, while pursuing efforts to limit the temperature increase to 1.5°C.

1.3 The Council conclusions of 25 June 2019 on the future of energy systems in the Energy Union to ensure the energy transition and the achievement of energy and climate objectives towards 2030 and beyond, which emphasise the development and ~~employment~~ **deployment** of safe and sustainable **low-carbon** technologies contributing to decarbonisation; the promotion of sector coupling and sector integration~~-~~; the removal of regulatory barriers; and the need for assessing the potential of hydrogen, particularly from renewables, with a view to make the best use of existing EU gas infrastructures in a decarbonised energy system.

1.4 The growing number and ambition of Member States' recent national hydrogen strategies, as well as of regional initiatives on hydrogen and the importance of implementing a coherent and complementary Union level strategy.

1.5 The European Commission communication on an EU Strategy for Energy System Integration and the European Commission communication on a Hydrogen Strategy for a climate-neutral Europe aiming to build an integrated energy system fit for climate neutrality and outlining a hydrogen roadmap for the EU with objectives for, among others, electrolyser upscaling and deployment, improving cost-competitiveness of hydrogen in particular produced by electrolysis, a corresponding investment agenda, proposals for boosting supply and demand and elements for a market and infrastructure framework, all embedded in a holistic view of the potentials of stronger synergies between the energy carriers and end-use sectors.

1.6 The Linz Hydrogen Initiative supported by all Member States and the European Commission as well as a large number of key energy and industry players in September 2018, highlighting the potentials of sustainable hydrogen technology for the decarbonisation of multiple sectors, for the energy system and for the long-term energy security of the EU.

1.7 The European Clean Hydrogen Alliance, which aims to enhance pan-European cooperation through openness, partnership, inclusiveness, diversity and transparency and to scale up the hydrogen value chain across Europe by establishing a robust project pipeline focussing on achieving a climate-neutral Europe.

1.~~7a~~**8** The role played by the Fuel Cells and Hydrogen Joint Undertaking as an excellent example of public~~-partnership~~ **private partnerships in hydrogen value chains, namely** for research~~-in the field of hydrogen~~**, technological development and demonstration**.

1.~~8~~**9** That the State of the Energy Union 2020 report by the European Commission showed the need to counter the observed decrease in research and innovation investments in clean energy technologies in order to strengthen the long-term sustainable growth potential with a focus on industries and innovators in the EU that will develop the clean technologies needed and can promote them worldwide.

1.~~9~~**10** That the Strategic Forum for Important Projects of Common European Interest (IPCEIs) has selected “Hydrogen Technologies and Systems” as one of the strategic value chains, which are essential to enhance the future competitiveness and sustainability of the EU.

-1.11 The central role of the National Energy and Climate Plans (NECPs) for economic recovery and for prioritising the necessary future investments to reach the EU's 2030 energy and climate targets as well as the EU's climate-neutrality target for 2050.

1.12 The Clean Energy for EU Islands initiative that aims to advance energy transition on European Islands ~~and the potential to make Europe's island communities innovation leaders in the energy transition for Europe~~.

2 RECOGNISING

2.1 That the EU, with its internal energy market, including energy legislation**,** in particular the Clean Energy for all Europeans Package, is well positioned to deliver competition, increased uptake of energy efficiency, renewable energy sources and improved energy security in Europe and proving its dedication to the combat of climate change~~-~~, while respecting Member States` choice in addressing energy poverty and their sovereign decision to decide on their energy mix.

2.2 That the energy sector will play a significant role in contributing to Europe's economic recovery after COVID-19, leading a just transition towards sustainable growth and climate neutrality and making use of the opportunities and stimulus for modernisation and transformation by enabling private and public investors to base their investment decisions on the ~~future~~ technologies needed to ensure the transition to a decarbonised energy system.

2.3 That energy savings and energy efficiency measures ~~as well as~~**,** direct use of renewables ~~including through~~ **as well as** electrification ~~based on~~**, particularly from** renewable sources, are effective and cost-efficient ~~no-regret~~ measures to substantially move towards climate neutrality in all relevant sectors.

2.4 That there are areas of fuel use in transport and in industry (including as feedstock) that ~~cannot become climate neutral~~ **are hard to decarbonise** other than by replacement with hydrogen or hydrogen-based ~~synthetic~~ fuels, feedstocks or chemicals.

2.5 The added value that the production of hydrogen from electrolysis, particularly when utilising ~~intermittent~~ **electricity from** renewable ~~electricity~~ **sources**, can have for the efficient and stable operation of the power system, while providing long-term energy storage options and additional flexibility for market and system balancing, in addition to other flexibility options, such as demand- side management and ~~electricity~~ **energy** storage.

2.6 The need to further incentivise and provide a level playing field for future decarbonisation investments, including through the continued functioning and ~~future improvement~~ **strengthening** of the EU ETS **and revision of the relevant EU State aid rules**.

2.7 The EU's leading role in research and development, in sustainable-energy technologies, as e.g. in electrolysers, in industrial innovation and in the utilisation of hydrogen, all of which are important prerequisites in order to enable a number of energy-intensive industries as well as some transport sectors to decarbonise **in a sustainable and cost-effective manner** by switching to hydrogen, preferably from renewable sources, as feedstock, as fuel or **when feasible** as a basis for synthetic gases or liquids within new investment cycles.

2.8 That there is a wide range of applications for hydrogen and for its derivatives in cases where direct hydrogen usage is not possible but given the presently high cost and limited availability of hydrogen, preference should ~~initially~~ be given to areas that are already close to commercial viability~~-~~, where the use of hydrogen **and its derivatives** contributes to emission reduction and is energy efficient, and where major lock-in effects can be avoided, or which cannot be decarbonised in other ways.

2.~~8a~~**9** That hydrogen clusters are an efficient starting point for the deployment of safe and sustainable **low-carbon** hydrogen technologies and large-scale applications, ~~reducing the need for long-distance transport and~~ **while** representing appropriate ecosystems to release the potential of EU value chains.

2.~~9~~**10** That the interconnected gas transmission and storage infrastructure in the EU harbours a range of future opportunities for **the** dedicated transmission of hydrogen**, where relevant**.

2.~~10~~**11** That there are different modes of hydrogen transport as well as clustered approaches to production and consumption that may prove efficient and provide reliable storage and supply options, including ~~liquid~~ **liquified** hydrogen or hydrogen embedded in other energy carriers.

2.~~11~~**12** That there are different **safe and sustainable low-carbon** technologies ~~and sources~~ for the production of hydrogen~~, while~~ **that can contribute to EU climate neutrality in 2050, but** priority should be given to **hydrogen from** renewable ~~hydrogen being~~ **sources and that** the ~~long-term sustainable solution while making use~~ **deployment** of ~~the decarbonisation potential~~ **hydrogen from renewable sources must go hand in hand with a further deployment** of ~~other safe and sustainable technologies in the short and medium term.~~ **renewable electricity capacity.**

2.~~12~~**13** The added value of supporting the rapid upscaling of hydrogen production capacity in the EU and worldwide to achieve economies of scale for the establishment of a competitive and liquid market and to attract necessary investments.

2.~~13~~**14** The opportunities for harnessing the considerable renewable energy potentials in the EU and in ~~partner~~ **non-EU** countries thereby not only widening and diversifying the European energy supply base but also creating new markets for technology exports and assisting ~~partner~~ **third** countries in their energy transition.

2.~~14~~**15** That**,** especially with regard to unavoidable process emissions and temporarily complementing the renewable hydrogen production for scaling up the hydrogen market, ~~that~~ carbon capture and storage (CCS) and carbon capture, ~~use~~**utilisation** and storage (CCUS) may play a role for decarbonisation for the Member States that choose this technology.

3 MAKING USE OF

3.1 The National Energy and Climate Plans as well as dedicated national hydrogen strategies to identify potentials for acceleration, exchange best-practises, find common pathways, foster regional cooperation and align EU-level actions with those of Member States, while respecting their different starting points~~.~~ **and potentials.**

3.2 The **European Recovery and Resilience Facility and the** National Recovery and Resilience Plans ~~and European funds~~ to ~~accelerate~~ **support the green transition towards achieving the most recent Union's 2030 climate targets and complying with the objective of EU climate neutrality by 2050 by fostering** investments into the creation of hydrogen lead markets in Europe and ~~support~~ **supporting** Member States in scaling up demand and supply of ~~renewable~~ hydrogen ~~as well as technology transfer~~**,** aiming at replacing the use of carbon-intensive hydrogen **and accelerating the deployment of hydrogen produced from renewable sources**.

3.3 The provisions of the Clean Energy for all Europeans Package promoting the development of guarantees of origin for better traceability ~~for~~ **of** hydrogen from renewable sources, promoting renewable fuels of non-biological origin in transport~~,~~ aiming at additionality**,** and a fair remuneration of flexibility and system services as can be provided by a well-integrated hydrogen sector.

3.4 The EU internal **energy** market for upscaling of hydrogen production with a view to jointly achieving economies of scale, **allowing for various business models,** as well as for broadening availability of energy **and feedstock** supplies, developing ~~a transmission~~ **transport modes** and storage ~~network~~ **infrastructure** and offering the opportunity for consumers to make use of this fuel switch, where appropriate.

3.5 The New Industrial Strategy for Europe published by the **European** Commission in March 2020 with initiatives that contribute to the twin transition and achieving strategic autonomy while preserving an open economy~~-~~, as well as measures to prioritise and accelerate initiatives that generate workplaces, boost innovative activity and strengthen competitiveness~~-~~, and the launch of the new Industrial Forum, that will analyse industrial ecosystems and value chains and work on commonly reviewing, developing, accelerating and coordinating existing initiatives.

3.6 The ~~emissions trading system~~ **EU ETS**, moving towards a comprehensive incentive to reduce emissions, monetising externalities ~~and reducing the gap to cost competitiveness~~, while avoiding carbon leakage and ensuring the competitiveness of the European industries~~-~~**.**

~~3.7 The EU's state-aid rules to develop a fit-for-purpose approach enabling investments in safe and sustainable hydrogen technologies in Member States for all parts of the value chain.~~

~~3.8~~**3.7** The EU's established competition rules to allow for the development of efficient storage and transport modes and infrastructure options, where necessary.

3.~~9~~**8** The EU internal energy market's legal framework and principles to ensure competition, affordable prices and security of supply as a basis for the development of a customised approach to the regulation of the hydrogen sector and ~~fostering~~ **to foster** a liquid and contestable EU hydrogen market~~.~~**.**

3.~~10~~**9** The **opportunities for repurposing of the existing** interconnected European natural gas networks **and storage infrastructure,** to potentially provide the basis for a trans-European hydrogen infrastructure to be developed in a sustainable, cost-effective and coordinated way in relation to major production and consumption centres, as appropriate, while acknowledging that hydrogen clusters represent an immediate short- and medium-term option to deploy hydrogen solutions.

3.~~11~~**10** International value chains, building on the reliable trading partners and routes and the available international cooperation and partnerships outside Europe as potential for cost-competitive renewable hydrogen, also contributing to the advancement of renewable-energy technologies in those countries, while safeguarding a level playing field for European hydrogen production.

3.~~12~~**11** Cooperation instruments enabling large-scale cross-border joint investment projects as in an IPCEI on ~~Hydrogen~~ **hydrogen** or ~~as~~ **by making use of** joint tenders **under the Renewable Energy Directive 2018/2001** for ~~renewable hydrogen~~ **the** production **of hydrogen from renewable sources** and **by making use** of the **European** Commission's support for this process by coordinating efforts, providing guidelines and taking into account the difficulty of establishing a hydrogen market while maintaining international competitiveness.

3.~~13~~**12** New partnership formats with international private and public stakeholders to develop a pipeline of sustainable investment projects along the hydrogen value chain, for example within the frameworks of Mission Innovation and the Clean Energy Ministerial, as well as of the cooperation in international institutions**, where relevant,** such as the International Energy Agency (IEA) or the International Renewable Energy Agency (IRENA).

4 IDENTIFIES THE NEED

4.1 For the **European** Commission and Member States to intensify the work on sector integration, including energy efficiency gains, direct electrification and the role and contribution of hydrogen, ~~in particular~~ **particularly** from ~~renewables~~ **renewable sources** to decarbonisation, recovery and competitiveness.

4.2 To rapidly upscale the market for hydrogen at EU level **in a sustainable and cost-effective manner targeting in particular those sectors that are hard to decarbonise through other means** and use learning curves to ~~achieve~~ **progressively improve** cost efficiency.

4.3 To actively develop EU potential for renewable hydrogen ~~by using~~ **from** electricity**, particularly** from the most cost-effective renewable sources.

4.4 To incentivise private investment, inter alia, through existing EU financial **institutions, funds and** instruments**, such** as the **European Investment Bank, the** Sustainable Europe Investments Plan, the **Innovation Fund, the European** Structural **and Investment** Funds~~,~~ ~~the European Investment Bank~~ and the Connecting Europe Facility as well as through the design of innovative instruments, ~~such as~~ **e.g.** carbon contracts for difference (CCfDs~~). ~~)~~, **contributing to the objective of EU climate neutrality by 2050.**

4.5 To develop a visionary and ambitious roadmap and strategy for climate neutrality in the end-use sectors with regard to hydrogen ~~from~~ **produced with** safe and sustainable **low-carbon** technologies, **particularly from renewable sources,** as well as its derivatives ~~through a gradual trajectory~~, respecting sectoral and regional approaches and requiring ~~different~~ **flexible** policy solutions.

4.6 To assess infrastructure options taking account of different deployment patterns with regard to the efficient and affordable supply with domestic and, where needed, imported hydrogen and its derivatives and the impact on the design of competition and regulatory frameworks.

4.7 To establish an integrated network planning approach for all energy carriers, taking into account production, transport, storage and use, preferably making use of repurposed EU infrastructures for hydrogen transport, while ensuring the subsidiarity principle.

~~4.8~~**4.8 To assess specific solutions in currently less connected or isolated regions, such as islands, for the development of a sustainable hydrogen market and its related infrastructure.**

4.9 To make active use of the positive externalities of domestic renewable hydrogen production for system integration by lifting efficiency and flexibility potentials while avoiding network ~~congestions~~ **congestion** and thus enabling higher shares of ~~intermittent~~ renewable **energy** production.

4.~~9~~**10** To assess the requirements of a market design framework for a transparent, competitive and liquid hydrogen market, ensuring the integrity of the internal gas ~~market~~ **and electricity markets** and fair network tariffs while allowing for flexibility of business models.

4.~~10~~**11** To account adequately for the~~ central~~ supportive role of carbon pricing, while ensuring a level playing field and international competitiveness.

4.~~11~~**12** To ensure a level playing field between sectors and energy carriers with regard to **network charges,** taxes and levies.

~~4.12~~**13** To promote investments in research and innovation projects at European, national and regional levels aimed at tapping the potential of safe and sustainable ~~hydrogen~~ **low-carbon** technologies **for the production and application of hydrogen, particularly from renewable sources,** in order to increase efficiency and **at** promoting synergies between European, national and regional programmes.

4.~~13~~**14** To take account of investment cycles in the energy and industry sectors to avoid lock-in effects and sunk investments.

4.~~14~~**15** To give consumers a choice by disclosing the origin of gases, their CO2 and other greenhouse-gas footprints across the whole life cycle as well as their production mode and the overall fuel mix, aiming for an EU standard, while ensuring traceability throughout the value chain and making use of the standardisation efforts already made.

4.~~15~~**16** To make use of the potential for domestic hydrogen production, while further deepening international cooperation on hydrogen, to strengthen efforts to produce and enable import of renewable hydrogen in particular, especially where partners have high renewable-energy potentials and thereby addressing the entire value chain and aiming for the creation of a global, competitive, liquid and sustainable hydrogen market while reducing import dependencies.

5 CALLS ON THE EUROPEAN COMMISSION

5.1 To strengthen Europe's position as a front runner in innovation and industrial competitiveness by making full use of the potential of the European Research Area (ERA), by strengthening partnerships and ensuring adequate means for research into and the development and deployment of the necessary technologies and by facilitating investments, inter alia through revised state-aid rules ~~and guidance on interpretation of state aid rules, especially on Article 23 of the Communication (2014/C 188/02) .~~ **.**

5.2 To further elaborate and operationalise the EU hydrogen strategy, outlining the pathway to the roadmap's objectives with the help of joint programmes and in a cost-efficient way while respecting the priority of **the** energy efficiency ~~measures and~~ **first principle,** direct use of renewables~~.~~ **and electrification, particularly from renewable sources.**

5.~~2a~~**3** To support **and facilitate** the cooperation between Member States on strategic value chains, in particular the ~~construction~~ **designing** of one or more IPCEIs on hydrogen, and to ensure regular updates to the Council on the progress of the IPCEIs on hydrogen and the European Clean Hydrogen Alliance~~.~~ **and guidance on interpretation of the EU State aid rules, especially on Article 23 of the Communication (2014/C 188/02).**

5.~~3~~**4** To develop a comprehensive classification and certification framework for gaseous energy carriers, including for hydrogen and its derivatives, from domestic and imported production, that includes information on sustainability as well as CO2 and other greenhouse-gas footprints across the whole life cycle as well as their production mode and the overall fuel mix and to ensure traceability.

5.4**5** To develop a reliable and workable Union methodology to be applied where electricity is used for the production of renewable liquid and gaseous fuels of non-biological origin **to be used in transport** based on appropriate criteria as foreseen in the Renewable Energy Directive 2018/2001 including additionality criteria.

5.~~5~~**6** To outline approaches to avoid sunk investment costs and ensure that the transition ~~to~~ **towards hydrogen produced with** safe and sustainable ~~hydrogen production~~ **low-carbon technologies, particularly from renewable sources,** is not hampered by lock-in effects.

5.~~6~~**7** To take into account the opportunity for improving security of supply by exploiting EU production potentials, by further diversification of import opportunities and an overall lowering of import dependency, while recognising the reliability of existing energy partnerships.

5.~~7~~**8** To foster the creation of hydrogen clusters across the EU, in particular for hard-to-decarbonise end-use sectors, while supporting Member States in connecting these clusters in the long-term, lifting the potential of natural gas systems for gradual conversion into hydrogen-based systems, where needed.

5.~~8~~**9** To improve the framework for the ten-year network development plan (TYNDP) to include gaseous hydrogen as well as efficient integration interfaces between hydrogen, ~~methane-based~~ **natural** gas and electricity network planning.

5.~~9~~**10** To make use of the upcoming Trans-European Energy Network (TEN-E) Regulation revision to support dedicated hydrogen grid development **where justified by reliable and sustainable demand**, preferably on the basis of repurposing of existing gas infrastructure, ~~and scale up of~~ **where it is the cost-**efficient~~, safe and sustainable hydrogen technologies~~ **solution**.

5.~~10~~**11** **To amend the Energy Statistics Regulation to include hydrogen as an individual product in the energy statistics.**

5.12 To address the ~~decisive~~ **supportive** role of carbon pricing and to assess how it can further contribute to the hydrogen market development.

5.~~11~~**13** To assess how incentives with regard to taxes and levies are conducive to system optimisation and can avoid **the** misallocation of investments.

5.~~12~~**14** To make good use of the internal energy market's main principles to ensure competitiveness and well-balanced investment signals when developing a fit-for-purpose approach to the regulation of emerging hydrogen markets.

5.~~13~~**15** To take due account of the interactions between the different parts of the energy system, making best use of mutually supportive effects between ~~the~~ hydrogen and **the** electricity ~~sectors and~~ **sector,** supporting network efficiency and stability.

5.~~14~~**16** Together with the Member States, to deepen international cooperation and develop markets for European technologies and commodities also with regard to value chains, trading routes and common global standards, including environmental standards and certification, also for trade between Member States with transit through third countries.

5.~~16~~**17** To ensure, including by norms and technical standards, ~~that~~ **the interoperability of** natural gas **transport** and **storage systems as well as of** hydrogen ~~storage~~ **transport** and ~~transmission~~ **storage** systems, including those with cross-border relevance and those connected to third countries~~, are interoperable with regard to their physical properties~~.

5.~~17~~**18** To reflect the roles and potentials of existing and new incentives and instruments to reach the decarbonisation targets ~~and objectives~~ **by making use of electrolysis technologies** for **the production of** hydrogen ~~produced~~**, particularly** from ~~safe~~ **renewable sources,** and ~~sustainable~~ **of hydrogen application** technologies**,** when revising the Energy and Environment State Aid Guidelines (EEAG**), contributing to EU climate neutrality in 2050, in a manner that avoids undue distortions to competition and reduces the risk of subsidy races between Member States**.