PCI list consultation response

In the following response to the PCI/PMI public consultation on hydrogen project candidates, we will focus on the provided guiding question: "*How is the proposed project significantly contributing to a) sustainability and contributing to at least one of the following criteria for hydrogen projects: b) market integration, c) security of supply and d) competition or to the following criteria for electrolysers: e) security of supply and f) enabling flexibility services, and why is the project needed from an energy policy perspective, which contributes to the climate and energy targets of the EU*"? The responses, albeit not provided individually to each project, indicate for which projects or project categories they are relevant.

1. Sustainability

Concerning sustainability, there are a number of serious concerns linked to the climate impact of the hydrogen transported in the candidate PCI/PMI projects.
First and foremost, the **assumption**, enshrined at several instances in the PCI process and made in the TEN-E regulation, **that 'low carbon' hydrogen** (i.e. largely fossil gas based hydrogen) **contributes to the sustainability of our energy system, is plain incorrect.**
Taking into account the supply chain emissions, including methane emissions, intrinsically tied to the fossil gas that fossil-based 'blue' hydrogen is based on, means that blue **hydrogen emits more climate-damaging greenhouse gases than the direct use of fossil gas**.
Additionally, **carbon capture and storage (CCS)** a prerequisite for the generation of 'low carbon' hydrogen, **has never proven to work at scale** and is notorious for disappointingly low capture rates, impermanent CO2 storage or plain failure, despite many decades of support, and hundreds of millions of subsidies in the EU alone. Currently, most of the CCS serves Enhanced Oil Recovery (EOR) - the extraction of even more fossil fuels. There is no proof of any other CCS projects functioning commercially at this stage.
There is an additional risk that comes with CCS: Without any meaningful results and actual emissions reductions, it fuels **continued belief in this problematic technology which would allow continued development of further fossil fuel projects.**
Relying on fossil gas for the production of hydrogen also means that **serious sustainability problems linked to the supply chain of fossil gas remain**. Among these are the contamination of air, water and soil, the manyfold bad impacts (health, economic, earthquakes) on communities affected by gas extraction, particularly fracking, as well as other human rights violations.
What's more, **fossil gas is inseparably linked with high, largely unavoidable methane emissions**. This means that even before the CO2 in the process is captured, the fossil gas used in Steam Methane Reformation (SMR) or Autothermal Reformation (ATR) has led to significant methane emissions during extraction, compression, transportation (and potentially liquefaction and regasification). Most uses of hydrogen are also highly inefficient.
Thus, so-called **'low-carbon hydrogen' risks significantly increasing our emissions**, and even more so when we compare it to genuinely cleaner options.

The **dependence on CCS** – linked to the need for a costly **CO2 transport system** – as well as dependence on imported gas makes fossil-based **'low carbon' hydrogen expensive**. It will not be able to compete with grey hydrogen or direct electrification – unless it gets generous public subsidies. Projects that rely on 'low carbon' hydrogen face a high risk ending up as stranded assets.
Also, reaching the targets of the Renewable Energy Directive (RED III, Art 22 and Art 25) is easier and more realistic by **scaling up renewables, and community renewable energy projects, and giving a clear priority to direct electrification**.

No type of fossil-based hydrogen is in line with our emission reduction targets and its promotion is neither responsible nor acceptable. Its endorsement via infrastructure projects would undermine EU climate targets and will not contribute to a sustainable EU.
We ask that no large-scale hydrogen transport project enhancing and encouraging the production, use and transport of any fossil-based hydrogen will get PCI/PMI status.
→This is relevant for all hydrogen candidate projects mentioning "clean" or "low-carbon" hydrogen

Also 100% renewable hydrogen projects face sustainability and justice issues. Particularly **'green' hydrogen import projects risk creating a neocolonial energy model**, by exporting energy instead of supporting third countries' access to renewable energy, by contributing to land grabbing and exacerbating environmental impacts as well as due to considerable water use linked to centralized large-scale renewables and in the process of electrolysis.
Furthermore, there are serious **concerns about significant water use for electrolysis** in **countries that are impacted by drought and water scarcity**. Several candidate project promoters mention supply countries like Namibia, Oman, UAE and Chile, which are known for water issues. Sustainability concerns range from environmental impacts of water usage for electrolysis as well as conflicts resulting from this usage change and increased scarcity. On top of that, also **desalination plants** are linked to serious sustainability issues (cost, brine discharge etc).
In the case of Namibia (which is mentioned by many promoters as h2 supplier) a vast area in the country's most biodiverse region, a national park, is supposed to be used for renewables for hydrogen production for export. The **placing of renewables in sensitive areas** is planned in several other regions as well, and needs to be looked at with the highest scrutiny. Projects relying on **problematic renewable generation** as mentioned above **must not be supported** with priority status, nor access to funding.
Project promoters will claim that they solely transport the hydrogen, but do not produce it, and thus have no responsibility. But due **diligence and responsibility along the whole supply chain is imperative, as only hydrogen transport infrastructure enables the consumption** of, and thus demand for, such hydrogen.
→ This is relevant for all hydrogen candidate projects mentioning "green hydrogen imports" or mention the above quoted countries or other non-EU countries

The transport of a fuel is always linked to emissions, which vary depending on factors like pipeline/compressor station quality etc. but also on the molecule that is transported. **Hydrogen is considered an indirect greenhouse gas** as it increases the levels of other greenhouse gases in the atmosphere with a **global warming potential of 12 over 100 years, and 35+ over 20 years**. Given its **corrosive characteristics**, hydrogen, which is also the world's smallest molecule, is highly prone to leaking. Unavoidable leakage as well as its indirect greenhouse gas effect means that **all along the hydrogen supply chain**, entirely independent from its origin, leaks and **emissions must be accounted for.**
In the case of fossil-based hydrogen, CO2 emissions, as well as methane and hydrogen emissions occur, some of them directly linked with the transport of hydrogen. The ESABCC recommends (in light of the cost benefit analysis to assess PCIs and PMIs) to '*adequately account for all relevant greenhouse gas emissions & assess climate adaptation costs, benefits, and measures*'.

→ This is relevant for all candidate hydrogen projects, particularly compressor stations, import terminals and long pipelines, as the hydrogen supply chain cannot be emission and leakage free.

Furthermore, the use of **hydrogen** can have an indirect, yet significant impact on sustainability by **crowding out better, cleaner solutions**: Particularly hydrogen transport projects that are not limited to fully domestic, renewables-based, additional hydrogen used for hard-to-abate sectors where no better solution exists after also taking into account energy efficiency (Energy Efficiency First) and energy savings can threaten more efficient and sustainable solutions such as **direct electrification with renewables, energy efficiency and sufficiency**. The need for **hydrogen infrastructure needs to be carefully tested against more sustainable alternatives**, to avoid channeling priority away from them.
Hydrogen projects should primarily be designed to r**eplace the currently high volumes of grey hydrogen**. The grey hydrogen used today generates emissions higher than the global aviation industry, thus hydrogen infrastructure aiming at its replacement by genuinely green hydrogen must be prioritised.

→ This is relevant for all candidate hydrogen projects, particularly as none of them limits itself to only sectors where no other options for decarbonization are available

Besides the risk of crowding out truly sustainable solutions, there is a risk that an unneeded hydrogen network channels away scarce subsidies. Additionally, many of the proposed hydrogen PCI/PMI projects help **keep capital and financial resources with the fossil fuel industry.** This is the case for candidate **projects that have been submitted by the fossil gas transport industry** (namely fossil gas TSOs) as well as **fossil fuel industry promoters** with a very large fossil fuel portfolio like RWE, Repsol, Uniper, BP etc. Those make up the majority of all project promoters who submitted candidate PCI/PMI hydrogen projects: close to 80%. On top of that, a significant majority of the hydrogen projects proposed for PCI/PMI status by the fossil

fuel industry are designed to maintain or even increase fossil gas dependency due to their **promotion and transport of fossil-based hydrogen**.
An analysis of the project promoter data submitted for the public consultation by Food & Water Action Europe of the project found that around **70 of the 199 submitted projects explicitly claim to aim at transporting fossil gas, fossil gas blends or fossil-based hydrogen**. **Another 50 projects** don't explicitly include such hydrogen in their description, but the supply countries and **project design suggests** they will at least in part transport and thus **promote fossil-based hydrogen**.
Hydrogen infrastructure project promoters may claim that they are not responsible for the kind of hydrogen they transport, but this can be questioned for the following reasons: The existing **hydrogen grid** will have an undeniable **influence on encouraging hydrogen use** and nudging hydrogen generation/import. Particularly an oversized hydrogen grid like the one currently planned, which will cost hundreds of billions to be built, and a yearly multi-billion amount of operating costs. Once the infrastructure is there, costs will (and have been in the past) be **used to justify hydrogen use,** even if such use happens in sub-optimal and inefficient applications.
→ This is relevant for all candidate hydrogen projects promoted by the fossil gas and fossil fuel industry, including fossil gas TSOs

Also for **domestic electrolyser** projects, important **sustainability concerns** remain. Many of the project candidates **plan to use grid electricity**. Some projects, such as the Porvoo Phase 2 electrolyser or Plug Power Kristinestad electrolyser, even plan to not use any dedicated renewables. These projects need to be subject to adequate scrutiny concerning their sustainability impact. **Electrolysers without direct links to additional, dedicated renewable electricity are problematic**, as they risk channeling renewable electricity away from more efficient uses.
→ This is relevant for all candidate hydrogen projects that are electrolysers planning to use significant amounts of grid electricity

2. Market integration

Hydrogen is - unlike fossil gas - **hardly ever being transported over significant distances** today**.** Before qualifying hydrogen transport projects as relevant for market integration, this fact needs to receive extra attention. Given the need to prioritize the decarbonization of the EU's current, grey, hydrogen volumes, an analysis of the infrastructure to support this process is needed. Current industry and grey hydrogen demand clusters are largely known, They are certainly **not, like currently fossil gas demand, spread all across Europe (with millions of household- and other users)**. It is of utmost importance that in this respect, and in all other instances, **hydrogen infrastructure and fossil gas infrastructure must be treated differently**. The PCI/PMI project assessment must insist more on this important reality.

As mentioned, **there is a large majority of fossil gas transport industry players (TSOs) that submitted PCI/PMI hydrogen projects**. This increases the risk of treating the future hydrogen network similar to the current gas network. It is already manifesting in the fact that there is an undeniable **similarity between the proposed hydrogen grid and Europe's current fossil gas grid**.
It must be noted that for candidate projects, the ratio 'fossil gas TSOs vs other promoters' has improved compared to the first PCI/PMI list, but **fossil gas TSOs and fossil fuel industry promoters constitute still the biggest share of candidate project promoters**. Heavy influence by these parties will likely lead to high costs, bad efficiency track records and an overbuilding of infrastructure that is not needed resulting in expensive stranded assets.

This concern stems from the fact that the business model of **fossil gas TSOs** mainly consists of the **building and operating of pipelines**, with much less priority given to ensuring affordable prices for consumers (with spill-over effects on other energy consumers) or prioritising of energy efficiency. **Civil society organisations have long cautioned against the profound involvement of ENTSO-G and its member organisations in the PCI process**, of which they finally benefit, should their project be included in the list.

There is also the **issue with ENTSO-G data,** which the PCI/PMI process is based on. Despite being stipulated in the TEN-E regulation, reliance on this data risks leading to results that are **not fit for purpose and beneficial from a sustainability and market, competition or security perspective**. Not to forget that the biggest share of the hydrogen project promoters are at the same time members of ENTSO-G…

As enormous uncertainties concerning all key pillars of the hydrogen market (notably supply and demand) prevail, we consider that the inclusion of the **criteria of market integration and security of supply are still largely inappropriate** at this point in time.
Some key characteristics around the hydrogen market are however certain already: Any consideration around market integration must acknowledge that hydrogen is **fundamentally different in its functioning from fossil gas**, notably with different consumers, different production centers, physical characteristics, (pressure requirements etc) and demand patterns. Treating hydrogen like gas risks **creating a super-sized grid that actually will transport very low volumes of hydrogen** which in turn will **create high costs for very little efficiency** and actual energy transported.
If the PCI/PMI process assumes an overall **need to integrate the currently non-existent hydrogen market**, it could result in a **situation in which basically all proposed hydrogen transport projects are considered necessary,** which, however, is not in line with the future hydrogen reality.
If the notion of market integration must be used for project assessments already at this stage, it will be useful to base it on a **profound, independent and realistic assessment of both a) carefully projected hydrogen supply** (considering additionality, 100% renewables-based hydrogen, import standards etc.) **and**

b) realistic demand (hard to abate sectors without more efficient and sustainable electrification alternative, prioritization of replacing grey hydrogen, considering sufficiency, etc). Additionally, data of exhaustive market testing for all projects is needed.
Only based on such information it will be possible to have a **solid and diligent approach**, ensuring as much as possible that **only hydrogen transport projects** which likely a) are **necessary** and b) truly **contribute to sustainability** and climate targets will receive priority status.
Relying on assumed hydrogen demand and supply data by ENTSO-G is the exact opposite of a genuine and independent informational/data base for the PCI selection, due to the significant conflict of interest around ENTSO-G and the TSOs as outlined above. Also **data from national hydrogen plans** are in many cases lacking a serious reality check and need to be treated with **caution**.

→ This is relevant for all hydrogen candidate projects

3. Security of Supply

If any significant amounts of fossil-based (i.e. 'blue', 'turquoise', 'grey', 'low-carbon' etc.) hydrogen will remain in the market, all important concerns about fossil gas security of supply must be taken into consideration as **fossil (gas) based hydrogen will largely continue – if not increase – reliance on the same problematic suppliers.** Current security issues around fossil gas in turn include a lack of reliability, dependence on authoritarian regimes, human right violations linked to gas extraction and transport, corruption, wars, etc. In this respect it needs to be noted that Europe currently depends on gas including from rather problematic sources such as Russia, the U.S., Azerbaijan and Nigeria.
As the **production of hydrogen is inefficient, fossil-based hydrogen could lead to a stagnation or increase of overall gas demand** in Europe, hampering the EU's independence and making it more vulnerable to geopolitical tensions and trade wars.
The energy crisis and the weaponization of the EU's Russian gas dependence by Putin should have served as a cautionary tale, and prevent us from making the same mistake twice.

→ This is relevant for all hydrogen candidate projects relying on fossil-based hydrogen

Concerning 'green' hydrogen, a relevant factor for hydrogen supply security is the **reliance on (green) hydrogen supply countries subject to droughts and serious water shortages**. This is important particularly for candidate projects, for which promoters mention eg. Chile, Egypt, Brazil, Australia, Morocco and other MENA countries, Mid-East and East Mediterranean etc. as hydrogen suppliers. Those countries might be forced to increasingly decrease supply due to severe drought conditions, exacerbated by climate change.
Also, domestic **nuclear-based hydrogen** needs to be seen as only to some extent reliable, given safety concerns and the hampering of nuclear energy production due to drought conditions and heatwaves in Europe.

→ This is relevant for all hydrogen candidate projects mentioning above-quoted countries or other drought-prone, dry or less politically stable countries

Concerning **infrastructure candidate projects relying on Norwegian hydrogen**, there is a serious problem as **Norway cancelled all blue hydrogen projects**.
In fact, the overall probability of all Norwegian hydrogen supply has dramatically decreased in the past months, with growing doubts also about green hydrogen projects able to provide hydrogen on scale. **There are currently no hydrogen projects in Norway with any prospect of providing hydrogen for export.**
This affects e.g. the Dutch National H2 Backbone, many projects related to German hubs (such as HyPipE Bavaria), the Franco-Belgian H2 corridor or other project candidates mentioning Norway as one of many possible sources for 'open source' hydrogen infrastructure. Equinor and Shell/Aker have cancelled their blue hydrogen projects which is particularly relevant for HyONE in the Netherlands.
Candidate projects mentioning/relying on a hydrogen pipeline from Norway are even more problematic: Those are Hyperlink 4-5 Wilhelmshaven in Germany, AquaDuctus in Germany and UST Hydrogen Storage Krummhörn in Germany. These are at the moment unlikely to become anything else than a 'bridge' to nowhere, as Gassco has stopped and cancelled all work on a hydrogen pipeline from Norway to Germany. This stop is linked to the cancellation of the many hydrogen supply projects.

→ This is relevant for all candidate hydrogen projects directly or indirectly linking to hydrogen from Norway, both 'green' or other hydrogen

4. Competition

There is a justified risk that the prioritization and subsidisation of an **outsized hydrogen grid creates disadvantageous competition for direct electrification** and other more sustainable solutions for decarbonising our energy system. The current 'big' plans for hydrogen infrastructure are largely out of proportion with the EU's indigenous renewables production, especially because hydrogen is very inefficient in many uses and **creates competing demand for renewables** where they can be used much more efficiently and effectively for decarbonisation.
Most hydrogen infrastructure candidates are extremely costly (several with multi-billion CAPEX and high yearly OPEX). Current hydrogen projects, reinforced via the PCI/PMI status, part of an even bigger hydrogen network will **channel dozens- if not hundreds of billions away from real solutions**, including direct electrification with renewables, energy savings, efficiency etc. This risks **hampering real innovation – and real decarbonization.** In this respect it should be noted that the TEN-E regulation highlights that the ENTSOs CBA should "*explain that the development and deployment of* ***renewable energy will not be hampered by the project***". ESABCC deplored that for the CBA methodology 4.0. this was not the case.

Competitiveness must not mean using the fossil gas transmission grid as a blueprint for hydrogen. Some of the most blatant **examples of treating hydrogen and fossil gas basically equally** in needs, volumes and supply and demand geographies are eg. the 'hydrogen ready' Eastmed and Melita pipelines, as well as many projects particularly in the Croatia and BiH

region. The project promoters claim eg. that "*if the market picks up, this gas pipeline will be a h2 pipeline*". It is extremely short-sighted to ignore the blatant difference between these two gases. In another instance, dangerous vested interest is even more striking: Eleven of the **hydrogen pipelines proposed for the 7th PCI/PMI list have segments that are nearly identical to those of unbuilt fossil gas pipelines planned by the same developers**, according to an analysis from Global Energy Monitor (GEM). The similarities among these pipeline routes suggest that **developers could simply be rebranding old fossil gas pipeline projects as hydrogen projects to garner public support**, whether or not they ultimately plan to transport hydrogen. As one example, Enagás's Hydrogen Interconnector Spain-Portugal appears to have been rebranded into the CelZa Pipeline segment of the H2Med Pipeline. For more information, GEM's internal analysis is available here.

This built-in fossil gas interest is further reinforced by the TEN-E regulation which stipulates the PCI/PMI process and allows ENTSO-G, a large share of whose members apply for PCI status for their projects, to play a crucial role in the selection of projects via influence on the CBA, TYNDP etc. It constitutes an **unacceptable conflict of interest and is per definition hostile to healthy competition**.

The EU Commission's needs methodology includes a very obvious, yet important observation. It says that '***significant uncertainties about future hydrogen demand***' remain. We caution that endorsing, and even subsidising, the build-out of a large hydrogen network at this stage and with so little analysys is **misaligned with real competition**. Any real priority project can only be identified based on independent, realistic and scientifically sound assessments as well as on genuine projections of the future of renewable hydrogen, including costs to end users. As this data is currently unavailable, there is an even higher risk of overbuilding unneeded hydrogen infrastructure, which leads to a situation in which ultimately **consumers will have to pay.** Furthermore, the **costs of hydrogen for those few users** for which hydrogen might actually be a **sensible solution, become unnecessarily high**.
→ This is relevant for all hydrogen candidate projects until a profound comprehensive, transparent and honest analysis of all projects and their interplay between each other is carried out, something which the so far presented assessments fail to sufficiently do.

Another important lack of provided data concerns PCI/PMI import projects. Most project **promoters fail to specify whether the hydrogen their projects aim to import** will be arriving in Europe as **liquefied hydrogen** or in the form of **ammonia.** The latter requires expensive cracking back into hydrogen which will have important repercussions on the projects' cost. Also, the kind of molecule that will finally be available/imported has an important impact on its use as well as on the design of the import infrastructure. Several project promoters claimed that the **imported ammonia would be used for fertilizer** production. This, however, raises serious concerns about the project's importance for the EU's ***energy*** **system** and the question whether such projects have even applied for the right selection process.

→ This is relevant for all candidate H2/LH2/NH3 import projects and related infrastructure projects

We call again for a **profound, independent, scientifically backed and genuine assessment** of expected **demand** and future **availability** of renewable hydrogen. Such assessment must also be in line with social justice, energy efficiency and environmental protection requirements, such as hydrogen being produced from additional electricity which is not needed for direct electrification. It should be used **primarily to replace grey hydrogen** and dirtier fuels **where no cleaner alternatives** exist. A 'filter' to prioritize on-site/local use of renewable hydrogen should be applied, which increases energy efficiency, influences infrastructure needs, and particularly reduces the need for costly transmission infrastructure. A hydrogen 'network' following all these requirements would look radically different from the plans currently in place.

→ This is relevant for all candidate hydrogen projects

Additional comments to EastMed and Melita Transgas pipelines

We express full opposition to the planned EastMed as well as Melita Transgas pipelines, both of which are claiming to be 'hydrogen ready' while having a near-identical project design. As in the past years, we denounce both projects for their dangerous lock-in of fossil fuel use.
In the case of EastMed, we are particularly concerned about the sourcing of the gas it aims to transport from disputed waters in a region that suffers from political tensions higher than before, the sustainability impacts of the pipeline laying (particularly on the seabed) as well as about high costs.
In the case of Melita, we highlight again the links between the project promoter and the killing of journalist Daphne Caruana, as well as the disproportionate big dimension of the project compared to the Maltese market.

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