Dear COP29 President-Designate Mukhtar Babyev,

Dear Mr. Gert Müller, Director General, UNIDO,

Dear Ms. Tatiana Molcean, Under-Secretary-General, UNECE,

Dear Mr. Simon Stiell, Executive Secretary, UNFCCC,

On behalf of the organizations we represent, we thank you for your leadership of the COP29 Hydrogen Action Agenda. Low-emission hydrogen is an essential tool for decarbonizing the hardest-to-abate sectors; and as we look to achieve the Paris Agreement goals, the global community must come together to overcome the technical, regulatory and financial barriers to ensure that low-emission hydrogen can make a meaningful contribution. We look forward to supporting the success of this effort, including the COP29 Declaration and the Hydrogen Breakthrough Agenda.

In advance of COP29 in Baku, Azerbaijan, we respectfully wish to highlight an element that is fundamental to the success of hydrogen and its derivatives as decarbonization solutions. Full transparency around hydrogen's climate impact will be critical to enabling a harmonized, well-functioning market that delivers the intended climate benefits.

Low-emission hydrogen (commonly referred to as "blue" or "green" hydrogen) offers varying climate and air quality impacts based on the inputs, operations and accounting assumptions; and as a global community, it is important that we focus investment on truly clean solutions to limit the worst impacts of accelerated climate change.

While the need for transparency around hydrogen's impact is universal, this letter focuses on guidelines for fossil-based hydrogen, given its broad range of potential emissions and implications for oil and gas industry development.

It is possible to achieve very low greenhouse gas (GHG) intensity rates with fossil hydrogen (i.e., around 1 kgCO2e/kgH2), and many companies have committed to ambitious targets on methane and carbon capture. But at the same time, under-

performing fossil hydrogen can actually be worse for the climate in the near term than today's fossil systems that it is intending to replace.

Lack of attention to these details can result in investment and deployment decisions being made that would lock in high emission levels for a 20-25 year plant life. For example, considering the impact of upstream methane leakage alone, for every fossil hydrogen facility built in the U.S. instead of a renewable hydrogen one, GHG emissions would be expected to increase at least 7-fold, based on the U.S. national average methane emission rate. This equals the emissions from 2-3 natural gas fired power plants each year.

It is clear that to create viable business models for the hydrogen value chain, there is an urgent need to harmonize international frameworks, regulations and standards. These frameworks and standards will also need to ensure that, at the highest level, hydrogen is set on the right path to reduce harmful climate-warming emissions in the coming decades, thereby supporting climate progress.

Currently, around the world, policy and standard-setting processes for hydrogen have yet to reach the necessary levels of transparency. EU and U.S. policymakers are currently grappling with this challenge as they finalize rules around low-carbon hydrogen definitions and tax credit eligibility. At a global level, International Organization for Standardization (ISO) standards are currently being developed by industry and have not yet been sufficiently vetted by the academic community or civil society (the latter has publicly raised concerns about gaps in this methodology). This international standard is being positioned to cascade into national and state standards around the world – as a way to facilitate international trade – and could determine the industry's long-term success and the achievement of national climate goals. Thus, this effort should set the best example as a gold-class standard, built on the most robust climate science and accurate data.

Below we highlight three key areas that require more attention before the global community locks in international standards for hydrogen deployment around the world.

More accuracy and granularity in reported methane emissions

Methane emissions are one of the largest contributors to lifecycle GHG emissions in fossil fuel-based hydrogen systems. Methane is a highly potent GHG, with a warming potential that is over 80 times higher than carbon dioxide over a 20-year period and 30 times higher over a 100-year period. Studies show that high methane leakage rates can severely undermine hydrogen's climate benefits. Accurate accounting will be critical to ensuring fossil-based hydrogen is truly a low-emission solution.

Methane leakage rates are known to vary greatly based on geography due to varying levels of methane management performance; for example, measurements show less than 1% in Norway to upwards of 20% in Venezuela, Iraq, and Angola. However, the national averages reported to international bodies and used in policy are often

underestimated and based on underreported emissions. For example, data from recent satellite-based studies show that global methane emissions from oil and gas production are 30% higher than the total reported by countries to the UNFCCC. Moreover, relying on a single national average obscures the large variation that often occurs between basins. For example, US measurement data shows rates ranging from less than 1% to nearly 8% (while a default rate of 0.9% is proposed for tax credit eligibility).

Rather than using a single national average, lifecycle assessments should rely on current regional-level estimates based on measured emissions data that will be available through the United Nations Environment Programme's International Methane Observatory (IMEO), which will also integrate high-quality site-specific data under the Oil and Gas Methane Partnership (OGMP) 2.0 framework. This framework, which was launched in partnership with the UNEP and European Commission, has been adopted by more than 140 companies around the world and is widely endorsed by investor groups like the Institutional Investors Group on Climate Change.

Alignment with such international best practice is key to establishing a credible and functional hydrogen market. These data-informed values should be reported publicly and verified by a technically competent and authorized third party.

Carbon capture and sequestration must be permanent, demonstrable and verified

The rates of carbon capture and sequestration also matter greatly for fossil-based hydrogen's climate impact. For example, low carbon capture rates (e.g., 60%, relative to the best-in-class 98%) can reduce the climate benefits of fossil-based hydrogen by an estimated 15-50% in the near term and 20-60% in the long term.

Certainty around actual capture rates utilized by companies is essential. "Nameplate" capacities can be misleading given that CCS systems often capture carbon dioxide at lower rates due to a variety of factors. Producers must also be required to demonstrate permanent sequestration with regards to each ton of carbon stored, following best practices like those outlined in California's Low Carbon Fuel Standard, the U.S. Environmental Protection Agency's Greenhouse Gas Reporting Program Subpart RR, or the EU's CCS Directive.

As with all emissions accounting, CCS data must be reported, verified, and made publicly available.

Transparent and responsible facility accounting practices are needed

In addition to disclosing accurate emissions attributable to a hydrogen project, it is critical to avoid artificial subtraction of emissions.

In the interest of securing more public funding support, some industry lobbyists are promoting the use of accounting gamesmanship. This includes the use of carbon-

negative accounting and/or offsets for fugitive methane, which would credit hydrogen producers for emissions avoided in another sector – despite a lack of robust verification methods and certification systems – or other accounting techniques to shift pollution from where it's counted (hydrogen) to where it's not. Under such schemes, even unabated "grey" fossil hydrogen producers could claim substantial emissions reductions (even going so far as to claim "net zero") without changing underlying technologies or processes – and therefore achieving no real emissions reductions and undermining individual, national and global climate goals and strategies.

Transparency must serve as the foundation for the new clean hydrogen economy and all collaborative efforts to harmonize international frameworks, regulations and standards. The fate of our global climate goals, the functioning of a sustainable global market, and the reputation of industry and governments with hydrogen strategies depend on understanding hydrogen's true climate impact and taking the necessary actions to set hydrogen on a path to deliver on its promise as a climate solution.

We appreciate your consideration of these critical issues and your support in ensuring international standards accurately reflect the full lifecycle GHG emissions associated with fossil-based hydrogen production.

Yours Sincerely,

ACCIONA & Nordex Green Hydrogen
Adani New Industries Limited
Bellona Foundation
Ceres
CWP Global
Electric Hydrogen
Environmental Defense Fund
Fortescue
Green Hydrogen Organisation
League of Conservation Voters
Natural Resources Defense Council
ReNew
Texas Hydrogen
Transport & Environment