

February 08, 2023

To: Chrystia Freeland, Deputy Prime Minister and Minister of Finance

Cc: Jonathan Wilkinson, Minister of Natural Resources
Steven Guilbeault, Minister of Environment and Climate Change
François-Philippe Champagne, Minister of Innovation, Science and Industry

Re: Prevent proposed hydrogen investment tax credit from becoming a fossil fuel subsidy

Dear Minister Freeland,

In order for Canada to do its fair share under the Paris Agreement to limit global temperature increase to 1.5 °C, economy-wide rapid decarbonization is necessary. The key elements of this transition include scaling up renewable energy and storage options to ensure our economy is powered by non-polluting energy, massive electrification of transportation, homes and industry, and significant improvements in energy efficiency. Effective solutions to achieve deep emission reductions in the next decade along a pathway to zero emissions are already at hand and must receive government support.

The strategic deployment of renewable hydrogen technology may help Canada meet its climate commitments by decarbonizing the sectors of the economy that do not have existing direct electrification solutions.

However, there is a risk that if the proposed investment tax credit for hydrogen is poorly designed, it could be used to subsidize fossil-hydrogen technology - which is incompatible with Canada's climate commitments - or inadvertently impact the availability of more cost-effective and reliable climate solutions. This would risk locking Canada into a fossil-based economy and divert funds from effective, cost-effective decarbonization measures that align with limiting global temperature increases to 1.5°C. If the objective of ramping up clean hydrogen production is to avoid exacerbating the climate crisis, then a clean hydrogen definition must be compatible with the Paris Agreement's net-zero goal by 2050.

On behalf of the 55 organizations and 110 academics who have signed this letter, we urge your government to consider these recommendations on the development of the hydrogen tax credit:

1. The tax credit should not be made available to any form of fossil-derived hydrogen.
2. The tax credit should only be available for strategic decarbonization opportunities. Applications with readily-available alternative decarbonization solutions, such as blended hydrogen for home heating or for power generation, should be ineligible.
3. The tax credit should only be made available for projects that have free, prior and informed consent from Indigenous communities. Furthermore, companies receiving tax

credits must be held accountable to mitigate harmful impacts on other impacted communities. These communities must be involved in the design and implementation of the tax credit.

4. The tax credit should not be stackable with the CCUS investment tax credit or with credits generated under the Clean Fuel Standard or carbon pricing systems, such as Alberta's Technology Innovation and Emissions Reduction (TIER) system.
5. Attach prevailing wage and apprenticeship requirements as a condition of receiving the maximum tax credit rates. Both measures will be necessary to uphold strong working conditions in the rapidly growing green economy and to attract the necessary skilled workers while providing apprentices with vital on-the-job training.

Aligning the Tax Credit with Canada's Climate Commitments

The only scalable and truly near-zero emissions hydrogen is produced from water using renewable energy (including solar, wind, geothermal and hydro power).¹ Hydrogen produced from fossil fuels - including pathways that use carbon capture, storage and utilization (CCUS) to reduce GHG emissions ('blue' hydrogen) - should not be eligible for support. Despite decades of research, CCUS is neither economically sound nor proven at scale, with a track record of massive cost overruns and less than promised performance.² It has limited potential to deliver significant, cost-effective emissions reductions. Furthermore, CCUS does not address the significant methane leakage from the production and distribution of gas. Nor does blue hydrogen production address other impacts associated with exploring and developing fossil gas deposits, including Indigenous rights violations, impacts on biodiversity, water, air quality, and the industry's failures to remediate wells.

As well as undermining government efforts to reach net-zero by 2050, applying this tax credit to blue hydrogen projects would contradict the promise made by the Government of Canada to eliminate fossil fuel subsidies by 2023 as well as Canada's international commitments under the Paris Agreement.

Fossil hydrogen production cannot be considered as a temporary or interim measure. Hydrogen plants typically have an operational life of 30 years - meaning any new hydrogen production facilities will probably still be operating into the 2060s.³ By the time planned blue hydrogen projects become operational, most of the expected market for energy demand will have been

¹Zhou, Y. *et al.*, (2021). *Life-Cycle Greenhouse Gas Emissions of Biomethane and Hydrogen Pathways in the European Union*, The International Council on Clean Transportation, <https://theicct.org/publication/life-cycle-greenhouse-gas-emissions-of-biomethane-and-hydrogen-pathways-in-the-european-union/>

² Levin, J. (2022). *Buyer Beware: Fossil Fuels Subsidies and Carbon Capture Fairy Tales in Canada*, Environmental Defence Canada. Available: <https://environmentaldefence.ca/wp-content/uploads/2022/03/Buyer-Beware-FFS-in-2021-March-2022.pdf>

³ Hydrogen Science Coalition (2022). *Clean Hydrogen Definition*, PDF, https://h2sciencecoalition.com/wp-content/uploads/2022/12/Clean-Hydrogen-Definition_final.pdf

taken over by renewable energy, electrification and renewable hydrogen.⁴ This means that spending on blue fossil hydrogen comes with a significant risk of creating stranded assets.⁵

Encouraging and subsidizing blue hydrogen development locks us into prolonged fossil fuel dependence at a time when preventing catastrophic climate change requires *winding down* fossil fuel use. Investing in fossil hydrogen would lock Canada into a future of fossil fuel use and methane emissions leakages.

Target hardest to electrify hydrogen applications

According to the 2022 IPCC report, decarbonized hydrogen will remain a relatively small portion of the global energy balance – at best 2.1% in 2050.⁶ However, renewable hydrogen may have the potential to reduce emissions in hard-to-decarbonize sectors with few alternatives and where electrification isn't yet an available option, such as the production of steel and cement and maritime shipping. A strategic priority is also replacing current applications of grey hydrogen, for example in the production of ammonia for fertilizer.

Building out renewable hydrogen systems requires a huge amount of energy, as its production and use incur a chain of energy conversions and losses. It is always more efficient to use renewable energy directly than convert it to hydrogen. Electrification and energy efficiency will always beat out hydrogen as the most efficient and cost-effective way to meet most energy needs. Depending on the end-use of green hydrogen, electricity generation requirements can be 2 to 14 times higher than direct electrification solutions for the same effect.⁷

Industry advocates are proposing blending hydrogen into natural gas grids or power generation. However, hydrogen blending, which faces significant feasibility constraints, would result in negligible emissions reductions, achieved at a high cost for ratepayers, and poses additional risks to public health and safety. Blended hydrogen also risks the lock-in of fossil fuel infrastructure. Investing in inefficient hydrogen solutions for heating and power generation diverts resources from better, more efficient and affordable solutions. For example, heat pumps are five to six times more efficient than using gas blended with hydrogen.⁸ A recent review of 32

⁴ Sanzillo, T., *et al.* (2022). *Federal blue hydrogen incentives: No reliable past, present or future*. Institute for Energy Economics and Financial Analysis, <https://ieefa.org/ieefa-u-s-federal-blue-hydrogen-incentives-no-reliable-past-present-or-future/>

⁵ Longden, T., *et al.* (2022). "'Clean' hydrogen? – Comparing the emissions and costs of fossil fuel versus renewable electricity based hydrogen", *Applied Energy*, 306 (B), www.sciencedirect.com/science/article/abs/pii/S0306261921014215?dgcid=author

⁶ IPCC(2022). *Climate Change 2022 – Mitigation of Climate Change, AR6 WG III*, Chapter 12, p.123, https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_FullReport.pdf

⁷ Ueckerdt, F., *et al.* (2021). "Potential and risks of hydrogen-based e-fuels in climate change mitigation", *Nature Climate Change*, Vol 11: 384–393, <https://dx.doi.org/10.1038/s41558-021-01032-7>

⁸ Energy Transitions Commission (2021). *Making the Hydrogen Economy Possible: Accelerating Clean Hydrogen in an Electrified Economy*, www.energy-transitions.org/wp-content/uploads/2021/04/ETC-Global-Hydrogen-Report.pdf

studies concluded that hydrogen for heating and cooking is a distraction: it is inefficient, costly and resource intensive.⁹ Not one of the studies suggested a major role for hydrogen for heating.

Widespread deployment of hydrogen risks putting significant pressure on the energy system, unnecessarily increasing the costs of the transition to a clean economy, and complicating climate progress.

Conclusion

The Government of Canada ignored the advice from over 400 of Canada's leading climate scientists and experts when it implemented the CCUS tax credit.¹⁰ It should not repeat the error by creating another tax credit for fossil gas.

To the extent that any public resources are made available for hydrogen development, they should be reserved for renewable hydrogen for the hardest-to-decarbonize sectors that do not have viable decarbonization alternatives.

We're in the middle of a climate emergency and what's needed is strong leadership to move us away from dependence on the dirty oil, coal and gas fuels that are causing this crisis. Tax credits must be truly green, building on Canada's renewable energy advantages, and not be used to keep the fossil fuel industry limping along past its sell-by date.

Sincerely,

⁹ Rosenow, J. (2022). "Is heating homes with hydrogen all but a pipe dream? An evidence review", *Joule* 6(10) 2225-2228, <https://doi.org/10.1016/j.joule.2022.08.015>

¹⁰ (2022). *Letter from scientists, academics, and energy system modellers: Prevent proposed CCUS investment tax credit from becoming a fossil fuel subsidy*, www.researchgate.net/publication/363485567_Letter_from_scientists_academics_and_energy_system_modellers_Prevent_proposed_CCUS_investment_tax_credit_from_becoming_a_fossil_fuel_subsidy

Environmental Defence Canada
Canadian Association of Physicians for
the Environment
Greenpeace Canada
Équiterre
Center for International Environmental
Law (CIEL)
Canadian Association of Nurses for the
Environment
Oil Change International
Climate Emergency Unit
Council of Canadians
Stand.earth
Shift Action for Pension Wealth and
Planet Health
Protect Our Winters Canada
Clean Air Partnership
Southern Alberta Group for the
Environment (SAGE)
Ecology Ottawa
Ecology Action Centre
Ontario Clean Air Alliance
Alliance for Empowering Rural
Communities
Grand(m)others Act to Save the Planet
(GASP)
Canadian Network for Human Health
and the Environment
Climate Action Parry Sound
BC Hydro Ratepayers Association
New Brunswick Anti-Shale Gas Alliance
Climate Justice Saskatoon
Seniors For Climate Action Now!
Seniors for Climate Action - Ottawa

Council of Canadians - Avalon Chapter
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Just Earth
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