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A letter from 25 scientists to the Chief Scientist, Alan Finkel

Dr Finkel,

We are writing to you as Chief Scientist with our concerns about your strategy for dealing with climate change, and to offer any scientific advice that you might find useful on climate change issues.

With the Black Summer bushfires and yet another mass bleaching of the Great Barrier Reef fresh in our minds, meeting the climate change challenge is more urgent and daunting than ever. The Paris Climate Agreement, to which Australia is a signatory, provides the global framework for addressing this challenge. It calls for nations to take action to keep global temperature rise to "well below 2°C and to pursue efforts to limit the temperature increase to 1.5°C."

In your February speech to the National Press Club entitled "The Orderly Transition to the Electric Planet,"[1] and in other publications and presentations, you have emphasised the importance of transitioning to renewables such as solar and wind, and that they should become the backbone of a 21st century clean economy. We strongly support this approach, and agree that renewables firmed by batteries and pumped hydro comprise a very effective approach to tackling the emissions reduction challenge.

Our concern, however, relates to the scale and speed of the decarbonisation challenge required to meet the Paris Agreement, and, in particular, your support for the use of gas as a transition fuel over "many decades." Unfortunately, that approach is not consistent with a safe climate nor, more specifically, with the Paris Agreement. There is no role for an expansion of the gas industry.

There are multiple lines of evidence to support our position on gas:

- We are already committed to a temperature rise of 1.3°C or 1.4°C from past greenhouse gas emissions, primarily from the combustion of coal, oil and gas (WMO 2020).[2] At this point it would take a global social, political and technological miracle to keep the world under 1.5°C (Huppmann 2019).
- Exceeding even 1.5°C will have escalating impacts on Australia (Reisinger et al. 2014)
- The combustion of natural gas is now the fastest growing source of carbon dioxide to the atmosphere, the most important greenhouse gas driving climate change (Friedlingstein et al. 2019; Peters et al. 2019)
- Global methane emissions from fossil fuel sources and from agriculture are accelerating (Saunois et al. 2020; Jackson et al. 2020). On a decadal timeframe, methane is a far more potent greenhouse gas than carbon dioxide. In Australia, the rapid rise in methane emissions is due to the expansion of the natural gas industry.[3] The rate of methane leakage from the full gas economy, from exploration through to end use, has far exceeded earlier estimates (Hmiel et al. 2020).
- Existing and planned fossil fuel infrastructure is more than sufficient to push the

1 Australia's Chief Scientist, National Press Club Address: The orderly transition to the electric planet (12 February 2020) https://www.chiefscientist.gov.au/news-and-media/national-press-club-address-orderly-transition-electric-planet

2 See Table 2.2 in Rogelji et al. (2018)

3 https://ageis.climatechange.gov.au/

world past 2°C, pushing even the upper bounds of the Paris Agreement's temperature goals well out of reach (SEI 2019).

- To meet the upper Paris goal ("well below 2°C"), we must achieve net zero emissions by 2040–2050. This requires a rapid phase-out of existing fossil fuel infrastructure, leaving no room for expansion of the gas industry.
- While in principle CCS (Carbon Capture and Storage) could extend the life of fossil fuels — for example, for use in the production of hydrogen — CCS technology is still far from being technologically and economically viable. The renewable energy-based alternatives are already technologically ready, less expensive, and more widespread, capable of delivering economic and employment benefits across regional and rural Australia.

The undeniable conclusion from this analysis is that the time has passed for any new fossil fuel infrastructure, including the proposed expansion of the gas industry in Australia. All types of fossil fuels, including gas, contribute to climate change and all must be phased out as quickly as possible to meet the Paris Agreement targets, helping to keep Australians safe now and into the future (Reisinger et al. 2014).

We reiterate that we very much appreciate your efforts and leadership in facilitating the rapid expansion of the renewable energy sector. This is a major step forward. But we must now make urgent progress towards a prosperous net-zero emissions economy by 2040–2050.

As always, we stand ready to provide advice on the science of climate change and to support your efforts to expand and accelerate the actions needed to do our part in the global effort to meet the goals of the Paris Agreement.

Yours sincerely,

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References

Friedlingstein P. et al. (2019) Global Carbon Budget 2019, *Earth System Science Data*, **11**, 1783–1838, 2019, DOI: 10.5194/essd-11-1783-2019.

Hmiel B et al. (2020) Preindustrial $^{14}CH_4$ indicates greater anthropogenic fossil CH_4 emissions. *Nature* **578**: 409–412. DOI: 10.1038/s41586-020-1991-8.

Huppmann, Daniel, et al. (2019) IAMC 1.5°C Scenario Explorer and Data Hosted by IIASA' (Integrated Assessment Modeling Consortium & International Institute for Applied Systems Analysis, 8 August 2019), https://doi.org/10.5281/ZENODO.3363345.

Jackson R.B. et al. (2020) Increasing anthropogenic methane emissions arise equally from agricultural and fossil fuel sources, Environmental Research Letters, 15, Number 7.

Reisinger A. et al. (2014) Australasia. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, pp. 1371–1438.

Rogelj, Joel, et al. (2018) Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development, in *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*, ed. Valérie Masson-Delmotte et al. (Geneva, Switzerland: World Meteorological Organization), https://www.ipcc.ch/sr15/. *Environmental ethics: an anthology*; Blackwell Publishing Ltd, Malden, MA, USA, 143–153.

Saunois M et al. (2020) The Global Methane Budget 2000–2017. *Earth System Science Data* **12**: 1561–1623. https://doi.org/10.5194/essd-12-1561-2020

SEI (2019) SEI, IISD, ODI, Climate Analytics, CICERO, and UNEP. (2019). *The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C.* http://productiongap.org/.

WMO (2020) World Meteorological Organization, WMO Confirms 2019 as Second Hottest Year on Record, 15 January 2020, https://public.wmo.int/en/media/press-release/wmo-confirms-2019-second-hottest-year-record.