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Open Letter to Heads of Government of the G-20 from Scientists and Scholars on Nuclear for Climate Change

October 25, 2018

President Emmanuel Macron
President of the French Republic
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CC:

President Mauricio Macri
The Honourable Scott Morrison
His Excellency Michel Miguel Elias Temer Lulia
The Right Honourable Justin Trudeau
President Xi Jinping
His Excellency Donald Tusk
Chancellor Angela Merkel
Prime Minister Narendra Modi
President Joko Widodo
President Sergio Mattarella
His Excellency Shinzō Abe
President Enrique Peña Nieto
President Vladimir Putin
King Salman bin Abdulaziz Al Saud
His Excellency Cyril Ramaphosa
President Moon Jae-in
President Recep Tayyip Erdoğan
The Right Honourable Theresa May
President Donald Trump

Dear President Macron,

We are writing as scientists, scholars, and concerned citizens to warn you of a persistent anti-nuclear bias in the recent Intergovernmental Panel on Climate Change (IPCC) report on keeping global temperatures from rising 1.5 degrees above pre-industrial levels.[1]

While many of the scenarios in the IPCC report call for the expanded use of nuclear energy, the report nonetheless repeats misinformation about nuclear energy, contrasts nuclear negatively to renewables, and in some cases, suggests an equivalency with fossil fuels.

While IPCC authors note that public fears of nuclear are an obstacle to its diffusion, in several instances they reinforce unfounded fears. Please consider the following:

- Nuclear is the safest way to make reliable electricity[2] and has saved over 1.8 million lives that would have been lost prematurely to deadly air pollution.[3]
- Nuclear plants produce just 12 grams of carbon dioxide per kilowatt-hour (kWh) as compared to coal plants, natural gas plants, biomass plants, and solar farms which produce 820, 490, 230, and 48 grams of CO₂/kWh, respectively, as used in the IPCC's own publications.[4]
- Of humankind's exposure to ionizing radiation, 88% comes from natural causes and 12% from human-made causes with just 0.04% from nuclear plant emissions.[5]
- The increased risk of mortality from living in a large city, where concentrations of air pollution are high, is 2.8 times greater than the increased risk of mortality for Chernobyl clean-up workers who received the highest levels of radiation exposure.[6]
- There is a consensus among leading radiation scientists that nobody should have been relocated after the accident at Fukushima Daiichi because the evacuation caused far more harm than the radiation that escaped from the plant could have.[7]
- Because uranium has an energy density one to three million times higher than coal, nuclear plants require the fewest fuel and material inputs, giving them the smallest mining and land use impact of all energy sources.[8]
- While nuclear provided 11% of electricity globally last year, solar and wind provided only 1.3% and 3.9%.[9]

- Because of their inherently intermittent nature, solar and wind energy sources rarely substitute on a one-to-one basis for fossil fuels and must be backed up by fossil fuels, hydroelectric dams, or some other form of large-scale storage.[10]
- The peak deployment of nuclear energy around the world has occurred more than 10 times faster than the peak deployment of solar and wind, according to a 2016 study published in the journal Science.[11]

The above facts are crucial for putting the role of nuclear in context and yet were either not included in the IPCC report or were insufficiently highlighted.

Moreover, in several instances IPCC authors make misleading claims about nuclear power including:

- An alleged debunking of the above-mentioned 2016 study in Science through the use of a 2018 study published in a journal[12] with an impact factor of just 10 percent of that of Science;
- The suggestion that building new nuclear plants must be a slow process[13] despite evidence from the recent past that nuclear capacity can be installed very rapidly when required[11];
- A statement[14] suggesting a connection between “nuclear installations” and “childhood leukemia,” and no mention of recent research finding higher radiation exposure from coal plants and the manufacturing of solar panels than from nuclear.[15] While the authors acknowledge that there is “low evidence/low agreement” to support their claim, in reality there is no valid evidentiary support for it and the supposed connection has been thoroughly dismissed in the literature[16];
- A claim that nuclear power “can increase the risks of proliferation”[17] and that the “use of nuclear power poses a constant risk of proliferation”[18] even though no nation in history has ever created a nuclear weapon from civilian nuclear fuel under inspection by the International Atomic Energy Agency;
- A claim that nuclear has “mixed effects for human health when replacing fossil fuels,”[19] which is contradicted by the large body of scientific research, cited above, showing that nuclear saves lives;
- Repeated concerns raised about nuclear waste[20] without acknowledgment or clarification that spent fuel is safely contained, usually on site, nor any mention of the waste from other low-carbon energy sources, including solar panels, which contain toxic metals

including lead, chromium, and cadmium, and which in most of the world lack safe storage or recycling.[21]

Such fear-mongering about nuclear has serious consequences. As IPCC itself acknowledges, public fears of nuclear are behind the technology's slower-than-desirable development.[22] Equally troubling, public fear of nuclear drove the panicked over-reaction to past nuclear accidents, including mass evacuations, which health experts agree had a far larger negative impact on human health than the low-levels of radiation that escaped from the plants.[23]

Where nuclear has proven capable of providing cheap and reliable zero-carbon power to large modern economies from France to Canada to Sweden, solar and wind, which IPCC treat more favorably, have not, in large measure because they require a constant source of back-up energy. And where IPCC report authors offer "policy interventions" to mitigate the challenges of scaling up solar and wind, they do not offer similar policy interventions for nuclear.

While we are gravely disappointed by the double standard with which the IPCC treated nuclear and other low-carbon energy sources, we are hopeful that you, as the head of state of a large modern economy, can rectify such misinformation through your words and actions.

We strongly encourage you to do everything in your power to speak out for nuclear and expand its share of electricity production, heating, and transport, including shipping production, to achieve the intertwined goals of climate change mitigation, pollution reduction, and poverty alleviation.

Signed,

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Andrew Klein, Past President, American Nuclear Society
Mark Lynas, Alliance for Science, Cornell University, author, *The God Species, Six Degrees*
Bill Lee, Professor of Nuclear Engineering, Imperial College London and Bangor University, U.K.
Steven Pinker, Harvard University, author of *Better Angels of Our Nature*
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