

Nuclear energy as a response to climate change

Policy Position Statement

Key messages: PHAA believes there is clear evidence that expanding nuclear power has no role in reducing global warming

PHAA will advocate against the adoption of nuclear power as a viable option to help mitigate global warming.

- Key policy positions:**
1. Climate change is an urgent and serious threat that demands changes in Australia's and the world's energy economy to reduce greenhouse gas emissions. These demands can be met with solar, wind and other renewable and battery technologies. Reliable and secure energy supplies do not depend on non-renewable resources including fossil fuels and nuclear.
 2. Energy efficiency and demand reduction are immediate, effective and low cost strategies to reduce greenhouse gas emissions thereby mitigating climate change.
 3. The nuclear fuel process is unsafe: there are direct health and environmental consequences from radioactive leaks and there is potential contamination at all stages of the process.
 4. Without government subsidy and even in comparison to fossil fuels, nuclear power is not cost effective. Renewable energy systems are cheaper and the difference is increasing with technological development.
 5. Expansion of nuclear industry and research would divert resources away from energy demand reduction and renewable energy system research, development and deployment.
 6. The nuclear industry does not have the capacity to expand rapidly enough over the next decade to meet projected needs and it generates substantial greenhouse gas emissions throughout its lifecycle.
 7. Nuclear power does not address the other ecological impacts of human society.

Audience: Federal, State and Territory Governments, policymakers and program managers, PHAA members, media.

Responsibility: PHAA Ecology and Environment Special Interest Group

Contacts: Dr Peter Tait and Dr Lea Merone: Co-Convenors, Ecology and Environment SIG

Date adopted: 29 October 2020

Nuclear energy as a response to climate change

Policy position statement

This position statement should be read in conjunction with PHAA policy position statements on Safe Climate and Nuclear Industry.

PHAA affirms the following principles:

1. An ecologically respectful and precautionary approach should inform the discussion of energy sources for human use.

PHAA notes the following evidence:

2. The nuclear fuel process is unsafe. There are direct health and environmental consequences from radioactive leaks, potential contamination at all stages of the process, and natural and industrial incidents occurring at nuclear reactor sites resulting in massive releases of radioactivity.¹⁻⁶
3. Since the terrorist attack on the World Trade Centre in New York on 11 September 2001, the risk of threats of nuclear facilities cannot be regarded as negligible. Similarly, since the tsunami at Fukushima on 11 March 2011,⁶ the risk of reactor accidents due to natural disaster must be recognised as real threats, and due to global warming itself, as an increasing threat.⁷
4. The safe storage of nuclear waste is an unsolved problem and the industry is struggling to cope with existing waste. Expansion of the industry will further compound waste problems.⁸
5. Given the poorly controlled link between nuclear power and nuclear weapons, any expansion of nuclear power could result in the potential for the proliferation of nuclear weapons.^{2,5}
6. Without government subsidy, and in comparison to gas and even coal, nuclear power is not cost effective.^{2,9} When the full lifecycle economic costs of operating nuclear plants are factored in, including decommissioning and waste storage, accident risk and capital set-up costs, nuclear becomes even less viable as an affordable option to address climate change.⁶ Renewable energy systems are now cost comparative,¹⁰ and with further investment and increased production, will become cheaper without the long term waste and decommissioning costs associated with nuclear.⁵
7. Energy efficiency and demand reduction are immediate strategies that would be more cost effective than nuclear.⁸ There are additional cost efficiencies to be discovered in electricity markets using existing technologies, through optimised national regulation.¹¹
8. There are significant opportunity costs associated with expansion of the nuclear industry. Such expansion would divert much needed resources away from energy efficiency and demand reduction and from renewable energy systems research, development and deployment.^{7,9}

PHAA Position Statement on Nuclear Energy as a Response to Climate Change

9. Proponents of nuclear energy as a solution to global warming support a continued resource consumption model, and propose that a nuclear solution does not require the same need for greater energy efficiency and a reduction in energy consumption as other carbon emission reduction solutions.^{6, 9, 12} This scenario can cause an increased dependency on coal fired power generation technology as a back-up system for nuclear power generation, either directly to power stations or as a peak load backup to nuclear generated baseload.⁹ It also ignores other ecological effects of an economic system based on high energy and materials use.
10. The nuclear industry does not have the capacity to expand rapidly enough over the next decade to meet the projected needs. Even if it were to adopt best practice, when ‘front end’ aspects of nuclear power generation are included, the mining, processing and building of reactors would contribute significantly to the use of fossil fuels and greenhouse gas emissions,^{1, 5, 13} and may increase local effects such as water warming from reactor cooling discharge.⁷ Because reactors have a limited life span, ‘back-end’ aspects such as the decommissioning of reactors add to the problems of lifecycle energy use, as do extreme long term waste storage issues.^{14, 15}
11. Advocates for nuclear energy note the lack of economic, political and social attraction of nuclear energy, and thus need to call for consistent government incentives to promote nuclear energy.¹⁶
12. Implementing this policy would contribute towards the achievement of [UN Sustainable Development Goals 3 – Good Health and Wellbeing](#) and [17 - Affordable and Clean Energy](#).

PHAA seeks the following actions:

1. No nuclear power industry in Australia.
2. Renewable energy, energy efficiency and demand reduction strategies as responses to climate change.

PHAA resolves to:

3. Advocate for the above steps to be taken based on the principles in this position statement.

First ADOPTED 2005, revised and re-endorsed in 2008, 2011, 2014, 2017 and 2020

References

1. International Atomic Energy Agency. Guidebook on good practice in the management of uranium mining and mill operations and the preparation for their closure. IAEA-TECDOC-1059. Vienna: International Atomic Energy Agency; 1998.
2. Deutch J, Moniz E, (Co-Chairs). The future of nuclear power: An interdisciplinary MIT study. <http://web.mit.edu/nuclearpower/pdf/nuclearpower-full.pdf>; Massachusetts Institute of Technology; 2003.
3. International Atomic Energy Agency. Regulations for the Safe Transport of Radioactive Material. IAEA Safety Standards Series, Specific Safety Requirements no. SSR-6. Vienna: International Atomic Energy Agency; 2012.
4. International Atomic Energy Agency. Safety evaluation of fuel cycle facilities during operation (SEDO) <https://www.iaea.org/services/review-missions/safety-evaluation-of-fuel-cycle-facilities-during-operation-sedo>; International Atomic Energy Agency; [cited 2017 6 October].
5. International Atomic Energy Agency. Engineering safety aspects of the protection of nuclear power plants against sabotage. IAEA Nuclear Security Series no. 4 Technical Guidance. Vienna: International Atomic Energy Agency; 2007.
6. Asuka J, Park S-J, Nishimura M, Morotomi T. Nuclear power is not the answer to climate change mitigation. Reply to the letter from Dr. Hansen and others. Guest post 31 January 2014. <https://safeenergy.org/2014/02/05/guest-post-nuclear-power-is-not-the-answer-to-climate-change-mitigation/>; GreenWorld; [cited 2017 6 September].
7. Kopytko N, Perkins J. Climate change, nuclear power, and the adaptation–mitigation dilemma. Energy Policy. 2011;39(1):318-33.
8. International Atomic Energy Agency. Radioactive waste management <http://www-ns.iaea.org/standards/documents/topics.asp?sub=170>; International Atomic Energy Agency; [cited 2017 3 September].
9. Verbruggen A. Renewable and nuclear power: A common future? Energy Policy. 2008;36(11):4036-47.
10. Blakers A, Lu B, Stocks M. 100% renewable electricity in Australia. <http://energy.anu.edu.au/files/100%25%20renewable%20electricity%20in%20Australia.pdf>; Australian National University; 2017.
11. MacDonald AE, Clack CTM, Alexander A, Dunbar A, Wilczak J, Xie Y. Future cost-competitive electricity systems and their impact on US CO2 emissions. Nature Climate Change. 2016;6:526.
12. Berger A, Bles T, Bréon F-M, Brook BW, Hansen P, Grover RB, et al. How much can nuclear energy do about global warming? Int J Global Energy Issues. 2017;40(1/2):43-78.
13. Heard B, Bradshaw CJA, Brook BW. Beyond wind: furthering development of clean energy in South Australia. Transactions of the Royal Society of South Australia. 2015;139(1):57-82.
14. Sovacool BK. Valuing the greenhouse gas emissions from nuclear power: A critical survey. Energy Policy. 2008;36(8):2950-63.
15. World Nuclear Association. Safe decommissioning of civil nuclear industry sites. September 2006 <http://www.world-nuclear.org/our-association/publications/position-statements/safe-decommissioning-of-civil-nuclear-industry-sit.aspx> [cited 2017 13 June].
16. Loughhead J, editor How to plug the energy gap. Consensus Conference UK Energy to 2050 - challenges and solutions 12-13 October; 2005; London: <https://www.geolsoc.org.uk/energygap>.