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ANU Energy Change Institute submission:

Inquiry into the prerequisites for nuclear energy in Australia

16 September, 2019

About the ANU Energy Change Institute

The ANU Energy Change Institute (ECI) provides authoritative leadership in energy research, education and public policy through a broad portfolio ranging from the science and engineering of energy generation and energy efficiency, to energy economics, regulation, security, sociology and policy. The ECI comprises more than 300 staff and PhD students from all seven Colleges of the University, and over \$100 Million in infrastructure and facilities, supported by a major portfolio of external grant funding.

Symposium on the Nuclear Fuel Cycle

In April 2017, the Australian National University Energy Change Institute, supported by Engineers Australia, the Australian Academy of Science and the Australian Academy of Technology and Engineering, held the first national Symposium to discuss and analyse the key recommendations and findings of the South Australian Royal Commission (SARC) into the Nuclear Fuel Cycle (NFC), released on May 5th 2016.

The Symposium provided around 70 participants an opportunity to discuss each element of the nuclear fuel cycle including mining and fuel processing, nuclear power and waste storage. It also considered the NFC in the international context, its economic impact and human capacity implications, and the importance of a social licence to operate.

Discussion and analysis of the SARC's 12 recommendations revealed general support for those findings.

This submission summarises the outcomes of the Symposium, as recorded in the Symposium communique of April 2017, under the relevant parts of the Inquiry Terms of reference.

Please note that while the ANU Energy Change Institute and other organisations described above supported the Symposium, its outcomes as described in the communique do not necessarily represent the views of our organisations.

Submitted by:

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Terms of Reference

a. waste management, transport and storage

The Symposium noted that Australia is already part of the NFC, and has international obligations to store and manage its own waste products responsibly. The current national radioactive waste arrangements are unsustainable in the long term, and the need for a national low-level waste disposal and intermediate-level waste storage facility is clear. Australia has the capability to construct and operate in the long term, a national facility for its own radioactive waste.

Separately, as recommended by the SARC report, the Symposium saw potential merit in establishing a radioactive waste storage and disposal facility in Australia for waste generated overseas.

The geological and hydrological conditions in Australia, for example the stability of the geology and the sparsity of underground water in South Australia, provide ideal preconditions for a high-level waste repository. This, coupled with the development of low risk methods of storage and disposal in other countries such as Finland and Sweden, yielded general support from the Symposium for SARC recommendation 11 to:

“Pursue the opportunity to establish used nuclear fuel and intermediate level waste storage and disposal facilities in South Australia....”.

Given the global need and economic opportunity for a commercial waste facility in South Australia, the Symposium generally supported the removal of legislated prohibitions that currently rule out this option.

Waste storage would have significant non-proliferation benefits, by removing the rationale for national reprocessing programs for used fuel management reasons, and by removing national accumulations of used fuel which would otherwise be available for reprocessing in the future.

Waste storage as part of a fuel leasing arrangement was also explored. Guaranteed supply of fuel assemblies under an international leasing arrangement would benefit non-proliferation by removing the rationale for national enrichment programs. Leasing would be more attractive if it included used fuel take-back. Although it was noted that while the uranium mining industry has in the past been reluctant to embrace this capability, it remains open to investigating this opportunity as part of establishing a waste management industry.

The Symposium was of the view that the greatest economic impact of participation in the NFC would be from the storage and disposal of international nuclear waste.

While there was some disagreement over the level of profitability that an international waste repository might generate, it was still clear that the economic benefit would be substantial even if economic returns were significantly less than those projected by the SARC. A key issue is that construction should only proceed if sufficient take-or-pay contracts have already been signed.

b. health and safety

c. environmental impacts

d. energy affordability and reliability

e. economic feasibility

f. community engagement

The Symposium explored the social constructs relating to the attitudes towards nuclear energy in Australia, which are different to some comparator countries internationally.

The current understanding of nuclear issues in Australia is often not based on empirical evidence and data, but rather on political and ideological beliefs and sentiments. The Symposium agreed that education is the one way that may help to build greater understanding in the community of elements of the NFC in Australia.

The Symposium noted that distributed fairness and procedural fairness were critical for building trust and acceptance. Similarly, confidence in government to be able to manage the associated risks of the industry to both individuals and the environment was also seen as important.

The Symposium generally agreed that a social licence to operate will not be achieved quickly. It will take time, transparency and extensive consultation.

Symposium Finding: Given that social license to operate is a key theme in all aspects of the NFC, the Symposium recommends that expertise in the humanities and social sciences be engaged to study the evolution and determining factors for public opinion on nuclear issues in Australia. This could be facilitated by engaging the Australian Academy of the Humanities (AAH) and the Academy of Social Sciences in Australia (ASSA) to propose jointly with the co-sponsors of the Symposium, an ACOLA research project on the NFC social license to operate as an extension of their original 2010 study (<http://acola.org.au/wp/PDF/Archive/NAF-NuclearAttitudes.pdf>).

g. workforce capability

The Symposium noted that Australia does not currently have sufficient human capacity to support all areas of the NFC. However, this could be ramped up over time by training Australian nationals, and also by importing expertise through targeted overseas recruitment and immigration.

h. security implications

i. national consensus

j. any other relevant matter.

Lifting legislated prohibitions

The Symposium was of the view that legislated prohibition is inconsistent with widespread

government practice of supporting technology neutrality, and is an inhibiting factor in the free and open discussion of options available to society. Removing legislated prohibitions would provide a level playing field on which such discussions could take place, allowing the extent of the social license to operate in each element of the NFC to be more freely evaluated.

The Symposium generally supported the following relevant SARC recommendations:

Recommendation 6. “Remove at the state level, and pursue removal of at the federal level, existing prohibitions on the licensing of further processing activities, to enable commercial development of multilateral facilities as part of nuclear fuel leasing arrangements.”

Recommendation 8. “Pursue removal at the federal level of existing prohibitions on nuclear power generation to allow it to contribute to a low-carbon electricity system”.

Recommendation 12. “Remove the legislative constraint in section 13 of the Nuclear Waste Storage Facility (Prohibition) Act 2000 that would preclude an orderly, detailed and thorough analysis and discussion of the opportunity to establish such facilities in South Australia”.

Symposium finding: The Symposium therefore recommended the establishment of an ACOLA working group to build on the findings of the Royal Commission, and to continue developing the case for removing legislation that inhibits an evidence-based discussion of Australia’s potential role in the NFC.

Symposium finding: The prohibitions in some other States on the exploration and economic assessment of uranium resources are significant barriers that prevent evaluation of a key national resource, and should be removed (as part of the general removal of legislated prohibitions).

International engagement

The Symposium generally agreed that engaging with international organisations in the nuclear fuel cycle provides Australia with a role in important decision making processes, such as nuclear nonproliferation.

The Symposium also generally agreed that international engagement and collaborative partnerships will help build the skills needed by Australian nuclear regulatory bodies.

Further, as a major supplier of uranium, the Symposium believed that there was a responsibility for Australia to contribute to international responses to nuclear non-proliferation and safety issues.

The Symposium also welcomed increased opportunities for international engagement arising from Australia’s participation in nuclear research through fora such as the Generation IV International Forum and ITER.