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8th August 2019

The Standing Committee on
Environment and Energy

Dear Committee Members

Inquiry into the prerequisites for nuclear energy in Australia.

I have worked as an energy specialist mainly in the UK and Australia, but also in countries such as Sweden and Finland, which have well-established and well-regulated nuclear industries.

I have followed the "nuclear debate" over a period of 30+ years and would characterise my position on nuclear energy as "neutral" in so far as the social, environmental and economic case encompassing the complete fuel cycle has yet to be made. Taking these in turn:

Social

Too often, and understandably, the nuclear debate has been obscured by well-intentioned feelings rather than facts. In my birth country this can be traced back to Prime Minister Macmillan's suppression of nuclear leaks at UK facilities in the 1950s. This led to an information vacuum which inevitably invited speculation, forming an incomplete evidence-base that was prone to fear-mongering.

In places like Sweden the "general" acceptance of nuclear generation should be seen in the context of the broader question of storage and disposal of spent fuel. In my conversations I found that the periodic inquiries by the Swedish government into their nuclear industry were constrained by the combined economic and social challenges of decommissioning and storage. Somewhat inevitably these inquiries concluded that the industry should continue.

Even Germany, with a track record of decommissioning nuclear power plants does not yet have a long term storage solution. The challenge of disposal also exacerbated the Fukushima disaster, due to the on-site storage of spent fuel rods.

Conclusions:

1) Social License to Operate (SLtO) is of paramount importance in consideration of nuclear generation;

2) Any debate must be open, fact-based and sustained; and

3) It is important to start with the end-point: ie what to do with the spent fuel.

Environmental

The scientific consensus is that the atmospheric carbon budget above which 2-degree warming occurs is almost depleted. Whilst there is some scepticism about anthropological global warming, this position does not provide any rationale for a risk-based policy approach.

Australia has a long-history of campaigning against domestic industries on environmental grounds however these can have adverse and unintended consequences. One such example is the expansion of brown coal generation in the 1980s, at least in part due to the opposition to expanding hydro-power. Whilst this may be understandable from a community perspective, it is not conducive to sound long-term economic policy and investment.

Conclusions:

1) It follows from the gravity of the scientific consensus on global warming that all low-emissions technologies should be "on the table" including nuclear; and

2) the environmental impacts of all options (ie not just nuclear) and the counterfactual of excluding that option should be considered.

Economic

A purist policy approach would see a nationally consistent, long-term policy and regulatory framework within which private capital has enough certainty to make rational long-term investments: "let the market decide".

However, this purist approach overlooks the challenge of promising low-emissions technologies that may be of strategic national interest, but are too uncertain to attract private capital, at least initially. In these circumstances, governments have the option of "staying pure" and relying on other economies to undertake the relevant R&D; or intervening in the market.

Whilst there are benefits and disbenefits with each approach, the interventionist approach is particularly problematic for the private sector due to: 1) the uncertainty it creates; and 2) discouraging, disadvantaging or displacing private sector innovations and investments in alternative technologies. Arguably, nuclear generation can only proceed with an interventionist approach due to the SLtO considerations.

The great economic advantage that so-called "renewable" energy technologies have over "conventional" technologies is the experience curve effect which has seen recent, dramatic cost reductions over a much shorter timeframe than the economic life of "conventional"

generation. This has been achieved through very high unit production and market competition.

This is problematic for all conventional generating technologies, except for gas-fired generation, which has leveraged aerospace turbine technology.

However, it is particularly problematic for nuclear generation in Australia for 2 reasons: 1) there is no experience and therefore the likelihood of major cost overruns is high and probably inevitable; and 2) the hypothetical numbers of conventional nuclear plants that could be deployed would likely be too few and over too long a time frame to see any discernible experience curve gains. On the other hand, Small Modular Reactor technology at least offers the potential of significant experience curve gains with the potential to compete without subsidies against renewable energy and storage technologies at a future time.

Conclusions:

1) ***Stable long-term policy direction, including a clear framework on the selection of technologies for intervention, the nature of those interventions and the circumstances under which such interventions would be withdrawn or phased out is an essential contextual pre-requisite;***

2) ***Early clarity should be provided on the earliest time at which nuclear generation could be deployed (eg practically, not before 2035), to avoid or at least minimise any distractions from the current investment in low-emissions technologies to meet Australia's Paris commitments and afterwards; and***

3) ***If nuclear technology is to be considered further, SMR is the only nuclear technology that offers any rationale for further investigation in the Australian context due to the experience curve effect.***

I wish to point out that I am a Member of the Climate Change Authority (and former Acting Chair). All the above views are my own and do not represent the views of the Authority or any other Member.

I also support emerging energy technologies in a professional capacity (mentor, investor and board member) however this has not impacted the views I have expressed.

I would be happy to discuss these matters with you further if that would be of assistance.

Yours faithfully

Stuart Allinson