17th December 2024

Having read your GenCost report for 2024-2025, I have made some comments, which perhaps will be useful in the public consultation stage that forms a part of this report.

I am not associated with nuclear energy, or the nuclear industry, however I am a professional engineer (retired) and have participated in many major projects in Australia and overseas and often related with public domain projects, working several times on Commonwealth funded projects, as well Victoria State projects.

In reading the report, there are several aspects which any costing should take into account and this should be on the basis of a "whole life cycle" costing, rather than just the costing to achieve operational status. In this case, an electrical power generation using thermal nuclear energy, as compared to other forms using renewable sources (solar, wind etc....) and several scenarios to eventually achieve in 2050 a net zero carbon condition, in meeting our international agreements/initiatives related to avert global climate change.

I have not seen/read any detailed report (other than what has been publicly reported) from the political group that supports the nuclear energy option, but I would have expected the same detail (including my comments bellow) to have/should have gone likewise into that report.

I consider the GenCost 2024-2025 the report to be a fair assessment and fairly comprehensive, taking into consideration many aspects that influence the final cost of the electrical generation systems considered, however it does not appear to be based on the concept of "whole life cycle" costing.

For example I think and perhaps you can confirm whether the following aspects have been considered and are reflected/mentioned in the final costing:

1. End of life decommission and disposal whether nuclear based or not. I would think renewable energy sources would have a significant cost advantage as compared to a nuclear plant and the associated nuclear waste;
2. At this moment Australia produces raw uranium that after processing, supplies the fuel for a nuclear reactor, however Australia (at least at this stage), has no processing facilities that I am aware of to convert the raw uranium to the fuel in a form (usually fuel rods) that can be readily usable at the nuclear reactor. This necessary input in the operation of the nuclear reactor creates at least two unfavourable and costly conditions;

    a). One is that we would need to depend on a third party (usually a *"friendly"* overseas jurisdiction), which means that we are dependant on a third party that we would have little if zero control in the supply/cost, or influence of the same and I suspect it would be more costly and less dependable, than having the means to produce the fuel in its final form here in Australia.
    b). and two, it adds further to the cost, in that we would need to export the raw uranium (cost added) and then import it in its fuel final form (more cost), It would seem to anyone that this is not a logical and cost prudent method of operation;
3. The spent fuel and nuclear waste need to be either stored, or processed into a *“safer”* form of waste, but nevertheless there will be long term facilities needed for safe storage. These storage/processing facilities would be costly to establish and maintain (maintain for how long?). Has this aspect been costed and is it an explicit item that is

found in the report? and

4. There is also the security aspect, which is perhaps hard/impossible to quantify, but nevertheless in the case of nuclear plants is a must to at least be considered and affect any decision to choose one system over another. This aspect is something that does not arise with renewable energy facilities or at least the degree of consequences are really worlds apart.
   These security issues can stem from natural disasters that may damage a nuclear plant and pose a threat to the surrounding area (often extending to a a radius of many kilometres involving possibly a large population). The other security aspect, is related to possible external/internal hostile actions to destroy a nuclear plant(s) by an adversary in times of hostilities. Have these aspects been considered ?
5. Not having seen the nuclear proponents report, or indeed after having read the GenCost 2024-2025 report it is not clear what type of nuclear energy plant is being envisaged and costed.
   I presume it is the most common, this being the pressurised water cooled nuclear reactor. This is a relic of the cold war era, when the electrical energy generation aspect was not the primary consideration, but the production of plutonium for nuclear weapons.
   Has there been any consideration of any alternative nuclear plants that for example operate at atmospheric pressure and eliminate/reduce the type of explosions we had witnessed in the Fukushima disaster?

I hope you can consider in any future updated report the above comments and perhaps reflect on these if you have not considered already .

Best wishes with your endeavours,

Paul Trantallis