

Submission to Dan Repacholi and The House Select Committee on Nuclear Energy 19 October 2024

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Generally on energy

1. Global energy demand is 7 times the size of global electricity demand.
Total global energy demand ~180,000 TWh. Total electricity demand ~25,000 TWh.
2. Globally, by and large we are mostly only addressing fossil fuel in our grids. We seem less concerned with the total energy demand.
3. Currently we are at around 7% RE generation. That's how far we have come today. Excluding existing hydro, pumped hydro and some smaller renewable fuels and methods.
Somewhat beige.
4. Energy demand as well as electricity demand are both increasing.

The way we are going today, this means that:

- First, we are going to struggle with our grids, they will become expensive, waste a lot of generation and never become 100% RE. Why? Because we model our grids to 95% renewable RE, energy, not to 100%. I recently saw a NEM modeling on RenewEconomy that went to some 98% RE. What was evident in the figures was that we would have to sacrifice 15% RE generation on an annual basis to get there. 15% of 200 TWh is 30 TWh. At a wholesale price of \$90 per MWh that wasted generation amounts to \$2.7B per annum. Plus of course we will have an expensive grid.
- We will struggle immensely with RE penetration in remaining energy sectors.
- Most countries are unlikely to meet their "net zero" goals, let alone ever make it to a full RE state and a circular economy.
Because we have left it for too long, as we go forward, the climate will become increasingly more unstable and more and more countries, including Australia, will start to realise and perhaps panic. Rightly so.

We will need a fundamentally different approach. That is the bad news. Good news is, it is not hard or even expensive. If we don't make it so.

Generally on Nuclear energy

1. Nuclear power generation is prohibitively expensive.
2. Nuclear power plants in the western world consistently runs over time and budget. Making the journey to a sustainable future prolonged and more expensive than necessary.
3. Nuclear energy comes with a lot of negatives. No one wants a plant near them and they are a security risk because of the damage an attack on them can cause. Nuclear waste is an unsolved 10,000 year problem.
4. Nuclear does not go well with RE generation. This is because nuclear plants would be required to load follow in a RE dominant grid. Something they can do but don't want to do because then they will be wasting nuclear energy, the most expensive energy to waste.
5. You can't get energy security from nuclear energy..

Generally on Australia

Australia, as the only country in the world, can power the entire world with renewable energy.

Fact.

On Nuclear energy in Australia

Since we can power the world with cheap RE energy why not do exactly that rather than wasting time on a nuclear fantasy?

Powering the world with cheap renewable energy means green hydrogen. There is no other way.

Additionally on the fact that we need a fundamentally different approach: Andrew Forrest, in his address to the United Nations recently labeled "net zero" a con and said that what we need is "real zero".

He is correct

What we need is cheap, efficient and 100% green energy. And we need it fast. We are very late.

Green hydrogen

Green hydrogen export will accelerate global decarbonisation and enable countries to live up to their climate commitments.

Green hydrogen provides the cheapest and most efficient energy storage for our grids, above minutes of storage. An effect from:

- A. The seasonal variation in our grids and the fact that after about 18 hours of storage, you don't need any more electrolyzers or fuel cells, all you need is a bigger tank. So the LCOE of green hydrogen storage does not apply.
Please also note that going hydrogen for energy storage in the grid means that any other form of storage, above minutes, becomes uncompetitive.
- B. Because we now have weeks of storage in the grid, you can design an optimal grid, a cheap and efficient grid, a grid designed for average demand rather than peak demand. Minimised generation and minimised transmission.
And, we no longer need fossil fuel in the grid.

Green hydrogen is the only thing that can provide energy security in a RE world.

Green hydrogen export can provide more income than fossil fuel could ever do for Australia.

In the wake of our green hydrogen production and export, our future green industries will follow. This is what you have aptly labeled "A future made in Australia".

Actions

1. Lead.
This means a goal. "Real zero by 2050" seems appropriate.
2. Invite all parties and independents at an early stage. Work with them to set the goal and agree on a way to get there. If the coalition wants to change things to the worse, just go with all others.
This united way forward will show the world and investors that we mean business and provide confidence for them.
3. Impose accelerating sanctions on companies that do not have a pathway to real zero.
Use some of the income stream for communication and promotion around where we are going and why. Make sure companies and people understand. Give them something to focus on that will make them forget the nuclear fantasy.
4. Stimulate green hydrogen production even more. Use the remainder of the income stream from 2. for this.
2. and 3. will now stimulate fossil fuel companies moving to green hydrogen.