

Joint Standing Committee on Trade and Investment Growth
Inquiry into Australia's transition to a green energy superpower 2022-2023

QUESTION ON NOTICE / Spoken

IQoN 003: Inquiry into Australia's transition to a green energy superpower

Hearing Date: 23 November 2022

Topic: Solar and Wind projections

Senator Scott Buchholz

Question

Mr BUCHHOLZ: I'm just trying to work out how many solar panels and how many windfarms we are going to, because you led me there with the abundance of land, the abundance of solar and the abundance of wind. You pulled up at mentioning anything about hydrogen.

Mr Woods: To be clear: firstly, you are generating the electricity by renewables. At this stage we'd expect it's going to be solar or wind. Then the question is: you've got that electricity here in Australia; how do you sell it overseas? What's the medium by which you transport that energy overseas? That's when you're talking about hydrogen, potentially ammonia or, potentially, green steel and green aluminium, but conceptually they're two different things. One is: how do you generate the electricity? And the second is: by what medium do you then transport that? And that's where the hydrogen piece is. To your question about, 'In this grand scheme of things, what does that look like in terms of the amount of solar or wind?'—I know that there are some projections out there but I don't have them with me now, so can I take that on notice?

Mr BUCHHOLZ: Yes, absolutely.

Mr Growder: I'll just say, too: because that's a domestic energy transition, that's very much the Department of Climate Change, Energy, the Environment and Water—they're the ones that work on that. DFAT is international trade. So if you're asking, 'How many solar panels and wind farms?' then that's them.

Mr BUCHHOLZ: Yes, because most of the solar panels are imported and they come through DFAT.

CHAIR: We might have to get them in as well.

Mr BUCHHOLZ: Most of the solar panels are imported. So I was asking DFAT, through the foreign investment and trade that you have, but not through the clean energy.

Mr Growder: I guess it'd be driven by the demand. We couldn't tell you how many need to be imported until we know how many are going to be used.

Mr BUCHHOLZ: We know what the usage is; that was mentioned in the opening comments. I was just working back from that assumption.

Mr Growder: Yes, and what I'd say is: that usage, though, is a theoretical petajoules figure; how many solar farms and wind farms that is, to get to that, is a domestic energy transition issue that's between us and the imports, I guess.

Mr Woods: We're certainly happy to take it on notice, but it might be a question which we then refer over to the department of climate change, for exactly Mr Growder's point.

Mr BUCHHOLZ: But, from a DFAT perspective, the other part was the 15,400 which we export.

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If this whole committee is about investigating what the green energy superpower is, and exports are part of that, I am asking you: 'How many windfarms and how many solar farms do we have, if we're not going to have fossil fuel, to replace that?' and I think that does sit within your remit; it absolutely does.

Mr Woods: We can take that on notice.

Mr BUCHHOLZ: Thank you.

Answer

Modelling the renewable energy generation required to develop a green energy export industry, equivalent to Australia's current energy exports, depends on a range of assumptions and estimates. Among other considerations, assumptions on technological development, infrastructure operation and utilisation, local considerations, and the nature of exported products will influence analysis on total renewable energy needed. The relative proportions of wind and solar generation within the total will also differ depending on similar factors.

Various analysis has sought to estimate the renewable energy requirements:

- The Australian Energy Market Operator's 2022 Integrated System Plan scenario includes a Hydrogen Superpower Scenario. For Australia to become a renewable energy superpower, as assumed in this scenario, the National Electricity Market (NEM) would need approximately 269 GW of wind generation capacity and approximately 278 GW of solar. This would expand the total generation capacity of the NEM more than eight-fold. This estimate only refers to projects connected to the NEM.
- Modelling undertaken by [the ANU](#) in 2022 estimated that to export a variety of energy and energy-intensive products (such as zero-carbon electricity, liquefied hydrogen, aluminium, and steel), Australia would require 1,264 GW of solar capacity and 919 GW of wind capacity.