

**TOPIC:** COMBINED SA/NT PETROLEUM AND GAS TENEMENTS

**REFERENCE:** TRADE AND INVESTMENT GROWTH JOINT COMMITTEE

**QUESTION DATE:** 10 FEBRUARY 2023

**Dr Feitz:** But there is a group out of France that is particularly strong. There is plenty of tenement uptake that's happened in South Australia at the moment—over 30 per cent now. South Australia is where explorers are looking for natural hydrogen.

**Senator CANAVAN:** It's a separate tenement than a petroleum and gas tenement?

**Dr Feitz:** No. I think it's the same one.

**Senator CANAVAN:** They're combined?

**Dr Feitz:** Yes, and the Northern Territory have just changed theirs to include it as well.

**Senator CANAVAN:** Alright. If you have any further information on it, I think it would be very relevant to our committee. It's not formally part of Exploring for the Future at the moment?

**Dr Feitz:** It is, actually. It's part of the program

**ANSWER:**

On 11 February 2021 the South Australian Government introduced amendments to its *Petroleum and Geothermal Energy Act 2000*, to provide for the exploration and production of hydrogen. Explorers can now apply for a petroleum exploration licence that covers exploration of natural hydrogen, oil and gas. A total of 310,000 km<sup>2</sup> (or approximately 32%) of South Australia's land area is now covered by exploration applications or licences for natural hydrogen.

On 1 December 2022 the Northern Territory's *Petroleum Legislation Amendment Act 2022*, was passed which establishes hydrogen as a regulated substance for the purpose of exploration and production. The Act is expected to come into force by mid-2023. Exploration for natural hydrogen will occur under a petroleum exploration licence.

Hydrogen exploration and production is also permitted in Tasmania under its *Mineral Resources Development Act 1995*. To date, no exploration permits have been awarded for natural hydrogen in Tasmania.

**TOPIC:** ONLINE TOOL

**REFERENCE:** TRADE AND INVESTMENT GROWTH JOINT COMMITTEE

**QUESTION DATE:** 10 FEBRUARY 2023

**Dr Heap:** It's an online tool, so anyone can get access to it. It presents it in a way that nonspecialists can use.

**Senator CANAVAN:** Maybe you could take on notice what that tool is and point us to it. There is no report on it, like there is with the mapping one?

**Dr Feitz:** Yes, there is. There is the academic paper that came out of it—actually a couple now—and there are online videos on how to use it. There is also the code which was released.

**Senator CANAVAN:** If you could take that on notice and send that to the committee, I'm sure it would be useful. I'm particularly interested in the land impact of this. I'm becoming increasingly concerned about how much land, potentially, is being taken up. Does your report identify how much land would be needed to export hydrogen from Australia—a certain amount of hydrogen, obviously?

**ANSWER:**

Geoscience Australia and Monash University have developed the Hydrogen Economic Fairways Tool (HEFT), which is designed to help identify and assess areas in Australia that are most prospective for hydrogen production. HEFT was made publicly available in March 2021.

Key factors underpinning the success of a hydrogen project include the availability of local energy resources, access to key infrastructure and water supplies, and the distance to export ports and energy markets. HEFT incorporates these factors to identify and assess areas of high economic potential for hydrogen production – the “Economic Fairways” approach. The results of this analysis highlight opportunities for hydrogen development and the infrastructure requirements. HEFT allows users to consider hydrogen production from renewable (wind, solar) sources, as well as non-renewable sources (steam-methane reformation, coal gasification) with carbon capture and storage.

HEFT has been used by investors, companies, local governments, and Australian and international government agencies to assess and promote the suitability of hydrogen production in Australia.

**Related publications and key links:**

Stuart DC Walsh, Laura Easton, Zhehan Weng, Changlong Wang, Joseph Moloney, and Andrew Feitz. “Evaluating the economic fairways for hydrogen production in Australia.” *International Journal of Hydrogen Energy* 46, no. 73 (2021): 35985-35996.

<https://doi.org/10.1016/j.ijhydene.2021.08.142>

Website: <https://www.ga.gov.au/heft> (includes training videos)

Source code: <https://github.com/GeoscienceAustralia/bluecap>

**TOPIC:** RENEWABLE PRODUCTION INCREASE

**REFERENCE:** TRADE AND INVESTMENT GROWTH JOINT COMMITTEE

**QUESTION DATE:** 10 FEBRUARY 2023

**Ms LAWRENCE:** In your submission you explained that over the last 10 years renewables production had an average growth of around four per cent. Looking ahead for the next 10 years, how much will renewable production need to increase to keep up with increased demand and also to meet our targets?

**Dr Feitz:** That one I'm going to have to take on notice, but it depends on the scenario which you're looking at. There's the domestic scenario or there's the question of how much of our exports we replace with hydrogen. It really varies based on the scenario. There are a number of different studies that have been conducted that give a range of estimates, but I'd have to take that on notice.

**ANSWER:**

The Australian Energy Market Operator (AEMO) published a range of renewable energy scenarios in the 2022 Integrated System Plan for the National Energy Market (NEM). Under the “Step Change” scenario, the scenario considered most likely, it is forecast that about 14 gigawatts (GW) of the current 23 GW of coal-fired generation capacity will withdraw by 2030. This is predicted to be largely replaced with solar and wind power with pumped hydropower, batteries and gas-fired peaking plants firming supply during periods of low renewable energy output.

The Step Change scenario forecasts an increase in installed grid-scale wind and solar capacity from 16 GW today to 44 GW in 2030. Household rooftop solar is forecast to increase from 15 GW today (approximately 30% of households) to 35 GW in 2030 (approximately 50% of households). Australia is currently installing wind and solar faster than at any time in history. Residential rooftop solar installation capacity, for example, increased from 11.39 GW in 2020 to 14.05 GW in 2021. This record rate of almost 3 GW per year of rooftop solar needs to be maintained to meet the 2030 target of 35 GW (Step Change scenario). The Hydrogen Superpower scenario is far more ambitious. Under this scenario, 46 GW of wind and 28 GW of solar would need to be installed by 2030, requiring a faster installation rate of grid-scale wind and solar capacity than today.

**Reference**

Australian Energy Market Operator (2022) 2022 Integrated System Plan: June 2022. Australian Energy Market Operator. <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp>

**TOPIC:** OVER THE LIFE OF THE EXPLORING FOR THE FUTURE PROGRAM, HOW MUCH HAVE THE STATES CONTRIBUTED

**REFERENCE:** TRADE AND INVESTMENT GROWTH JOINT COMMITTEE

**QUESTION DATE:** 10 FEBRUARY 2023

**Senator CANAVAN:** I was asking about the states. How much has the Commonwealth government committed under both stages so far?

**Dr Heap:** It's \$225 million.

**Senator CANAVAN:** And the states have contributed?

**Dr Heap:** Over the life of the program? I don't have that exact answer, but for the second phase, which is for the last four years, I think it's around \$2 million—but I'll have to take it on notice.

**ANSWER:**

The state and Northern Territory governments have contributed \$8.6m in cash directly to the Exploring for the Future program. This includes \$5.3m in the first phase (2016-2020) and \$3.3m to date in the current phase (2020-2024).