Renewable hydrogen will be produced on land traditionally owned by First Nations people: will its owners benefit?

Lily O'Neill, Fiona J. Beck, Wenting Cheng *AUSTRALIAN NATIONAL UNIVERSITY and* ***Karrina Nolan*** *ORIGINAL POWER*

Introduction

The production of low emissions hydrogen is currently a key priority of Australian governments, at both the national and state level.[1] This drive has come about from the global imperative to decarbonise as hydrogen has been identified as fuel that emits no carbon pollution.

However, recent research makes clear that producing so-called "low-emissions" hydrogen from fossil fuels is a risky proposition.[2] This research highlights that making hydrogen from fossil fuels with carbon capture and storage (CCS) can produce significant emissions, particularly fugitive emissions, and is expensive. Renewable hydrogen, produced by the electrolysis of water powered by renewable electricity, is the clear winner.[3]

The production of renewable hydrogen will require vast amounts of land. In Australia, this land will likely be subject to First Nations' traditionally owned property rights and interests. This is because land that is able to be claimed under native title and land rights legislation by Australian First Nations people in large areas is predominately in regions away from significant population areas, and unlikely to be industrialised (refer to map at Figure 2). A key question therefore emerges: how can First Nations' traditional owners of this land ensure that they benefit from this emerging industry?

This paper argues that the most likely vehicle through which First Nations people will benefit from large-scale hydrogen, and other clean energy projects on their land will be through negotiating strong land access and benefit sharing agreements, a process known as "agreement making". These agreements will be pursuant to the Native Title Act 1993 (Cth) or other legislation recognising First Nations' traditional ownership of land. This paper is intended to start a discussion about possible methods to strengthen agreement making practice, to make it more likely that First Nations people will benefit from the production of large-scale renewable hydrogen.

1. Background

The sobering news from research on the clean energy transition makes it very clear that the clean energy revolution will not automatically be a fair one. A recent review of 20 years of research into the low-carbon energy transition and climate mitigation projects across the world — including wind farms, hydroelectric dams, electric vehicles, low-carbon agriculture, land use changes — found that these projects "can be viewed as power struggles and processes of exacerbating vulnerability . . . [that] climate mitigation creates a fulcrum for elitism, discrimination and the consolidation of wealth".[4]

Much of the large-scale developments on First Nations land to date have been resource extraction.[5] Research clearly shows that the socio-economic benefits of the mineral boom for First Nations communities have been distributed unevenly: good for some people, with more employees and on higher incomes, but the boom also saw poverty increase from already high levels.[6] Karrina Nolan, Yorta Yorta descendent and on the steering committee of the First Nations Clean Energy Network, makes clear that this could also occur in relation to clean energies like green hydrogen:

> When it comes to large-scale projects we can't assume these would inherently benefit communities. There must be principles to ensure First Nations people and our communities are central in the development, design, and implementation.[7]

A. Hydrogen and decarbonisation

Hydrogen has emerged as a key priority for Australian governments because of its potential role in both decarbonising Australia's economy and developing a lucrative new industry. Hydrogen is a useful gas as it can be used as fuel and a feedstock for a range of energy and industrial applications that currently rely on fossil fuels. When used, it releases no greenhouse gases, except water vapour. Hydrogen is currently made from high temperature processing of fossil fuels, mainly natural gas, but also coal and other heavy hydrocarbons. Large volumes of hydrogen are made this way (~70 million

tonnes in 2019), for making fertiliser, refining petrochemicals and other industrial applications. In the process, significant amounts of carbon dioxide are released, accounting for about 2% of global emissions.[8]

In Australia, governments and industry are exploring ways that "low-emissions" hydrogen could be used to help transition heavily polluting industries away from fossil fuels.[9] Typically, the definition of "low-emission", "low-carbon" or "clean" hydrogen includes hydrogen made from fossil fuels with some of the emissions captured, as well as hydrogen made using renewable energy. Renewable, or zero-emission hydrogen is made by splitting water, a process called electrolysis, using renewable electricity, releasing no greenhouse gases (also sometimes called "green" hydrogen).

"Low-emission" fossil-fuel based hydrogen is made from natural gas using traditional industrial processes and includes carbon capture and storage (CCS) technologies (so-called "blue" hydrogen). Carbon dioxide from gas waste streams (think factory chimneys) can be captured, compressed and pumped into underground storage. Around 50–90% of the emissions from current natural gas-based hydrogen production can be avoided using CCS, depending on the technology used.[10] However, blue hydrogen production leads to more fugitive emissions — methane that is leaked into the environment during the extraction and processing of natural gas — compared to just burning natural gas directly.[11] Fugitive emissions are the second largest source of methane pollution[12] and rates are likely to rise due to the expansion of unconventional natural gas production that uses fracking.[13] This is important, as we need to rapidly reduce methane emissions to have a chance of limiting global warming to below 1.5°C.[14]

In general, hydrogen from natural gas with CCS is considered cheaper now, but renewable hydrogen has the most potential to reduce in cost predominately because of the falling cost of electrolysers[15] and especially if there is a price on carbon.[16] Some estimates suggest that this is already happening in Australia.[17]

B Hydrogen at COP 26

The recent Glasgow Climate Change Conference (UNFCCC COP 26), held in November 2021, also saw the role of hydrogen in reducing GHG emissions widely touted. A series of global leader-led common targets, known as Glasgow Breakthroughs[18] were announced across five key economic sectors including power, road transport, steel, hydrogen and agriculture. These five sectors together represent over 50% of global GHG emissions. Specific to hydrogen, the target is that affordable renewable and low carbon hydrogen will be globally available by 2030. Also related to hydrogen is another COP 26 outcome: the Global Methane Pledge where over 100 countries pledged to cut methane emissions by 30% on 2020 levels by 2030.[19]

C Renewable hydrogen likely to use First Nations' land

Fossil-fuel and renewable hydrogen plants will look very different and have different environmental impacts. Renewable hydrogen plants have a large footprint as they need lots of room to generate renewable energy. Large renewable hydrogen plants will likely have both wind and solar on site, as well as electrolysers. The electrolysers themselves resemble shipping containers and will not take up much room. As an example, Figure 1 shows a plan of the Asian Renewable Energy Hub, which will cover 6,500 km^2, with 26 GW of wind and solar[20] used to produce renewable hydrogen which will be converted into ammonia for export.

In Australia, as we have said, the land that is available in these quantities is highly likely to be subject to differing strengths of First Nations rights and interests in land (for example exclusive possession native title, or non-exclusive possession native title where a pastoral lease co-exists) whether native title or another form of tenure.[21] Figure 2 shows the current extent of these property rights and interests.

In comparison, natural gas-based hydrogen plants have a relatively small footprint of a few square kilometres. This land is intensively used and hosts heavy industrial plant operating at high temperatures (~900°C). They need to be built close to water sources and natural gas supplies, as well as suitable carbon dioxide injection sites. Even with CCS there will be some local emissions of carbon dioxide, as well as the emissions from additional electricity used on site. The captured and compressed carbon dioxide gas will be pumped in pipeline to the site where it will be injected deep underground — up to 2 km deep. Figure 3 shows a plan of one the few working natural gas hydrogen production plants with CCS.[22]

2. Strengthening land access and benefit sharing agreements

As has been written about extensively elsewhere,[23] best practice agreement making is often said to be the best vehicle to ensure First Nations benefit from large-scale projects.

However, land access and benefit-sharing agreements are almost always confidential.[24] This means that First Nations communities, investors, governments, and the broader public are unable to verify whether these agreements are fairly sharing the costs and benefits of these developments. As is now widely known, in 2020 mining giant Rio Tinto detonated several age-old rock shelters

of the Puutu Kunti Kurrama people and the Pinikura people in Juukan Gorge, the Pilbara, Western Australia. The subsequent Federal government inquiry into why the destruction of such significant sites occurred has brought into sharp relief the gap that can exist between what is said publicly by a company about its corporate behaviour, and what it negotiates privately. Publicly, Rio Tinto was rated as a world-leader in "communities and social performance": it was rated on the Corporate Human Rights Benchmark as the top scoring mining company globally and in its highest scoring band of publicly listed companies as recently as 2019.[25] Privately, Rio Tinto was negotiating agreements that allowed cultural heritage sites to be destroyed, and "gagged" native title holders from both seeking emergency heritage law injunctions to prevent cultural heritage destruction, as well as speaking publicly to protest.[26] Rio Tinto is by no means alone in having a dichotomy between their public position and their private agreements.[27]

Yet, best practice standards for agreement making do exist.[28] Professor Ciaran O'Faircheallaigh, in particular, has analysed many confidential agreements for both strong and weak agreement provisions, as well as providing a scoring system for how to gauge an agreement's strength.[29] These have been summarised below in Table 1. For First Nations people to fairly benefit from green hydrogen projects on their land best practice principles in agreement making should become standard.

One method to strengthen agreements could be to make agreements publicly available more often (with sensitive information redacted), or at least, make certain aspects of an agreement publicly available (for example, the cultural heritage protection provisions). Making agreements publicly available is often seen as a way to improve their quality.[30]

Another way the quality of agreements could be improved is for companies and First Nations traditional owners to obtain an independent assessment of how their draft or finalised agreement compares to best practice provisions. This independent assessment could be done by two or more legal practitioners, accountants or similar professionals, with significant expertise in these agreements. The independent assessment could be made public, or made available to a more limited group of stakeholders, for example, investors or regulators. This independent assessment could be undertaken voluntarily or could be made a requirement by governments when granting project tenure and permits.

Interestingly, the treatment of the large-scale green hydrogen projects by the Native Title Act 1993 (Cth) (NTA) is not yet settled. While one view is that these projects could be valid pursuant to s 24KA NTA (which deals with infrastructure facilities and would not require an agreement with native title holders). The more persuasive view, however, is that there is no avenue in the NTA for tenure to be granted absent an Indigenous Land Use Agreement or compulsory acquisition by the government because, as the explanatory memorandum to the Native Title Amendment Bill 1997 made clear, s24 KA was expressly never intended to cover large-scale works (with an airport the example given).[31] This arguably put native title holders in a legally stronger position in relation to green hydrogen projects than they would be for a mineral extraction project, increasing their leverage to insist best practice agreements are negotiated (if they want a development on their land to go ahead).

3. Conclusion

The emergence of a renewably-driven, rather than fossil-fuel based, hydrogen industry will be a key part of decarbonising the Australian economy. Renewable hydrogen production may also provide significant benefit to First Nations Australians, on whose land these large-scale projects will be built, but only if they are able to negotiate strong access and benefit sharing agreements. As Karrina Nolan says:

> Our people are critical to sustaining country and know best how to manage lands that could host renewable energy resources. Many of our communities want to engage with renewable energy as it's cleaner and more sustainable than other development, yet our level of participation, let alone ownership, in the industry so far has been limited.[32]

This paper has provided some initial ideas for how benefit might accrue to First Nations traditional owners — we welcome discussion and feedback.

Table 1 Strong and Weak Provisions in Land Access and Benefit Sharing Agreements[33]

	Strong Provisions	Weak Provisions
Environmental Protection	First Nations land holders are in a position where they can ensure that the environment is protected, including by unilaterally stopping certain activities from occurring if the environment is in imminent danger (for example, the group could have power to veto certain development activities if necessary).	The agreement limits the environmental law rights First Nations land holders may have under state or Commonwealth legislation, and leaves them worse off, for example if in an agreement prohibits their right to sue for environmental damage.
Cultural Heritage	A high level of protection would stipulate that the company has to avoid all damage to cultural sites without exception, and right holders be funded to do cultural heritage protection work, and can ensure ongoing cultural competency training for company personnel. This could be embedded in the agreement by way of a power of veto in certain circumstances.	Very weak clauses may simply comply with weak cultural heritage laws that allow cultural sites to be destroyed and may prohibit objecting to cultural heritage matters under relevant legislation.
Financial Payments	A good result would be a significant income stream commensurate with the scale and likely revenue stream of the project, including offering equity or royalty-type payment in the project in recognition of the value of land access.	A poor result would be a financial payment that is equal to or less than First Nations land holders would receive if no agreement were made (i.e., if the land was compulsorily acquired).
Employment and Training	Best practice sees firm employment targets set for local First Nations people, including career pathways to ensure that workers are not limited to entry level work and provided with opportunities, mentoring and training to develop. Accountability for these targets should be assigned to senior company personnel; pathways to employment created; measures put in place to make the workplace conducive to recruitment and retention of First Nations workers.	A very weak clause could include a vague commitment to employing First Nations people.
Business Development	Best practice clauses could lend business expertise to First Nations companies; help with the sourcing of financing for First Nations companies; provide procurement preference clauses for First Nations businesses; fund business management training; provide secure, long-term, "bankable" contracts for First Nations companies.	Weak clauses would make a vague commitment to helping First Nations business development.

Implementation of the Agreement and Ongoing First Nations Land Holder Monitoring of the Development	A best practice clause might set aside personnel and significant financing specifically for the task of implementing the agreement; ensure structures, processes and financing are set up for the purpose of implementation for both the company and the First Nations landholding group; contain explicit clauses about who is to do what post agreement; require senior decision makers in the company and First Nations group to focus on implementation and regular review of progress, including in relation to environment protection and cultural heritage; and contain incentives for company personnel to implement the agreement fully.	An agreement weak on implementation would not make any mention or make only general comments about how it would be implemented. Confidentiality requirements, whereby First Nations land holders face legal consequences if they speak out about perceived failings of the development, are also indicators of an agreement that is weak on implementation.
Recognising Rights and Interests in Land	A strong clause would result in native title being recognised, or a transfer of land to traditional owners	A very weak clause would result in extinguishment of all native title rights and interests.
Project Finalisation	A best practice clause would make it clear that the company is responsible for the full rehabilitation of the site at project finalisation, including removal of all infrastructure that is no longer of value to local First Nations land holders. This would include money for rehabilitation being set aside in a trust.	An agreement weak on project finalisation would make no mention of rehabilitation of the area at the end of the project life.

Figure 1: Map of the Asian Renewable Energy Hub[34]

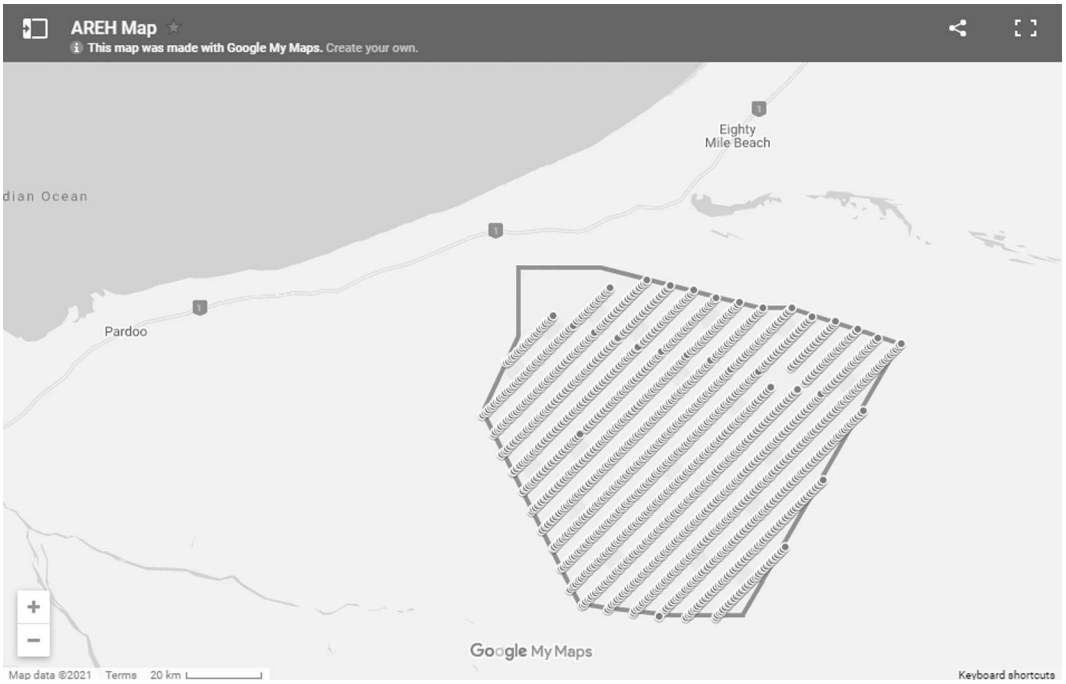

Figure 2: Map of Indigenous Estates and Determinations, courtesy of the National Native Title Tribunal

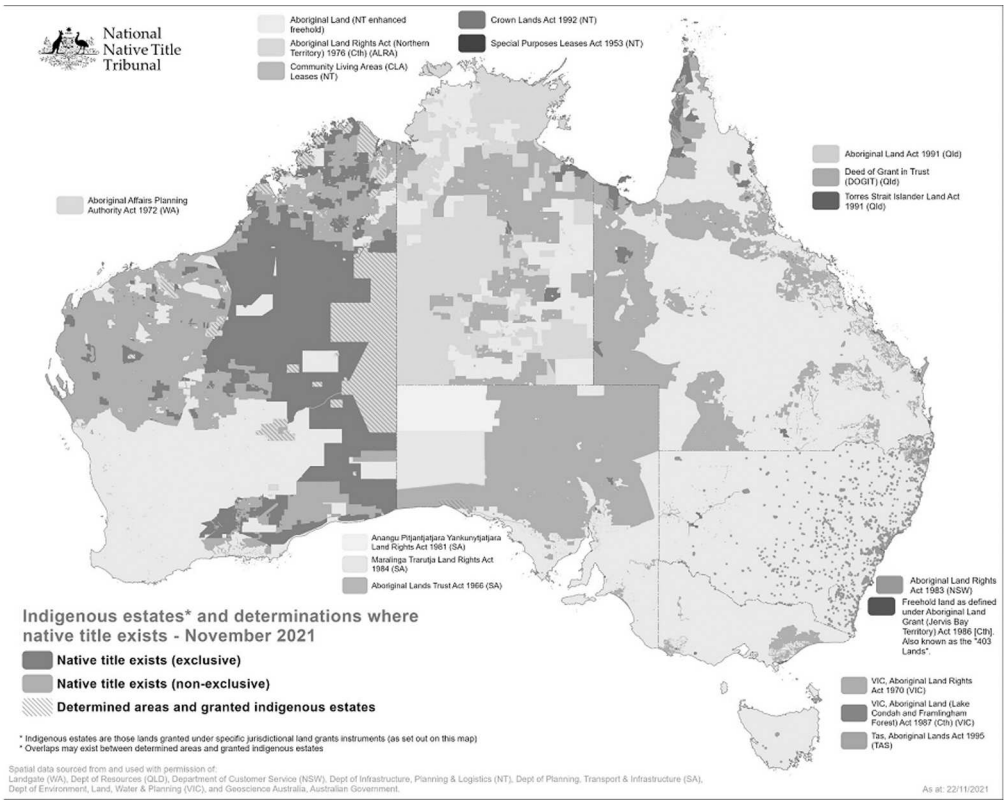

Figure 3: plan of the Quest natural gas based hydrogen plant with CCS in Canada[35]

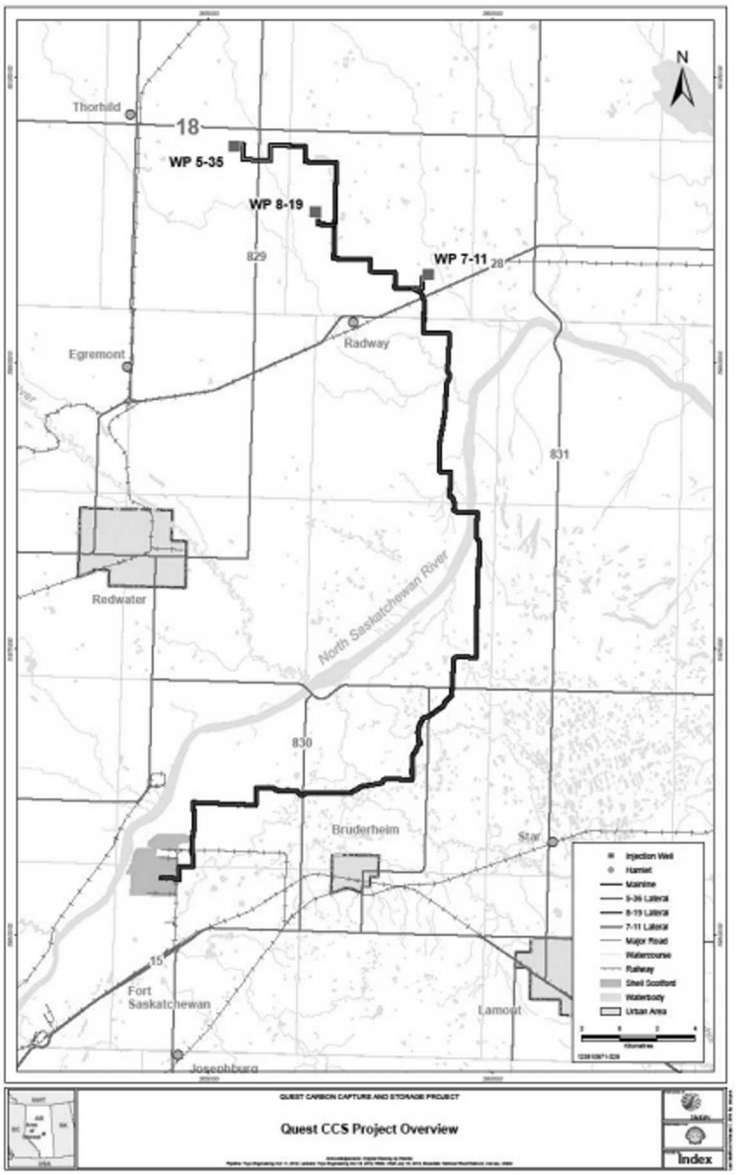

Figure 1-1: Project Facility Locations.

Dr Lily O'Neill
Grand Challenge Research Fellow
Centre for Aboriginal Economic Policy Research
ANU Grand Challenge, Zero-Carbon Energy for the Asia-Pacific
Australian National University

Dr Fiona J. Beck
Senior Fellow at the School of Engineering
Australian National University

Ms Karrina Nolan
Executive Director
Original Power

Dr Wenting Cheng
Grand Challenge Research Fellow
College of Law
ANU Grand Challenge, Zero-Carbon Energy for the Asia-Pacific
Australian National University

Footnotes

1. For example, COAG Energy Council, *Australia's National Hydrogen Strategy* (2019). www.industry.gov.au/sites/default/files/2019-11/australias-national-hydrogen-strategy.pdf; Western Australian Renewable Hydrogen Strategy and Roadmap (2019) www.wa.gov.au/government/publications/western-australian-renewable-hydrogen-strategy-and-roadmap.
2. T Longden et al "'Clean' Hydrogen? — Comparing the Emissions and Costs of Fossil Fuel versus Renewable Electricity Based Hydrogen" (2022) 306 *Applied Energy* 118145 accessed online at https://linkinghub.elsevier.com/retrieve/pii/S0306261921014215.
3. Above.
4. B K Sovacool "Who Are the Victims of Low-Carbon Transitions? Towards a Political Ecology of Climate Change Mitigation" (2021) 73 *Energy Research and Social Science* 101916 accessed online at https://doi.org/10.1016/j.erss.2021.101916.
5. L O'Neill et al "Renewable Energy Development on the Indigenous Estate: Free, Prior and Informed Consent and Best Practice in Agreement-Making in Australia" (2021) 81 *Energy Research and Social Science* 102252 accessed online at https://doi.org/10.1016/j.erss.2021.102252.
6. For example, John Taylor, writing of the mining boom in the Pilbara and its impact on Aboriginal communities there writes: "[i]f pressed to allocate an approximate ratio to this observation, the general impression would be that a third of people are now economically better off and two-thirds are not", see J Taylor, "Change in Aboriginal Social Indicators in the Pilbara: 2001–2016", A Report to the Pilbara Regional Implementation Committee, 2018.
7. Foreward to Lily O'Neill et al, *Clean Energy Agreement Making on First Nations Land: What Do Strong Agreements Contain?*, 2021, p 2, accessed online at https://web.archive.org/web/20210910053609/https://openresearch-repository.anu.edu.au/bitstream/1885/242825/1/2021_09_08_ANU_Guide_Portrait.pdf.
8. IEA, *The Future of Hydrogen*, 2019, ("*The Future of Hydrogen*").
9. COAG Energy Council, above n 1.
10. IEA, above n 8.
11. Longden et al, above n 2.
12. H Ritchie and M Roser, "CH4 Emissions: CO2 and Greenhouse Gas Emissions", online at https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions.
13. R Alvarez et al "Assessment of Methane Emissions from the U.S. Oil and Gas Supply Chain" (2018) 361(6398) *Science* 186.
14. M Saunois et al "The Global Methane Budget 2000–2017" (2020) 12 *Earth System Science Data* 1561.
15. International Energy Agency, "Sustainable Development Senarios" (2019); IEA, *Global Hydrogen Review 2021* (2021) ("*Global Hydrogen Review 2021*"); IRENA, *Green Hydrogen Cost Reduction: Scaling up Electrolysers to Meet the 1.5°C Climate Goal* (2020) <www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Dec/IRENA_Green_hydrogen_cost_2020.pdf>.
16. Longden et al, above n 2.
17. E Bellini, "Off-Grid Green Hydrogen Production in Australia May Already Be Competitive with Blue", Pv Magazine Australia, 15 November 2021, accessed online on 7 March 2022 at www.pv-magazine-australia.com/2021/11/15/off-grid-green-hydrogen-production-in-australia-may-already-be-competitive-with-blue/.
18. "*Glasgow Breakthroughs*" accessed on 7 March 22 at https://racetozero.unfccc.int/system/glasgow-breakthroughs/.
19. *Global Methane Pledge* accessed online at www.globalmethanepledge.org/.
20. Map obtained from the "Asian Renewable Energy Hub", accessed online on 27 November 2021 at https://asianrehub.com/.
21. For an explanation of why these areas have high First Nations property rights and interests see O'Neill et al, above n 5, at p 3.
22. Alberta Department of Energy, *Quest Carbon Capture and Storage Project Annual Report* (2019) online at https://open.alberta.ca/publications/quest-carbon-capture-and-storage-project-annual-report-2019; Shell Canada, "Quest Carbon Capture And Storage" online at www.shell.ca/en_ca/about-us/projects-and-sites/quest-carbon-capture-and-storage-project.html.
23. See particularly C O'Faircheallaigh, *Negotiations in the Indigenous World*, Routledge, 2015, online at https://doi.org/10.4324/9781315717951.
24. These agreements, often in the form of "Indigenous Land Use Agreements" or "s 31 agreements" under the Native Title Act, or s 19 agreements under the Aboriginal Land Rights Act

(Northern Territory), are almost always confidential — see M Stewart, M Tehan and E Boulot, *Transparency in Resource Agreements with Indigenous People in Australia: Report to the Extractive Industries Transparency Initiative Pilot* (July 2014), released as WP 2015/1, Agreements, Treaties and Negotiated Settlements Project, Uni of Melbourne.

25. Corporate Human Rights Benchmark, "Download the Benchmark Data 2019" accessed online on 27 November 2021 at www.corporatebenchmark.org/download-benchmark-data.
26. E Borrello and K Michelmore, "Juukan Gorge traditional owners given 'gag order' warning by lawyers for Rio Tinto, inquiry hears", ABC News Online, 12 October 2020, accessed online on 27 November 2021 at www.abc.net.au/news/2020-10-12/juukan-gorge-blast-inquiry-told-of-rio-tinto-gag-clauses-warning/12754100.
27. L O'Neill, "A Tale of Two Agreements: Negotiating Aboriginal Land Access Agreements in Australia's Natural Gas Industry", University of Melbourne, 2016, p 181.
28. For a summary of these best practices standards, see O'Neill et al, above n 7.
29. C O'Faircheallaigh, "Evaluating Agreements between Indigenous Peoples and Resource Developers" in M Langton, M Tehan, L Palmer, K Shain(eds), *Honour Among Nations?: Treaties and Agreements with Indigenous People* (2004) at pp 303–28. Access online at www.academia.edu/42485310/Honour_Among_Nations_Treaties_and_Agreements_with_Indigenous_People. Please refer to this chapter (18) for more details on how an agreement could be assessed against best practice criteria.
30. Stewart, Tehan and Boulot, above n 24.
31. See p 4 for the full legal reasoning behind this view, O'Neill et al, above n 5. See also Explanatory Memorandum, Native Title Amendment Bill 1997 (Cth).
32. K Nolan, Opening address to the First Nations Clean Energy Network Launch, Mparntwe/Alice Springs, 16 November 2021.
33. This table has been drawn from O'Faircheallaigh, above n 29. It is also contained, in slightly different formats, in O'Neill et al, above n 5. and O'Neill et al, above n 7.
34. "Asian Renewable Energy Hub", above n 20.
35. Shell Canada, "Quest Carbon Capture And Storage", above n 22; Alberta Department of Energy, above n 22.