RENEWABLE ENERGY PROJECTS ON THE INDIGENOUS ESTATE: IDENTIFYING RISKS AND OPPORTUNITIES OF UTILITY-SCALE AND DISPERSED MODELS

K THORBURN, L O’NEILL, J HUNT AND B RILEY
Series note

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Renewable energy projects on the Indigenous estate: Identifying risks and opportunities of utility-scale and dispersed models

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Abstract

Australia’s Pilbara and Kimberley regions have very high rates of Indigenous land tenure, whilst hosting some of world’s best co-located solar and wind energy resources. Simultaneously, technological advances in energy transmission and distribution raises the possibility of renewable energy export into Southeast Asia.

This paper builds upon previous work (O’Neill, L., Thorburn, K. and Hunt, J. (2019), Ensuring Indigenous benefit from large-scale renewable energy projects: Drawing on experience from extractive industry agreement making, Working Paper No. 127, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra) in considering the opportunities and risks of renewable energy developments for Indigenous communities in these regions. It considers renewable energy developments at two different scales – utility-scale and smaller dispersed models, finding that communities are more likely to obtain broader social and economic benefits from developments in which they have a significant financial stake and have power over aspects of development.

Proponents of utility-scale developments may negotiate agreements to offer Indigenous people access to energy, financial compensation for land use, or a stake in ownership. Yet, in considering research from the extractives industry in relation to agreement making we find that broader social and economic benefits for communities are often less than predicted. Research from Canada that looks at the potential for Indigenous ownership of smaller scale renewable energy developments to address local need and benefit, highlights the importance of First Nations’ voices in discussions of regional economic development associated with the coming energy transition.

Keywords: native title, renewable energy, utility-scale, Indigenous estate.
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Acronyms

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<tr>
<td>ABARE</td>
<td>Australian Bureau of Agricultural and Resource Economics</td>
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<td>AEMO</td>
<td>Australian Energy Market Operator</td>
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<td>ANU</td>
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<td>Asian Renewable Energy Hub</td>
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<td>ARENA</td>
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<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<td>B.C.</td>
<td>British Columbia</td>
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<td>LNG</td>
<td>liquefied natural gas</td>
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<td>MW</td>
<td>Megawatt – one million watts</td>
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<td>PPA</td>
<td>Power Purchase Agreement</td>
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<td>WA</td>
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Introduction

This paper considers the opportunities and risks of renewable energy developments on the Indigenous estate, both at utility-scale (between 30 megawatts (MW) and 600 MW) and via smaller, dispersed models (distributed generation and microgrids under 30 MW) (collectively ‘small and medium scale’); it does not consider renewable energy development at a household level, e.g. rooftop solar panels. There has been an explosion in renewable energy investments and project construction across Australia, with flow-on benefits for employment, and for the nation’s achievement of various renewable energy and carbon emission targets (Rystad Energy 2018). Nevertheless, Australia lags behind many developed countries, particularly in terms of the existence of policy mechanisms and legal frameworks that encourage the development of the renewable energy industry and drive the uptake of renewable energy systems across community, government and industry sectors (REN21 2018). Despite the national policy vacuum relating to renewables, all States in Australia except Western Australia (WA) have set renewable energy targets (Climate Council of Australia 2017). As is the case in many other parts of the world (REN21 2018, ch.2), the renewable energy revolution is being driven by State and Territory level governments, as well as local governments, communities, households, businesses and industries.

Globally, the development of renewable energy industries has largely occurred without the support of law and policy frameworks that have historically supported national and/or state level fossil fuel energy production. Fossil fuel energy production has tended to be centralised and monopolistic, with communities as passive consumers. Renewable energy represents a radically different opportunity for dispersed ownership of energy resources. This is because the resources themselves are dispersed, and because the technology is available for the resource to be captured and used at much smaller scales: for example, solar panels on the roofs of individual households allow households to transition from being consumers to energy producers.

This paper focuses on the Kimberley and Pilbara regions in Australia’s remote north-west, and asks ‘What are the implications of renewable energy developments for Indigenous people and communities?’ It does this looking alternatively at utility- and then small- and medium-scale renewable energy developments. This distinction in scale allows the scope to consider examples provided by Canadian First Nations communities, many of which are driving local energy transitions. Furthermore, community ownership of renewable energy developments is a world-wide trend as communities seek to capture dispersed renewable energy resources at local scales, and to move away from the previously dominant model of centralised electricity providers. In an Indigenous context, energy self-reliance may also appeal to Indigenous communities for reasons relating to political and economic self-determination.

Certain attributes of north-western Australia make it an ideal location for utility-scale developments to take place, including that the region is proximate to Southeast Asian energy markets and because it has some of the highest intensity solar radiation in the world (Geoscience Australia 2019). Developing technology means that renewable energy may soon be able to be transported cost efficiently over large distances both within Australia, and across the Asian region. In some areas of Australia’s north-west, solar resources are co-sited with very strong and consistent night time wind resources, making such sites doubly attractive to renewable energy developers of utility-scale projects.

The region also holds great promise for small- and medium-scale developments to occur. The domestic supply of energy to the north-west of Australia has traditionally been very challenging given both very small, and very

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1 The term ‘Indigenous estate’ refers to all land that is communally held by Aboriginal and Torres Strait Islander people, according to their traditional laws and customs. The Indigenous estate is recognised by Australian law pursuant to a variety of statutes, including the Native Title Act 1993 and various land rights regimes.

2 We have defined ‘utility-scale’ in this way based on the Australia Energy Market Operator’s (AEMO) categorisation of any generator over 30 MW as ‘semi-scheduled’ and therefore subject to defined rules.

3 For more detail see the Asian Renewable Energy Hub (AREH) – https://asianrehub.com/
dispersed, populations. Recent work considering spatial factors in infrastructural inequity note the importance of geography to considerations of energy affordability and access (Bouzarovski & Simcock 2017). Small and medium scale developments point to one possible pathway for improving energy access to these small dispersed populations. The region is also a long way from the more population-dense areas of Australia in the south and east of the continent and is not connected to those electricity grids. A number of scholars have argued that there are economically compelling reasons why these energy intense regions should be connected to major demand centres in the near future (see Chambers et al. 2018; Wang, Daragville & Jeppesen 2018).4

This rationale for renewable energy generation for use by Indigenous communities – particularly those in more remote parts of Australia relying on costly and inefficient diesel generators – is well understood and has been facilitated in the past by government investment for installing solar and battery systems.5

This paper also references the growing body of scholarship documenting the ways in which communities (both Indigenous and non-Indigenous) have developed financial, technological and political mechanisms to enable these developments to occur, mostly at a small and medium scale. These mechanisms include highly innovative community ownership models that have underpinned this shift. These communal forms of ownership are in contrast to large scale utilities, which have been characterised until recently in the industrialised world by corporate ownership.

The paper is written in light of a history of uneven benefit-accumulation to Indigenous people and populations from extractive industries in remote Australia. It follows on from an earlier Working Paper (O’Neill, Thorburn & Hunt 2019) that focused on best practice extractive industry agreement making and how its lessons might be applied or bettered by large-scale renewable energy development on the Indigenous estate.

Background and context: The Australian renewable energy sector is booming despite uncertain policy environment

In 2018 the Climate Council of Australia observed that Australia is experiencing a renewables and battery energy storage boom.6 They documented 54 projects under construction in Australia in 2018, comprising $11.2 billion in investment and the creation of 7884 jobs.7 Geoscience Australia reports that Australia has the highest solar radiation per square metre of any continent, providing the best solar energy resource in the world (Geoscience Australia 2019). These kinds of resources suggest that Australia is in a position to become a renewable energy superpower (Chambers et al. 2018). This potential appears to close to realisation, in spite of the policy uncertainty at a federal level in Australia (Simshauser 2018). Australia looks set to eclipse its Renewable Energy Target8 with 29% of electricity to be generated by renewable sources by 2020, and 50% by 2025 (Australian National University 2018).

Most Australian States have set renewable energy targets of between 40% and 100% by 2030, and a number are targeting net zero emissions by 2050 (Climate Council of Australia 2017:ii). These targets are comparable with international trends. These targets have increased over the last decade as the costs of renewables have continued to fall, and public concern about climate change, and related political pressure, continues to grow

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4 Chambers et al. (2018) propose a trans-continental energy superhighway that travels through central Australia and connects to the ASEAN super grid via a hub in northern Australia. Additionally, they say that there is the possibility that developments in the efficiency of transmission cabling might soon mean that the remoteness of Australia’s north-west no longer makes the proposition of connecting to national grids uneconomic. They state: ‘a refocus of less than 25% of the Australian fossil fuel industry subsidies over the next 10 years would fund both a national energy superhighway and connection of the full range of Australia’s energy capabilities to the lucrative and expanding Asian energy markets’ (Chambers et al. 2018:628). See also Wang et al. (2018) who argue for the economic viability of connecting Australia’s national electricity market (NEM) grid to supply that of Indonesia via submarine link.

5 The Centre for Appropriate Technology Bushlight project (2002-2013) is a successful example of this approach.


8 Australia’s large-scale renewable energy target is ‘33,000 gigawatt hours of additional renewable energy generation by 2020’.
(Vaughan 2018). It is not only governments that are setting renewable energy goals: two-thirds of Future 100 companies have also set ambitious renewable energy targets (Climate Council of Australia 2018:b).

The Australian Government’s Renewable Energy Agency (ARENA) has identified four investment priorities for the sector:

1. Deliver secure and reliable electricity
2. Accelerate solar photovoltaic innovation
3. Improve energy productivity, and
4. Export renewable energy.

Whilst still in the development stage, the prospects for exporting renewable energy from large scale projects in Australia’s north are proposed by many as being increasingly viable. Efficiencies of scale and technological advances in power transmission (Blakers, Luther & Nadolny 2012; Chambers et al. 2018; Wang et al. 2018) as well as the use of renewable energy to produce ‘clean’ hydrogen via electrolysis (ACIL Allen Consulting for ARENA 2018) are each considered as signalling the potential for Australia to become a renewable energy exporter.9 This has been identified by a range of sources (Australian National University 2018; Chambers et al. 2018; Wang et al. 2018). Although the Australian Government (2015) White Paper on Developing Northern Australia lacks explicit mention of solar and wind resources, it does identify Australia as ‘potentially positioned as Asia’s energy supplier of choice – from a balance of sources”10. Large and sparsely populated land areas of high solar energy potential, in some instances co-sited with night time wind resources, and in relatively close proximity to anchor loads in Asia – these are all cited by proponents as being significant comparative advantages.

In these regions, environmental constraints typically modelled as limits to onshore renewable projects such as visual impact, distance to residential land (Rodrigues, Montanes & Fueyo 2010) and spatial requirements11 may be complemented by wider assessments of possible adverse effects (Carley et al. 2018), learnings from past regional transitional frictions12 cultural heritage considerations (Pasqualetti 2011), and regional and local labour market constraints (Chapman, Tonts & Plummer 2014). Legacy constraints related to the incumbent centralised supply models and remoteness from key infrastructure likely remain key challenges to be overcome (Byrnes et al. 2013). Barriers to these developments occurring are described by some as political, cultural and institutional rather than technical or economic (Sovacool 2009; Blakers, Luther & Nadolny 2012; Diesendorf & Elliston 2018). For Australia to position itself competitively in the Asia Pacific region, governments and/or large corporations will have to identify and invest in the connecting infrastructure to resolve bottlenecks in the national energy system. This infrastructure includes interconnectors between States and renewable energy zones. Investing in energy storage systems, such as Snowy 2.0, will also be necessary (Baldwin et al. 2018). Renewable energy export will require either transmission and under-sea cables – as proposed by the Suncable

9 ‘Most of the jobs associated with any future hydrogen exports will be located where hydrogen production or export facilities are built. It is most likely that the facilities will be located close to the supply of renewable energy. Renewables, particularly large-scale solar PV or concentrated solar thermal projects are most likely to be located where the solar irradiance is high in Australia. Such areas of high solar irradiance (and reasonable ease of access to appropriately sized areas of land) tend to be in regional areas. Hydrogen production for export may therefore particularly benefit regional communities, traditional owners of the land, and the broader Australian community through the direct employment associated with hydrogen production facilities.’ (ACIL Allen Consulting for ARENA 2018: vi-vi).
10 Both the Northern Australia White Paper (Australian Government 2015) and the Defence White Paper (Australian Government 2013) note energy security as of increasing importance in the region.
11 ARENA suggests large scale solar power plants as requiring approximately 2 hectares of land per MW of power.
12 Regional Development Australia Pilbara (2017) stresses a suite of factors as being limits to further economic and social development as the region transitions from the last resources and mining boom.
proponents for Tennant Creek\textsuperscript{13}, or the export of liquid hydrogen in the form of green ammonia as proposed by the Asian Renewable Energy Hub (AREH)\textsuperscript{14} through shipping via Pilbara port facilities (Bruce et al. 2018).

**Community energy in Australia: part of a global social movement for dispersed and locally owned systems**

Globally, in both developed and less developed parts of the world, some communities have become dissatisfied with conventional and centralised models of energy production because they have ‘…little-to-no influence over the sustainability of their energy supply’ and because energy companies ‘generally (do) not reinvest profits locally’ (REN21 Secretariat 2016:137; see also Hammeijer et al. 2012; Morris 2016). Community investment in these kinds of developments in Australia has been rapidly increasing, and, as elsewhere in the world, is underpinning the increasing acceptability of renewable energy infrastructure and developments such as wind turbines (Holmes à Court 2018).

Communities adjacent to a proposed commercial renewable energy development are increasingly likely to be offered the opportunity to invest, via various mechanisms including community trusts and individualised portfolios of shares. Such an approach facilitates the company obtaining community approval (known as a ‘social licence to operate’) and provides surrounding communities with cheaper energy and income via feed-in tariffs or in some cases, tax credits (REN21 Secretariat 2016:138). These community buy-in schemes have been strongly facilitated in countries like Germany where policy elements have included an energy purchase obligation and a guaranteed price for the electricity produced. Many governments, including that of Scotland, some provinces in Canada and the Victorian State Government in Australia, have legislated for some degree of community ownership of renewable energy developments (Hammeijer et al. 2012; Roberts, Bodman & Rybski 2014; McHarg 2016; Karanasios & Parker 2018).

**Current status of renewable energy in Indigenous communities**

To date, renewable energy development in Australian Indigenous communities has been almost exclusively at a very small scale and off-grid – not for redistribution beyond a local group of households. In remote areas particularly, renewable energy development has occurred on a scale suitable to replace diesel generators. The approach to this type of renewable energy development has generally not occurred as part of regional development or systematic energy planning\textsuperscript{15}. Nonetheless, for remote communities, replacing expensive diesel generators with solar and battery systems presents multiple benefits. These include reducing household energy costs, increasing energy security and reliability, and enabling sustainable economic development through development of small businesses (Indigenous Business Australia 2017).

For example, the Northern Territory Government partnered with ARENA in 2014 to fund the installation of 10 MW of solar power across 27 communities with the aim of reducing diesel consumption.\textsuperscript{16} Another example of renewable energy investment now exists in WA, where Carnegie Clean Energy partnered with the Perth Noongar Foundation and Indigenous Business Australia as co-equity investors in the $17 million 10 MW Northam Solar Farm. The Noongar partners stated that the project would ‘…offer our people, and the greater community, access to a clean, renewable energy that is sustainable and aligns with our cultural values and

\textsuperscript{13} In July 2019 the Northern Territory Government awarded major project status to Suncable’s proposed Australia Singapore Power Link project which would connect these countries via high voltage direct current transmission.

\textsuperscript{14} For further information see AREH at https://asianrehub.com/.

\textsuperscript{15} The Centre for Appropriate Technology’s Bushlight project (2002–2013) and their community energy planning model, which was implemented in over 130 remote communities, stands out as a notable exception.

\textsuperscript{16} A recent Northern Territory Government (2018) discussion paper identified a further 60 communities to which this program could be expanded in the Northern Territory.
responsibilities. Business opportunities for Noongar people, as well as employment, are built-in to the partnership.

The potential role of Indigenous people in financially partnering in renewable energy developments has not as yet been encouraged by policy in Australia, with the exception of a few isolated cases. However, a much broader conceptualisation of the potential role for First Nations people in renewable energy development can be seen in the legislative and policy frameworks of renewable energy in Canadian provinces – some of which have been driving First Nations involvement in renewables for two decades or more.

**Indigenous benefit and policy settings: A quick glance at the renewable energy transition in Canada**

In Canada, both the national and provincial governments recognise that the transition to green energy can provide an opportunity to advance reconciliation with First Nation peoples, as well as enable socioeconomic development in those communities. This is in a context where, in 2018, 17% of Canada's total energy supply came from renewable energy sources. By 2015, 50% of the Canadian population had participated in the development of Community Energy Plans. These plans are created to help define community priorities around energy with a view to improving efficiency, cutting emissions, enhancing community resilience, managing future risks, and driving economic development (Community Energy Association & Quest 2015).

Indigenous involvement in renewable energy projects in Canada has benefited greatly by specific policy settings which have encouraged, or indeed legislated, for such involvement. The Indigenous Renewable Energy Research Project in 2016 estimated that there were approximately 300 Indigenous clean energy projects across 194 communities in Canada. Another survey identified over 1000 small scale projects, and 152 medium scale projects across Canada (greater than 1 MW according to that report's definition) (Henderson & Sanders 2017).

Many of the renewable energy projects have been enabled by provincial government funds which specify how profits derived from renewable energy projects on Indigenous lands will be shared with First Nations people (Krupa 2012). For example, British Columbia (B.C.), the province which leads the way with over 50% of the nation's renewable partnership projects, established the First Nations Clean Energy Business fund to promote Indigenous community participation in the clean energy sector. This fund supports agreements between the B.C. Government and successful applicants for capacity and equity funding. It also provides revenue sharing agreements between the B.C. Government and eligible First Nations. These agreements, which prescribe the percentage of revenue from the development which is to go to the relevant First Nations, are subject to complete transparency, and all 52 in place are available online. Similar investment funds to support First Nations involvement in renewable developments now exist in every province in Canada (Henderson & Sanders 2017; Karanasios & Parker 2018).

Canadian provincial government subsidisation is not the only source of Indigenous investment. Other forms include:

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18 See https://www.nrcan.gc.ca/20093.
19 See https://www.nrcan.gc.ca/e.energy/facts/renewable-energy/20069.
20 See https://indigenousenergy.ca/about/.
21 For example, '50% of new incremental water and land rentals, for any one project will be deposited in to the First Nations Clean Energy Benefit Fund. A total of 75% of those deposited funds will be directly shared with First Nations whose territory may be impacted by a clean energy project, for a total of 37.5% of the deposited rentals. The remaining 12.5% will remain in the fund to further support capacity and equity grants.' (https://www2.gov.bc.ca/gov/content/environment/natural-resource-stewardship/consulting-with-first-nations/first-nations-clean-energy-business-fund).
...community funds, funds from treaty settlements and land claims, community trusts, debt financing through the project development partner, direct grants from the project developmental partner, external terms, and/or external borrowing backstopped by guarantees provided by governments, Indigenous financial institutions like the First Nations Finance Authority, or project partners (Henderson & Sanders 2017:5; for more detail, see also Krupa 2012).

The existence of ‘supporting regulatory and fiscal policy that were negotiated and adapted to Indigenous sustainability visions’ has proved crucial to the success of a range of such projects across Canadian provinces (Karanasios & Parker 2018:169). Henderson and Sanders (2017:3) similarly observe that the ‘extent of Indigenous clean energy participation would not have been possible without public sector programs and mechanisms’. In Canada, provincial and territorial government departments with responsibility for energy, climate change and economic development have been driving Indigenous involvement.

Across Canada, it is now the norm for Indigenous communities to hold approximately 25% ownership of clean energy projects. This has been facilitated by the contractual requirements for such developments and ‘price-adders’ which favour projects with First Nations partnerships (Henderson & Sanders 2017). The report by Henderson & Sanders, which surveyed renewable energy project across Canada, recorded an estimated $2.5 billion in profit for First Nations communities over 15 years, and $167 million in net annual returns from renewable energy projects. It also recorded 299 First Nations people in renewable energy employment, and $842 million in estimated Indigenous employment income. The authors noted a total generating capacity of such projects of 19,516 MV, or nearly one-fifth of the country’s overall power production infrastructure (Henderson & Sanders 2017).

Utility-scale renewable energy projects: Risks, benefits and opportunities

The development of ‘utility-scale’23 renewable energy projects presumes the energy produced from such installations will be exported – either to other towns or communities within Australia, offshore, or for uptake by industry. For the purposes of this paper, we have defined ‘utility-scale’ as installations that produced between 30 MW and 660 MW of electricity. Utility-scale renewable energy is also distinct from ‘mega’ projects, which are becoming more common globally.

In a region like the Kimberley, which is not connected to the major power grids of the south of the State of WA, each town operates as its own kind of microgrid. Apart from the large towns of the east Kimberley, which derive their power from the Lake Argyle hydroelectric scheme, the majority of towns in the Kimberley are currently powered by gas-fired power plants – which are owned and run by the WA State utility Horizon Power. Smaller communities tend to rely on diesel generators, combined with small solar systems (Phillips et al. 2018). Recent modelling in the Kimberley Clean Energy Roadmap (Phillips et al. 2018) suggests that such a micro-grid model would also be the most economic approach to a roll-out of renewables across the Kimberley, although these scenarios did not consider energy opportunities or demands beyond domestic usage, and the demands of the Thunderbird mine site, on the Dampier Peninsula north of Broome (Phillips et al. 2018).

The authors of this report also presumed that the majority of the $560 million required to transition the Kimberley to renewable energy could be sourced from government agencies, including the WA Government and ARENA, as well as the private sector. While the question of Indigenous equity in such a transition to renewable energy is briefly mentioned, there is little detail except to say that investment opportunities for Indigenous people exist. Our

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23 For the purpose of this paper we have defined ‘utility-scale’ as being between 30 MV and 600 MW based on the Australian Energy Market Operator (AEMO) treating any installation generating over 30 MW as ‘semi-scheduled’ and subject to specific guidelines.
proposition is that building Indigenous equity into a renewable energy future could form the basis of a different kind of economic future for Indigenous people.

The co-location of favourable wind and solar resources on large tracts of sparsely inhabited land in north-western Australia presents considerable opportunity for large scale renewable energy developments. The vast majority of this land is subject to Indigenous rights and interests, as can be seen in Figure 1 below.\(^{24}\) The following section overviews how agreements developed with large-scale extractive industries have often resulted in sub-optimal outcomes for Indigenous parties. This suggests that a different approach might be necessary both to build-in Indigenous benefit in the future, and to secure Indigenous access to renewable energy.

**Figure 1** Indigenous estates and determinations where native title exists, as at 30 June 2019

Source: National Native Title Tribunal 2019.

**Resource extraction on the Indigenous estate: benefits and impacts**

As discussed in a previous Working Paper (O’Neill, Thorburn & Hunt 2019), the predominant experience of Aboriginal people in dealing with large-scale development on traditional lands has been in relation to mining and the extractive industry. Lessons from these engagements are therefore important to consider as the renewable energy industry develops.

\(^{24}\) See O’Neill Thorburn & Hunt (2019).
Several years ago, one of the largest resource booms in Australia's history came to an end (Sheehan & Gregory 2013:121). That resource boom saw large amounts of resource wealth extracted from, or next to, land on which Australian Indigenous communities live (Minerals Council of Australia 2011:4). Yet the traditional owners of that land – like Indigenous people world-wide – are on average less educated, live shorter lives and pass on less wealth to their children than their non-Indigenous counterparts (Australian Bureau of Statistics 2017). That resource wealth has largely not helped to improve the lives of Indigenous traditional owners has been described as ‘the Australian paradox’ and ‘poverty in the midst of plenty’ (Langton & Mazel 2008; Altman & Martin 2009:ix).

The history of the interactions between resource extraction companies and Indigenous Australians has long been fraught, the former having carried out its operations on the Indigenous estate without regard for its owners for much of that time. The recognition of Indigenous rights to their traditionally owned land from the 1970s onwards ended the most egregious acts by resource extraction companies, including whole communities being forced to make way for developments without consultation, notice or compensation. The recognition of traditional rights to land saw the advent of agreement making with developers seeking to access traditionally owned land, as discussed in a previous Working Paper (O’Neill, Thorburn & Hunt 2019)).

Yet, in spite of these advances, researchers have continually found that the benefits of resource extraction projects are not shared equitably by the land’s Indigenous owners. In the early 1980s, Cousins and Nieuwenhuysen wrote of the limited social and economic benefits accruing to Aboriginal communities from royalty and other funding streams associated with such developments (Cousins & Nieuwenhuysen 1984). In 2009, in the middle of the most recent boom, Nieuwenhuysen wrote that:

> It is…disappointing to learn that, after yet another major mineral boom in Australia, when in the five years to 2006 mining export revenues rose by over $100 billion (or around 70 per cent), Indigenous people still do not share equitably in the vast incomes which are generated from their lands in the remote regions of Australia (Altman & Martin 2009:ix).

Scholars note a complex range of contributing factors, including the following broadly applicable explanations. Firstly, the institutional capacity of primarily Indigenous organisations is not robust enough to properly implement agreements reached with developers. Secondly, poor human capital in Indigenous communities means that people are not able to participate in the economies of a mine site, combined with concurrent failure by companies and governments to enable participation. Thirdly, because of government substitution, a practice whereby governments fail to provide essential services in areas of resource extraction with the expectation that companies will fill the gap, communities adjacent to mining developments can receive less services than they are entitled to (Trebeck 2007; Langton & Mazel 2008; Scambary 2013 Campbell & Hunt 2013).

In 2010 Marcia Langton noted the large economic disparities between the Indigenous communities close to mine sites with the workforce servicing those sites. She observed that this effect was in keeping with ‘the resource curse’, a trend observed particularly in the developing world whereby mineral wealth does not lead to improved socioeconomic conditions of surrounding communities. The reasons for a localised resource curse operating in Indigenous communities, she argues, are ‘low levels of Aboriginal education and skills, combined with racism, poverty, poor housing, and high levels of morbidity and mortality’ resulting in low economic participation (Langton 2010; 13 see also Scambary 2010:232).

Similarly, Benedict Scambary argued that even where traditional owners have negotiated beneficial agreements, the promised socioeconomic impacts of those agreements often failed to materialise. He analysed three agreements widely seen as strongly beneficial for traditional owners, concluding that, despite noteworthy successes, they largely do not live up to their promise for creating economic opportunity for disadvantaged Indigenous communities. The reasons for this are ‘numerous and complex’, he argues, among them:
…the level of accord between defined agreement beneficiaries and local Indigenous conceptions of relatedness; [the strength of] Indigenous organisations arising from the agreements; their ability to represent the diversity of their memberships; the various effects of statutory and agreement defined conditions on the flow of benefits…; the impact of agreements upon the role of the state as a service provider; and the nature of Indigenous autonomy over agreement benefits (Scambary 2013; 3).

Unsurprisingly, the circumstances in which positive benefits accrue to Indigenous communities from local resource extraction are the corollary of those reasons discussed above. Langton, for instance, emphasises the importance of strong, open and accountable institutions, drawing on the work of American economist Joseph Stiglitz who highlights the importance of institutional quality, particularly accountability, in ensuring lasting positive impact of mining booms (Stiglitz 2007; Langton 2010).

Campbell and Hunt (2013), writing of a successful community development program run by the Central Land Council and funded by community money derived from royalties, suggest the following factors are influential. 
They say that royalty money is best spent where it is done so according to community priorities, with community ownership, by community leaders and members, in a culturally appropriate manner. They also emphasise the importance of significant investment in capacity development and strong local governance structures. In the specific programs they examined, they write of the importance of community development on a regional scale, run by a strong land council, as one way to ensure benefit. Campbell and Hunt acknowledge that the impacts of large-scale development on the Indigenous communities have predominately been very negative.

**Differences between renewable energy and extractive industry development**

Utility-scale renewable energy projects are different from extractive developments in several important ways, as discussed in O’Neill, Thorburn & Hunt (2019). These include that utility-scale renewable energy developments – and the resources they seek to capture – are dispersed over relatively vast areas. They are likely to have less of an environmental impact than a mine and clearly have very positive benefits in terms of carbon emissions abatement. They also have a potential lifetime measurable in generations, rather than decades. The AREH25, proposed for the north Pilbara, for example, is planning to be producing energy for 60 years, or three generations.

Like extractive industries, both solar farms and wind turbines can impact 'landscape amenity', a term which refers to the cultural associations of 'pleasing' landscapes. This could impact the Kimberley, an area associated with high ‘wilderness’ values in particular, although there are still vast areas of the both the Kimberley and the Pilbara that are rarely visited by outsiders. These developments also clearly have a potential impact on Indigenous cultural heritage. Their dispersed character means there is potential for such developments to co-exist with other enterprises, such as cattle stations, or with agricultural developments, although the latter remains a rarity in Australia’s north.

The other crucial observation is the global push for renewable energy companies to share benefits of these kinds of developments with local and regional communities. This pressure is shifting what is considered best practice by both renewable energy companies, and by government – although there is a great deal of diversity globally in what kinds of benefits might be offered (Kerr, Johnson & Weir 2017). The way benefits of renewable energy generation on the Indigenous estate might be shared across or between neighbouring groups is an important consideration.

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25 See the AREH at https://asianrehub.com.
Some of the commercial opportunities, risks and considerations for First Nations in relation to utility-scale renewable energy developments on or near their land are now considered.

**Commercial opportunities**

Opportunities presented to Indigenous people, particularly those in more remote parts of Australia, by the renewable energy industry could be significant, and could be quite different from the kinds of opportunities which have emerged from industrial developments on country up to now. Opportunities associated with larger scale developments may include:

- benefits from land access and benefit sharing agreements negotiated with renewable energy companies
- development of mainstream commercial partnerships with renewable companies involving part ownership, and hence revenue, from on-selling of energy resources via Power Purchasing Agreements
- employment in both construction and maintenance of renewable energy installations
- siting of energy-purchasing businesses adjacent to renewables developments – with flow-on opportunities for employment, or co-investment, or contract-based businesses; this might include PPAs for provision to industries, or to electric vehicle recharge stations
- minimising cost of electricity for surrounding communities, in exchange for land access or a ‘social licence to operate’ where the community are not landowners
- energy export to potentially enormous markets in countries with limited renewable resources such as South Korea, Japan and Indonesia
- energy security for future generations, and potentially,
- energy sovereignty – that is, ownership of the sources and distribution of energy.

Clearly a number of these opportunities could be enhanced by a proactive policy and/or legislative environment, as well as by the development of financing options for Indigenous groups to enable part or total equity in renewable energy projects. Considerable investment in the development of the necessary infrastructure to either export energy, or to transmit energy resources to less energy rich parts of Australia and the Asia Pacific region, would also be necessary (see Chambers et al. 2018)

**Constraints to Indigenous participation**

In simple terms, and in the context of renewable energy as a development proposition for Indigenous lands, constraints are as follows.

1. Native title/land rights as proprietary interests in land are unique forms of land title. They enable communal decision making and group ownership. They are inalienable – or non-transferrable or sellable. How these regimes – and benefits packages negotiated via these – might interact with renewable energy developments is yet to be seen in Australia. Because these land assets cannot be sold, they are difficult to utilise to obtain a mortgage, which limits the capacity of many traditional owner groups to raise capital for investments.26

2. Populations are dispersed – so the need for a social license to operate (and concomitant benefits package) can be mitigated by placing renewable energy developments away from where people live. In

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more populated parts of Australia, the social licence to operate imperative gives neighbouring communities leverage to receive benefits from renewable energy developments, or the opportunity to invest in such developments. This is less likely to be the case in remote Australia where communities are so dispersed that companies do not have to accommodate a local, densely populated community.

3. Socioeconomic resources of Indigenous groups are generally limited, as is their capacity to co-invest on conventional terms.

Longer timeframes

Having a utility-scale industrial development on country for three generations has the potential to transform the socioeconomic status of traditional owner groups – but only when the benefits negotiated under the native title agreement are sufficient, appropriate and capable of responding to changes in externalities.

This is necessary because longer timeframes will potentially have compounding effects in terms of both benefits and costs of such developments. They will therefore incur greater degrees of uncertainty about how both benefits and costs will be affected by domestic externalities such as changes in commodity prices (including the energy being sold), changes to relevant laws, local and regional demographics as well as industry, climate change, and changes in demand for land access. The risks and uncertainties associated with renewable energy production for an export market include shifts in international agreements, treaties and diplomatic relations between trading nations, the development of alternative renewable energy technologies, global changes in climate patterns, the volatility of resource markets, and its impacts on the economies of importing nations.

The degree to which traditional owners are affected by these kinds of uncertainty related to international markets would depend entirely on the nature of the benefits agreement they sign. The best kinds of agreements are likely to contain provision for different kinds of investment portfolios, and include both high-risk, potentially highly profitable elements, as well as low risk payments which are not tied to production and protected from market volatility. Such agreements would mitigate unnecessary exposure to market volatility for traditional owners. Whilst it may not be possible to build a future scenario across intergenerational timeframes with certainty, native title agreements can account for variations in circumstances; for example, if more than one group is found to hold native title, if more companies come on board or the corporate structure changes, or if production of the commodity increases, agreements can be adjusted.

To ensure an ongoing social licence to operate, as well as to effectively appraise the impacts of negotiated benefits agreements over such long-time frames, regular opportunities for review would be an essential element of the terms of any agreements.

Dispersal of resources

A radical difference between renewables and extractive resources is that renewable energy resources – the wind and the sunlight – are dispersed. This has important implications for neighbouring groups of traditional owners, who might share similar access to the same energy resources, or who might have marginal advantages over one another in terms of proximity to future export nodes (ports, undersea cables) or in topography or in terms of the coherence and human capital of the group – and therefore the ease and success with which developers might presume benefits agreements to be negotiated and implemented.

A good example of how traditional owners might avoid such a ‘divide and conquer’ approach exists in the way in which the Kimberley Land Council planned for the distribution of benefits across traditional owner groups in the Kimberley, prior to the identification of a preferred site by the State Government for the Browse Basin gas development, which sought to process offshore gas somewhere on the Kimberley coast (O'Faircheallaigh & Twomey 2010; O'Neill 2019 forthcoming).
This plan by regional Kimberley traditional owners ensured that wherever the development was sited, out of the 40 sites that were originally identified, there would be a sliding scale of benefits distributed to traditional owner groups across the Kimberley. The highest percentage would go to those on whose country the gas plant would be sited, scaled out to a wider distribution of benefits across the region. This process was supported by a Traditional Owner Taskforce, which contained representatives of all the coastal native title claims upon which potential sites had been identified (O’Faircheallaigh & Twomey 2010:24). Traditional owners recognised that the liquefied natural gas (LNG) development would have impacts, both positive and negative, that would be highly significant, felt throughout the Kimberley, and that would be intergenerational. Such an approach also ensured that the developers could not benefit from neighbouring Indigenous groups – whose country might be suited to the gas development – competing against one another, and bidding for the lowest price. 27

There are also parallels between renewable energy resources and dispersed resources including water: both can be harvested across neighbouring traditional owner groups. For example, in the Victorian town of Stanley (non-Indigenous) residents were unable to prevent the extraction of 19 million litres of groundwater from a highland aquifer by multinational beverage company Asahi (that residents said would negatively impact on the environmental and agricultural values of the area), because of an agreement that the company had reached with a single landowner (White & Nelson 2018).

The dispersed nature of renewable energy resources presents a challenge to traditional owners to think strategically, and more regionally, about how to engage with the opportunities that the renewable energy industry presents.

**Dispersed model renewable energy developments: Risks, benefits and opportunities**

Additionally, we can point to two scales of renewable energy development on the Indigenous estate which are smaller than the utility-scale option discussed above. The first has been occurring for some years, and is the development of small, off-grid solar or hybrid energy systems for dispersed Indigenous communities 28. That such developments are not connected to a wider grid means there is no opportunity for the sale of this energy to other communities or towns; the benefits of such energy developments are therefore limited to cheaper, or free, electricity, the provisional of a handful of jobs to maintain the technology 29 and what has become known as ‘energy access and reliability’.

The second scale would be the development of larger renewable energy installations which could supply energy to medium and larger size towns across northern Australia – to both Indigenous and non-Indigenous residents – as well as possibly to industry. These developments would have parallels with similar scale installations elsewhere in Australia (such as Sapphire Wind Farm in New South Wales) and could provide competitively priced and secure sources of energy for the populations living in towns in northern Australia. Developments of this scale would benefit from investment in regional development plans which take account of future energy needs – including the supply of electricity to electric vehicles – and potential growth of other industries such as hydrogen-based export, or the mining of new energy metals used in the rapidly growing market for energy storage such as lithium ion batteries 30 (Future Smart Strategies 2018). Low and dispersed populations will diminish the cost-effectiveness of such installations in the immediate term, but the populations of these regions

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27 See O’Neill (2019): ‘Aboriginal elders approached the KLC saying that given significant interest in industrialising the Kimberley they wanted a single consultation process in which all companies had to come “through one door and tell us the same message.”’ (from Wayne Bergmann, then KLC CEO, interview).

28 For more detail see the website of the Centre for Appropriate Technology.

29 Phillips, Rose & Bunn (2018) estimated renewable energy systems for the entire Kimberley could be maintained by 180 people annually.

30 ‘WA is home to the world’s most accessible abundance of new energy metals - lithium, rare earths, cobalt, vanadium, tin, tantalum, nickel, manganese and magnesium – essential components in energy storage devices, such as lithium ion batteries’ (Future Smart Strategies 2018:13).
are predicted to grow; just how fast the population of northern Australia will grow will depend on various policy signals, and government investment (see Australian Government 2015).

Issues of energy justice and energy reliability – and how these might be attained by remote Indigenous communities – have been largely under-theorised in Australia. Energy justice raises concerns that relate to equitable access to cheap and reliable energy; equitable both between more urban Australians and remote Indigenous people, and among those Indigenous people themselves. The track record in Australia of remote Indigenous communities’ access to other utilities, for example, to clean water, indicates that energy access and security are not guaranteed.31

The concept of energy security suggests reliability of energy supply, but it is also underpinned by notions of control and ownership of the energy sources. A number of international scholars observe that a transition to energy security for minority groups such as Indigenous people will not be ensured by a mere technological approach, but rather that such a transition must challenge conventional, industrial ways of organising production and power relations (Newell & Mulvaney 2013; Sovacool & Dworkin 2014). Energy production is crucial to any form of economic growth; the continued marginalisation of Indigenous people from regional economies seems likely unless concerted efforts are made to ensure that Indigenous people have a strong voice and stake in the energy transition which is proposed for Indigenous lands. The policy initiatives undertaken by various Canadian provincial governments offer a range of possible approaches.

**Conclusion**

The Kimberley Clean Energy Roadmap, which modelled a range of possible renewable energy scenarios for the West Kimberley, only considered generating electricity for the domestic energy market of the Kimberley. This market, based on current population figures of the Kimberley, and the limited industry needs, is very small in comparison to other areas in the south and east of Australia.

However, as the development of the AREH32 in the north Pilbara suggests, global industries and investors now recognise the extent of renewable energy resources in north-west Australia and are seeking to act on the demand for renewable energy in nearby Asian markets.

The potential for green hydrogen as an exportable commodity has been documented recently (Bruce et al. 2018; ACIL Allen Consulting for ARENA 2018) and could underpin renewable energy export from north WA, as well as forming the basis for other kinds of industries.

The explosion in renewable energy investment in Australia also has implications for different kinds of industrial development in Australia’s north-west, including a growing interest in lithium, and other metals. What is clear is that the shift away from the mining and exporting of fossil fuels is underway in Australia. The implications of an economy which is driven by renewable rather than conventional sources of energy are many. New markets will emerge, as will new competitors.33

In considering the potential benefits and risks to Indigenous people of smaller and larger scale renewable energy developments the issue of scale might not be the most crucial. Rather the intertwined questions of ownership and the potential downstream use of energy resources become central. The real opportunities for indigenous people in renewable energy go far beyond being recipients of a list of negotiated ‘benefits’, to longer

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31 For example, a 2015 WA Auditor General’s report into power, water and wastewater services to 84 remote communities found drinking water at 68 failed to meet Australian standards (https://audit.wa.gov.au/reports-and-publications/reports/delivering-essential-services-remote-aboriginal-communities/communities-reliable-power-water-supply-water-quality-often-not-meet-australian-standards/).
32 See https://asianrehub.com/.
33 See for example Buchanan’s 2018 essay on Russia’s reorientation to the Asia Pacific in its energy export strategy.
term, strategic and regional considerations of ensuring the capacity for Indigenous involvement in an energy transition which sees Pilbara and Kimberley resources securing Australia’s position as renewable energy exporter to the region. The next phase of this research proposes to engage with First Nations’ organisations in the Kimberley and Pilbara regions to share these findings and engage in a discussion with them about their energy futures.

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