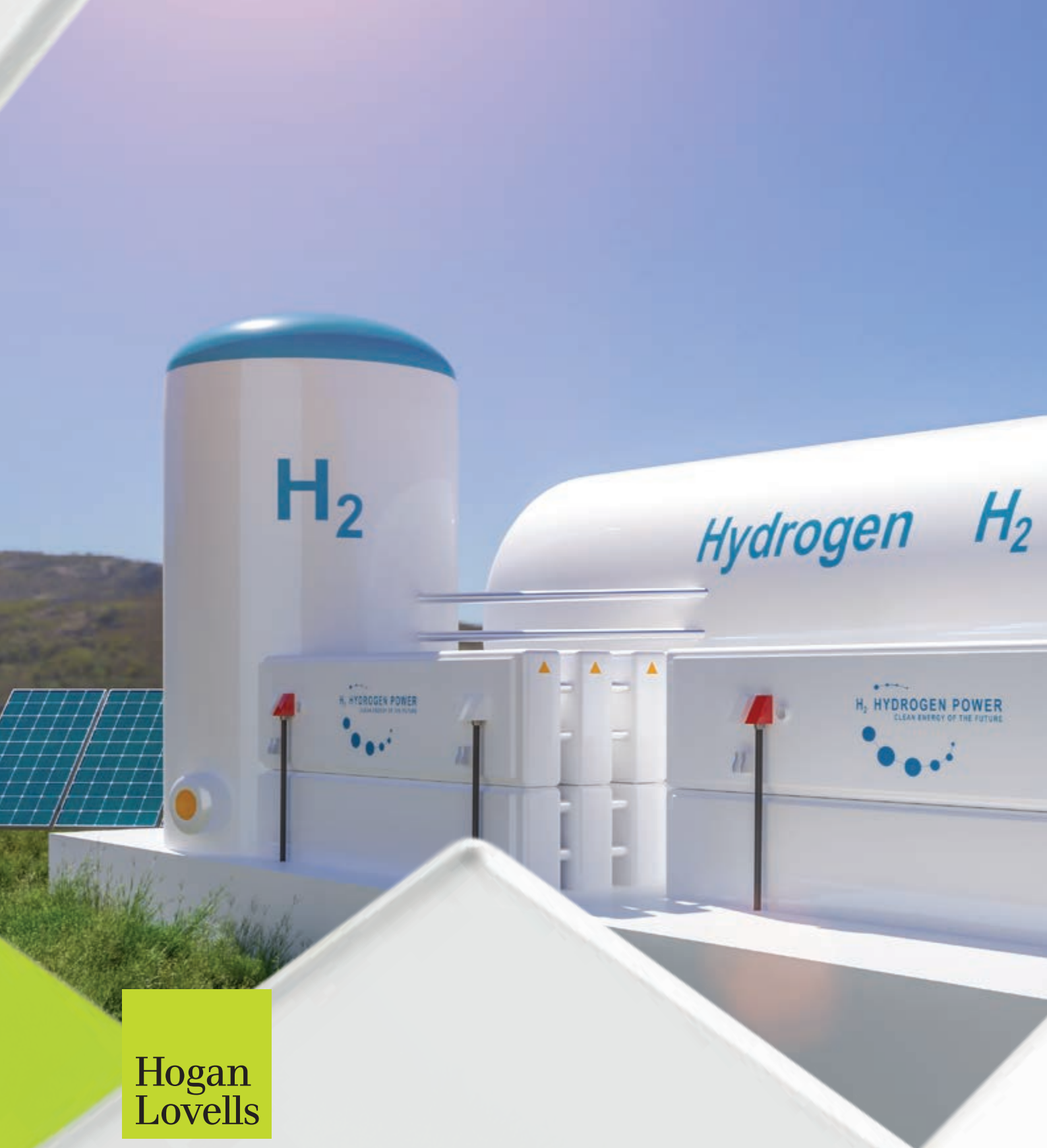

Hogan Lovells

Australian Hydrogen Update Paper

September 2020

Introduction

The move to a low carbon energy industry is now firmly underway in Australia, with the Commonwealth and most State governments publishing and executing long term strategies to develop the hydrogen energy industry in Australia.

This Australian Hydrogen Update Paper provides an overview of the state of Australia's nascent hydrogen industry, and should be read with our associated Australian Hydrogen Projects Paper. These documents have been prepared by Hogan Lovells to assist developers, investors, project sponsors and energy buyers looking to better understand the opportunities and challenges in the emerging Australian hydrogen industry.

This paper outlines the long-term investment logic for hydrogen development projects, the status of the legal framework required for this, and the current Government funding initiatives promoting hydrogen development projects. Our Australian Hydrogen Projects Paper lists the projects that are currently funded or shortlisted for development.

Want to know more?

If you would like more information or assistance, drop us an email or give us a call.

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The authors would like to acknowledge the valuable contributions of Maree Casey (Associate, Corporate, Perth) in the preparation of this publication.

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This publication is of a general nature only and should not be relied upon as a substitute for specific advice.

The investment logic

In 2019, Australia's fuel exports (coal, natural gas and crude) accounted for over one-quarter of Australia's total export earnings.

Australia has committed to achieving a 26% to 28% reduction in greenhouse gas emissions below 2005 levels by 2030 under the Paris Agreement.

Three of Australia's top four export partners have made clear commitments to use clean hydrogen to decarbonize their economies.

The Next Era of Energy

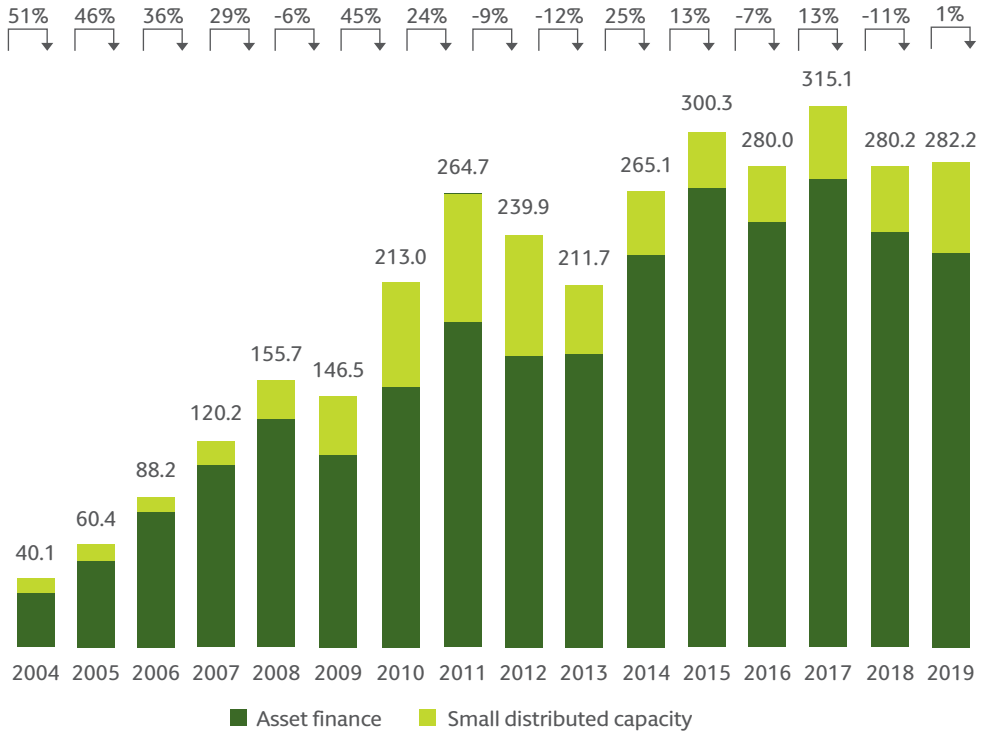
Looking forward

Despite small pockets of political and ideological resistance, the global community has accepted the need to reduce reliance on carbon-emitting fuels as a core source of power. This can be seen clearly in the year-on-year growth in renewable energy investment shown in Figure 1.[1]

The challenge for heavily-industrialized countries is how to move to a low-emission and energy-secure future, particularly if renewable energy options are not readily available to the scale required. Japan is an excellent example of this, having a relatively small land area (limiting its wind and solar options), massive industrial and consumer energy demand, and a reluctance to rely too heavily on nuclear power. As a consequence of this, the Japanese Government has declared its commitment to a hydrogen-fueled future.[2]

South Korea and China have made similar commitments to decarbonize their energy systems utilizing hydrogen, sourced locally where viable and otherwise by way of imports. This is where Australia fits in.

Figure 1. Global Renewable Energy Capacity Investment, 2004 to 2019, $BN



1 Global Trends in Renewable Energy Investment 2020 publication, https://www.fs-unep-centre.org/wp-content/uploads/2020/06/GTR_2020.pdf.

2 Basic Hydrogen Strategy (2017), Ministerial Council on Renewable Energy, Hydrogen and Related Issues, https://www.meti.go.jp/english/press/2017/pdf/1226_003b.pdf.

Australia's Natural Advantage (Again)

"Exporting sunshine"

Australia is blessed with abundant coal and petroleum resources, and has developed the industrial infrastructure and expertise to design, build and manage large scale energy export projects, recently becoming the largest LNG exporter in the world. Singapore, China, Japan and South Korea remain the largest purchasers of Australia's energy exports.

But as our energy buyers look to move to a low-carbon future using hydrogen, Australia has started looking into how it can modify its fuel export options. Fortunately, Australia is perfectly suited for this transformation to large-scale clean hydrogen production, thanks to its natural abundance of sun, wind and space (to generate the renewable electricity required to electrolyze green hydrogen), and its established hydrocarbon basins (to produce blue hydrogen and sequester the resulting carbon dioxide).

As with coal and gas, shipping hydrogen to Asia is fast and cost-competitive, and Australia remains a commercially sophisticated and politically stable counterparty, well-placed to commit to long-term hydrogen offtake arrangements capable of supporting major power development projects.

Government Promotion & Support

Australia's Hydrogen Strategy

The Federal and State Governments of Australia have identified hydrogen as the holy grail of the energy export industry for the future, and have published detailed strategy papers to promote its development (see Table 1 at the back of this paper). As part of these strategies, a number of funding and investment support initiatives have been created. These are listed in our Australian Hydrogen Projects Paper.

Australia is not alone in this approach, with many other countries taking similar approaches. For example, the German Federal Government recently announced a hydrogen strategy that aims to position Germany internationally as a pioneer in the development and export of hydrogen technologies. Hogan Lovells' German offices have released a seperate paper on this topic.

The legal framework

What framework?

The transition to hydrogen as a major source of energy will require substantial investments in the construction and operation of energy and processing infrastructure, both for domestic production and use as well as for commercial-scale export.

These long-term investments will be largely privately funded, via equity and debt, and this will require a clear and well-understood regulatory and legal regime, as has been the case with Australia's existing coal and petroleum industries.

The First Challenge

An uncertain regulatory regime

It is important to understand that the Australian regulatory framework for the development of hydrogen projects has not yet been fully developed, leaving developers and investors in an invidious position when considering major hydrogen investments.

The National Hydrogen Strategy of the Council of Australian Government's Energy Counsel explicitly recognizes the need for suitable technical and legal regulatory models to be developed, but does not elaborate on the approach and timeline for this to occur. Other countries are struggling with these issues as well, with the German Federal Network Agency (as the competent regulatory authority for the energy sector in Germany) recently expressing the view that hydrogen pipelines are not covered by the current network access regime under German energy law, and that the a new regime will need to be created or an existing one adapted.

Adapting existing energy industry regimes, where viable, may be the most efficient first step, taking advantage of the advanced systems and learnings from well-established energy industries such as oil & gas. This is already occurring in the Australian offshore wind industry, with the Federal Government releasing a Discussion Paper on a new "Offshore clean energy infrastructure regulatory regime" that is intended to be based upon the award of oil & gas-style graticular block permits for offshore wind energy exploration and development, and being overseen by the existing national offshore oil & gas regulator.

Areas that have been identified as being high priorities for policy review and legislative drafting include:

- setting technical and safety standards for commercial hydrogen facilities and for the use of hydrogen by consumers;
- considering the need for regulated shared infrastructure to promote hydrogen development and access, and setting the terms of use;[3] and
- considering the need to reserve levels of hydrogen production for domestic use.

Specific Legal Issues

To assist developers and investors in considering some of the legal risks involved in early stage hydrogen projects, set out below are examples of the typical legal issues that may arise in a hydrogen development project.

Environmental and planning approvals

Environmental regulators and planning authorities are not experienced in hydrogen development projects, and will require detailed submissions and assistance from project proponents when evaluating new hydrogen projects. There will be limited support from international projects, as the hydrogen industry is at such an early stage of development.

The re-purposing of existing petroleum infrastructure (e.g. natural gas pipelines) into pure hydrogen infrastructure will raise similar questions with regard to on-going environmental and planning compliance, with the risk of overlap and inconsistency between regulators.

Hydrogen Facility Construction

Industrial facilities, in particular hydrogen electrolysis plants as well as the corresponding renewable power and transport infrastructure, will have to be financed, constructed and operated. These projects will need to take into account the special characteristic of hydrogen as a new energy source in terms of construction law and allocation of project risk.

3 By way of example, the Australian National Gas Law only regulates "Natural Gas", excluding pure hydrogen pipelines and creating uncertainty on blended gas streams.

Tendering processes for suitably qualified EPC contractors will require careful diligence to ensure that suitable expertise is utilized, and appropriate contractual warranties are provided.

New supply chains and commercial relationships will need to be formed to enable the development, production and sale of hydrogen. No market standard exists for the contractual documentation for such supply chains and relationships, which means that appropriate – and risk-adequate – contract documentation will need to be developed.

Project Financing

Project financing in the renewables energy industry is extremely advanced, but hydrogen represents a new form of energy that has not penetrated common usage in the same way that wind and solar has. Financiers are likely to be more conservative and will seek a greater level of protections in early-stage projects.

As with all capital-intensive energy projects, certainty of offtake revenue will be key. Projects are likely to proceed either (i) as smaller-scale phased projects, gradually de-risking the capital commitments – for example, smaller facilities to fuel heavy vehicles with hydrogen, expanded to fuel consumer vehicles as consumer fueling facilities expand, or (ii) as major export projects (much like LNG projects), underwritten by long-term hydrogen offtake agreements with overseas purchasers looking to secure their green energy supplies.

These long-term high-value agreements will be new and untested, with differing shipment and logistical challenges needing to be addressed by the project proponents (e.g. ammonia based shipments versus refrigerated hydrogen).

Third Party Access to Infrastructure

To effect a rapid take-up of hydrogen as a domestic energy source, there will be an urgent need for expansion of hydrogen fueling stations and hydrogen grids to distribute the hydrogen to domestic users. This may lead to arguments for third party access and regulated fee regimes using existing infrastructure access legislation.

In addition, sharing of major infrastructure may be promoted to minimize duplication and reduce the cost of major projects (as occurred in the LNG industry in Queensland). Clarity around this position will be essential for infrastructure developers to determine project economics. Policy makers will need to balance the desire to reduce barriers of entry to the new hydrogen market against the need to allow early stage investors to recoup a suitable return on proprietary investments.

Competition Law & Foreign Investment

The considerable commitment from private industry resources and risk capital may require cooperation between companies that are active as competitors in the same market, and upstream and downstream integration may be necessary. Competition policy and law may need to be flexible to support the rapid growth of the hydrogen industry, while still protecting the consumers.

In addition, and particularly in light of the recent changes to Australia's foreign investment thresholds, foreign-owned investors and project developers will need to obtain Foreign Investment Review Board approval to proceed with transactions for new projects, and these projects are likely to be carefully assessed due to their strategic importance as domestic energy suppliers.

Fiscal Regimes and Tax Relief

While Federal and State funding is now available for hydrogen projects (as outlined above), tax relief and other Government rebates and support will need to be understood, including any long term incentives for new hydrogen projects.

How Hogan Lovells can help

Navigating your legal challenges

Our global energy law team has extensive experience in energy regulation and project development, with particular expertise in the closely aligned areas of gas and LNG facilities and infrastructure.

We regularly assist energy companies and their financiers with the legal issues of power and infrastructure projects, including advising on: the construction of several early-stage hydrogen infrastructure projects; one of the first hydrogen stations in Germany; project contracts for the construction of hydrogen filling stations; and several start-up projects being progressed in Australia.

Hogan Lovells is able to provide legal support through the entire process – from project planning, partner and contractor selection and structuring, corporate and project financing, capital works and development, and operation and maintenance, as well as refinancing through to asset sale.

As a full-service law firm, Hogan Lovells has highly experienced lawyers in all areas of law that may become relevant in the context of development and implementation of hydrogen projects.

We can also assist in helping you frame suitable policy and legislative positions to put to the Government and industry regulators at this early stage in the hydrogen growth cycle, at a time when the Government is still developing the detailed regulatory regime that will support and govern future hydrogen projects.

Supporting our international clients in shaping the future

Our objective is to not only assist our clients, but to also promote and shape this important energy transition, working at the intersection of business and government.

Hogan Lovells has set up an internal initiative (H_2L) connecting our lawyers worldwide so that we can collaborate and innovate, and be an active part of shaping the legal framework for hydrogen globally, with developments and knowledge from one jurisdiction to be shared and learned from in another.

This enables our clients to benefit not only from our local expertise, but also from our active involvement in global projects.

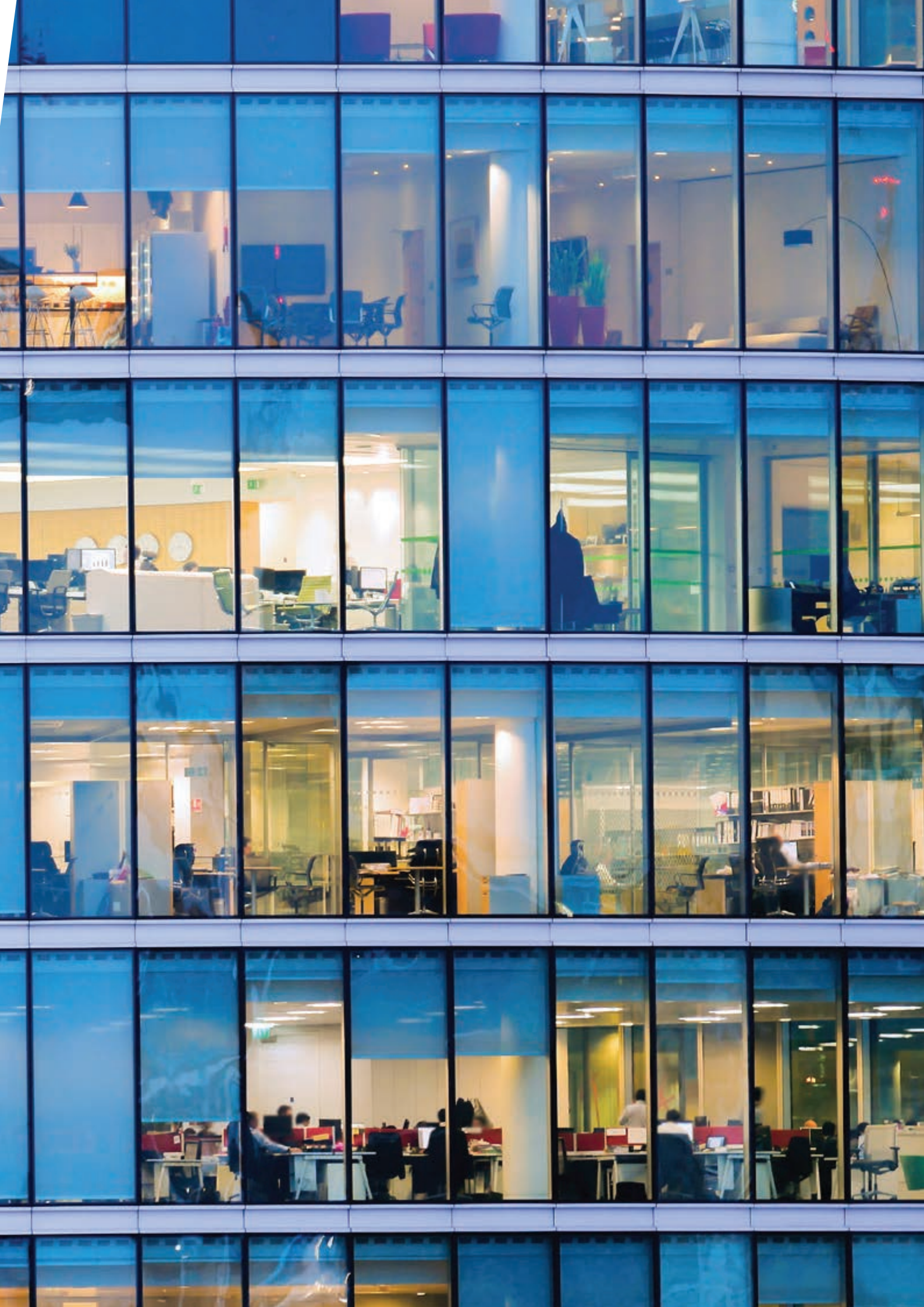


Table 1

Commonwealth and State Government Hydrogen Strategy papers

Strategy Paper	State	Proposed Plan For Hydrogen
National Hydrogen Strategy	Cth	Australia's National Hydrogen Strategy ("NHS") was released in November 2019 and sets a vision for a clean, innovative, safe and competitive hydrogen industry that benefits all Australians. The NHS aims to position the Australian hydrogen industry as a major player by 2030.
Hydrogen for Australia's Future (August 2018)	Cth	The Hydrogen Strategy Group led by Dr Alan Finkel AO, Chief Scientist, released its briefing paper to the Council of Australian Governments (COAG) Energy Council Ministers on Hydrogen for Australia's Future. The briefing paper discussed the scope of Australia's hydrogen potential and framed the discussion for a national strategy.
CSIRO National Hydrogen Roadmap (August 2018)	Cth	The primary objective of the CSIRO National Hydrogen Roadmap was to provide a blueprint for the development of a hydrogen industry in Australia. With several activities already underway, it was designed to help inform the next series of investment amongst various stakeholder groups so that the industry can continue to scale in a coordinated manner.
Opportunities for Australia from Hydrogen Exports (August 2018)	Cth	Prepared for ARENA by ACIL Allen Consulting, this report identified opportunities for Australia to export hydrogen to help meet the potential future global demand. Four countries namely Japan, China, the Republic of Korea, and Singapore were identified as prospective markets for Australian hydrogen by 2025.
Memorandum of Understanding – NSW Energy Package	NSW	The NSW Government has introduced approximately A$2 billion of the Memorandum of Understanding supports initiatives that reduce emissions in non-electricity sectors. These include a Hydrogen Technology Program to support the commercialisation of hydrogen technologies in NSW, including recommendations arising from the National Hydrogen Strategy. Currently none of this funding is available for new and existing hydrogen pilot projects.
Green Hydrogen Discussion Paper	Vic	The Victorian Government established the Victorian Hydrogen Investment Program to develop green hydrogen technologies. The Victorian Government also released its Green Hydrogen Discussion Paper to assist with the development of the Victorian Green Hydrogen Industry Development Plan.
Western Australia Renewable Hydrogen Strategy	WA	Western Australia will develop industry and markets to be a major exporter of renewable hydrogen. To facilitate the export of renewable hydrogen, Western Australia will develop domestic production capabilities and applications of renewable hydrogen, improving the State's hydrogen industry expertise, contributing to global decarbonisation and decarbonising Western Australia's economy. It will also contribute to improving air quality across the State.
South Australia's Hydrogen Action Plan	SA	The South Australian Government has contributed to the development of a NHS with representatives across all work streams, and leading a kick-start project on blending up to 10 percent hydrogen with natural gas in domestic gas networks. South Australia's Hydrogen Action Plan ("Action Plan") will be the primary mechanism through which South Australia contributes to the implementation of the NHS, with a focus on being a supplier-of-choice for certified renewable hydrogen. With hydrogen production technologies from renewable energy and water already proven, the focus is now on achieving significant cost reduction through production at scale within a comprehensive regulatory framework. South Australia is well positioned for this next stage.

Strategy Paper	State	Proposed Plan For Hydrogen
Hydrogen Export Modelling Tool and Prospectus	SA	As a key measure under the Action Plan, over A$1 million has been committed to develop a South Australian Hydrogen Export Modelling Tool to inform the establishment of renewable hydrogen export supply chains. The South Australian Government will commission one or more consultants to work with the international hydrogen industry to deliver a landmark study of existing and potential infrastructure requirements in South Australia for a renewable hydrogen export supply chain.
Tasmania Renewable Hydrogen Action Plan	Tas	The Tasmanian Government established the Renewable Hydrogen Action Plan. The Renewable Hydrogen Action Plan will benefit investors through access to low cost hydrogen production, and will benefit Tasmanians through job creation and economic growth, particularly in regional areas. The Tasmanian Government is establishing a comprehensive package of measures, including a Tasmanian Renewable Hydrogen Fund, to support the development of a renewable hydrogen industry in the State.
Queensland Hydrogen Industry Strategy	Qld	The Queensland Government established the Queensland Hydrogen Industry Strategy. As part of the strategy, the Queensland Government established a A$15 million industry development fund to support hydrogen projects in Queensland. The objective of the strategy is to drive the development of an economically sustainable and competitive hydrogen industry that creates economic growth, opportunities for new export markets, generates the highly skilled jobs of the future, while supporting the transition to a low-emission economy. The strategy will ensure that government and industry work towards a common vision for Queensland's future hydrogen industry, with specific actions in five focus areas. Implementation of this strategy will help us take advantage of the many opportunities for domestic energy uses, new export markets and skilled jobs from hydrogen, while also benefiting from cleaner energy generation and lower carbon emissions.

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