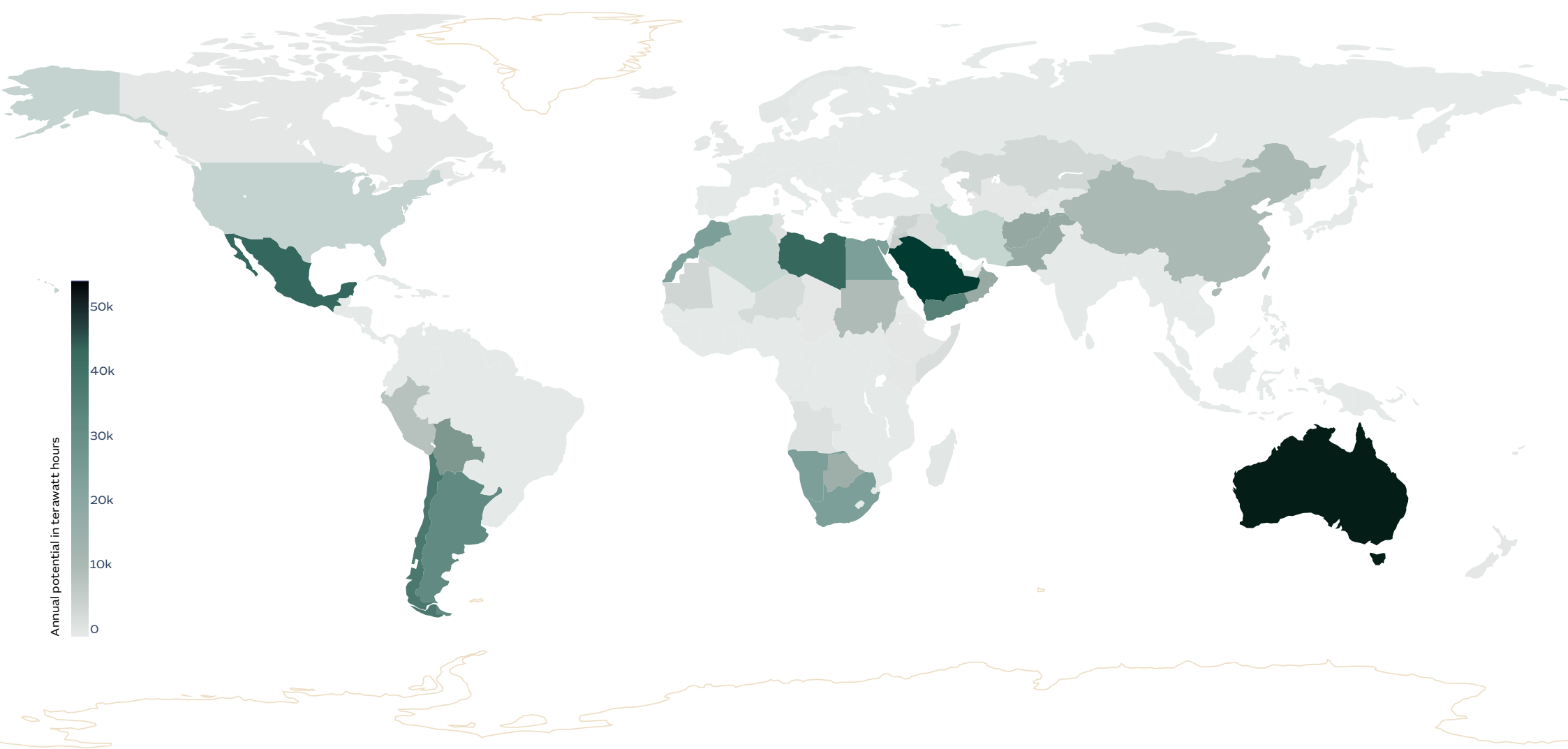


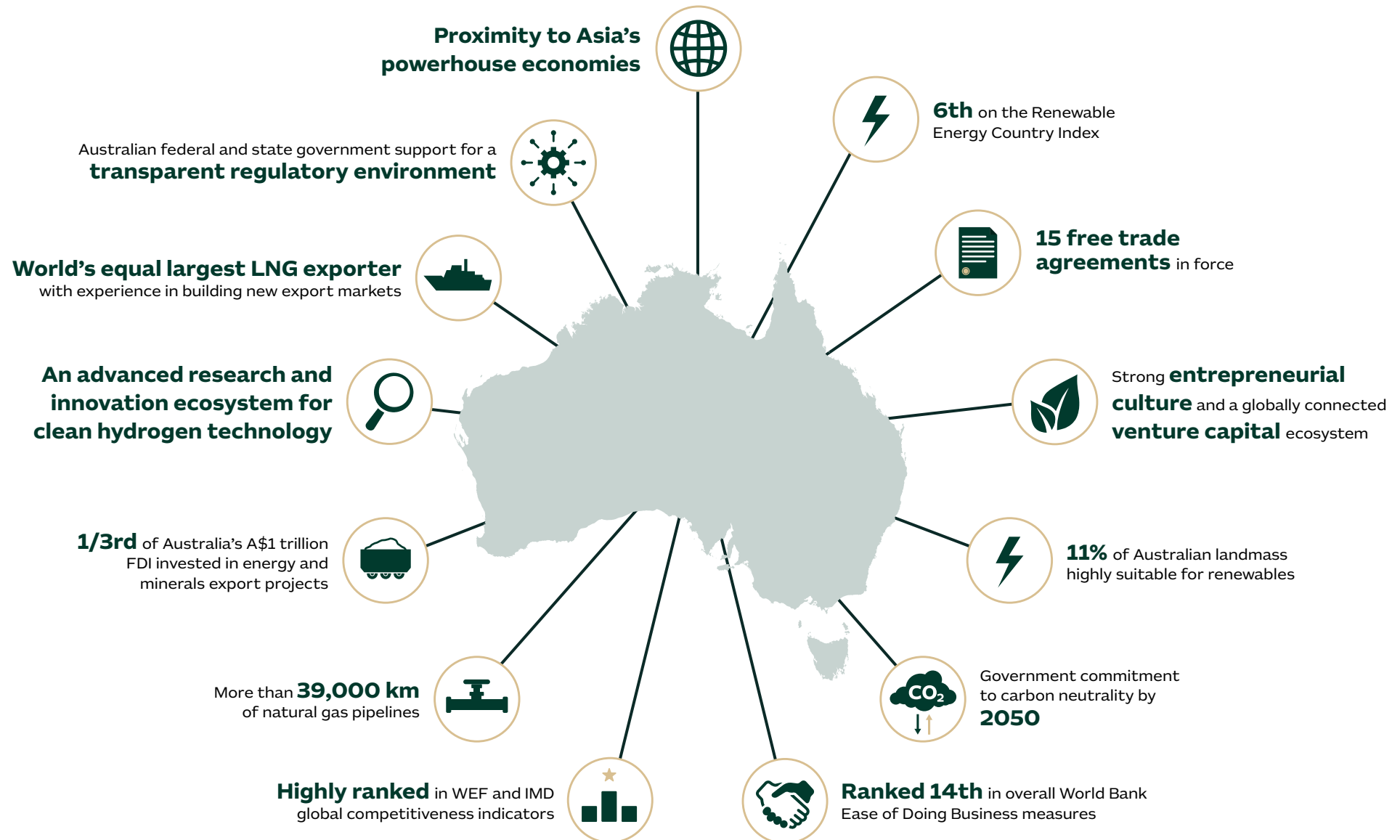
Australia has some of the best natural resources to produce green hydrogen

Estimated wind and solar PV resources potential by country



Source: HySupply project, GlobH2E, 2021 | Data source: Chu et al, 2020

Australia is a reliable and experienced exporter of energy

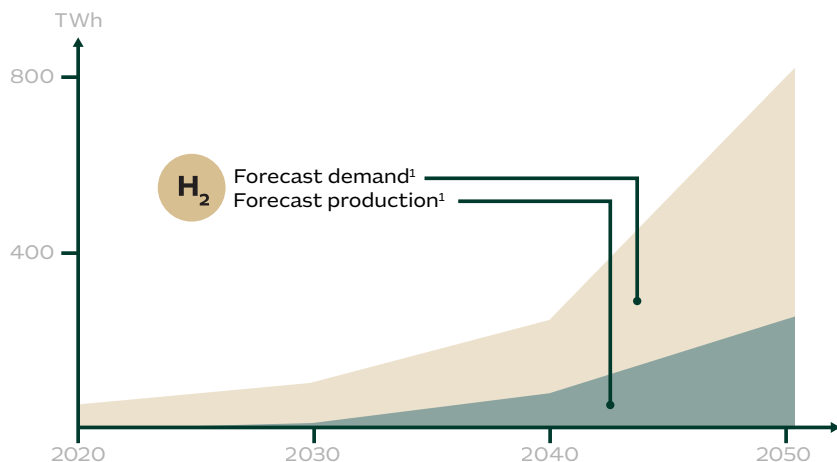


Australia can produce vast quantities of green hydrogen to supply Germany's demand

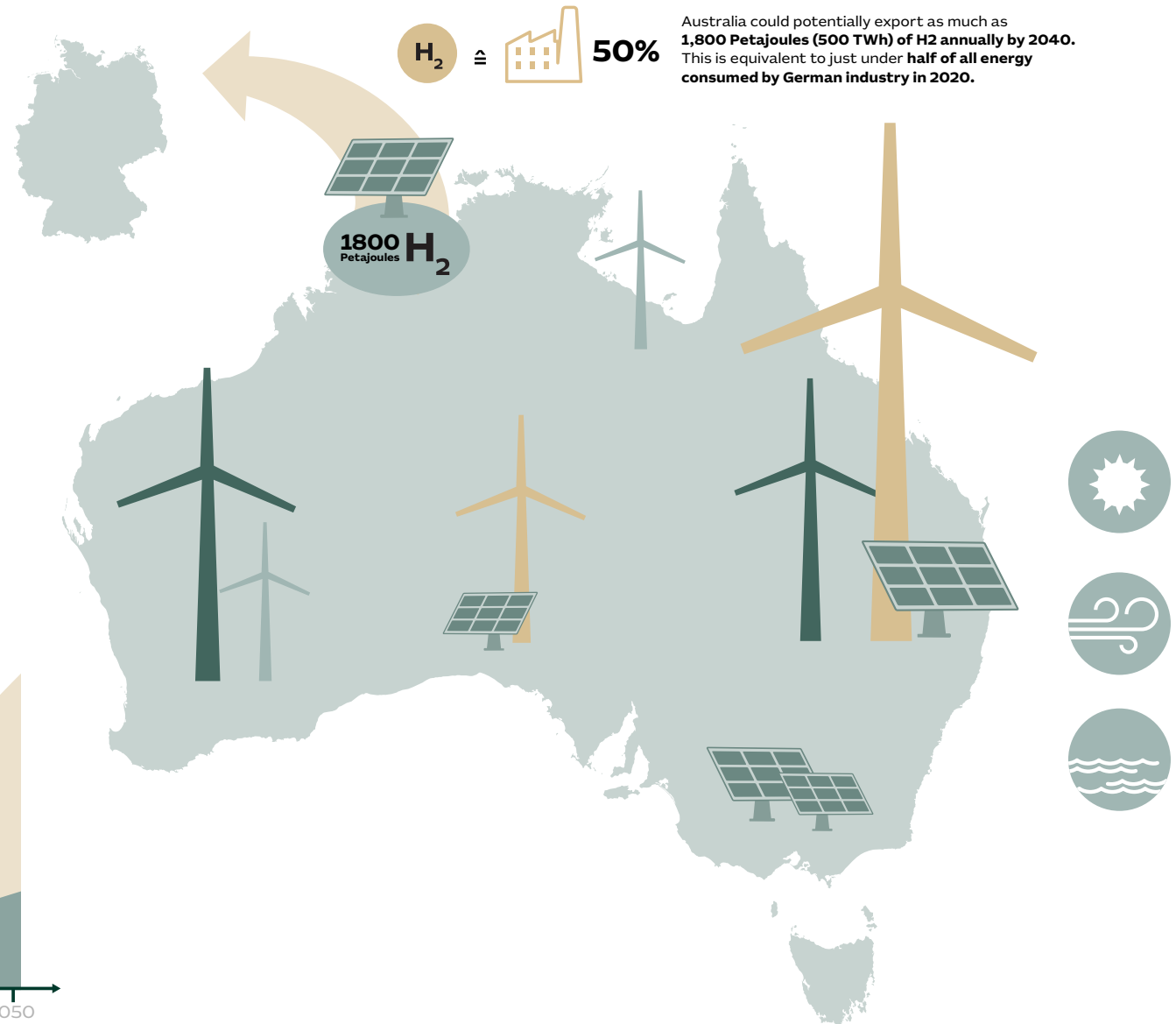
This is because

- 1 **Australia has the vast solar, wind and hydro resources** needed to produce green hydrogen at scale
- 2 And those resources are being translated into production – Hydrogen projects now make up over 1/3 of Australia's major resources and energy investment pipeline.

Germany will need to import large quantities of hydrogen to meet its climate goals.



¹ Source: Fraunhofer Institute, German National Hydrogen Strategy, own calculations



Australia and Germany

are natural partners in green hydrogen



Australia and
Germany both have
deep expertise in
renewable energy



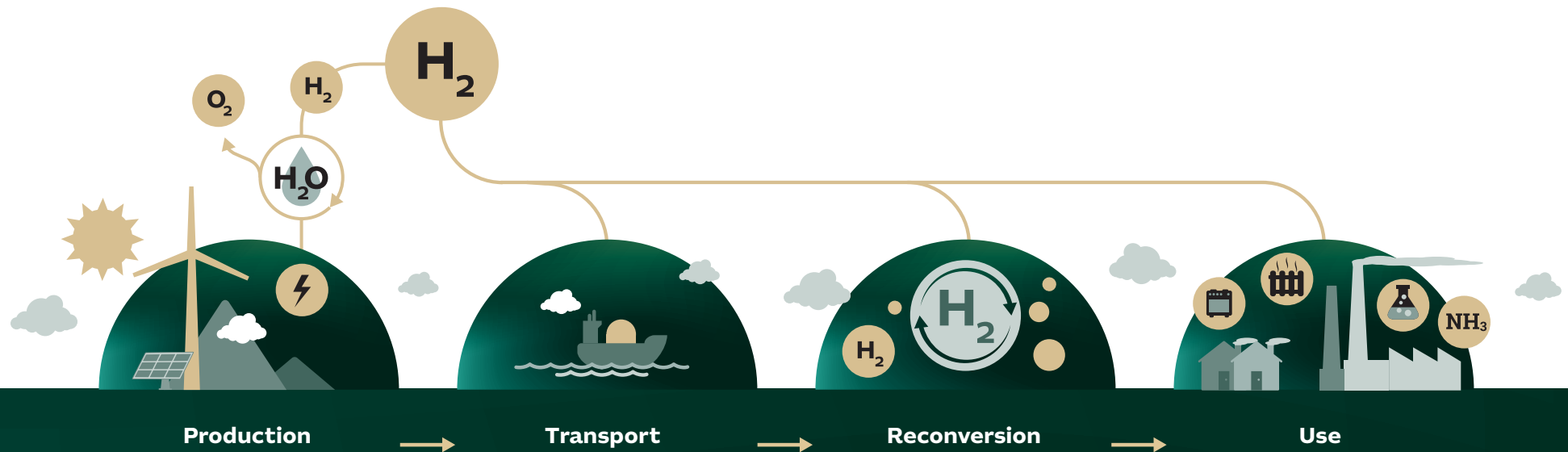
GER

- Energy demand
- Manufacturing capability
- Technology leader

AUS

- Land and resources
- Recognised leader in global export of energy
- Reliable and trusted energy partner

The world's green hydrogen supply chain will be complex and it needs solid planning



The HySupply feasibility study is planning a green hydrogen supply chain

This feasibility study harnesses the sharpest minds from both Australia and Germany to answer the important questions:

- How to bring costs down?
- How should hydrogen be transported?
- What infrastructure will be needed in Australia and in Germany?
- How can customers be sure they are buying truly green hydrogen?

The Australia-Germany Hydrogen Accord

Enabling trade, investment and innovation

The Hydrogen Accord is a partnership to produce the cheapest green hydrogen in the world

The Accord charts the future for Australia and Germany's work together on:



Research and pilot projects

The HyGATE initiative is supporting real-world pilot, trial, demonstration and research projects along the hydrogen supply chain with Australian Government contributing \$50 million and German Government contributing €50 million.



Co-investment

Australia welcomes co-investment by German industry in our hydrogen hubs – regions where hydrogen users and exporters are co-located in new energy ecosystems.



Trade

Australia and Germany are exploring options to facilitate green hydrogen trade through Germany's €900 million H2Global auction scheme.



Prime Minister Morrison and former Chancellor Merkel announce the Accord in Cornwall, June 2021
Credit: Adam Taylor



Learn more
about our
partnership

What success looks like

A carbon-neutral German industry enabled by



H₂<A\$2

Affordable hydrogen at or under A\$2 per kilogram (€1.20/kg) - the point at which hydrogen is competitive with conventional energy carriers



German export opportunities

Australia will be a major export market for German hydrogen technology, and a destination for long-term investment (e.g. electrolyser)



Guarantee of origin

Australian and German leadership in the development of a hydrogen supply chain will help set global standards and certification norms



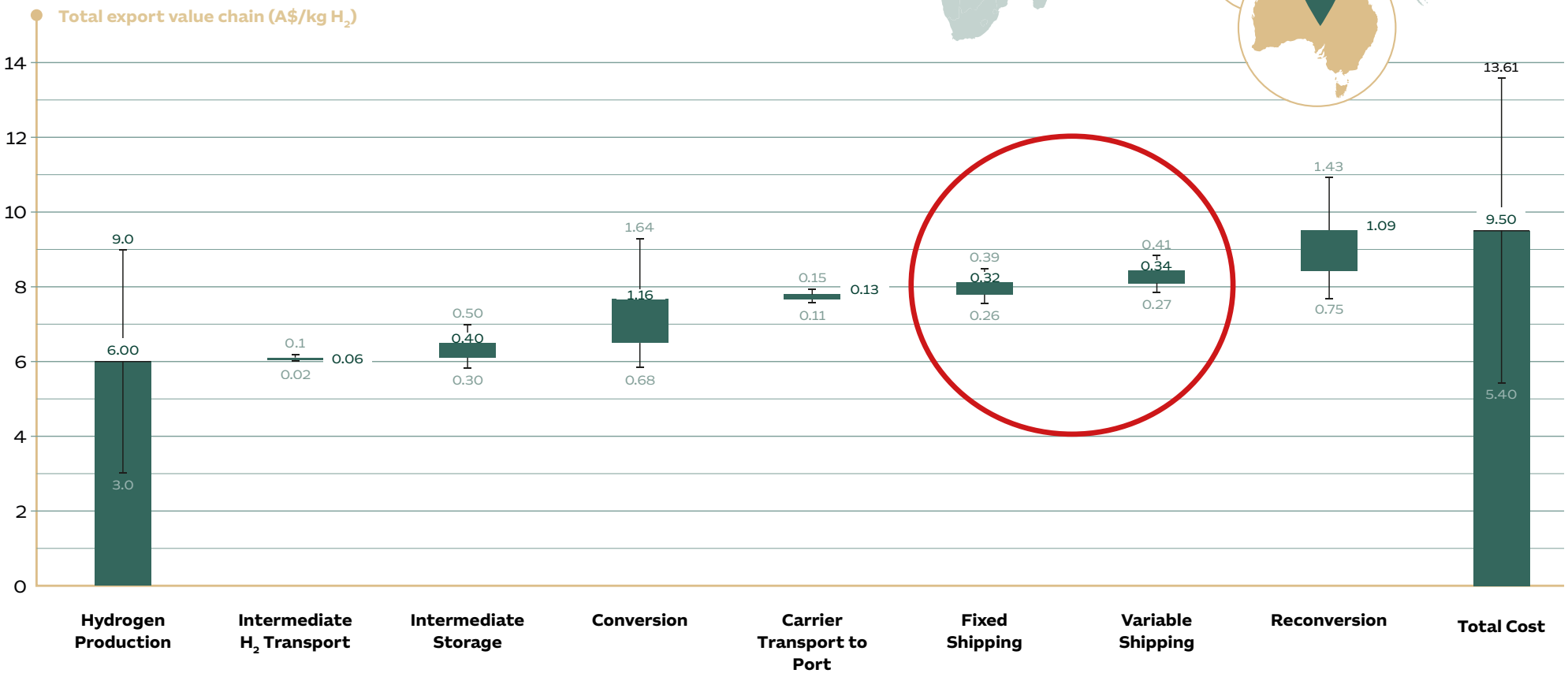
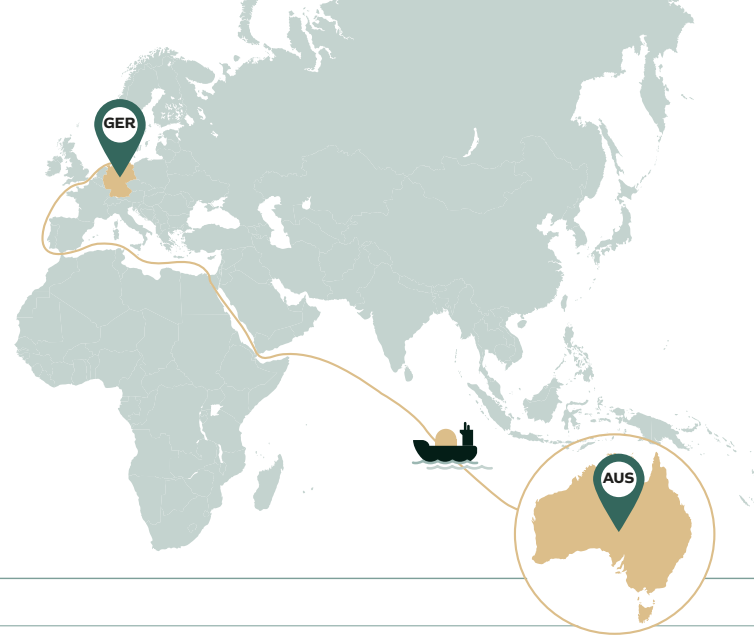
Shipping routes

A secure and reliable supply of green hydrogen powering German industry

Transport is not a major cost despite the distance

Indicative total export value chain for green ammonia

Variable shipping costs are a modest component of the total cost (shipping costs shown in red circle below)



Source: HySupply Project: Daiyan, MacGill, Amal, Kara, Aguey-Zinsou, Khan Polepalle, Rayward-Smith (2021)

The Australian Government is investing significantly in low emissions technologies, including hydrogen



\$464 million for up to seven regional hydrogen hubs and design studies



\$300 million of clean hydrogen finance available



\$24.9 million to make new gas generators hydrogen-ready



\$565 million for low emissions technology international partnerships



More than **\$300 million** committed to projects so far



\$100 million+ to develop three **10MW electrolyzers** – among the largest in the world

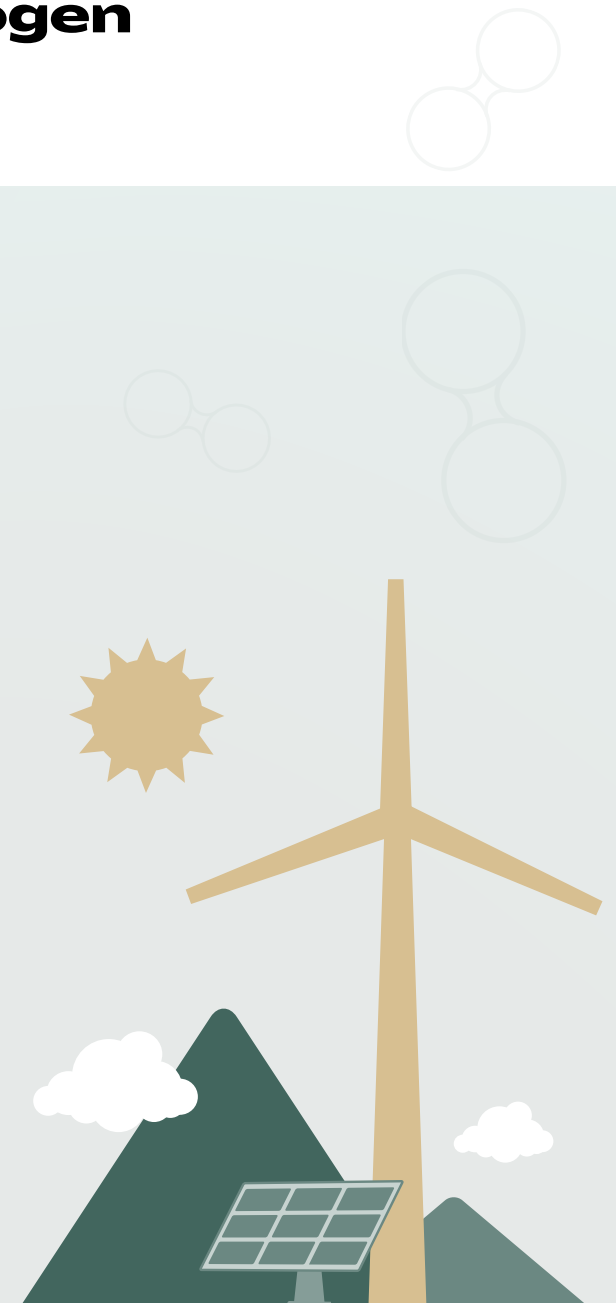


New international researcher collaboration program



New stretch target of **\$15 per MWh** for ultra-low cost solar

Plus billions of dollars in additional investment from Australia's state governments

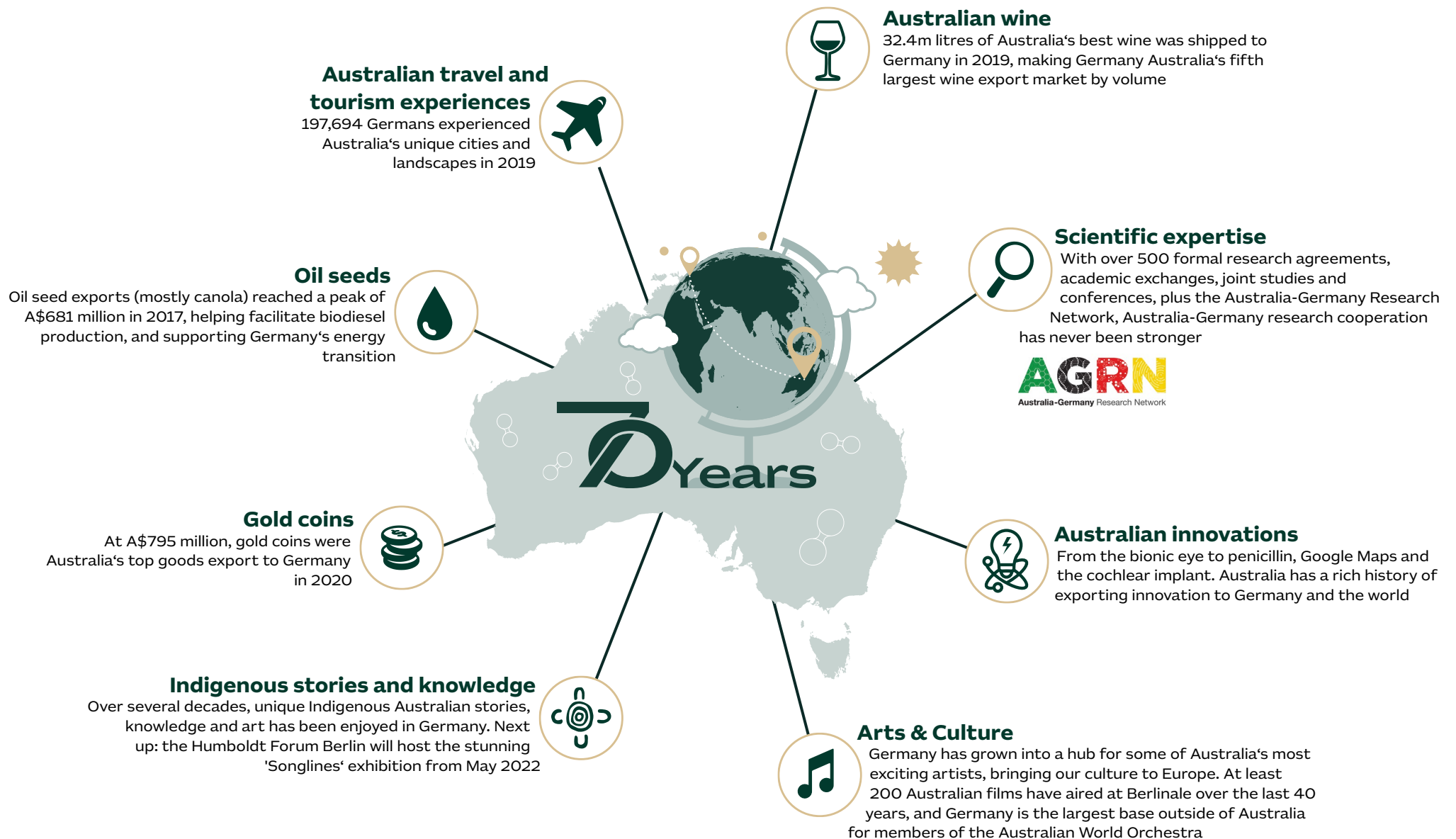


Shipping the Sunshine

The Australia-Germany
Partnership



70 years of shipping the sunshine (and other things that shine)



Celebrating 70 years of Australia-Germany bilateral relations



1956



1972



1957



1957



1957



2003



2015



2016



Snapshots from 70 years of Australia-Germany bilateral relations

1956 A group of twenty young German migrants arriving at Essendon airport, Melbourne, on the new Viscount turbo-jet airliner 'Charles Sturt' in 1956.

The plane departed from Hamburg, Germany, under the assisted passage scheme sponsored by the Inter-governmental Committee for European Migration. Image courtesy of the National Archives of Australia. NAA: A12111, 1/1956/4/64

1957 A reception was given at the Hotel Canberra on 18 March 1957, by the German Ambassador on the occasion of the visit to Australia's National Capital by Dr H Von Brentano, Foreign Minister of the Federal Republic of Germany.

Left to right: Dr Von Brentano, Mrs Walther Hess, The Prime Minister of Australia, Mr R G Menzies, Dame Pattie Menzies, Dr Walther Hess, Ambassador of Federal German Public and Mr Athol Townley, the Australian Minister of Immigration. Photographer: J Tanner. Image courtesy of the National Archives of Australia. NAA: A1200, L22531

1972 Dr. Helmut Kohl in his role as Minister-President of Rhineland-Palatinate visiting Canberra in 1972. Credit: Australian Government

1995 Australian Prime Minister Paul Keating is welcomed in Berlin with military honours by German Chancellor Helmut Kohl, March 1995.

Prime Minister Keating's visit to Germany was the first by an Australian Prime Minister since German reunification in 1990. Photographer: Schambeck

1995 Australian Prime Minister Paul Keating with Annita Keating meet the Mayor of Berlin Eberhard Diepgen and Monika Diepgen in Berlin, March 1995.

Photographer: Köhler

2003 Australian Ambassador Paul O'Sullivan AO, German Foreign Minister Joschka Fischer, and Australian Foreign Minister Alexander Downer at the opening of the new Australian Embassy in Berlin, January 2003.

2015 The Australia Germany Advisory Group meets with Chancellor Angela Merkel in Berlin, July 2015.

Front row (left-right): Minister of State Dr Maria Böhmer, Ms Lucy Turnbull AO, Chancellor Angela Merkel, Senator the Hon Mathias Cormann. Second row (left-right): Mr Volkmar Klein, Dr Nicholas Milton, Professor Brian Schmidt AC, Mr Peter Coleman, Professor Anja Schwarz. Back row (left-right): Professor Volker Perthes, Mr Jeff Connolly, Ambassador Christoph Müller, Ambassador David Ritchie AO, Mr Peter Jennings PSM.

2016 Australian Foreign Minister Julie Bishop and Defence Minister Marise Payne with German counterparts, Ministers Frank-Walter Steinmeier and Ursula von der Leyen at the inaugural Australia-Germany 2+2 Ministerial Meeting in Berlin, September 2016.

Tasmania

Australia's green energy state

Tasmania's Green Hydrogen Credentials

The perfect environment for industry and investors looking to be at the forefront of the rapidly emerging hydrogen industry

- World class wind resources firmed by hydropower creating competitively priced energy for green hydrogen production at a high-capacity factor
- Unique clean, green power systems with the ability to trace hydrogen product to clean generation
- First Australian state with 100% self-sufficiency in renewable electricity generation and on track to reach a world-leading and legislated 200% renewable generation by 2040
- Significant planned investment in low-cost wind development and established industrial precinct with deep water port
- Seeking to establish an 'open access' Tasmanian green hydrogen hub, starting at Bell Bay for production, export, and domestic supply of 'green hydrogen' and related products and services



A story of Tasmania and Germany

Fundamental synergies and complementary capabilities exist between Tasmania and Bremen in hydrogen development, presenting a strong basis for formalising cooperation under a partnership agreement.

Discussions are underway to develop a MOU on hydrogen cooperation. Focus areas include research, innovative and sustainable hydrogen technology; industry development across the entire hydrogen value chain; implementation of green hydrogen in Polar regions to enhance energy security and assist with decarbonisation efforts; and expansion of future international trade in hydrogen and hydrogen related technologies.

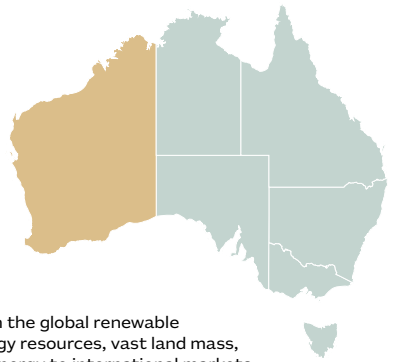


Western Australia

Powering Australia's economy

Western Australia will be a significant producer, exporter and user of renewable hydrogen.

With many attributes that provide a strong competitive advantage in the global renewable hydrogen market, Western Australia has world-class renewable energy resources, vast land mass, established energy infrastructure and a proud history of exporting energy to international markets.



H₂

Around 30 renewable hydrogen projects and proposals in WA across the hydrogen supply chain.



Western Australia has signed on as a founding partner to the Smart Energy Council's Zero Carbon Certification Scheme. This aims to accelerate the development and deployment of renewable hydrogen, green ammonia and green metals.



The Oakajee region in the Mid-West of Western Australia is recognised for its world class wind and solar energy potential. The WA Government is exploring the creation of a globally competitive renewable hydrogen precinct at Oakajee.



WA could produce up to 200 gigawatts of renewable energy by 2040



Up to 50% wind capacity factors.



Vast land mass of 2.5 million square kilometres.

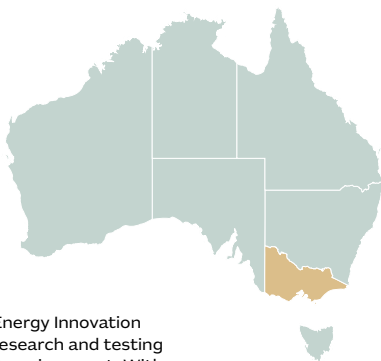


Victoria

A renewable hydrogen powerhouse

Victoria is rapidly establishing a thriving renewable hydrogen economy – ensuring our state is at the forefront of the exciting transition to net zero emissions by 2050.

We are home to four Hydrogen Technology Clusters, the \$90 million Energy Innovation Fund and two hydrogen grant programs as well as several hydrogen research and testing centres. We offer a competitive, low-risk and transparent investment environment. With around 24% of Australia's GDP, Victoria is one of the largest economies in Asia.



Strong policy settings - ambitious renewable energy targets (50% by 2030) and a progressive hydrogen strategy.



Deep-water ports – including in Melbourne, Geelong, Portland and Hastings, that are primed for hydrogen export.



Established freight networks – well connected by major highways to other capital cities and states.



Highly-skilled workforce – home to world-leading universities and TAFEs, as well as cutting edge hydrogen research and testing centres. The state also boasts more than 20,000 qualified gas plumbers.



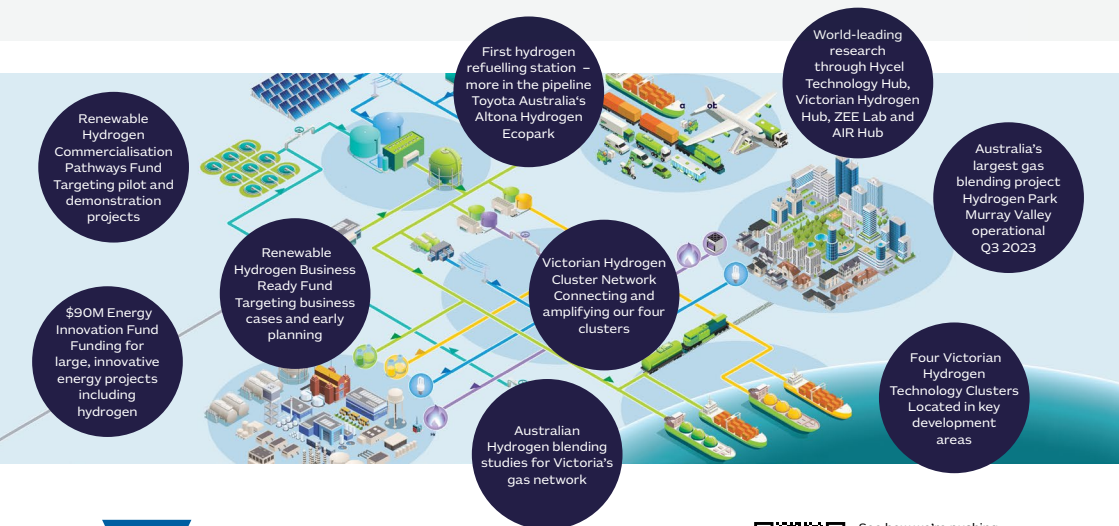
Abundant solar and wind energy resources – 2.5GW of renewable energy capacity and six dedicated Renewable Energy Zones (REZ).



Refuelling stations – the Toyota refuelling station in Altona is already operational, and there are several more refuelling stations in the pipeline.



Extensive gas network transitioning towards hydrogen – Australia's most extensive gas network, which supplies more than 80% of Victorian households.



Environment,
Land, Water
and Planning



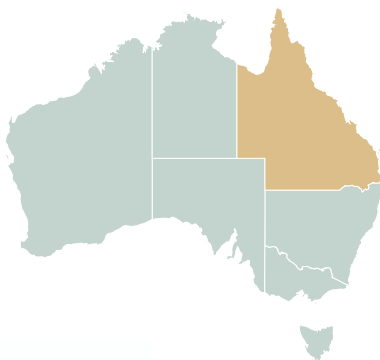
See how we're pushing the frontiers and helping Victorians to skill up, scale up and build supply chains to discover the potential of renewable hydrogen

Queensland

Queensland's sustainable hydrogen – fuel for the future

Why Queensland?

Queensland's established credentials as a global energy exporter mean that we have existing infrastructure in place and the experience to lead in the export of renewable energy.



Queensland's Competitive Advantages



A target to fuel 50 per cent of our energy needs from renewable energy by 2030, and an area of 1.73 million km² for renewable energy deployment



Over 300 days of sunshine per year, with 14 million petajoules of untapped solar energy. Enormous coastal wind resources and capacity to generate water efficiently



\$5 billion in committed renewable investment, \$1.1 billion already constructed and operating, and a further \$20 billion in the pipeline



Well-positioned infrastructure at key ports Townsville, Abbot Point, and at Gladstone – one of seven regions prioritised as a global export hub



A stable, pro-business government with a supportive policy and regulatory regime and a strong focus on innovation



Australia's lowest payroll tax rate, and streamlined development approvals and project facilitation processes



LEGEND

- Investigation Study
- Project in progress
- Project completed



TRADE + INVESTMENT
QUEENSLAND



For project proposals, view our Hydrogen Investor Toolkit with information on the process and contact information for each aspect of the planning and approval process.



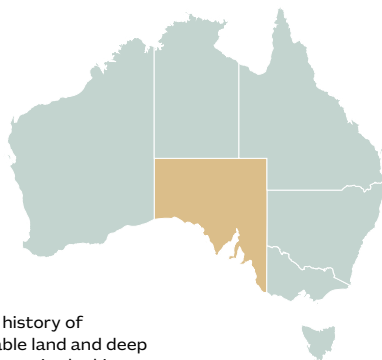
More information on Queensland's Hydrogen Industry Development:

South Australia

A rising force in clean hydrogen

South Australia produces over 62 per cent of its energy from renewable sources and is on track achieve 100 per cent net renewable energy generation by 2030.

With the highest renewable energy grid mix in the country, a 20-year history of investment in clean energy, access to thousands of hectares of available land and deep sea shipping ports, South Australia is a compelling destination for companies looking to produce, supply and export clean hydrogen.



A renewable energy powerhouse – South Australia boasts 11 of Australia's 33 Renewable Energy Zones (REZ) and is second only to Denmark globally for annual variable renewable energy generated.



Track record of investment – Companies including Australian Gas Infrastructure Group (AGIG), H2U, Neoen and Trafigura are currently progressing domestic and export projects. Seven projects have been shortlisted in the Port Bonython development, proposing to produce in excess of 1.5 million tonnes per annum of clean hydrogen for export.



Australia's largest electrolyser – Producing green hydrogen onsite at Hydrogen Park SA, AGIG is supplying 5% blended hydrogen gas to the local domestic gas network, and industry via its tube trailer refuelling station.



Investment confidence – One of the most transparent and well-regulated business environments in the world; South Australia has political stability and regulatory framework to provide investors with confidence.



Strong policy settings – One of the first jurisdictions to commit to achieving a net 50% reduction in carbon emissions by 2030, and net zero emissions by 2050.



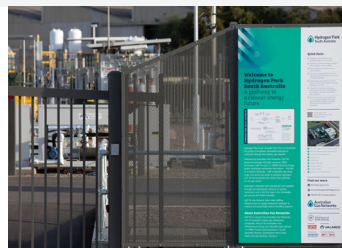
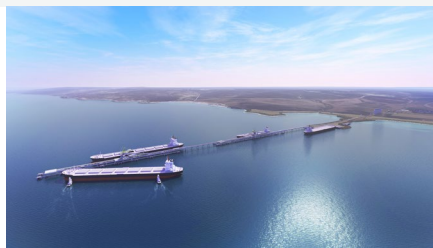
International trade relations – South Australia has completed a study with the Port of Rotterdam highlighting the feasibility of exporting South Australia's green hydrogen to Western Europe and is a member of Japan's Green Ammonia Consortium.



Hydrogen modelling tool and prospectus – The state's \$1M modelling tool gives investors access to free online resources to model the final free- onboard-cost of producing and exporting clean hydrogen from South Australia



Deep water shipping ports – Five ports including Port Bonython and Port Adelaide have excellent potential to become globally significant hydrogen export hubs



Learn more about South Australia's Hydrogen Action Plan.



Use our Hydrogen Export Modelling Tool

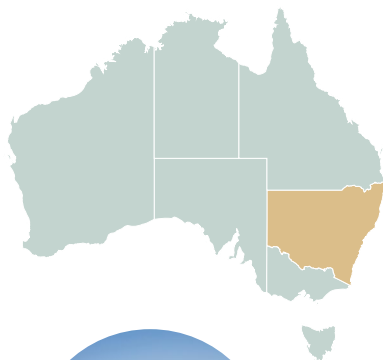
New South Wales

Invest in the leading Asia Pacific decarbonisation destination

Creating a hydrogen superpower

The net zero opportunity

Australia's largest economy and Asia Pacific's leading investment destination, NSW has the resources, infrastructure, skills and ambition to build an integrated hydrogen ecosystem.



H₂

NSW Hydrogen Strategy

Policy framework and \$A3 billion of industry incentives



Advanced infrastructure

Highly developed transmission, transport and communications capability



Skilled workforce

One of the world's best-educated and most diverse populations



NSW Net Zero Plan

Clear commitment to halving emissions by 2030, net zero by 2050



Renewable Energy Zones

Minimum 12GW of renewable energy development by 2030 through the rollout of five Renewable Energy Zones



Industrial supply chain

Existing assets and track record of managing large scale energy export



Find out more here
and contact us



**Investment
NSW**

Part of the New South Wales Government