

# NEW ENERGY WORLD

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## Power up: How Australia plans for massive Asia renewable energy hub

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▲ New Norcia solar powered space comms facility, Western Australia, the state hosting the planned Asian Renewable Energy Hub (AREH)

Photo: ESA

Australia plans to establish one of the world's largest renewable energy production hubs, capitalising on the vast solar and wind resources of the remote Pilbara region of Western Australia. This privately-funded initiative, led by BP, represents a significant step in the nation's push towards renewable energy and its goal of achieving net zero emissions by 2050, encouraged by the country's centre-left Labour government. Barbara Barkhausen reports from Sydney, Australia.

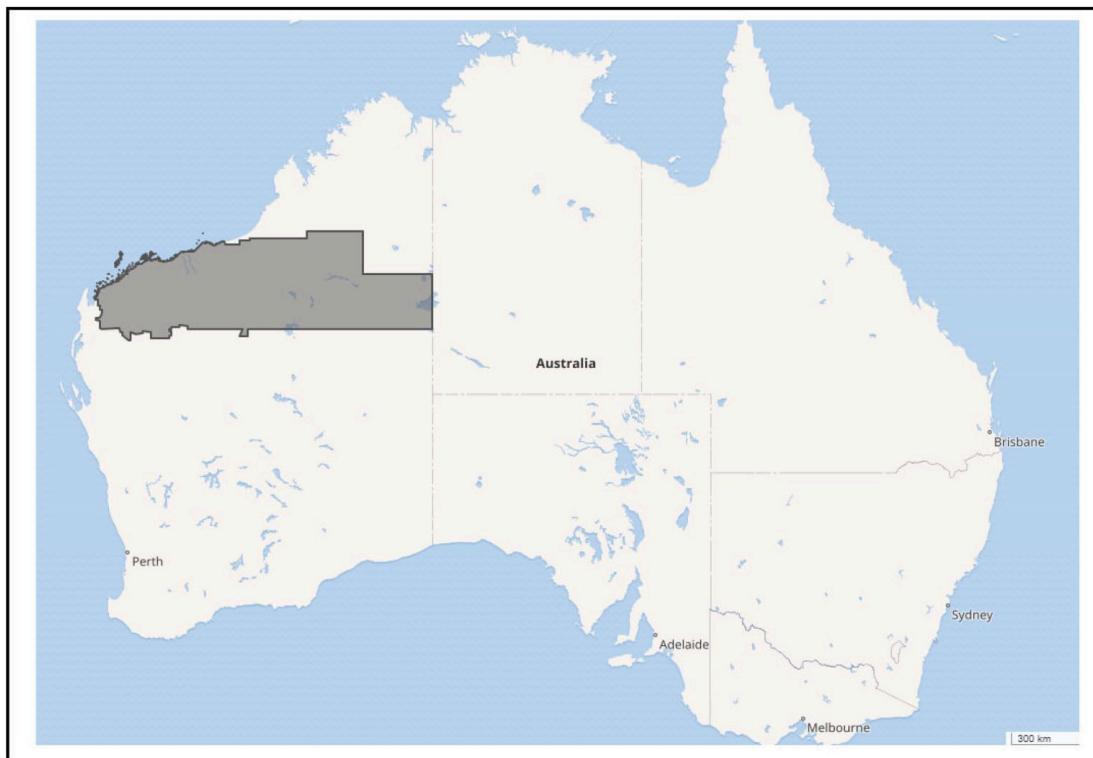
Formerly known as the Australian Renewable Energy Hub (AREH), the A\$50bn (US\$33.6bn) project proposal aims to build 1,743 wind turbines and 18 solar photovoltaic (PV) arrays, each with a capacity of up to 600 MW. These will deliver an overall renewable energy output at full capacity of up to 26 GW of solar and wind power (by an as yet undetermined date) – one-third of Australia's electricity output in 2020, according to the government's [\*Australian Energy Update 2021\*](#).

Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) says: 'The project intends to supply renewable power to local customers in the Pilbara, a large mining region, and produce green hydrogen for the domestic Australian market and for export to major international users.'

The AREH project was granted 'major project status' in August 2024 by Australia's Department of Industry, Science and Resources (DISR),

recognising its national importance and potential to stimulate economic growth and job creation. Such projects get extra support from the Australian government, including help with the co-ordination and facilitation of administrative controls such as government environmental, biosecurity or foreign investment approvals.

Spanning approximately 6,500 km<sup>2</sup> between Port Hedland and Broome, the project is being funded by an international consortium composed of BP (responsible for development and operations), Singapore-based InterContinental Energy and Serbia-based CWP Global.



## **Pilbara in Western Australia**

*Photo: Wikimedia/copyright [OpenStreetMap](#)*

## **Greening heavy industry**

One goal will be to green the production of iron ore in Western Australia, which accounts for 38% of the global supply, producing 860mn tonnes in 2023. The Commonwealth government also wants to develop a sustainable and large-scale green iron and steel production industry in the state. Three major green steel projects are underway including Green Steel of Western

Australia (GSWA) which involves two large-scale, low-emissions steel and iron projects. Both the green steel recycling mill in Collie, as well as a direct reduced iron (DRI) plant near Geraldton, use green steelmaking technology. In a third project, Fortescue is developing a green 'pit to product' supply chain in the Pilbara region.

The AREH project emphasises Australia's commitment to clean energy under the Labour government elected in 2022. The government has an express goal for Australia to reach net zero emissions by 2050.

Potentially creating up to 3,000 jobs, according to a spokesperson for the Western Australian government, the AREH development is projected to occur in phases. The first will focus on decarbonising Pilbara's energy sources by generating renewable electricity from solar and wind. Next, the project will explore producing green hydrogen for Australian users, with the goal of eventually exporting the gas as the initiative scales up.

Initially, AREH was created by a consortium of BP, InterContinental Energy, CWP Global and Australia's Macquarie Group. In March 2024, BP acquired Macquarie's 15% stake, boosting the former's stake to 63.6%.

InterContinental Energy maintains its 26.4% interest in the project, alongside a 10% stake held by CWP Global.

***'The [AREH] project intends to supply renewable power to local customers in the Pilbara, a large mining region, and produce green hydrogen for the domestic Australian market and for export to major international users.'* – Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO)**

## **A matter of scale as a global player**

AREH is poised to become Australia's largest renewable energy initiative, comparable to major zero-emissions projects in China's wind power sector and India's solar and wind developments in the Kutch district of Gujarat state.

Once operational, BP says the hub will tackle the significant carbon footprint of the Pilbara region, which is responsible for 41% of Western Australia's emissions. It is expected to reduce emissions by 17mn t/y, cleaning up existing Pilbara industries such as iron ore and critical minerals mining as well as hydrogen derivatives production in the Burrup Peninsula.

Currently, traditional fossil-based fuels – gas, oil and coal – dominate the region's energy use, with renewable energy accounting for just 2% of the source of electricity in the Pilbara, according to Tim Buckley, Founder and Director of Climate Energy Finance (CEF), a Sydney-based think tank that works *pro bono* on accelerating decarbonisation. However, detailed plans on any closures of local fossil fuel-based power plants have yet to emerge.

CEF published a major [report](#) on the electrification and decarbonisation of the Pilbara in August 2024, that argued that AREH could be a key part of the solution. As for the stage 2 green hydrogen development, AREH is anticipated to produce up to 1.6mn t/y of green hydrogen and up to 9mn t/y of green ammonia.

The report also highlights AREH's potential to lower green energy costs through economies of scale, reduced land use and 'minimised' environmental impact, by using shared infrastructure – particularly grid transmission infrastructure.

The report advocates for BP to continue to play a leading role, since it possesses the necessary financial and technical expertise as well as a proven track record of successful delivery. CEF argues that a private global major like BP is better suited to lead the project than a public sector entity.

AREH aligns with BP's aim to invest up to \$65bn in renewable energy, hydrogen, biofuels and electric mobility by 2030, according to the company's strategy update for 2023.

Sarah Carter, AREH Project Director at BP, comments: 'The challenges we face as we move to a low-carbon energy mix are not unlike those we've faced developing LNG [...] in Karratha', another Western Australian development, involving offshore production platforms, trunk lines and onshore gas processing facilities. 'When it comes to energy, Western Australia has a reputation for getting it done – and whether it's in oil and gas, or solar, wind or hydrogen, we possess the knowledge, skills and relationships to succeed.'

The Western Australia government, which is also a Labour administration, is a keen supporter of AREH. 'Due to its scale, there are several challenges associated with the development of the emerging renewable energy industry, and particularly the green hydrogen industry,' a Western Australia government spokesperson notes.

The administration's current involvement is primarily focused on providing proactive project facilitation services to assist BP and its joint venture partners through the regulatory approvals process, he explains. Several initiatives have been implemented to aid this process, including the Green Energy Approvals Initiative, a cross-government collaboration to deliver faster environmental approvals for renewable energy projects without compromising the unique environmental biodiversity of isolated Western Australia. This approach has not only helped prioritise the development of AREH but also ensured the West Australia government could identify further areas for regulatory approval reform, according to the spokesperson.

### **Electrification and decarbonisation**

The full electrification and subsequent decarbonisation of Pilbara requires significant investment in renewable energy capacity, notes CEF's Buckley. It

also means developing infrastructure to connect renewable energy areas with energy demand. 'The scale of AREH is critically important to further crowd-in investment into renewable energy projects, culminating in upwards of \$100bn [\$67bn] of new infrastructure investment if the Pilbara is to deliver on its full potential,' he says.

Buckley and colleague CEF Net Zero Transformation Analyst Matt Pollard, believe that AREH has the potential to act as a model for the Pilbara in how private enterprise can effectively collaborate with state and federal governments to accelerate large-scale renewable energy projects. 'Renewable energy hubs at the scale of AREH can provide significant cost advantages over distributed, smaller-scale renewable energy projects,' they say.

The scale of AREH also allows for the development of dedicated supply chains and even some local fabrication or assembly to deliver the scale required, they suggest. However, they caution that lengthy approval processes for First Nations (Aboriginal), environmental and planning considerations could cause delays. Indeed, some projects have been trapped in the administrative pipelines for years, they warn. This is something that AREH has had to overcome already but could also cause further delays, they add.

### **Further afield**

If AREH succeeds in producing power by 2029 – as planned – it could set a benchmark for international projects.

One such overseas project is CWP Global's agreement with Mauritania-based Société Nationale Industrielle et Minière (SNIM – a national industrial and mining company) to collaborate on a potential new green iron hub in Mauritania using green hydrogen, water and green electricity from CWP Global's AMAN, an ultra-large scale green hydrogen project in Mauritania. Given the similar scale of AMAN and the shift towards leveraging green



electricity production to value-add iron as the exportable product, AREH could be used as a model for co-location of renewable energy with value-added refining capacity, according to the Australian analysts.

- **Further reading: 'Australia beefs up lithium refining despite downturn'**. *Lithium is a key component of lithium-ion batteries for electric vehicles in the transition towards a renewable energy-based economy. Find out why some Australian miners have begun to increase production, despite a severe market downturn.*
- **What's driving Australia's switch from coal addiction to renewables?** *Australia's reputation for foot-dragging on carbon emissions and a locked-in relationship with the coal industry is being demolished as the country transitions to renewables and towards net zero emissions. Nick Yates, Founder of Sydney-based Flexity, explains why this is happening faster than most could imagine.*

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