



New Energy

Innovating and investing in a global energy transition



September 2024

About Woodside Energy

We are a global energy company founded in Australia, providing reliable and affordable energy to help people lead better lives. We have reliably delivered gas to homes and businesses in Australia for decades, supporting the development of local industry and driving economic prosperity.

We are contributing to the energy transition by leveraging our track record of reliable operations, strong customer relationships and investing in new energy.

Our strategy is to thrive through the energy transition with a low cost, lower carbon,¹ profitable, resilient, and diversified portfolio.²

We are working to reduce our net equity Scope 1 and 2 greenhouse gas emissions towards our aspiration of net zero by 2050 or sooner.³

Our quality global portfolio and strong balance sheet enables us to execute major projects today, while pursuing opportunities that will deliver Woodside's next wave of growth. These opportunities are across gas, oil, new energy products and lower carbon services.

We are guided by our values, and we believe that our success is underpinned by our people and culture.

Our Approach

Scope 3 Targets⁴

Target to invest **US\$5 billion** in new energy products and lower carbon services by 2030.⁵

Target to take final investment decision on new energy products and lower carbon services by 2030 with a total abatement of **5 Mtpa CO₂-e**.⁶

Customer Collaboration

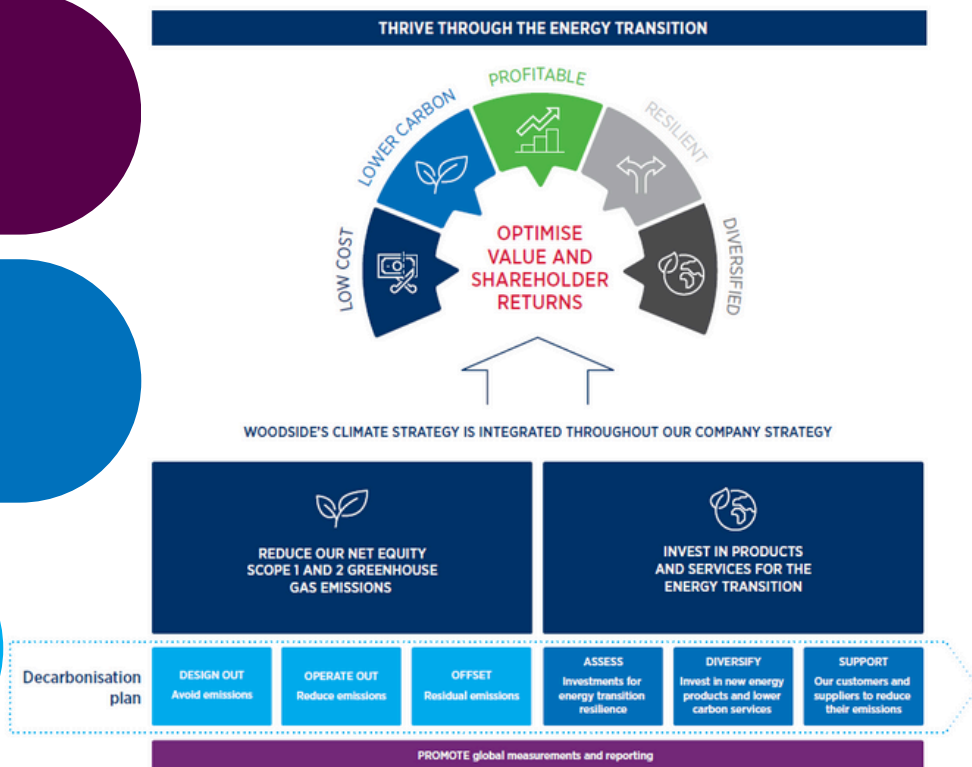
Working with customers to catalyse demand and develop the value chain for new sources of energy

New Energy

Targeting hydrogen, ammonia and emerging fuels production leveraging Woodside's core capabilities

Integrated Carbon Solutions

Developing carbon credits, carbon capture and storage (CCS), and carbon utilisation solutions to reduce emissions for Woodside and our customers



1. Woodside uses this term to describe the characteristic of having lower levels of associated potential greenhouse gas emissions when compared to historical and/or current conventions or analogues, for example relating to an otherwise similar resource, process, production facility, product or service, or activity. When applied to Woodside's strategy, please see the definition of lower carbon portfolio.

2. For Woodside, a lower carbon portfolio is one from which the net equity Scope 1 and 2 greenhouse gas emissions, which includes the use of offsets, are being reduced towards targets, and into which new energy products and lower carbon services are planned to be introduced as a complement to existing and new investments in oil and gas. Our Climate Policy sets out the principles that we believe will assist us achieve this aim.

3. Targets and aspiration are for net equity Scope 1 and 2 greenhouse gas emissions relative to a starting base of 6.32 Mt CO₂-e which is representative of the gross annual average equity Scope 1 and 2 greenhouse gas emissions over 2016-2020 and which may be adjusted (up or down) for potential equity changes in producing or sanctioned assets with a final investment decision prior to 2021. Net equity emissions include the utilisation of carbon credits as offsets. Scope 3 targets are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance. Potentially includes both organic and inorganic investment.

4. Includes pre-RFSU spend on new energy products and lower carbon services that can help our customers decarbonise by using these products and services. It is not used to fund reductions of Woodside's net equity Scope 1 and 2 emissions which are managed separately through asset decarbonisation plans.

5. Includes binding and non-binding opportunities in the portfolio, subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third-party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance.

6. Includes binding and non-binding opportunities in the portfolio, subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance.

Why work with Woodside

Through working with leading industry participants, we aim to combine our capabilities, solve collective challenges and create shared opportunities.

- Experienced and trusted energy partner with 35+ years of experience
- Growth opportunities across our three pillars of oil, gas and new energy
- Significant and credible global energy company
- Proven track record delivering multi-billion dollar projects
- Customer focused

We have both organic and inorganic growth opportunities that we are looking to progress and in new energy, we're aiming to develop projects that we can scale up in line with customer demand.

- Meg O'Neill

Developing the hydrogen supply chain

A key part of Woodside's new energy strategy is to work with others to develop a supply chain that enables customers access to the products and services they need as they secure their energy needs and reduce their emissions.

Since 2022, we've been collaborating with HD Korea Shipbuilding & Offshore Engineering and Hyundai Glovis to study the development of a flexible, cost-effective shipping solution for liquid hydrogen, a key part of the hydrogen supply chain.

In 2023, the collaboration achieved a key milestone with the completion of a detailed study into the design of a large-scale, purpose-built liquid hydrogen carrier. The study focused on refining the flexible ship design to achieve improvements in safety, constructability, and cost-effectiveness.

In 2024, Mitsui O.S.K. Lines, one of the world's largest global shipping companies was welcomed to the collaboration as it plans to progress to the next phase in delivering an integrated marine transportation system to maximise delivery of new energy products.



Conceptual image only. Image credit: HD Korea Shipbuilding & Offshore Engineering. Learn more about developing the hydrogen supply chain [here](#).

Collaboration in action

In April 2023, Woodside and Keppel Data Centres signed a non-binding Heads of Agreement to evaluate the potential supply of liquid hydrogen to Singapore from Woodside's portfolio of planned production facilities.

The Heads of Agreement provides a pathway for the parties to jointly develop further commercial principles for key hydrogen supply chain agreements and references the potential purchase of approximately 1000 tonnes per day of liquid hydrogen by Keppel Data Centres as early as 2030.

Our New Energy Portfolio¹

Woodside is developing a global portfolio of new energy products and lower carbon services.

Capella^{2, 3}



Initial 5 MW concentrated solar energy system to prove concept of energy delivery with nearly 24/7 availability. Potential deployment to support our operations.

H2OK²



Proposed³ facility targeting up to 60 tonnes per day of liquid hydrogen, strategically located in Houston, Texas to service heavy duty transport and emerging markets.

US Gulf Coast²



Assessing potential locations for large-scale, lower carbon ammonia production facilities. Location has access to multiple export markets for power, marine and industrial sectors

Beaumont Clean Ammonia Project⁴



Proposed³ acquisition of OCI Clean Ammonia, a lower carbon ammonia production facility, located in Beaumont, Texas.⁵

Angel CCS

Proposed³ large-scale multi-user CCS hub with the potential to help Australian and international customers to decarbonise.

Exmouth CCS³

Hydrogen Refueller @ H2Perth²



Proposed³ self-contained hydrogen production, storage and refuelling station, located in the Rockingham Industry Zone to service heavy duty transport.

H2Perth²



Proposed³ liquid hydrogen facility to be located in the Rockingham Industry Zone, Perth, Western Australia.

H2TAS²



Proposed³ commercial-scale renewable hydrogen production for export as ammonia for domestic and export markets.

Woodside Solar³

Proposed³ solar facility expected to initially supply approximately 50 MW of solar energy to Pluto LNG.

Bonaparte CCS³

South East Australia CCS²

1. See page 37 of the [Climate Transition Action Plan](#) and [2023 Progress Report](#) for more information.

2. Conceptual images only, not to scale.

3. Proposed opportunities are subject to commercial arrangements, commercial feasibility, regulatory and Joint Venture approvals, and third party activities (which may or may not proceed). Individual investment decisions are subject to Woodside's investment targets. Not guidance.

4. The proposed acquisition is targeted to close in H2 2024, subject to customary approvals and OCI shareholder approval.

5. The supply of carbon abated hydrogen is dependent on ExxonMobil's CCS facility becoming operational.

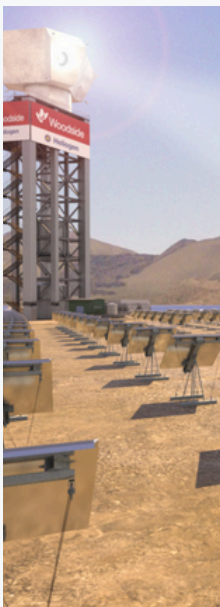
Developing hydrogen and ammonia products

As the energy transition progresses, Woodside expects demand to increase for hydrogen and ammonia and is focusing on delivering products to customers in four end-use markets.

	Heavy Duty Transport	Power	Shipping and Aviation	Industrials and Chemicals
Focus	Decarbonisation of mobility sector (diesel substitution).	Decarbonisation of coal-fired power generation and firming renewables in the grid.	Decarbonisation of maritime and aviation sectors and supply chains.	Provide lower carbon ¹ industrial feed stock and carbon capture and storage (CCS) in hard-to-abate sectors.
Benefits	Line of sight to diesel parity. Operational benefits vs. battery electric trucks.	Diversifies supply and provides lower carbon ¹ power. Potential to expand into combined cycle gas turbines.	May be a substitution for marine diesel and aviation fuel.	May enable progressive displacement of existing ammonia and hydrogen supply produced from unabated fossil fuels.
Progress	H2OK technical readiness to support final investment decision reached.	Joint feasibility study on ammonia supply chain from Australia to Japan.	Exploring opportunities with potential partners and original equipment manufacturers.	Exploring new opportunities across hard-to-abate sectors.

Exploring cost-effective renewable power

Woodside Energy is collaborating on new solar technology in the US and Australia. Woodside is also evaluating early-stage onshore wind opportunities in Western Australia and Queensland.



Capella

Woodside has a technology development collaboration with Heliogen to advance longer duration renewable power.

The collaboration includes delivery of a commercial scale demonstration plant in California known as Project Capella.



Woodside Solar

Woodside is progressing the proposed Woodside Solar project, a facility which would initially generate electricity from a solar photovoltaic farm approximately 15 km south-west of Karratha in Western Australia complemented by battery energy storage system. The proposed solar facility is expected initially supply approximately 50 MW of solar energy to Pluto LNG.

Our approach to carbon management

Woodside has a dedicated carbon business tasked with developing integrated carbon solutions. We have three focus areas – offsets, carbon capture and storage (CCS) and carbon to products – each have key roles to play.

	Offsets	Carbon Capture and Storage	Carbon to Products
Focus	To develop a portfolio of carbon credits and our skills and expertise in managing carbon credit integrity.	Secure and accelerate CCS in Australia.	Invest in technology advancement to convert carbon into useful products.
Benefits	Available at scale now.	Potential for large-scale CO ₂ storage.	Future conversion of carbon at source of generation.
Progress	Executing plan to secure offsets to meet Woodside's 2030 net emissions reduction targets. ^{7 8}	Awarded five GHG permits to advance studies on CCS in Australia.	Completion of a number of engineering studies with carbon capture and utilisation (CCU) technology developed and engineering firms.



Carbon Capture and Storage (CCS) Opportunities

Proposed Angel CCS Project

Woodside led Joint Venture with BP Low Carbon (CCS) Australia Pty Ltd (bp), Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd (Shell) and Chevron Australia New Energies (G-10-AP) Pty Ltd (Chevron) are developing a proposed multi-user carbon capture and storage facility for Woodside's depleted Angel Gas Field located north-west of Karratha, Western Australia.

The Angel CCS Project has the potential to facilitate the development of new lower carbon¹ industries, such as the production of hydrogen and ammonia by providing a local solution for emissions. The proposed opportunity could be the first large-scale CCS facility with offshore storage in Australia and potentially one of the largest CCS hubs in the Asia Pacific.¹⁰

7. Amount of offsets includes those currently held in offset accounts, forecast yield from forward contracts and offsets related to land purchased for carbon origination projects (but not yet fully implemented). The offsets include Australian Carbon Credit Units and voluntary market offset units. Forecast includes offsets required up to and including 2030 and excludes retired units.

8. Woodside equity emissions abatement demand is based on current and sanctioned projects at current equity share as well as near- and medium-term net equity scope 1 and 2 greenhouse gas emissions targets.

9. The carbon capture and storage permits are subject to commercial agreements, regulatory approvals and being granted appropriate titles.

10. Media Release, Woodside-led Joint Venture Awarded Greenhouse Gas Assessment Permit in WA, September 2022.

Head Office

Woodside Energy Group Ltd
Mia Yellagonga
11 Mount Street
Perth WA 6000

Postal Address

GPO Box D188
Perth WA 6840
Australia

T +61 8 9348 4000

F +61 8 9214 2777

E companyinfo@woodside.com

Woodside Energy Group Ltd

ABN 55 004 898 962

woodside.com

