



# BEAUMONT CLEAN AMMONIA PROJECT

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Ammonia Energy Association  
10 Dec 2024 Webinar



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# Disclaimer, important notes and assumptions (continued)

## Forward-looking statements (continued)

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- Unless otherwise indicated, the targets set out in this presentation have been estimated on the basis of a variety of economic assumptions including: (1) US\$70/bbl Brent long-term oil price (2022 real terms, inflated at 2.0%); (2) currently sanctioned projects being delivered in accordance with their current project schedules; and (3) applicable growth opportunities being sanctioned and delivered in accordance with the target schedules provided in this presentation. These growth opportunities are subject to relevant joint venture participant approvals, commercial arrangements with third parties and regulatory approvals being obtained in the timeframe contemplated or at all. Woodside expresses no view as to whether its joint venture participants will agree with and support Woodside’s current position in relation to these opportunities, or such commercial arrangements and regulatory approvals will be obtained. Additional assumptions relevant to particular targets or other statements in this presentation may be set out in the relevant slides. Any such additional assumptions are in addition to the assumptions and qualifications applicable to the presentation as a whole.

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- Woodside “greenhouse gas” or “emissions” information reported are net equity Scope 1 greenhouse gas emissions, Scope 2 greenhouse gas emissions, and/or Scope 3 greenhouse gas emissions, unless otherwise stated.
- For more information on Woodside’s climate strategy and performance, including further details regarding Woodside’s targets, aspirations and goals and the underlying methodology, judgements, assumptions and

contingencies, refer to Woodside’s Climate Transition Action Plan and 2023 Progress Report (CTAP) available on the Woodside website at <https://www.woodside.com/sustainability/climate-change>. The glossary and footnotes to this presentation provide clarification regarding the use of terms such as “lower carbon” under Woodside’s climate strategy. A full glossary of terms used in connection with Woodside’s climate strategy is contained in the CTAP.

- Additionally, the developments of environmental and climate change-related issues in this presentation are based on various frameworks and the interests of various stakeholders that are subject to evolve independently of our will. Moreover, our disclosures on such issues, including climate-related disclosures, may include information that is not necessarily “material” under US securities laws for SEC reporting purposes or under applicable securities law.

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# We are Woodside

- We are a **global energy company, proudly Australian** with a spirit of innovation and determination
- **We provide energy that the world needs** to heat homes, keep lights on and support industry
- **We aim to thrive through the global energy transition** with a low-cost, lower carbon, profitable, resilient and diversified portfolio<sup>1</sup>
- Our three strategic pillars – **oil, gas and new energy** – each have a role to play in the energy transition

1. 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.

2. Woodside uses this term to describe the characteristic of having lower levels of associated potential GHG 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.

3. 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.

## OUR FOCUS

Provide low cost, lower carbon<sup>2</sup> energy the world needs.

Our resilient and diversified portfolio will help us thrive through the global energy transition.



### World-class assets

Our focus is the safety, reliability, efficiency, and environmental performance of our operations, leveraging more than 35 years of experience.

### Delivering growth

We have growth opportunities across our three pillars of oil, gas, and new energy



### Social and economic benefits

Environmental, social, and governance performance is integral to our success

### Our Scope 3 targets

We are targeting to invest US\$5 billion in new energy products and lower carbon service by 2030.<sup>3 4</sup>

We are targeting final investment decisions on new energy products and lower carbon services by 2030, with total abatement capacity of 5 Mtpa CO<sub>2</sub>-e.<sup>3 5</sup>



# Global ammonia demand expected to double by 2050

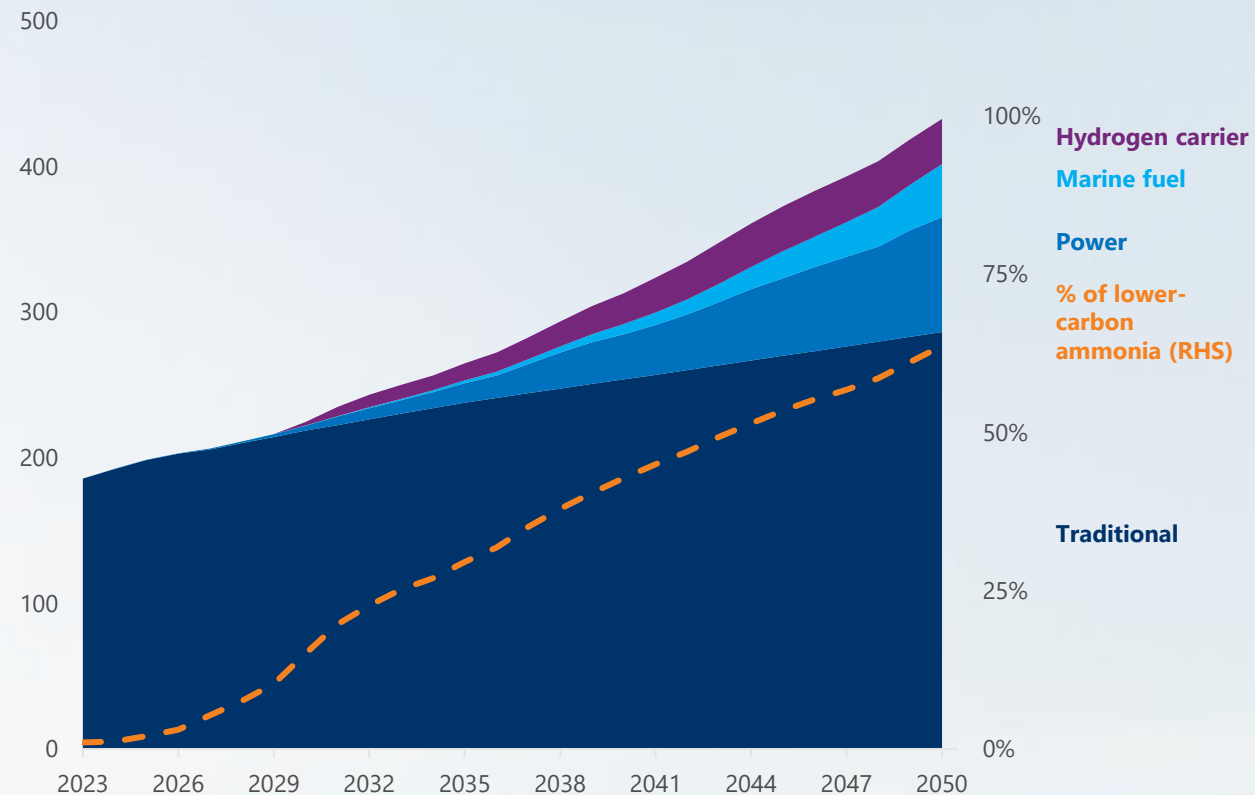
Existing global market of ~200 Mtpa traded on a blend of spot and medium-term contracts

Lower carbon ammonia expected to exceed 250 Mtpa by 2050, comprising nearly two-thirds of total ammonia demand

Carbon policy development expected to play a key role in lower carbon ammonia demand growth

Lower carbon ammonia expected to support decarbonisation of traditional end-uses and supply new areas such as power, marine fuel, and as a hydrogen carrier

Global ammonia demand (million tonnes per annum)<sup>14</sup>



14. Wood Mackenzie Global Ammonia Strategic Planning Outlook 2024, published 31 May 2024. Traditional demand includes fertilizer, metals and mining, major chemicals and other industrial.

# Acquiring one of the world's first lower carbon ammonia projects

**1.1 Mtpa project under construction; with cost, schedule and performance guarantees,** targeting production of first ammonia from 2025 and lower carbon ammonia from 2026<sup>1,2,3,4</sup>

**Exceeds Woodside's capital allocation framework targets for new energy projects;** Phase 1 is >10% IRR, <10-year payback period<sup>5</sup>

**Free cash flow accretive** from 2026; **earning per share accretive** from 2027<sup>5</sup>

**World-class ammonia capability;** positioned to target growing lower carbon ammonia market

**Capacity to abate 3.2 Mtpa CO<sub>2</sub>-e of customer emissions in Phases 1 and 2,** with less than 0.1 Mtpa Scope 1 and 2 emissions<sup>1,6,7</sup>



**Providing energy**



**Creating and returning value**



**Conducting our business sustainably**

1. Woodside will market ammonia volumes into the global ammonia market, which in 2023 represented ~200 Mtpa.

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

3. See glossary for key definitions including lower carbon and lower carbon ammonia.

4. With limited exceptions, such as changes requested by Woodside, OCI will expend the resources necessary to complete the project ensuring that it meets the agreed performance standards prior to hand over. OCI will also be responsible for limited financial payments to Woodside if the project is delayed beyond September 2025.

5. Forecast IRR and payback period assume Woodside equity of 100% and include the acquisition price. IRR and the payback period are a look forward from July 2024. Lower carbon ammonia price assumes an uplift to Woodside's internal unabated ammonia cost assumption. In 2025 the uplift is \$0/t increasing to ~\$120/t in 2034 (real terms 2024) aligned with the phase in of the CBAM. Payback period is calculated from undiscounted cash flows from RFSU.

6. Scope 3 emissions abatement capacity of 1.6 Mtpa CO<sub>2</sub>-e assumes supply of carbon abated hydrogen and CCS operational. Woodside has made the assumption to estimate the avoided emissions through the displacement of conventional marine fuel. Actual displaced emissions may differ based on actual use case. Please refer to the Glossary starting on page 22 and the section on Scope 3 targets starting on page 34 of the CTAP for further information on the definition and calculation of Scope 3 targets.

7. Scope 1 and 2 emissions of less than 0.1 Mtpa represent Woodside's gross equity Scope 1 and 2 emissions from the project and are comprised of the on-site electricity requirements for ammonia production.

# Advantaged project utilising a proven design

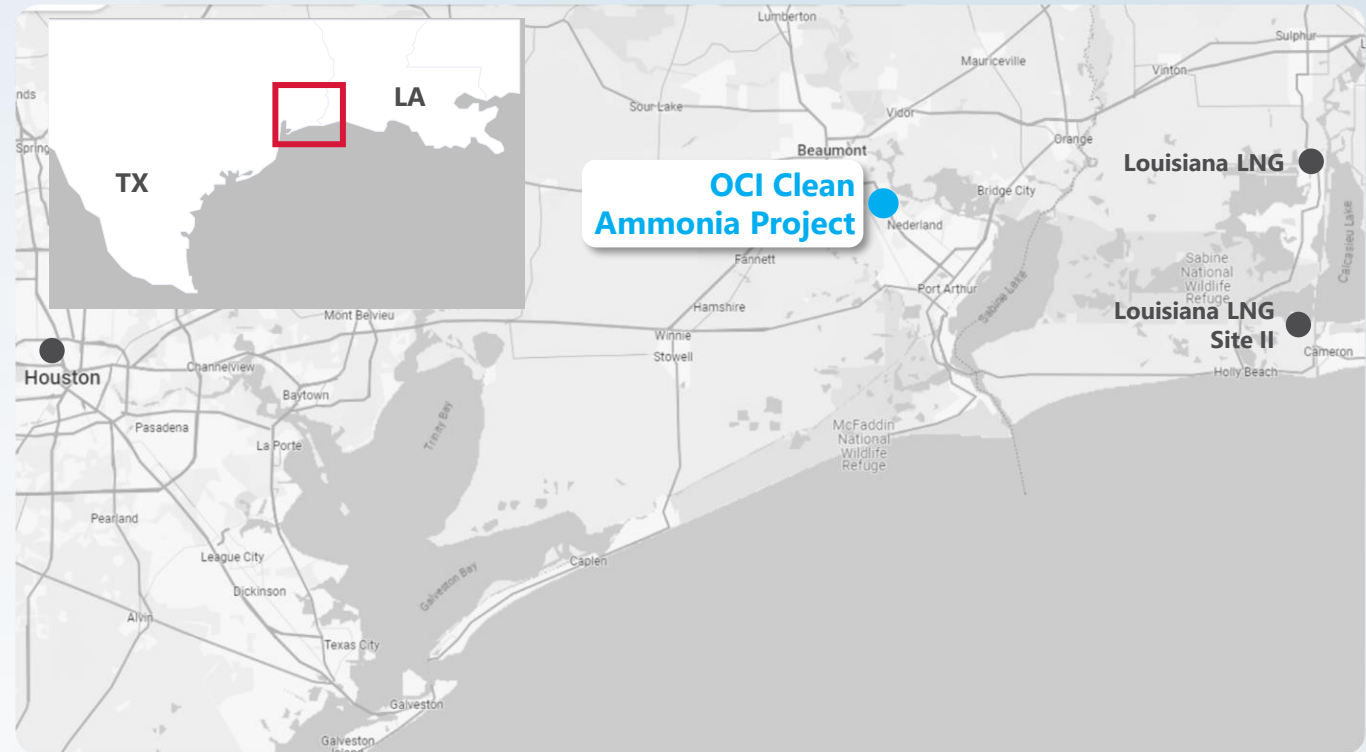
Located on Texas Gulf Coast in an established energy precinct with immediate access to domestic and export markets

Capital efficient model leveraging close-proximity to third party hydrogen and nitrogen feedstocks

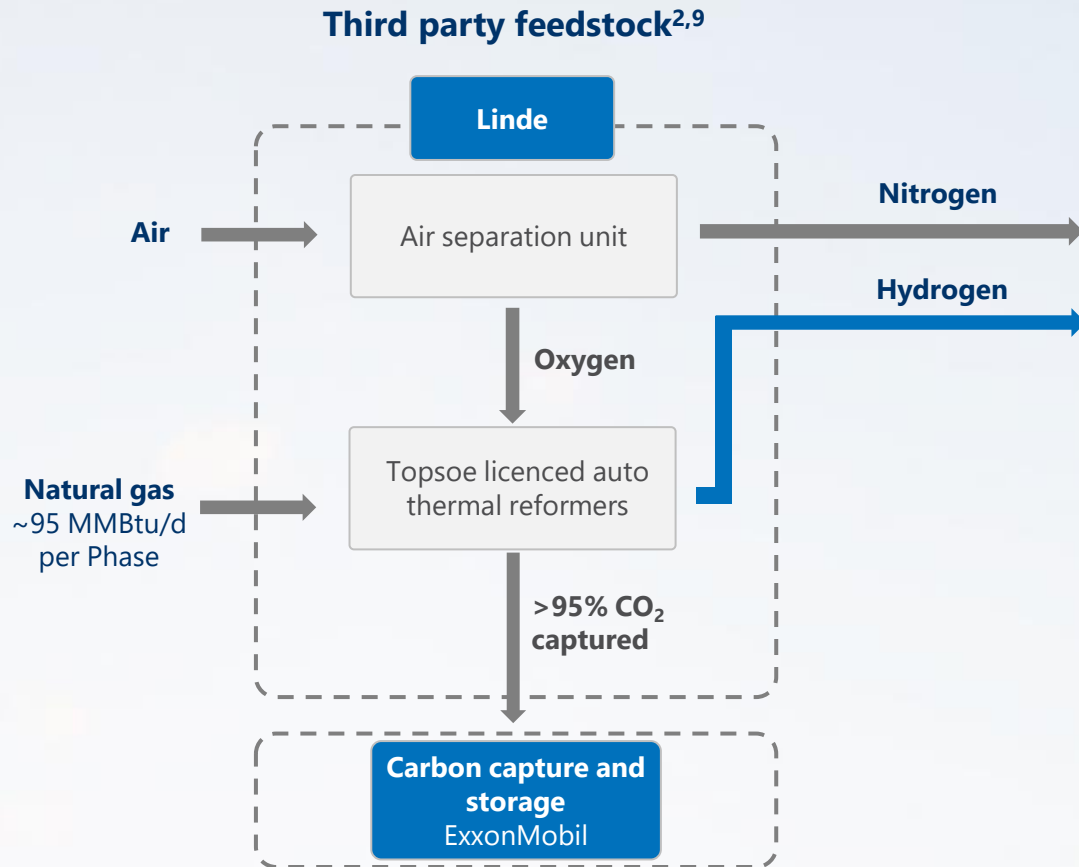
Feedstock agreement in place for hydrogen from natural gas paired with CCS<sup>2</sup>

OCI is a proven developer with a track record of constructing eight ammonia plants and operating 11 plants since 2008

Phase 1 design replicated from previous plants



# Capital light structure with locked-in supplier agreements



## Acquisition scope<sup>10</sup>

### Lower carbon ammonia

#### Phase 1

1.1 Mtpa ammonia synthesis

- 2x 50,000 tonne ammonia storage tanks
- Dock facilities designed for VLGC/VLAC vessels
- Pre-investment in infrastructure (~US\$200 million) to enable Phase 2 train

#### Phase 2<sup>11</sup>

1.1 Mtpa ammonia synthesis (subject to FID)

- Additional 50,000 tonne ammonia storage tank
- Expected capital expenditure range of US\$1.2 -1.4 billion



9. Linde is expected to produce nitrogen and carbon abated hydrogen from natural gas paired with CCS and sell to Woodside's ammonia facility. Linde is responsible for CCS with ExxonMobil.

10. Woodside is expected to buy nitrogen and lower carbon hydrogen feedstock and manufacture lower carbon ammonia for domestic use and export.

11. Phase 2 nitrogen and carbon abated hydrogen feedstock to be competitively bid in the future.



# Project 78% complete with expansion optionality

Phase 1 to be completed by OCI and includes cost, schedule and facility performance guarantees<sup>4</sup>

Significant Phase 1 progress:

- Engineering: 99% complete
- Procurement: 84% complete (includes 100% of long lead items)
- All major mechanical equipment delivered and installation underway/completed

Phase 1 includes scope to accommodate Phase 2:

- Feedstock connections for H<sub>2</sub>, N<sub>2</sub>, natural gas power
- Common facilities (e.g. piperack, utilities, control room)



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.

# Attractive combination of world-class capability



## OCI track record

~7 Mtpa gross ammonia capacity

16 years of safe and reliable ammonia production and eight ammonia plants built globally<sup>13</sup>

Industry leader in developing, producing and marketing decarbonised ammonia and methane



## Woodside track record

35 years of LNG operations

World-class reliability

Proven track record in integrated shipping, operations, marketing and trading activities



## Combined capability

Strong overlap between customers for LNG and lower carbon ammonia

Combination of complementary expertise to deliver and operate the project safely and reliably

Positioned to establish preferred provider status in growing market

13. OCI has built eight ammonia plants since 1997 and has been producing ammonia/operating across 11 ammonia plants and four continents since 2008.



# Positioned to take advantage of carbon pricing schemes

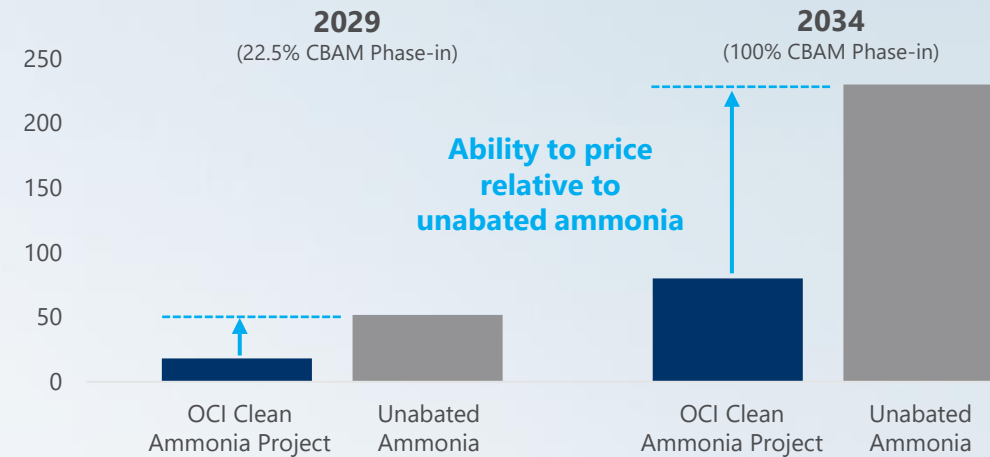
Increasing carbon costs expected to drive demand for lower carbon ammonia

EU is currently setting the global market with advanced pricing schemes of ETS and CBAM

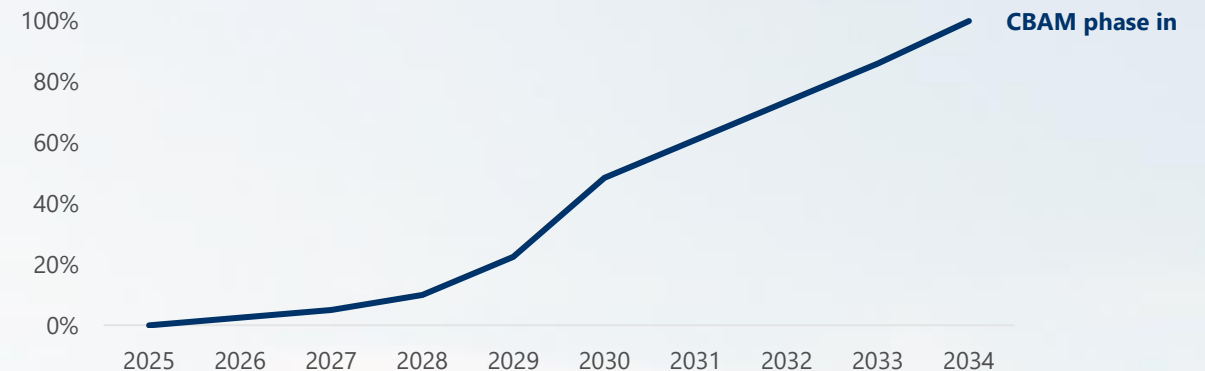
OCI Clean Ammonia Project product is well positioned to capture increasing value from the CBAM methodology

Similar carbon cost schemes being developed in Asia

CBAM carbon cost in 2029 and 2034 at \$100/t CO<sub>2</sub> price (\$/tonne)<sup>15</sup>



EU CBAM phase-in<sup>16</sup>



15. The calculation assumes 22.5% CBAM phase-in in 2029 and 100% CBAM phase in in 2034 and an ETS price of \$100/t CO<sub>2</sub>. Lower carbon ammonia assumes emissions of 2.3 tCO<sub>2</sub>-e/t NH<sub>3</sub> and lower-carbon ammonia assumes emissions of 0.8 tCO<sub>2</sub>-e/t NH<sub>3</sub>. Wood Mackenzie ETS Forecast \$101/t CO<sub>2</sub> in 2026 and \$159/t CO<sub>2</sub> in 2034 (RT 2024).

16. Regulation (EU) 2023/956 of the European Parliament and of the Council, 10 May 2023.

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# Woodside Energy: Early-mover advantage in the growing lower-carbon ammonia market



**Rick Beuttel**

Vice President, New Energy US  
Woodside Energy



**AMMONIA ENERGY**  
ASSOCIATION

Tuesday, December 10  
10-11 AM EST (4-5 PM CET)

# House rules



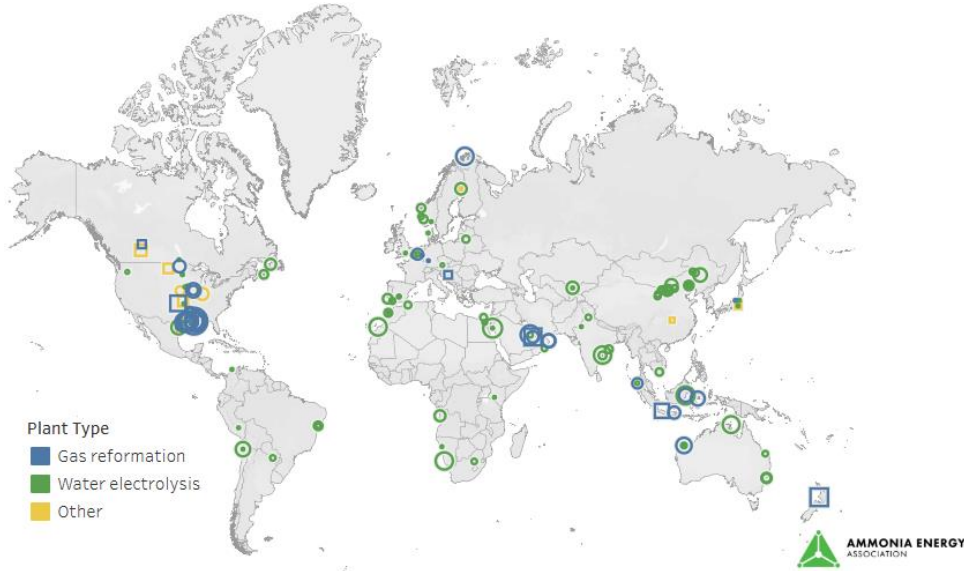
- Any questions for the speakers can be asked in the Q&A section. The questions will be answered by text by the speakers, or will be discussed in the panel.
- The webinar recording of this webinar will be shared with all registrants after the webinar.
- An article about the webinar will be posted on [AmmoniaEnergy.org](https://AmmoniaEnergy.org)



# Low-emission ammonia plants



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Plant Type  
■ Gas reformation  
● Water electrolysis  
■ Other

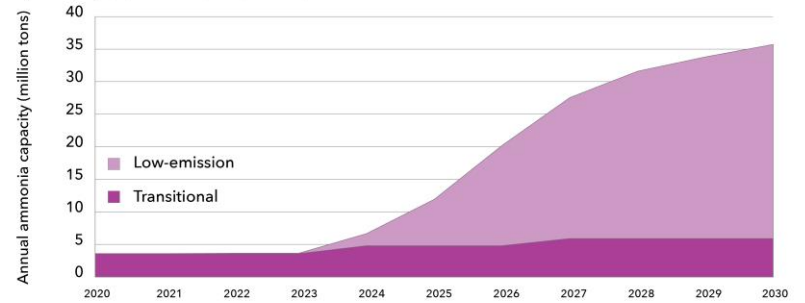
*Realized, Firm, and Mature Projects*  
Ammonia Energy Association (December 2024)  
[ammoniaenergy.org/LEAD](https://ammoniaenergy.org/LEAD)

## Low-emission and transitional ammonia plants

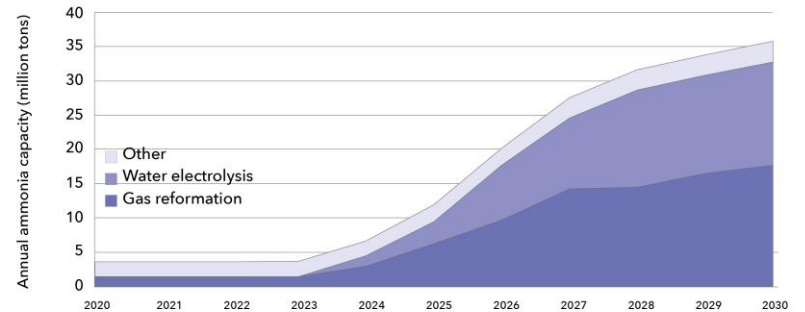
35.7 million tons of ammonia by 2030



By category (Operational, Firm, Mature)



By technology pathway (Operational, Firm, Mature)



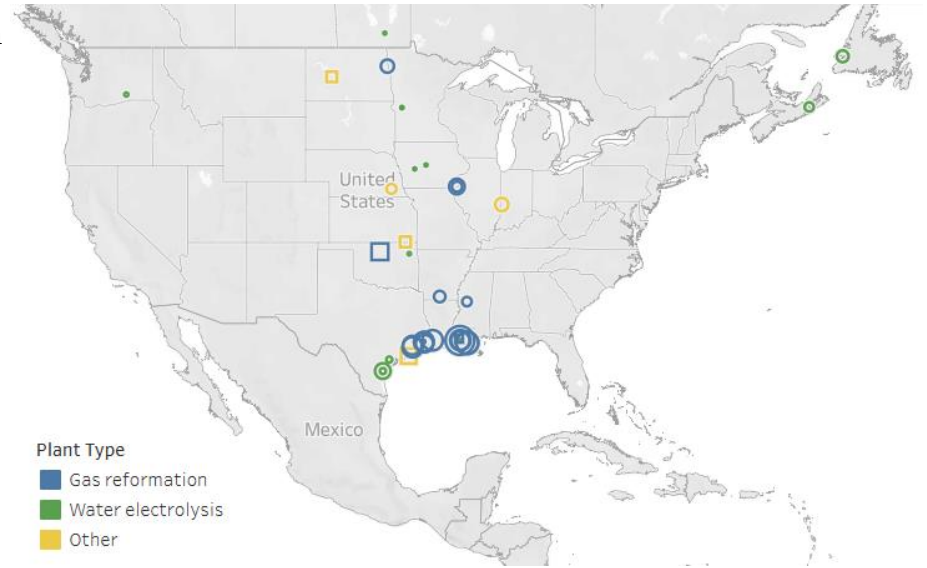
# Low-emission ammonia plants in the US Gulf Coast



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Numerous Gas reformation projects are under development in the US Gulf Coast.

- Woodside Energy recently acquired the Beaumont Clean Ammonia Project (already under construction) from OCI Global.
- Located on the US Gulf Coast, phase one of the project will have the capacity to produce 1.1 million tons per year of ammonia, utilizing gas feedstock. The facility is designed to accommodate a second 1.1 million tons per year production train (phase two).
- Phase 2 remains pre-final investment decision (FID). Woodside will target FID readiness for Phase 2 in 2026.



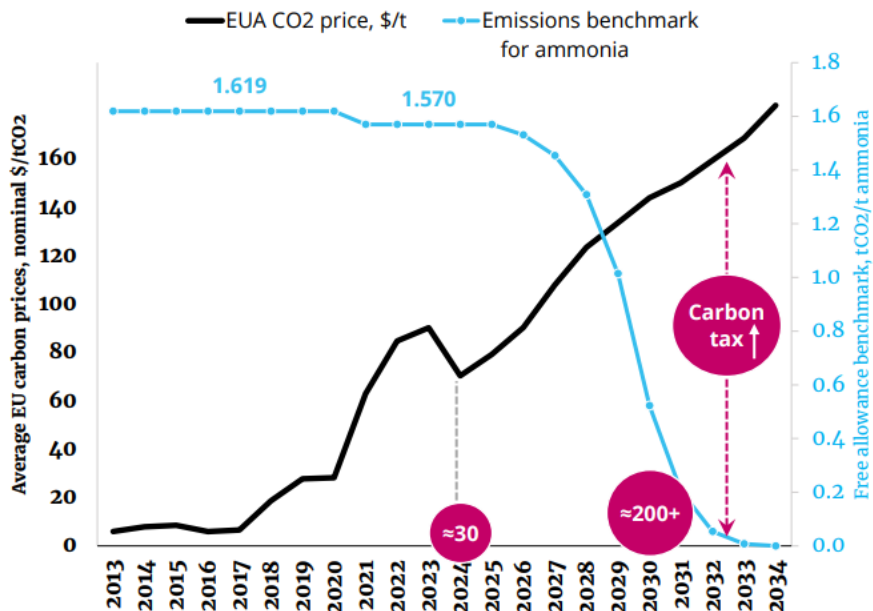
*Realized, Firm, and Mature Projects*  
Ammonia Energy Association (December 2024)

[ammoniaenergy.org/LEAD](https://ammoniaenergy.org/LEAD)



# The importance of carbon pricing: ammonia (and hydrogen) will be included in the EU's Carbon Border Adjustment Mechanism (CBAM)

## Phasing out of EUA & outlook for CO<sub>2</sub> prices in Europe



- **Progressive removal of free allowances will increase carbon costs (and price) for grey products, with implications beyond EU.**
- **So far the only “mandatory” cross-border carbon scheme.**

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