

Low-Emission Ammonia Data (LEAD): Plants

Executive Summary

May 2025 Version Ammonia Energy Association

Project intelligence database

The AEA's project intelligence database has been available to members of the AEA since April 2022, and contains details on all the low-emission (and transitional) ammonia production plants that have been announced.

The database is growing quickly:

- December 2022: 103 projects
- May 2025: 516 projects (635 phases of expansion), for a total of 457.7 million tons

Projects are categorized according to technology pathway:

- **Gas reforming** (CCS, CCU, EOR, biogas)
- Water electrolysis (renewable, grid, nuclear), and
- **Other** (pyrolysis, gasification, electrochemical, byproduct hydrogen, etc).



Low-emission and transitional ammonia plants

Global announced capacity: 457.7 million tons of ammonia 2025 Q2

By Location (Operational, Firm, Mature, Developing, Announced)



Low-Emission Ammonia Data, Ammonia Energy Association https://ammoniaenergy.org/lead/

Project updates this quarter

Since the last update in February 2025, the net low-emission ammonia capacity we are tracking has increased by 6.5 MT (million tons). Numerous projects without active project development (12.9 MT) have been categorized as "Defunct" in the database in the last 3 months. Thus, 19.4 MT of capacity has been announced over the past 3 months.

Significant low-emission ammonia capacity moving toward FID

- In April 2025, CF Industries, JERA, and Mitsui took FID on the Blue Point Number One ATR Project in the US Gulf Coast, producing 1.4 MT of ammonia per year. Technip Energies was selected as the EPC contractor. About 2.3 MT of CO₂ is sequestered by 1PointFive. Offtake for power in East Asia & fertilizers in Europe.
- ATOME selected Casale as the EPC for its Villeta Project in Paraguay, with a definitive EPC contract signed in April 2025. About 0.1 MT of ammonia is produced via water electrolysis, with subsequent conversion to fertilizers for offtake by Yara.
- In March 2025, Northern Lights (a JV of Equinor, Shell and TotalEnergies) took FID to expand from 1.5 MT to 5 MT of permanent CO₂ sequestration per year. From 2026, Yara will transport 0.8 MT of CO₂ from its Sluiskil site in the Netherlands to Northern Lights in Norway.







Low-emission ammonia projects



As of May 2025, 457.7 million tons (MT) of Low-emission and Transitional ammonia have been announced.

By 2030, 46.6 MT could become operational

- 4.1 MT is already Operational (up to Q2 2025)
- 14.0 MT is Firm (eg, under construction / FID)
- 28.6 MT is Mature (eg, offtake / EPC selected / FEED)

In total, 305.3 MT is classified as Announced with few public details. Another 96.6 0 MT is Developing (eg, making clear progress to FID), of which 36.4 MT targets to start this decade.

Key conclusions:

- Within the large funnel of projects, a significant number of projects are maturing to meet the low-emission ammonia demand.
- Clear demand signals and regulatory certainty will be required to move more of these projects towards FID.

Low-emission and transitional ammonia plants





Availability this decade

Looking only at Operational, Firm, and Mature projects, 46.6 million tons (MT) of Low-emission and Transitional ammonia capacity could be Operational in 2030.

- 3.9 MT of Transitional capacity is already operational. This could increase to 6.2 MT of Transitional capacity in 2030.
- 0.2 MT of Low-emission capacity is already operational. This could increase to 40.5 MT of Low-emission capacity in 2030.
- About half of Low-emission (and Transitional) capacity this decade comes from Gas reformation projects, totalling 25.8 MT in 2030.
- Water electrolysis projects begin operating at scale in 2025-2026, and reach 17.9 MT capacity in 2030.

Key conclusions:

- Transitional ammonia plants serve existing markets (fertilizers, chemicals), but are not expanding long-term.
- Gas reformation projects are developing at large-scale, especially at existing sites, while some Water electrolysis projects are scaling toward the size of Gas reformation projects in the late 2020s.



Low-emission and transitional ammonia plants

46.6 million tons of ammonia by 2030 (Operational, Firm, Mature) 2025 Q2



Plants by Project Type

Nearly 80% of the Operational, Firm, and Mature projects is Newbuild capacity by 2030 (36.9 MT), with only 20% representing revamps (9.7 MT). This aligns with the continued growth of ammonia production, combined with a shift of ammonia production to locations with abundant natural gas and the best renewable potential.

Newbuild projects:

- Gas reformation via autothermal reforming with full CCS, focused on long-term low-emission ammonia markets.
- Water electrolysis projects ranging from small-scale to world-scale.

Revamp projects:

- Gas reformation projects typically have partial CCS to comply with near-term markets in East Asia and Europe.
- Water electrolysis projects have 20-240 MW capacity to decarbonize 5-20% of the hydrogen supply. The exception is India, with various full revamp projects with grid connection.



Low-emission and transitional ammonia plants

46.6 million tons of ammonia by 2030 (Operational, Firm, Mature) 2025 Q2







Plants by Region: North America



Projects in the US Gulf Coast mostly focus on Gas reformation with CCS:

- Sometimes at existing plants serving existing markets (fertilizers, chemicals), with some notable first-mover offtakes into energy markets.
- East Asia and Europe are set to become a key offtake market for newbuild Low-emission Ammonia capacity.

Projects in Eastern Canada focus Water electrolysis, coupled to wind electricity:

- Initial offtake is focused on Europe, with RFNBOcompliant ammonia production.
- Also, the ammonia plants may provide grid services in Eastern Canada.

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Low-emission and transitional ammonia plants

46.6 million tons of ammonia by 2030 (Operational, Firm, Mature) 2025 Q2

Canada and the United States (Operational, Firm, Mature)



Low-Emission Ammonia Data, Ammonia Energy Association https://ammoniaenergy.org/lead/

Plants by Region: China and India

Newbuild Water electrolysis projects have various narratives:

- Optimal regions for solar and wind such as Australia, Chile, Eastern Canada, Egypt, India, Morocco, Namibia, etc.
- A highly renewable grid with substantial hydropower in Brazil and Norway, and in parts of India.
- Replacing coal-based production in China.

Various Water electrolysis projects are maturing globally, with an emphasis on China and India:

- In China and India, initial offtake of RFNBO-compliant ammonia will be focused on Europe.
- The cost gap between ammonia via Coal gasification and Water electrolysis is closing in China, implying local offtake may also become significant.
- Noting that India is a net ammonia importer, ammonia produced via Water electrolysis can serve local markets.

Low-emission and transitional ammonia plants

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46.6 million tons of ammonia by 2030 (Operational, Firm, Mature) 2025 Q2

China and India (Operational, Firm, Mature)



Low-Emission Ammonia Data, Ammonia Energy Association https://ammoniaenergy.org/lead/

Evaluation of project maturity

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The AEA tracks project development indicators using nine criteria:

- FEED ongoing/completed
- existing ammonia complex
- existing operator (ammonia, chemicals, energy)
- existing infrastructure
- hydrogen technology vendor selected
- ammonia licensor selected
- plant operator selected
- offtaker selected
- financing / funding (pre-FID)

Using nine criteria, every project is assigned an objective status:

- **Operational**: the plant is operational
- Firm: the plant has reached FID or is under construction
- Mature: 5+ out of 9 criteria have been met
- **Developing**: 3+ out of 9 criteria met
- Announced: 2 or less out of 9 criteria met
- **Defunct**: the plant has closed, or the project is on hold, or not ongoing

Evaluation of project category



The database include both Low-emission and "Transitional" plants.

Low-emission plants include a variety of technology pathways, including water electrolysis, gas reformation with permanent CCS, and methane pyrolysis.

Transitional plants includes projects with reduced emissions, but via pathways that may not be consistent with net-zero (for example, byproduct fossil hydrogen or enhanced oil recovery pathways).

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For more information or questions related to this material, please contact Kevin Rouwenhorst at krouwenhorst@ammoniaenergy.org, Technology Manager, Ammonia Energy Association.

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