

Our summary of low carbon technology developments for April 2025 is based on data and information collated by Gifford Consulting and provided on the website: <u>Gifford Consulting</u>

Highlights by Topic: May 2025

More information on these articles can be found on our website dashboards.

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Ammonia production

- 1. <u>Ammonia production</u>: Germany. BASF started producing green hydrogen-based ammonia at its Verbund site in Germany, offering both gaseous and aqueous forms. The Ludwigshafen plant is now producing green ammonia, which is used in industrial applications such as fertiliser production and emissions control, and also a green ammonia solution, which is an aqueous product containing 24.5% ammonia by weight, typically used in processes requiring diluted ammonia. The products are manufactured by integrating hydrogen, derived from both fossil and renewable energy sources, into the ammonia synthesis process, thereby reducing the plant's natural gas consumption. Link 13/05/2025.
- 2. <u>Ammonia production</u>: India. Indian renewable power solutions provider Juno Joule Green Energy Private Limited and German energy trading company SET Select Energy GmbH are set to jointly develop a green hydrogen-to-ammonia facility in India, a project estimated at USD 1.3 billion (EUR 1.14bn). The contemplated partnership will combine Juno Joule's expertise in green hydrogen, green ammonia and biofuels with family-owned SET Select Energy's activities as a global oil and energy trader. The project is planned to be implemented in three phases on the East Coast of India near Mulapeta Port in Andhra Pradesh. It targets an annual production of up to 1 million tonnes of green ammonia, derived from around 180,000 tonnes of green hydrogen generated via electrolysis. The electrolysers will be powered exclusively by renewable energy sources, including solar, wind and hydropower. Link 27/05/2025.
- 3. <u>Ammonia production</u>: USA. Marubeni Corporation and Exxon Mobil Corporation signed a long-term offtake agreement for approximately 250,000 metric tons of low-carbon ammonia per year from ExxonMobil's facility in Baytown, Texas, which is expected to produce virtually carbon-free hydrogen with approximately 98% of CO2 removed and low-carbon ammonia. Marubeni will supply the ammonia mainly to Kobe Power Plant, a fully owned subsidiary of Kobe Steel, Ltd. (Kobe Steel). Marubeni has also agreed to acquire an equity stake in ExxonMobil's low-carbon hydrogen and ammonia facility. Link 15/05/2025.

Biobased chemicals

- 4. <u>Biobased chemicals</u>: Germany. Starting in 2026, large quantities of renewable molecules for the chemical industry will be produced at the Verbio site in Bitterfeld. These specialty chemicals are used, for example, in detergents and cleaning agents, high-performance lubricants for engines, and plastics. The distillation column is used for the preparation of the raw ester from the biodiesel plant before further processing in the ethenolysis process. The liquids are heated at the bottom of the column and can be separated due to their different boiling points. Using ethenolysis, Verbio provides the market with the bio-based speciality chemicals methyl 9-decenoate (9-DAME) and 1-decene, which can be used as key components in a wide range of applications. 9-DAME is a component of detergents and cleaning agents and serves as a raw material for lubricants and polymers. 1-decene is an important basis for products in the field of high-performance lubricants used in modern engines, gearboxes and wind turbines. Link 2/08/05/2025.
- <u>Biobased chemicals</u>: Switzerland. Switzerland's Bloom Biorenewables raised \$15 million in April 2025. Bloom currently markets three lignin-based materials – DPX, cellulose, and lignin. All three are potential biobased building blocks that can perform different functions in diverse industries and replace fossil-based chemicals. Its DPX, short for dipropylxylose, is an industrial solvent useful for pharmaceuticals, paints and coatings, plastics and rubber and resins. <u>Link</u> 09/05/2025.

6. <u>Biobased chemicals</u>: USA. Pilot Chemical Company announced an exclusive partnership with Novvi LLC to bring a new sustainable surfactant technology, biobased alpha olefin sulfonates, to the North American market. In partnership with Novvi, Pilot will supply CalCare[®] AOS biobased alpha olefin sulfonates to the North American household, industrial and institutional (I&I), and personal care (PC) markets. CalCare. CalCare[®] AOS biobased alpha olefin sulfonates with the added benefit of being fully biobased. These high-performance, sulfate-alternative surfactants are excellent for use in a range of cleaning and rinse-off personal care applications. Link 23/05/2025.

Biobased plastics

- 7. <u>Biobased plastics</u>: Belgium. Vioneo has awarded Wood a multi-million-dollar FEED contract to deliver the front-end engineering design for its revolutionary plant which will produce fossil-free plastics using green methanol. The plant will have the capacity to produce 300 kilotonnes per annum (ktpa) of high-quality, virgin polyethylene and polypropylene plastics made from green methanol and free of fossil feedstock. These plastics will be fully traceable, segregated and carbon negative, enabling customers to reduce Scope 3 emissions. In addition, the production of these plastics does not affect the feedstock supply for food. Link 02/05/2025.
- Biobased plastics: China. TotalEnergies Corbion and Useon announced a strategic partnership to advance global commercialization of EPLA molded products – a new generation of sustainable, high-performance foam materials made from Luminy[®] PLA bioplastics. EPLA (Expanded PLA) is a plant-based, industrially compostable material designed for packaging, thermal protection, and other molded applications. Developed using Useon's direct bead foaming technology and TotalEnergies Corbion's Luminy[®] PLA. Link 16/05/2025.
- <u>Biobased plastics</u>: Germany. thyssenkrupp Uhde's polymer specialists Uhde Inventa-Fischer (UIF), a subsidiary of the global leader in chemical engineering and construction, and Praj Industries Limited (PIL), announced a strategic partnership to jointly offer an end-to-end integrated technology for the production of Polylactic Acid (PLA). This strategic partnership offers a unique, seamless solution that sets them apart in the arena of bioplastics. <u>Link</u> 12/05/2025.
- <u>Biobased plastics</u>: Malaysia. SK chemicals signed an MOU with Malaysia's kitchenware manufacturer LH Plus, to supply copolyester and circular recycled plastic materials. Under the MoU, SK chemicals will supply LH Plus with up to 2,000 tons of ECOZEN—a copolyester containing biomass—and SKYPET CR—a circular recycled PET made from waste plastics—by 2027. The 2,000 tons of raw materials can produce approximately 100 million 1-liter water bottles. <u>Link</u> 27/05/2025.

Biodiesel

- <u>Biodiesel</u>: Germany. Biodiesel blending in Germany to meet the greenhouse gas reduction obligation reached a historic low of 90,800 tonnes in December 2024. According to the Federal Office of Economics and Export Control (BAFA), consumption of biodiesel and hydrogenated vegetable oil (HVO) fell to around 2.1 million tonnes in 2024, down 20.6% on the previous year. <u>Link</u> 02/05/2025.
- 12. <u>Biodiesel</u>: United Kingdom. Greenergy announced the temporary suspension of operations at its biodiesel plant in Immingham, Northeast England, as it conducts a strategic review to

evaluate the plant's commercial viability amid the significant challenges currently facing the UK biofuels industry. Link 27/05/2025.

13. <u>Biodiesel</u>: USA. Chevron Renewable Energy Group will lay off 70 employees from its Ames biodiesel plant as of June 18 in response to the political uncertainty for biodiesel. The state has seen several biodiesel plants mothballed in recent months due to lack of clarity on the 45Z tax credit and the current level of RVO volumes. The EPA has sent to the White House its proposal last week for future RVO volumes. Chevron REG already shut down two of its other biodiesel plants in the region last year. <u>Link</u> 28/05/2025.

Biofuels

- 14. <u>Biofuels</u>: Hong Kong. Wallem Group published a new whitepaper to ensure ships, ships systems and crews are fully prepared to load, store and use biofuels in everyday vessel operations. 'Marine Biofuels: Adoption, use and best practice' recognises the contribution that biofuels can make to maritime decarbonization, while also offering comprehensive guidance on the precautions owners and crew need to consider before and during use. <u>Link</u> 23/05/2025.
- 15. <u>Biofuels</u>: Romania. Corden Biochem plans to invest millions of euros in Clariant's former ethanol facility in Podari, Dolj County. The plan is to start up production with existing equipment to produce first generation ethanol from molasses or starch and will then transition it to produce diverse products over time. Clariant mothballed the facility in December 2023 when it realized significant upgrades would be required even though the plant only came online the year prior. <u>Link</u> 07/05/2025.
- 16. <u>Biofuels</u>: The Netherlands. UPM plans to discontinue the development of its potential second biomass-to-fuels refinery at the Port of Rotterdam. As a result, UPM plans to halt all engineering work related to the CAPEX investment in Rotterdam and to withdraw from all site-related commitments associated with the Rotterdam investment. At the same time, UPM will continue to seek growth in biofuels by advancing the development of proprietary technologies enabling the extension of feedstock options to other forms of competitive and sustainable biomass and the work related to the qualification and commercialization of Crude Tall Oil (CTO)-derived UPM biofuels for jet engine fuels. Link 29/05/2025.
- 17. <u>Biofuels</u>: United Kingdom HutanBio announced that the production process for its proprietary HBx microalgal biofuel achieves net-negative carbon emissions, based on an independent cradle-to-gate Life Cycle Assessment (LCA) conducted by EcoAct. HutanBio's proprietary microalgal system naturally captures and sequesters carbon, achieving a net uptake of -5.78 tCO₂e per tonne of HBx produced. The LCA found that HBx production removes up to 1.48 tonnes of CO₂e per tonne of biofuel produced across all three planned production sites: Morocco, the Middle East, and Western Australia. HBx is derived from a newly discovered marine microalgae cultivated in seawater on non-arable land using HutanBio's proprietary enclosed photobioreactor technology. It does not compete with food crops or freshwater resources and is designed to power hard-to-abate transport sectors. Link 12/05/2025.
- 18. <u>Biofuels</u>: USA. Gevo, Inc. entered into a definitive agreement to sell Agri-Energy, LLC to A.E. Innovation, LLC for \$7 million. The transaction includes Agri's 18-million-gallon-per-year ethanol-production facility located in Luverne, Minnesota. Gevo will retain ownership of certain isobutanol-production-related assets and a portion of the vacant land at the site for future use. With these retained assets, Gevo could potentially produce up to 1 million gallons per year of isobutanol, which can be sold as a specialty chemical, or converted into isooctane and jet fuel. Link 30/05/2025.

Biogas

- 19. <u>Biogas</u>. USA. Cowboy Clean Fuels announced a groundbreaking offtake agreement with Mercuria, one of the world's leading independent energy and commodity trading groups. This partnership marks the first commercial agreement for the sale of Renewable Natural Gas (RNG) generated under CCF's pioneering BiCRS+RNG Methodology at the company's Triangle Unit Project near Gillette, Wyoming. <u>Link</u> 14/05/2025.
- 20. <u>Biogas</u>: France. The Outlook for Biogases and Biomethane, finds that over 50 new policies have been introduced to support biogas since 2020 as countries increasingly recognise their benefits. Biogas can be used directly as heat by households and industry and to produce electricity, while biomethane which is an upgraded form of biogas has many advantages as a drop-in substitute for natural gas. Link 30/05/2025.
- <u>Biogas</u>: Italy. Anaergia S.r.l. entered into a contract with Capwatt Biomethane Unipessoal, Lda. Under the terms of this C\$7.3 million contract, Anaergia S.r.l. will design and construct an advanced facility, Metanext. Located in central Italy, Metanext will produce biomethane from agro-industry waste. The facility is expected to be operational by the end of June 2026. Link 23/05/2025.
- 22. <u>Biogas</u>: Spain. Greening, Atlantica, and Edison Next joined forces to develop a portfolio of 17 biomethane projects in Spain with a capacity of 907.4 gigawatt hours (GWh). three of these projects will begin construction in 2026, two located in Andalusia and one in Castile and León. With this transaction, Greening, which has been developing a commitment to biogas since 2023, seeks to consolidate its presence in the biomethane business. <u>Link</u> 07/05/2025.
- 23. <u>Biogas</u>: Spain. HoSt Energy Systems signed and agreed contracts with Five Bioenergy to deliver five of the largest biogas facilities in Spain. They will be located in Castilla Leon, Aragon, and Murcia regions, Spain. The plants will include biogas upgrading systems for biomethane production, close to 0.8 TWh annually, and CO2 liquefaction plants to recover and liquefy the CO2 from the anaerobic digestion process. All digesters are 40 meters in diameter and 8 meters high. The complete technology package will be delivered by HoSt, such as feeding systems, mixers, roofs, sensors, control system, local pipe and cable works, and heat exchangers. This last feature also ensures a stable degree in the digester tanks during the different climates in Spain. Link 09/05/2025.
- 24. <u>Biogas</u>: Spain. Naturgy teamed with ID Energy Group for the development of 20 new plants in Spain. The alliance adds up to an expected investment of more than 500 million euros. The projects included in the agreement will have an estimated production capacity of 1,600 GWh per year, which will allow the consumption equivalent of 320,000 households to be decarbonized and contribute significantly to the reduction of CO2 emissions. <u>Link</u> 26/05/2025.
- 25. <u>Biogas</u>: Sweden. St1 and St1 Biokraft delivered their own Swedish-produced liquefied biomethane to the maritime sector as Terntank's vessel Tern Ocean was bunkered at the Port of Gothenburg. St1 and St1 Biokraft are now aiming to become large-scale suppliers of biomethane for shipping, while the Port of Gothenburg continues to pursue its goal of becoming Scandinavia's primary bunkering hub for alternative fuels. <u>Link</u> 19/05/2025.
- 26. <u>Biogas</u>: Ukraine. MHP launched commercial production of liquefied biomethane (Bio-LNG) and has delivered the first Ukrainian Bio-LNG to a partner in the European Union. MHP has been systematically investing in bioenergy infrastructure for over a decade. The company operates one of Europe's largest biogas project portfolios, which is now complemented by Bio-LNG production. <u>Link</u> 14/05/2025.

- 27. <u>Biogas</u>: Ukraine. The Bioenergy Association of Ukraine says three more biogas plants are currently converting to biomethane production, in addition to the four currently producing and another three that will be online by the end of the year. One of these plants produces liquid natural gas and exports to Europe. By the end of 2025, total bio-methane production will reach 111 million cubic meters nationally. Export of biomethane to Europe has been held up by regulatory details on how the trade will actually work, but considering the EU market is short of biomethane, Ukraine has high hopes for supplying that increasing demand. Link 28/05/2025.
- 28. <u>Biogas</u>: United Kingdom. Cadent confirmed investment of more than £75million to modernise around 385km of its Northwest pipeline over the next 12 months (April 2025 to March 2026). Homes, schools, hospitals and other buildings use gas for heat and hot water, some of the region's biggest **industries** need it to power production processes, and it is the fuel of choice for rising numbers of HGV fleets. These upgrades also mean big environmental gains for the region, as it reduces methane emissions and enables a move to more renewable gases like biomethane. This is essential for a cleaner future the UK will need energy to come from a range of sources to meet demand and be sustainable. <u>Link</u> 12/05/2025.
- <u>Biogas</u>: United Kingdom. ReFuels N.V opened a new refuelling station at Livingston in West Lothian, Scotland. The public-access Bio-CNG station operated under the CNG Fuels brand will enable low-emission transport across large parts of Scotland. <u>Link</u> 29/05/2025.
- 30. <u>Biogas</u>: USA. Aemetis Biogas signed a \$27 million equipment agreement with Centuri Holdings, Inc. to build biogas cleanup systems for 15 dairy digesters. This arrangement will enable Aemetis Biogas to rapidly scale up the construction of dairy digesters to produce renewable natural gas (RNG) for a total of 50 dairies that have already been signed by Aemetis Biogas. This summer, 16 dairies are scheduled to be operating in the Aemetis Biogas Central Digester Project near Modesto, California, with 36 miles of biogas pipeline and a central biogas-to-RNG production facility already in operation delivering RNG into the PG&E utility gas pipeline. Link 15/05/2025.
- 31. <u>Biogas</u>: USA. The new RNG-to-freight transport story is among the most interesting in the world of fuels today and there is good reason to be bullish on its future. Unlike the wood-chip visions, the RNG-to-freight transport approach has the potential to emerge as a success story for cellulosic biofuels. <u>Link</u> 19/05/2025.

Biojet/SAF

- 32. <u>Biojet/SAF</u>: Australia Virgin Australia and Boeing released a report by Pollination on the challenges and opportunities of an International Book and Claim system for Sustainable Aviation Fuel (SAF) accounting. The report examines the challenges inherent in the current policy frameworks and the critical points of consideration to unlock alternative SAF accounting frameworks, such as Book and Claim. The Book and Claim system separates the environmental benefits of SAF from the physical fuel. This allows airlines to purchase and claim the environmental benefits of SAF without physically transporting and storing the fuel, reducing the logistics costs and avoiding the additional unnecessary carbon emissions. Link 28/05/2025.
- 33. <u>Biojet/SAF</u>: Australia. Qantas, Sydney Airport and Ampol, supported by Qantas' SAF Coalition partners, marked the largest ever commercial importation of Sustainable Aviation Fuel (SAF) into Australia, with nearly two million litres of unblended SAF arriving this week. The fuel was imported by Ampol from Malaysia to its Kurnell facility and is currently being blended with conventional aviation fuel before testing and certification so that it can be distributed

into the Sydney airport supply chain. It will then be used on flights departing from Sydney Airport over the coming weeks. <u>Link</u> 16/05/2025.

- 34. <u>Biojet/SAF</u>: Belgium. TotalEnergies announced a series of significant investments and operational updates at its Antwerp platform reinforcing the site's A first project, set to begin in 2025, will produce 50,000 tons of SAF annually using coprocessing technology, which integrates the simultaneous processing of hydrocarbons and biomass within existing refining units. position as a key pillar of the company's industrial operations in Europe. The company has entered into a tolling agreement with Air Liquide to secure 130 MW from a 200 MW electrolyser project, enabling the annual production of 15,000 tons of green hydrogen. Link 19/05/2025.
- 35. <u>Biojet/SAF</u>: Canada. Aduro Clean Technologies and Cleanfarms Inc. signed an MOU to collaborate on developing a commercial pathway for difficult-to-recycle agricultural plastics. They will assess the technical and commercial feasibility of Aduro's Hydrochemolytic Technology (HCT) as a solution for chemical recycling of on-farm plastic waste like silage film and bale wrap. Canada's agricultural sector generates an estimated 62,000 tonnes annually, much of which is not conventionally managed. Link 13/05/2025.
- 36. <u>Biojet/SAF</u>: China. The Chinese government granted Zhejiang Jiaao Enprotech a rare stategranted export license for sustainable aviation fuel, one of the first to be issued. More than \$1 billion has been invested in Chinese SAF production for both domestic consumption and potential exports. Zhejiang Jiaao Enprotech's new 372,400-ton facility that is 15% owned by bp will come into full production this year. The export license is already for exports during 2025. <u>Link</u> 07/05/2025.
- 37. <u>Biojet/SAF</u>: China. Topsoe signed an agreement with Zhongneng Yida to provide its HydroFlex technology and catalysts to produce SAF. Located at the city of Shijazhuang in the Shenze Economy Development Zone of Hebei province, the facility will produce 400,000 tons of SAF annually, utilising used cooking oil (UCO) for the feedstock. When in full operation, Topsoe's technology will expectedly enable an annual emission avoidance of approximately 930,000 tons of CO2e. Link 19/05/2025.
- 38. <u>Biojet/SAF</u>: Singapore. Singapore Airlines (SIA) Group signed agreements with Neste and World Energy to acquire Sustainable Aviation Fuel (SAF) and SAF certificates. The first transaction saw the Group acquire 1,000 tons of Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)-eligible neat SAF, sourced from renewable fuel producer Neste. The SAF was produced at Neste's Singapore refinery, blended locally and uplifted at Singapore Changi Airport. Link 16/05/2025.
- 39. <u>Biojet/SAF</u>: Spain. Decal requested an extension of its concession in the port of Barcelona to install a new cargo arm. The move responds to the company's willingness to manage biofuels and renewable fuels at its facilities. an extension of 464,7 square meters is requested to the port authority, so that the arm can be installed between the storage infrastructures of Decal and the 32E mooring of the dock of the Energia. The new arm will be dedicated to the loading and unloading of renewable fuel for the aviation or SAF Link 26/05/2025
- 40. <u>Biojet/SAF</u>: Thailand Bangchak Group has started its Sustainable Aviation Fuel (SAF) Production Unit at the Bangchak Phra Khanong Refinery, marking Thailand's first dedicated facility for producing 100% Neat SAF. Operated by BSGF Company Limited, a Bangchak Group affiliate. This is Thailand's first fully integrated standalone Neat SAF production facility. <u>Link</u> 01/05/2025.
- 41. <u>Biojet/SAF</u>: The Netherlands. Neste started producing sustainable aviation fuel (SAF) at its renewable's refinery in Rotterdam, the Netherlands. In addition to the recent modifications to the refinery, Neste continues its strategic growth investment project in Rotterdam which

will more than double the company's production capacity at the Rotterdam refinery to 2.7 million tons of renewable products annually, making the refinery the world's largest facility producing renewable diesel and SAF. This expansion, scheduled to be completed in 2027, will increase Neste's total global annual renewable fuels production capacity to 6.8 million tons with Neste's total annual SAF production capability accounting for 2.2 million tons. In addition to the Rotterdam refinery, Neste has SAF production capabilities at its refineries in Singapore and Porvoo, Finland. Link 07/05/2025.

- 42. Biojet/SAF: USA. 4AIR has officially verified more than 100 locations around the world carrying Sustainable Aviation Fuel (SAF) on its interactive "Where to Find SAF" map https://www.4air.aero/saf-map. The SAF map, powered by 4AIR and now also available on Aviation International News (AIN) Online, serves as a critical resource for operators seeking to locate SAF worldwide. As SAF becomes increasingly available, from a diversifying range of feedstocks and in different blends, documenting its use has never been more important. Link 21/05/2025.
- 43. <u>Biojet/SAF</u>: USA. Neste and FedEx, agreed on the supply of 8,800 metric tons of blended Neste MY Sustainable Aviation Fuel to FedEx at Los Angeles International Airport (LAX). It is the largest SAF purchase by a U.S. cargo airline at LAX to-date. The fuel blend purchase will account for roughly a fifth of all jet fuel consumed annually by FedEx at LAX. <u>Link</u> 27/05/2025.
- 44. <u>Biojet/SAF</u>: USA. Sustainable aviation fuel (SAF) production is growing in the United States as new capacity comes online. U.S. production of Other Biofuels, the category the Energy Information Agency uses to capture SAF in its Petroleum Supply Monthly, approximately doubled from December 2024 to February 2025. <u>Link</u> 08/05/2025.
- 45. <u>Biojet/SAF</u>: USA. Calumet Inc announced sustainable aviation fuel (SAF) capacity at its Montana Renewables biorefinery is expected to reach 120 MMgy to 150 MMgy sooner than previously reported for a fraction of the originally expected cost. Montana Renewables, an unrestricted subsidiary of Calumet, in October 2024 was awarded a conditional commitment for a \$1.44 billion U.S. Department of Energy loan guarantee to support its proposed MaxSAF initiative, which aims to increase annual production at the biorefinery to 330 MMgy, including 300 MMgy of SAF and 30 MMgy of renewable diesel. <u>Link</u> 15/05/2025.

Biomaterials

- 46. <u>Biomaterials</u>: Brazil. Braskem, and Fites, one of the world's largest nonwoven manufacturers and the first company to produce Spun bond nonwovens with I'm green bio-based polyethylene, to announce the use of Braskem's I'm gerent bio-based high-density polyethylene (HDPE) designed specifically for nonwoven applications. <u>Link</u> 09/05/2025.
- 47. <u>Biomaterials</u>: Germany. The Leibniz Innovation Farm for Sustainable Bioeconomy (Inno Hof[®]) is a modular research infrastructure. Its components cover the bioeconomic value chains from primary agricultural production, including upstream and downstream industries, to waste recycling. It offers the scientific community in Germany and abroad a wide range of opportunities to work co-creatively with stakeholders from industry and practice to identify pressing issues in the bioeconomy, develop innovative technical and methodological solutions, implement and test new solutions in existing systems, establish new value chains and transfer the resulting know-how. Link 29/05/2025.
- 48. <u>Biomaterials</u>: Sweden. Lignin Industries AB has raised \$4.36 million in fresh funding as the company accelerates its commercialization and scaleup plans. Lignin Industries created Renal, a patented bio-based thermoplastic which is derived from lignin. The firm highlighted

that Renal is ending the plastic industry's reliance on fossil fuel-based plastics. Link 20/05/2025.

- 49. **Biomaterials**: USA. Bio MADE announced an agreement with Lygus to acquire Lygos' pilotscale biomanufacturing facility in Hayward, California, and operate it as a multi-user national asset. This facility, aiming to open by early 2026, will serve as the second site in BioMed's network aimed at expanding domestic bio industrial manufacturing capabilities and strengthening supply chains. Link 06/05/2025.
- 50. <u>Biomaterials</u>: USA. Invent Wood, creator of revolutionary SUPERWOOD, announced it has secured \$15 million in the first close of its Series A funding round. This investment marks a significant milestone as the company prepares to begin shipments from its first commercial manufacturing facility in Frederick, Maryland, in the third quarter of 2025. Invent Wood has now successfully secured more than \$50 million in total capital, which supported the construction of its first production facility and positions the company to scale rapidly. <u>Link</u> 26/05/2025.

Biotechnology

51. <u>Biotechnology</u>: Brazil. Civita announced it has successfully increased the bioprocess productivity of its proprietary Ferm Oil producing microorganism ahead of schedule, achieving this key performance milestone at least six months earlier than projected. This improvement—achieved using crude glycerol from biodiesel industries—significantly strengthens the techno-economics and scalability of Farmwork's™, Cemvita's commercial biomanufacturing plant. Link 26/05/2025.

Cement

52. <u>Cement</u>: Finland. Eleatic, and Carbonaide, a leader in carbon dioxide utilization and storage solutions for the building industry, announced commercial cooperation to become the first to bring production scale CO₂ curing systems for precast concrete and infrastructure product production around the world. Carbonaide's award-winning technology binds carbon dioxide into precast concrete using an automated system at normal air pressure. The technology has been used commercially in Finland since early 2024, and it has been shown to halve the CO₂ emissions of traditional Portland cement concrete by reducing the required cement content up to 20 percent, while reducing curing time up to 25 percent, and mineralizing CO₂ into concrete. Link 21/05/2025.

CO2 removal

53. <u>CO2 removal</u>: Canada. Svante Technologies Inc. (Svante) announced that its joint carbon capture and storage project with Mercer International Inc. (Mercer) has advanced to the Front-end Engineering and Design Phase 2 (FEL-2). This phase involves engineering, cost estimation, and risk analysis to evaluate the project's commercial viability. Mercer is a global producer of sustainably sourced forest products, including pulp, lumber, mass timber, biomass-based green energy, and extractives. The carbon capture project targets biogenic CO2 emissions from Mercer's Peace River pulp mill, where the biomass (fibre) is sourced from sustainably managed forests. Svante's solution is its structured sorbent filter system, which uses solid materials coated with metal-organic frameworks (MOFs) – nanomaterials specifically designed to selectively capture CO₂ molecules. These filters represent a meaningful evolution over earlier carbon capture systems, offering reduced energy requirements and broader industrial applicability. Link 14/05/2025.

54. <u>CO2 removal</u>: United Kingdom. Mission Zero Technologies opened a direct air capture plant in Norfolk, the world's first fully integrated DAC-to-building materials production demonstration. This marks the completion of the second of our three systems, following the launch of the UK's first commercial DAC plant in late 2023, and the beginning of our deployment alongside Deep Sky, in Alberta, Canada, in 2024. In partnership with O.C.O Technology (O.C.O) and the UK Department of Energy Security and Net Zero (DESNZ), our DAC solution is capable of recovering up to 250 tonnes of CO2 per year from the atmosphere for direct use in O.C.O's Manufactured Limestone, which stores the CO2 in a stable form for thousands of years. Once tested, the resulting carbon-negative limestone can then be used widely to decarbonise essential building products, including bricks, concrete blocks, tiles, and slabs. Link 14/05/2025.

E-fuels

- 55. <u>e-fuels</u>: Denmark. Aalborg Foraying, Reno-Nord and Copenhagen Infrastructure Partners are collaborating in building one of the world's first commercial Power-to-X plants. The project is set to commence in 2028 and will accommodate an electrolysis plant of between 300-400MW. The coming facility will produce hydrogen from the electrolysis plant, following which CO2 from Reno-Nord will be used to convert it to green methanol that can be used as heavy transport fuel. The plant will recycle 180,000 tonnes of waste-based CO2 annually from waste company Reno-Nord in the production of the green methanol. In total, the plant will be able to produce 130,000 tonnes of methanol per year. Link 14/05/2025.
- 56. <u>e-fuels</u>: Germany. INERATEC produced the first litters of synthetic e-fuels and e-waxes at its pioneering plant in Frankfurt. The first INERATEC system on a commercial scale, the largest power-to-liquid plant (PTLA) of its kind in Europe. The INERATEC plant is designed for the production of up to 2,500 metric tons of sustainable e-fuels and e-wagons per year. It is located in an industrial park, uses renewable hydrogen and biogenic CO2 and produces synthetic hydrocarbons that are processed into drop-in fuels, waxes and chemicals. Link 21/05/2025.
- 57. <u>e-fuels</u>: Spain. Magnon, a renewable energy company subsidiary of the Ence group, Power2X and ErasmoPower2X signed an agreement to explore the development of an e-methanol plant at Magnon's industrial complex in Puertollano, Ciudad Real, Spain. Around 380,000 tons of biogenic CO2 will be captured each year, which is equivalent to the amount of carbon captured annually by around 15 million trees, enabling, amongst others, the annual production of 200,000 tons of synthetic methanol. This non-fossil feedstock enables the decarbonization of hard-to-electrify sectors such as aviation, shipping and chemicals. Link 27/05/2025.
- 58. <u>e-fuels</u>: Spain. RIC Energy and Siemens signed a Memorandum of Understanding (MoU) to jointly develop innovative projects in the fields of renewable hydrogen, green ammonia, and e-fuels in Spain. The collaboration will especially boost the sustainable aviation fuel (e-SAF) plant that RIC Energy is promoting in Cubillos del Sil (León), known as the Compostela Green project, which was recently recognized by IDAE as the top-rated initiative under the Hydrogen Valleys program. Link 29/05/2025.
- 59. <u>e-fuels</u>: Switzerland. The Lake Lucerne Navigation Company (SGV) AG used solar fuel from Snelson. The steamboat Gallia was fuelled with solar diesel from Synhelion's industrial scale plant DAWN. The fuels produced at DAWN will now be gradually introduced into other means of transport to showcase their potential in driving the transition to a net-zero transportation sector. The world's first motorcycle ride powered by Synhelion's solar gasoline already took place recently. At the same time, the company is working intensively to expand

its production capacities in order to supply commercially relevant quantities of renewable fuels. Link 27/05/2025.

E-methanol

- 60. <u>E-methanol</u>: Denmark. European Energy's hydrogen-based e-methanol production plant in Denmark was officially opened and is ready to begin delivering fuel. Located in Aabenraa, the Kassø facility features a 52MW Siemens Energy electrolyser that produces approximately 8,000 tonnes of Renewable Fuels of Non-Biological Origin (RFNBO)-certified green hydrogen. The plant produces 42,000 tonnes of e-methanol annually by using green hydrogen, generated from solar power at the adjacent 301MW solar park, and combining it with biogenic CO2 captured from the nearby Tønder biogas facility. <u>Link</u> 14/05/2025.
- 61. <u>E-methanol</u>: USA. Worley entered a collaboration with decarbonization technology expert Topsoe to accelerate standardized, modular e-Methanol production plants in the US Midwest, USA. The partnership will support the shipping industry transition to low carbon fuels while addressing growing demand, with each facility expected to produce up to 600 tonnes of e-Methanol per day. Topsoe will provide the methanol synthesis technology, while Worley will develop the green hydrogen facilities, handling electrolyser procurement and overall integration. By adopting a standardized, modular approach this collaboration will fast track the rollout of e-Methanol plants enabling efficient production. Link 05/05/2025.

Ethanol

- 62. <u>Ethanol</u>. United Kingdom. Vivergo notified its wheat suppliers about the risks of shutting down in response to the US-UK trade deal recently agreed to by the prime minister and President Trump. The company plans to already wind back purchases to meet only its contractual obligations in the face of the removal of the current 19% tariff on ethanol imports that it says, together with other existing regulatory failures, will make the business unviable. Link 29/05/2025.
- 63. <u>Ethanol</u>: United Kingdom. Associated British Foods is contemplating mothballing again its ethanol Vivergo fuels site in Saltend, near Hull. The ethanol plant recently cut volumes due to market conditions which has now worsened and risks shutting down the plant all together, along with the possible loss of 150 jobs. <u>Link</u> 01/05/2025.

Feedstock

- 64. <u>Feedstock</u>: China. Tariffs are keeping Chinese UCO products out of the US, the used cooking oil that had been headed to that market, the largest market in the world, would instead be diverted to the European Union. Last year, the US imported 3 million metric tons of Chinese UCO worth \$2.64 billion. With 700,000 metric tons in Sustainable Aviation Fuel installed capacity opening in Thailand, Malaysia and Japan this year, those markets are expected to quickly open up and divert some of that excess supply from Europe. <u>Link</u> 07/05/2025.
- 65. **Feedstock**: Europe. European rapeseed oil market is one of the largest vegetable oil markets in the world, playing a crucial role in food, feed and bioenergy. Vegetable oil-based derivatives volumes have been rising, in part due to the growing importance of bioenergy markets such as biomass-based diesel and ethanol used in transportation, as well as biogas used for heating and electricity generation. European rapeseed oil has been gaining ground amid rising demand for road transport biodiesel, with demand particularly high during the colder months due to its superior performance compared to other feedstocks. Link 19/05/2025.

- 66. <u>Feedstock</u>: USA. Ash Creek Renewables a platform dedicated to developing renewable fuel feedstock solutions and a portfolio company of Tailwater Capital LLC recently announced it has secured exclusive licensing rights from Montana State University for a new high-performance Camelina seed variety. With the new seed license, Ash Creek is expanding its Montana-based growing operations in 2025 following its success in 2024. The company has also expanded internationally, launching Camelina planting efforts in Argentina with its partner Elementa Foods while exploring additional low-carbon feedstock opportunities. Ash Creek is also expanding its Camelina processing operations and establishing an office in Montana through a strategic collaboration with Ag Processing Solutions, Inc. This facility will support increased production of Camelina meal and oil, accelerating Ash Creek's ability to deliver high-quality feedstock for biofuels and sustainable bioplastics. Link 09/05/2025.
- 67. <u>Feedstock</u>: USA. Bartlett plans to acquire agribusiness Ceres Global Ag Corp. in a deal valued at approximately \$140.1 million. US-based Ceres Global is an international agricultural, energy and industrial products merchandising and supply chain company that operates 10 locations in Saskatchewan, Manitoba, and Minnesota. The facilities have an aggregate grain and oilseed storage capacity of about 29 million bushels. Ceres also owns membership interests in three agricultural joint ventures in Minnesota and North Dakota that have a combined grain and oilseed storage capacity of approximately 16 million bushels. Under the terms of the agreement, a newly formed entity controlled by Bartlett Grain is slated to buy all of the issued and outstanding common shares of Ceres Global. Link 29/05/2025.
- 68. Feedstock: USA. In Iowa, according to a new economic contribution study, Iowa biofuels production has begun to reflect stagnant corn demand throughout the agriculture economy. As farmers continue to produce more and domestic demand has levelled off, we saw commodity prices fall. That means the indirect impacts of converting corn and soybeans into renewable fuels also fell. Iowa farmers need growing markets. In 2024, Iowa ethanol plants produced 4.6 billion gallons of ethanol and continues to lead the nation in ethanol production. Iowa biodiesel facilities produced 353 million gallons, up from 350 million gallons in 2023. Link 09/05/2025.

Hydrogen

- 69. <u>Hydrogen</u>: Australia. Automotive majors BMW, Hyundai, and Toyota have launched a new coalition focused on accelerating hydrogen mobility deployments in Australia. The Hydrogen Transport Forum (HTF) will aim to identify opportunities, align fleet and infrastructure deployment, and advocate for government support. Its launch comes after the Australian government withdrew AUD \$75m (\$48m) in funding allocated to a scheme to support deploying hydrogen-powered trucks and refuelling stations. <u>Link</u> 16/05/2025.
- 70. <u>Hydrogen</u>: Australia. The Western Australian government has allocated Global energy consultancy Xodus land to develop a green hydrogen and ammonia production project, which will be operated under Warradarge Energy's banner. Located at Xodus Group's Oakajee Strategic Industrial Area (SIA) site, the project is set to be executed in two key phases and could produce up to 800,000 tonnes per annum (ktpa) of green ammonia. It will be powered by a 1GW wind and 500MW solar renewable energy project at Warradarge, with behind-the-meter access providing a competitively priced, high-utilisation power supply. <u>Link</u> 28/05/2025.
- 71. <u>Hydrogen</u>: Austria. Austrian state-owned oil and gas firm OMV made a final investment decision (FID) on a 140MW green hydrogen plant to supply its refinery near Vienna but warns it will be subject to securing EU or national subsidies. The plant in Bruck an der Leitha

is expected to produce 23,000 tonnes of green hydrogen per year and would replace volumes of fossil-based hydrogen used at its Schwechat refinery. Link 30/05/2025.

- 72. <u>Hydrogen</u>: Austria. OMV commissioned a 10MW green hydrogen plant at its Schwechat refinery near Vienna, which will play a role in supporting low-carbon chemical production. Backed by around €25m (\$28m) in investment, the facility can produce up to 1,500 tonnes of green hydrogen annually, making it the largest of its kind currently operating in Austria. OMV will operate a 10MW PEM electrolyser powered by electricity from wind, hydro, and solar sources. The state-owned oil and gas company also confirmed the plant is certified for producing renewable fuels of non-biological origin (RFNBO). Link. 01/05/2025
- 73. <u>Hydrogen</u>: Chile. TotalEnergies' hydrogen subsidiary started the permitting process for a \$16bn green hydrogen plant in Chile. Planned for the San Gregorio commune, the project intends to produce up to 1.9 million tonnes of green ammonia per year on a 72,000-hectare site, primarily for export. 4,000 hectares would be dedicated for infrastructure such as wind turbines, electrolysis plants, production and storage units, electrical infrastructure and a port terminal with a desalination plant. <u>Link</u> 07/05/2025.
- 74. <u>Hydrogen</u>: China. China oil and gas major Sinopec unveiled a \$690m venture capital fund to support early-stage hydrogen investments and technologies. The announcement provides further evidence of China's pre-eminent position in hydrogen and follows \$321m of funding from the Chinese finance ministry for regional hydrogen fuel cell vehicle demonstration projects, taking overall funding to \$700m in the last three years. Sinopec recently inaugurated the second phase of its Guangzhou Petrochemical Hydrogen Fuel Cell Supply Centre, raising hydrogen production capacity to 15 tonnes daily. Link 30/05/2025.
- 75. <u>Hydrogen</u>: China. Envision Energy's hydrogen-based ammonia plant in Chifeng, China, was certified by Bureau Veritas and secured an offtake deal with Marubeni Corporation. The 500MW green hydrogen and ammonia plant is understood to be one of the world's largest, set to produce up to 300,000 tonnes per year. Japanese trading firm Marubeni has reportedly agreed to offtake an undisclosed amount of ammonia from the Chinese plant, potentially for strategic, economic, or decarbonisation-related operations. <u>Link</u> 23/05/2025.
- 76. <u>Hydrogen</u>: Estonia. Estonian-based Elcogen is partnering with chemical plant engineer Casale to explore deploying its solid oxide electrolyser (SOEC) technology in green hydrogen-based ammonia plants. SOEC technology can use excess heat from industrial processes like ammonia to dramatically improve their hydrogen production efficiency without the use of precious metals. However, the technology remains relatively immature compared to PEM and alkaline electrolysis, with no larger-scale installations operating yet. <u>Link</u> 08/05/2025.
- 77. <u>Hydrogen</u>: European Union. The European Commission selected 15 green hydrogen projects for nearly €1bn public funding following the second European Hydrogen Bank auction. Eight of the projects are in Spain, three in Norway, and two in Germany, with one apiece in Finland and the Netherlands. The projects funded by the Innovation Fund, sourced from the EU Emissions Trading System (ETS) are expected to produce nearly 2.2 million tonnes of renewable hydrogen over 10 years. Link 21/05/2025.
- 78. <u>Hydrogen</u>: Finland. Energiequelle received planning consent for its Oulu Green Hydrogen Park project. It is the company's first public hydrogen project in Finland and is to be developed in the city of Oulu, 600 kilometres north of Helsinki. The first phase of the project includes the construction of a hydrogen production plant with a maximum capacity of five MW and a hydrogen refuelling station for buses and heavy commercial vehicles. In the next phase, the capacity of the hydrogen production plant would be increased by to 10-50 MW and hydrogen exports via the planned hydrogen pipeline and the port of Oulu could be an

option, if the needed infrastructure is available. In the third phase, production would be further increased to an additional capacity of 100-500 MW. <u>Link</u> 01/05/2025.

- 79. <u>Hydrogen</u>: France. Lhyfe has secured €53m (\$60m) in debt financing to develop a portfolio of green hydrogen production sites in France and Germany. The financed asset portfolio includes two operational sites in Buléon, France, and Schwäbisch Gmünd, Germany, plus two under construction in Le Cheylas (Isère) and Somme, representing a combined electrolysis capacity of 30MW. The deal completes Lhyfe's existing funding package, which already includes equity and €19m in grants. Part of the new funds will reimburse Lhyfe for capital it has already spent on developing the four hydrogen sites, while the rest will fund the remaining developments. Link 01/05/2025.
- 80. <u>Hydrogen</u>: Germany. EnBW Energie Baden-Wuerttemberg AG (ETR:EBK) intends to build a hydrogen-capable gas and steam turbine plant in Karlsruhe, Germany, with 850 MW of electrical capacity and 220 MW of district heating output. EnBW commissioned in April a hydrogen-ready gas turbine power plant with a capacity to supply 124 MW of electricity and 370 MW of thermal energy in Stuttgart. The company is also converting its coal-fired sites in Altbach/Deizisau and Heilbronn into hydrogen-ready gas power facilities. <u>Link</u> 05/05/2025.
- 81. <u>Hydrogen</u>: Germany. Hy2gen AG has raised EUR 47 million (USD 53.4m) in a funding round to advance its gigawatt-level pipeline of projects in Europe, Canada and South America towards final investment decision (FID) and ready-to-build phases. Active in five countries, Wiesbaden-based Hy2gen designs, builds and operates green hydrogen, green ammonia, e-SAF, e-methane and e-methanol production plants using Power-to-X processes. Its current project pipeline comprises an electrolysis capacity of 3.4 GW in planning and construction, and a further 15 GW of electrolysis capacity in development. Link 05/05/2025.
- 82. <u>Hydrogen</u>: Germany. Uniper and Thyssenkrupp Uhde agreed to jointly develop an industrial-scale ammonia-to-hydrogen cracker plant in Germany with a 28 tonne-per-day capacity. Located at Uniper's Gelsenkirchen-Scholven power plant, it will serve as the basis for the planned hydrogen import terminal in Wilhelmshaven being developed by TES and Uniper. With higher energy density and easier transport than hydrogen, ammonia is an ideal carrier. Existing global trade networks can be used to ship low-carbon ammonia, which can then be cracked back into hydrogen at its destination for climate-friendly use. Link 28/05/2025.
- 83. <u>Hydrogen</u>: India. Ceres Power begun producing hydrogen at Shell's technology centre in Bangalore, India, aiming to demonstrate enhanced efficiencies through its solid oxide electrolyser (SOEC) technology. Ceres and Shell have been working to deploy a 1MW electrolyser with the potential to produce hydrogen at 600kg per day at full capacity, with an electrolyser module efficiency of 37kWh/kg of hydrogen. <u>Link</u> 21/05/2025.
- 84. <u>Hydrogen</u>: Norway. Norwegian hydrogen technology company Hystar secured \$36 million in Series C funding to support its expansion and scale-up plans. The funding round includes both new and returning investors from a range of industries. The funding will support Hystar's plan to launch a 1.5 gigawatt (GW) automated electrolyser production line at its factory in Høvik, Norway by 2027. The company aims to triple its capacity to 4.5 GW by 2030. In addition to the private funding, Hystar recently received a €26 million (\$28.9 million) grant from the EU Innovation Fund to help finance the expansion. The company claims its proton exchange membrane (PEM) electrolysers, which use membranes based on fuel cell technology, are 90% thinner than standard alternatives. This, Hystar says, improves efficiency and supports scalable mass production, helping to lower the overall cost of hydrogen. Link 15/05/2025".
- 85. <u>Hydrogen</u>: Oman. Oman state-owned natural gas network operator OQGN has confirmed a term sheet with Belgium's Fluxys to jointly develop a hydrogen pipeline network in the

Sultanate. OQGN has plans to develop 300-400km of hydrogen pipeline to serve its developing green hydrogen production capacity, as part of wider intentions in the Gulf state to set up a nationwide 2,000km network. Link 20/05/2025.

- 86. <u>Hydrogen</u>: The Netherlands. The Port of Amsterdam and the government of Newfoundland and Labrador have agreed to address large-scale hydrogen trade routes and identify regulatory and market barriers. Under a Memorandum of Understanding (MOU), they aim to establish a transatlantic green hydrogen corridor between Canada and the European port. The Port of Amsterdam highlighted Newfoundland and Labrador as an ideal location for large-scale hydrogen production, with consistent wind, abundant freshwater, available land and ice-free deep-water ports. For example, Abraxas and EDF Group unveiled plans to develop a 3GW Power-to-X project in the region last year. The plant will be capable of producing 200,000 tonnes of green hydrogen annually. Link 26/05/2025.
- 87. <u>Hydrogen</u>: United Kingdom. Uniper has selected ITM Power to supply 120MW of electrolysers for its UK green hydrogen plant, which was shortlisted for government funding. The German energy major intends to use six of ITM's 20MW Poseidon process modules at its Humber H2ub project at its existing Killingholme site, with plans to supply hydrogen to Phillips 66's Humber refinery. Uniper signed a collaboration agreement with Phillips 66 in 2024 to explore supplying green hydrogen to the US petroleum firm's Humber refinery to replace some refinery fuel gas in fired heaters. Last month, the Uniper project was shortlisted by the UK government for funding through its second hydrogen allocation round (HAR2) in the form of 15-year contracts for difference. Link 09/05/2025.
- 88. <u>Hydrogen</u>: USA. Cleveland-Cliffs acknowledged that the company may shift away from hydrogen and back to more fossil fuels at its steel decarbonisation projects, in response to changing policies under the Trump Administration. The company signalled a strategic shift for the North American steelmaker, specifically at its Middletown Works site, which successfully trialled hydrogen injection in its blast furnace in 2023. <u>Link</u>. 12/05/2025
- 89. <u>Hydrogen</u>: USA. Hydrogen's optimists and promoters still hope its role will expand beyond refining and ammonia to sectors such as steelmaking, heavy transport and energy storage, but it faces huge challenges, including high costs, infrastructure needs and uncertain policy support. For now, its best prospects may be in hard-to-abate industries, long-haul transport and seasonal storage, where it offers the best combination of cost and sustainability, although widespread adoption remains quite difficult due to economic and technical hurdles many made even more formidable by the Trump administration's shift away from many clean-energy initiatives, including hydrogen. Link 19/05/2025.
- 90. <u>Hydrogen</u>: USA. Infinium selected Electric Hydrogen to supply its 100MW PEM electrolyser plant for its flagship project in Texas, a facility expected to be one of the largest e-fuel plants in North America. Under the plans, the electrolyser maker's plant will be used by Infinium at its Project Roadrunner, which is expected to produce around 7.5 million gallons of e-fuels per year from green hydrogen and CO2. Roadrunner, which has been backed by a \$75m equity commitment from Breakthrough Energy Catalyst and over \$200m from Brookfield Asset Management, is expected to start up in 2026. Link 20/05/2025.
- 91. <u>Hydrogen</u>: USA. Plug Power is looking to state-level funding and betting big on Europe as uncertainty over US hydrogen subsidies clouds the outlook for federal support. And with proposals to remove the lucrative up to \$3/kg 45V clean hydrogen production tax credit from the Inflation Reduction Act (IRA), Marsh said the firm was engaged in lobbying efforts. <u>Link</u> 14/05/2025.
- 92. <u>Hydrogen</u>: USA. The US Government (Trump Administration) is proposing a \$15bn funding cut to the legislative package that includes \$8bn for the seven regional clean hydrogen hubs

(H2Hubs), though it remains unclear which programmes will be affected. Last Friday (2 May), the Trump administration published its 2026 budget proposal, with plans to cut around \$163bn off the total federal bill. Link 07/05/2025".

93. <u>Hydrogen</u>: USA. United Airlines made an investment in hydrogen-based sustainable aviation fuel (SAF) start-up Twelve as part of its \$83m Series C funding round. Once operational, the Moses Lake plant could produce up to 50,000 gallons of SAF per year. It will be produced by combing captured CO2 with hydrogen to create synthetic hydrocarbons, which are refined into jet fuel. Additionally, Twelve has also secured a 14-year agreement to supply 260 million gallons of SAF to the International Airlines Group (IAG), which includes airlines such as British Airways and Iberia. Link. 12/05/2025

Marine fuels

- 94. <u>Marine fuels</u>: China. China Water Transport News reports Sinopec's China Marine Bunker Supply Company delivered 4,200 tons of bonded B24 marine biofuel to the Maersk container vessel Kirsten Maersk at the Ningbo-Zhoushan Port, setting a new domestic record for the largest single biofuel bunkering. The B24 biofuel, consisting of 24% biodiesel made from ISCC-certified waste cooking oil and 76% low-sulphur fuel oil, is expected to cut carbon emissions by around 20%. <u>Link</u> 09/05/2025.
- 95. <u>Marine fuels</u>: China. Sinopec delivered to 4,200 mt of B24 bio bunker fuel to "KIRSTEN MAERSK" at Ningbo Beilun Third Container Terminal, the first in East China. The biofuel component of the biofuel blend was ISCC compliant. The company plans to offer biofuel oil, LNG, and methanol as alternative bunkering fuel for vessels in the region. <u>Link</u> 16/05/2025.
- 96. <u>Marine fuels</u>: Hong Gong. Orient Overseas Container Line has ordered \$3 billion worth of 14 methanol-fuelled containerships at two shipyards in China. The 18,500 TEU vessels average \$220 million each and will be built at Dalian COSCO KHI Ship Engineering (DACKS) and Nantong COSCO KHI Ship Engineering (NACKS). They are expected for delivery between the third quarter of 2028 and the third quarter of 2029. The same shipbuilders were contracted in 2022 to build seven 24,000 TEU methanol dual-fuel units. <u>Link</u> 02/05/2025.
- Marine fuels: Ireland. Circle K begun to supply Irish Ferries with HVO to the high-speed catamaran Dublin Swift for the Dublin-Holyhead route. The aim to boost HVO use to 100% on all four of the catamaran's engines over the next few months to reduce carbon emissions by 90%. <u>Link</u> 05/05/2025.
- 98. <u>Marine fuels</u>: South Korea HD Hyundai and A.P. Moller Maersk (Maersk) announced the signing of a Memorandum of Understanding (MOU) to establish a collaboration on decarbonization solutions for vessels, while HD Hyundai plans to expand the use of Maersk's integrated logistics services across its affiliates. Initially, the two companies will conduct a sixmonth trial applying Avikus' HiNAS, an advanced navigation solution for energy-efficient vessel operations, and HD Hyundai Marine Solution's OCEANWISE route optimization on a Maersk container vessel built and delivered by HD Hyundai Heavy Industries. The purpose of this trial is to validate the fuel-saving and greenhouse gas emission-reduction impacts of optimized navigation systems. They further plan to explore cooperation in the field of ship retrofitting for decarbonization, including optimizing engine efficiency, increasing container ship cargo capacity, and retrofitting dual-fuel propulsion systems. Link 08/05/2025.
- 99. <u>Marine fuels</u>: South Korea. South Korea and the United States agreed to establish a zerocarbon shipping corridor between Busan–Ulsan and Seattle–Tacoma by 2027, backed by a bilateral roadmap and multilateral support from port authorities, shipping lines, and classification societies aiming to deploy green methanol- and ammonia-fuelled container vessels across the Pacific. The corridor will connect Busan and Ulsan ports with their U.S.

counterparts using zero-emission ships and jointly developed safety standards. Participating organizations include Busan and Ulsan Port Authorities, Korean Register, HMM, the Northwest Seaport Alliance, and the ports of Seattle and Tacoma. A separate pre-feasibility study was also announced for a Korea–Australia green corridor pilot set for 2029. Link 02/05/2025.

- 100. <u>Marine fuels</u>: The Netherlands. AM Green and the Port of Rotterdam Authority signed a MoU to focus on building a green energy supply chain between India and Northwestern Europe via Rotterdam, Europe's first energy port and a key hydrogen carriers entry point. This includes the supply of bunkering fuels and Sustainable Aviation Fuels (SAFs) and analysing requirements for the development of terminal infrastructure in Rotterdam and along the supply chain to Northwestern Europe. Link 28/07/2025.
- 101. <u>Marine fuels</u>: The Netherlands. Hapag-Lloyd reached significant milestones in its efforts to decarbonize the shipping industry under the Zero Emission Maritime Buyers Alliance (ZEMBA) initiative. The company successfully completed its bio-methane bunkering operations, marking a major step toward the company's goal of achieving net-zero fleet operations by 2045. Hapag-Lloyd's Hanoi Express vessel successfully bunkered 1,800 metric tons of bio-methane in Rotterdam, generating the first Sustainable Marine Fuel Certificates (SMFc) under the ZEMBA initiative. Link 23/05/2025.
- 102. <u>Marine fuels</u>: UAE. Vitol Bunkers is to offer customers FuelEU compliant biofuel co-processed bunkering fuel. The fuel is being produced by Vitol's refinery in Fujairah a 100kbd refinery producing finished grade bunker fuel and will, in due course, be marketed in multiple locations by Vitol Bunkers. The co-processed fuel, which conforms to RMG380 VLSFO grade, is the same chemical composition and quality as conventional fuel. Link 01/05/2025.

Market development

103. <u>Market Development</u> United Kingdom. Pioneer Point Partners announced the final close of its second sustainable institutional fund, Pioneer Infrastructure Partners II SCSp ("Fund II"), having raised over €1.1 billion in commitments. This significantly exceeded the initial €800 million target and reached the increased hard cap, a notable achievement raised in just over twelve months. The fund continues Pioneer's strategy of applying a thematic, research-driven approach to invest in energy transition and environment sectors in Western Europe. Since July 2024, Fund II has completed two investments: Yeager Energy, a Dutch geothermal platform, and OG Clean Fuels, a European clean fuel filling station platform, with a third investment planned for Q2 2025. Fund II is classified as an Article 9 Product under SFDR. Link 06/05/2025.

104. <u>Market development</u>: United Kingdom. Argus launched a new freight service which offers global pricing and market intelligence for biofuels, associated feedstocks and chemicals. The Argus Specialised Freight service provides over 180 freight prices for biofuels and their feedstocks, as well as for chemicals such as methanol, glycols and aromatics, with other specialised market prices to follow in the coming months. Link 21/05/2025.

105. Market development: USA. A new study commissioned by Clean Fuels Alliance America showed the U.S. biomass-based diesel industry generated \$42.4 billion in economic activity in 2024, supported 107,400 jobs and paid \$6 billion in annual wages. The study, "Economic Impact of Biodiesel on the U.S. Economy 2024," was conducted by GlobalData using actual 2024 data, including 5 billion gallons of domestic production. It evaluates direct, indirect and induced economic impacts and jobs across the entire value chain, from raw-material production, collection and processing to fuel production and distribution. Link 07/05/2025.

106. <u>Market development</u>: USA. The American Alliance for Biomanufacturing (AAB), a new coalition of industry leaders committed to advancing U.S. leadership in biomanufacturing

innovation, competitiveness, and resilience was launched. The Alliance brings together essential stakeholders from across the industrial biomanufacturing ecosystem to address critical challenges and opportunities in a rapidly evolving sector that is increasingly vital to American economic and national security, and public health. <u>Link</u> 26/05/2025.

107. <u>Market Development</u>: USA. US energy infrastructure and fuel distribution company Sunoco LP (NYSE:SUN) has struck a cash-and-equity deal worth about USD 9.1 billion (EUR 8bn) to take over Parkland Corporation (TSE:PKI), a Canadian convenience retailer with a dedicated low-carbon fuel distribution business. Parkland's business offers are various options for customers to lower their environmental impact, including manufacturing and blending renewable fuels, ultra-fast electric vehicle (EV) charging, a variety of solutions for carbon credits and renewables, and solar power. The company has 4,000 retail and commercial locations across Canada, the US, and the Caribbean region. Link 06/05/2025.

108. <u>Market development</u>: USA. The economic impact of the renewable fuels industry in Iowa was \$800 million less in 2024 than it was in 2023, according to a recent study released by Iowa Renewable Fuels Association. Overall, the report found the renewable fuel industry accounted for 2% of Iowa's 2024 gross domestic product, or \$5.7 billion. The industry also created more than 34,000 direct and indirect jobs across the state, which is down from 52,000 jobs in 2023. According to studies from the National Corn Growers Association, a 5% increase in ethanol blends, which E15 would represent, equates to an increased demand of 2.3 billion bushels of corn annually. The IRFA study found that 62% of corn in Iowa is processed by the ethanol industry. Link 26/05/2025.

Methanol

109. <u>Methanol</u>: Australia. Hazer Group Ltd has entered into a binding Alliance Agreement (with Kellogg Brown and Root for the commercial deployment and licensing of Hazer's proprietary methane pyrolysis technology. KBR has licensed over 260 grassroots ammonia plants since 1943. Over 50% of the world's ammonia is produced using KBR's ammonia process. Under the Alliance, KBR will be Hazer's exclusive global partner for the marketing, licensing and deployment of Hazer technology to customers in the ammonia and methanol markets. KBR and Hazer will also work closely to pursue licensing opportunities in decarbonizing hydrogen markets beyond these exclusive markets. Link 08/05/2025.

110. <u>Methanol</u>: USA. SunGas Renewables and partner C2X announced the start of front-end engineering design for the \$2 billion Beaver Lake Renewable Energy project in Rapides Parish, Louisiana, marking its final stage of development ahead of expected construction in late 2026. Engineering firms Kiewit and Jacobs will lead FEED based on SunGas's S1000 syngas modules and technologies from Johnson Matthey (methanol synthesis), Linde (acid gas removal), and Merichem (sulphur recovery). The plant is projected to produce over 500,000 metric tons of green methanol annually for the shipping, aviation, and chemicals sectors. <u>Link</u> 09/05/2025.

Pellets

111. <u>Pellets</u>: Finland. Maatschappij Wilhelmina N.V. (Wilhelmina), and Valmet Oyj announced a strategic collaboration to commercialize the TG2 pellet technology on a global scale. The collaboration integrates TG2's proprietary process with Valmet's BioTrac steam explosion technology, advancing sustainable energy solutions and promoting efficient utilization of problematic agricultural residues for steam-treated pellet production. <u>Link</u> 06/05/2025.

Plastic recycling

112. **Plastic recycling**: Austria. Borealis made significant progress on its journey towards a circular economy in 2024, with major increases in both capacity and feedstock processing. Our latest Annual Report shows circular production capacity rising by 18% compared to the previous year, reaching 227,900 metric tons, while the volume of circular feedstock processed nearly doubled to 221,200 metric tons. Link 23/05/2025.

113. <u>Plastic recycling</u>: Canada. Aduro Clean Technologies and Cleanfarms Inc. signed an MOU to collaborate on developing a commercial pathway for difficult-to-recycle agricultural plastics. They will assess the technical and commercial feasibility of Aduro's Hydrochemolytic Technology (HCT) as a solution for chemical recycling of on-farm plastic waste like silage film and bale wrap. Canada's agricultural sector generates an estimated 62,000 tonnes annually, much of which is not conventionally managed. <u>Link</u> 13/05/2025.

- 114. **Plastic recycling**: Japan. Toray Industries, Inc., announced a breakthrough in recycling nylon 66. The company recently deployed a proprietary depolymerization technology using subcritical water to depolymerize this resin uniformly and efficiently in just minutes and recover it as a raw monomer material. Demand for nylon 66 is estimated at 100,000 metric tons annually in Japan and 1.3 million tons worldwide. Its high heat resistance and strength make it essential for automotive and industrial applications. These include automotive textiles such as airbags and tire cords, and plastic components such as radiator tanks, cylinder head covers, and oil pans. Link 20/05/2025.
- 115. **Plastic recycling**: Turkiye. Doğa Holding has diversified its investment portfolio within Türkiye by entry into the recycling sector. Doğa PET, a subsidiary of Doğa Holding, is using TOMRA's sensor-based sorting machines to produce premium quality PET flakes and rPET granules from post-consumer PET which are suitable for food and textile applications. Located in northwestern Türkiye, Doğa PET's plant currently processes more than 4,200 tons of PET bottles monthly, producing 1,000 tons per month of PET flakes and 2,000 tons per month of rPET granules. The facility incorporates TOMRA's full range of machines for plastics sorting: four of the company's sorting all-rounder AUTOSORT[™], as well as two INNOSORT[™] FLAKE and two AUTOSORT[™] FLAKE units for advanced flake sorting and purification. This combination of units optimizes both product quality and processing capacity. Link. 12/05/2025

116. **Plastic recycling**: USA. Freepoint Eco-Systems LLC announced the loading of its first rail car of pyrolysis oil (Poel) made from waste plastic for delivery to Shell USA's refining facility in Norco, Louisiana. Freepoint owns and operates a state-of-the-art waste plastic upcycling facility in Hebron, Ohio that converts 180 million pounds per year of waste plastic into Poel, from which its customers can manufacture new products. The Hebron facility, which is ISCC Plus certified, began construction in late 2022 and is currently undergoing commissioning. Link 08/05/2025.

Policy

117. **Policy**: France. The French Government launched a consultation on a mandate that would see clean hydrogen meet 1.5% of transport fuel by 2030, with penalties for non-compliance. From 2026, France would require green hydrogen, in line with the EU's renewable fuels of non-biological origin (RFNBO) rules, to meet 0.1% of fuel demand in 2026, ramping up annually to 2% by 2035. Link 15/05/2025.

118. **Policy**: USA. The current landscape for energy projects in the U.S. is marked by heightened economic policy uncertainty, driven by shifting tariff strategies, evolving regulatory frameworks, and potential revisions to the IRA and IIJA. This has put companies weighing whether (and when) to make an investment in a tricky spot, as they must balance the potential risk of missing an opportunity with the financial prudence of waiting to see how things develop. This has resulted in

tangible delays, with project slippage rates rising and major players pausing or reevaluating investments. As companies and investors await greater clarity, the pace of energy infrastructure development could remain sluggish, reflecting the broader sentiment that it may be safer to wait out this period of uncertainty. Link. 12/05/2025

Recycling plastic

119. **Recycling plastic**: Switzerland. Deploy announced the launch of a 500-tonne-per-year showcase plant in Manthey, Switzerland , representing a critical step in the company's journey from laboratory breakthrough to industrial-scale implementation. The facility will demonstrate DePoy's proprietary process that converts PET and polyester waste into virgin-quality raw materials without fossil fuels. Imagine a world where discarded items – from polyester shirts to water bottles – are not wasted anymore but resources transformed back into the building blocks for new products. Link 09/05/2025.

Technology development

120. <u>Technology development</u>: Sweden. Thyssenkrupp Nucera will begin delivering electrolysers to Strega's hydrogen-based green steel plant in Boden, Sweden, in the coming weeks. Up to 37 20MW alkaline electrolyser modules will be delivered to the site to form a 740MW green hydrogen production plant. Last September, Strega secured a €100m grant from the Swedish Energy Agency to accelerate development of its plant, which is set to begin green steel production next year. By 2030, the company aims to produce five million tonnes of steel annually. Link 08/05/2025.

121. <u>Technology development</u>: United Kingdom Johnson Matthey (JM) agreed to sell its Catalyst Technologies division, which includes hydrogen and sustainable fuel production assets, to Honeywell for £1.8bn (\$2.4bn). The British firm has faced growing investor pressure to simplify its operations and boost shareholder returns. By offloading one of its four core divisions, JM aims to sharpen its focus on its remaining business units, such as platinum group metal processing. The Catalyst Technologies business sold to Honeywell includes Johnson Matthey's work in blue hydrogen, carbon capture and storage (CCS), and ammonia, as well as sustainable fuels such as SAF and biomethanol. Link 23/05/2025.

122. <u>Technology development</u>: USA. Woodchuck, an AI-powered climate tech company focused on transforming wood waste into renewable energy, officially opened its flagship biomass processing facility in Grand Rapids, Michigan. The new facility represents a breakthrough in sustainable energy production—combining advanced machine learning with localized waste diversion to turn construction and demolition wood waste into high-quality biomass for energy producers. The screened wood chip is used for boiler fuel. <u>Link</u> 14/05/2025.

Torrefaction

123. <u>Torrefaction</u>: Finland. Joensuu Biocoal, the biocoal production facility developed by Taaleri Bioindustry, has begun production, and the first deliveries to customers have been made. The production capacity is 60,000 tonnes of torrefied biomass, also known as biocoal, and is the largest-of-its-kind single biocoal production unit in Europe. The production facility is located in Joensuu, Finland, next to the Savon Voima combined heat and power (CHP) plant. The surplus energy generated during biocoal production is utilised for district heating. <u>Link</u> 27/05/2025.



Company Summary – May 2025

Frequency of mention

Company	Frequency
Neste	3
TotalEnergies	3
OMV	2
Uniper	2
US Government	2
4Air	1
Aalborg Forsyning	1
Aduro Clean Technologies	1
Aemetis	1
Alder Renewables	1
AM Green	1
American Alliance for Biomanufacturing	1
Ampol	1
Anaergia	1
Argus	1
Ash Creek Renewables	1
Associated British Foods	1
Bangchak Group	1
Bartlet	1
BASF	1
BioMade	1
Bloom Renewables	1
Borealis	1
Braskem	1
Cadent	1
Cemvita	1
Ceres Power	1
Chevron Renewable Energy	1
Total	117

Topics & Themes/Category Summary– May 2025

Frequency of mention

Category	Frequency
Hydrogen	25
Biojet	14
Biogas	13
Marine fuels	9
Biofuels	6
Biomaterials	5
e-fuels	5
Feedstock	5
Market Development	5
Plastic recycling	5
Biobased plastics	4
Ammonia production	3
Biobased chemicals	3
Biodiesel	3
Technology development	3
CO2 Removal	2
e-methanol	2
Ethanol	2
Methanol	2
Policy	2
Biotechnology	1
Cement	1
Pellets	1
Recycling plastic	1
Torrefaction	1
Total	123