



Welcome to the **eighth edition** of **P2N0** covering the drive to reduce greenhouse gas (**GHG**) emissions to net-zero (**NZE**). The **ninth edition** of **P2N0** will be published during the first week of March 2024, and will include news items arising during February 2024.

P2N0 identifies significant news items globally, reporting on them in short form, focusing on policy settings and project developments. **P2N0** will not cover news items relating to climate change generally, M&A activity, or that are negative.

Access previous editions of **P2N0** by clicking [here](#).

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Edition 8: January 3, to January 31, 2024 (covering news items arising during this period). Also, we have picked up some of the key news items from the last two weeks of December 2023.

HEADLINES FROM JANUARY 2024

January 2024 was a quieter month for news (certainly not as news rich as the months of Q4 2023).

The following matters seem to us to be the most news-worthy in the context of progress towards net-zero:

- **GRI 101 Biodiversity 2024:** In late **January 2024**, the **Global Reporting Initiative (GRI)** published [GRI 101: Biodiversity 2024 – Topic Standard](#). The **Topic Standard** provides a global benchmark in respect of accounting for the impacts on biodiversity of the activities of corporations and other organizations. The **Topic Standard** will go live on **January 1, 2026**.
- **IPCC meets to settle program for the Seventh Assessment Report (AR 7):** On **January 16 to 19, January 2024** in **Istanbul, Turkey**, the first plenary session of the seventh cycle of the work of the **Intergovernmental Panel on Climate Change (IPCC)** took place. The reporting undertaken for the purposes of the sixth cycle concluded ahead of **COP-28**.

As with the [Sixth Assessment Report \(AR 6\)](#), **AR 7** will involve development of:

- **three Working Group (WG) Reports** – **WG I on Physical Science Basis**, **WG II on Impacts and Adaptation, and Vulnerability**, and **WG III on Mitigation of Climate Change**; and
- a **Synthesis Report**, to be released by 2029.

For the first time, **AR 7** will include a **Methodology Report on carbon dioxide reduction (CDR), carbon capture and storage (CCS) and carbon capture and utilization (CCU)**, along with **Special Reports on Climate Change and Cities** and a **Methodology Report on Short-lived Climate Forcers**. In addition, the Technical Guidelines on impacts and adaptation will be revised, alongside the work of **WG II**.

It is important to remind oneself of the critical importance of the work done by the folk who contribute to the development of these **Reports**, and it is heartening to see that **CDR, CCS and CCU** is now regarded as an integral part of the work to be done. The acceptance, and mainstreaming of, **CDR, CCS and CCU** recognizes the need for pragmatism in respect of what was once regarded as a bridging solution. This is about as close as the author of



P₂N₀ gets to editorial comment: CCS / CCU described by some as the ugly duckling of the energy transition may yet become the swan.

- **2023 warmest year on record:** On **January 8 and 9, 2024**, there was considerable coverage of the end of year reports from various meteorological offices and organizations around the world. The **Copernicus European Centre for Medium-Range Weather Forecasts** team concluded that 2023 was the warmest year on record globally at around **1.48°C** above pre-industrial levels, i.e., close to the limit of the **1.5°C** increase that is the subject of **Article 2** of the Paris Agreement.

- **Shipping News, and Views:**

As many reflect on 2023, and look forward to 2024, in respect of future fuels, two themes emerge, the use of hydrogen and ammonia and methanol to decarbonize, and the infrastructure required to produce and to carry these future fuels. The models and perspectives are many and varied. Nowhere is this plurality more apparent, than in respect of shipping.

- **All aboard the Ane Maersk:**

- On **September 14, 2023**, the world's first dual fuel powered and propelled container vessel was named, **Laura Maersk** (2,100 TEU) having been launched and bunkered with methanol in South Korea in July 2023;
- On **January 26, 2024**, it was reported widely that **AP Moller-Maersk** is soon to launch, in South Korea, the **Ane Maersk** (16,000 TEU). Like the Laura Maersk, the **Ane Maersk** will be dual fueled with methanol and heavy fuel oil.

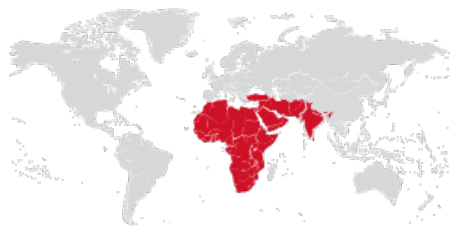
The author of **P₂N₀** has reported on the **AP Moller-Maersk** procurement of dual fueled container vessels since 2021: **AP Moller-Maersk** has 24 dual fuel container vessels on order, including a further eleven 16,000 TEU (the same size as the Ana Maersk), six 9,000 TEU, and six 17,000 TEU, with a further six of these container vessels to be launched during 2024. It is a privilege to watch the development of this sector.

- **Scale and size of decarbonization defined:** On **January 9, 2024**, a paper entitled [Optimal fuel supply of green ammonia to decarbonize global shipping](#) was published. The headline from the paper is that "demand for green ammonia by 2050 could be three to four times the current (grey) ammonia production ... Our model predicts a regionalization of supply, entailing a few large demand centres, with limited long-distance shipping of green ammonia fuel." The paper is excellent.
- **Ammonia tanker orders:** On **January 5, 2024**, [Hydrogeninsight](#) published an article entitled '[Big Wave of orders for huge ammonia tankers underway – but will any of them ever carry NH₃?](#)' which noted that orders are accelerating for carriers that can "carry vast quantities of ammonia": during the last two months of 2023 shipbuilders in South Korea received preliminary orders for 15 very large ammonia carriers (**VLACs**), with a further 4 VLACs ordered from Chinese ship builders.

These **19 VLACs** have an estimated **1.7 million m³** of capacity. The **IEA** estimates that **70 VLACs**, with an average capacity of **80,000 m³**, will be needed to meet estimated demand for the global trade in ammonia by 2030, i.e., **5.6 million m³** of capacity.

- **Keeping it in the family:** On **January 2, 2024**, it was reported widely that the operator of the largest tanker fleet globally, **Cosco Shipping Energy Transportation**, had contracted with **Cosco Shipping Heavy Industry** to build six new methanol powered and propelled tankers, three 114,900 dwt Afrmax, two 64,000 dwt Panamax, and one 50,000 dwt MR. This continues progress towards the reduced carbon footprint of shipping capacity.

NEWS FROM AROUND THE WORLD



Africa, Middle East and South Asia

India announcement two auctions: On **January 17, 2024**, it was reported widely that the **Government of India** (Ministry of New and Renewable Energy) had announced that it will hold two auctions, one to encourage the production and supply of green hydrogen for supply to, and use by, oil refiners, the other to encourage production of green ammonia (and used by the producer). As announced, the auctions will be in respect of the following subsidies per kilogram (**kg**).

Year	Green Hydrogen (in Rupees / kg)	Green Ammonia (in Rupees / kg)
1	50	8.82
2	40	7.06
3	30	5.30

By way of reminder: New Energy Outlook India: BloombergNEF published its **2050 outlook** in respect of two energy transition pathways for India, one an **Economic Transition Scenario** without constraints on emissions, and the other a **Net Zero Scenario** with a carbon budget consistent with achieving net-zero GHG emissions as contemplated by Article 4 of the [Paris Agreement](#).



Americas

On the airwaves: On **January 18, 2024**, the [Carbon Dioxide Removal Leadership Act \(CDRLA\)](#) was reintroduced for consideration by the House of Representatives. The headlines are the that the **CDRLA** may provide up to **USD 10 billion** for CDR, to facilitate the removal of **40 million metric tonnes** for **CO₂** from the climate system by 2035. We will follow the progress of the **CDRLA** with interest.

On the near seas: On **January 25, 2024**, it was reported widely that the US **State of New Jersey** (through the New Jersey Board of Public Utilities (**NJBPU**)) had awarded contracts for the provision of electrical energy from two offshore wind field developments. The **NJBPU** announced that the **Leading Light Project** (Invenergy and energyRE) was awarded a contract at USD 112.50 / MWh, and that **Attentive Energy Two** (Attentive Energy LLC) was awarded a contract at USD 131.00 / MWh.

On the Fairway: On **January 10, 2024**, **Mitsui & Co.** [announced](#) that its 50 / 50 joint venture with **Celanese Corporation** (the joint venture is named Fairway Methanol LLC) had commenced the production of methanol using CO₂ emitted from plants. As announced by **Mitsui**, this is one of a number of projects globally in which it is has invested to capture CO₂ and to derive CO₂ to use that CO₂ to produce methanol. Methanol is both a fuel (wood alcohol) and a feedstock.

Clean H₂ CI Production: On **December 22, 2023**, the US **Treasury Department** and **Internal Revenue Service** published draft proposed regulations in respect of [Section 45V Credit for Production of Clean Hydrogen and Section](#)

48(a)(15) Election to Treat Clean Hydrogen Production Facilities and Energy Properties. Comments are sought on the draft proposed regulations by **February 16, 2024**, with a public hearing proposed for **March 25, 2024**.

The headlines from the draft proposed regulations are best presented in table form:

Tier	Lifecycle GHG emissions Rate (kg of CO ₂ -e of H ₂)	Applicable Percentage of USD 0.60 (%)	Available Tax Credit (USD / kg of H ₂)	Investment Tax Credit Rate - % of the cost of facility or modification
1	0 – 0.45	100	3	6
2	0.45 – 1.5	33.4	1	2
3	1.5 – 2.5	25	0.75	1.5
4	2.5 – 4	20	0.6	1.2



APAC

Indonesia Presidential Regulation on CCS: On **January 30, 2024**, the highly anticipated [Presidential Regulation No 14/2024](#) was signed. The regulation provides for storage of CO₂ arising from industrial and power generation, and contemplates the import of CO₂ for storage.

China fast track: On **January 22, 2024**, it was reported widely that the **National Energy Administration (NEA)** for the **PRC** had reported that, during 2023, **217 GW** of photovoltaic solar capacity had been installed across China. As the same time, installed thermal capacity increased by **58 GW**. While the numbers are staggering, in the context of progress to net zero emissions, the **NEA** is reported to have indicated that coal consumption will peak in and decline after 2025. This has been a consistent narrative for some time.

PRC voluntary carbon credit market reboot: On **January 22, 2024**, the **South China Morning Post** (at www.scmp.com, under [Climate change: China’s voluntary carbon-credit market reboots in “milestone” for emissions goals](#)) reported that China’s voluntary carbon market had recommenced trading on **January 22, 2024**. As reported, trading in respect of the **China Certified Emission Reduction (CCER)** scheme now “allows enterprise to purchase carbon credits to offset emissions, not just businesses currently covered under China’s compulsory national carbon trading market, known as the national Emissions Trading Scheme”.

Sumitomo Chemical CO₂ pilot a go: On **January 4, 2024**, it was reported that the **CO₂-to-methanol** plant of Sumitomo Chemical, in **Nihama City, Japan**, had commenced operation. The author of **P₂N₀** has been following with interest the development of the **CO₂-to-methanol** plant: the plant captures **CO₂** arising from the combustion of waste and hydrogen produced using renewable electrical energy, and methanates it to produce methanol. This is an exciting development.

METHANATION

Methanation involves the use of CO₂ (and CO) to produce CH₄ (methane) through the combination of CO₂ (and CO) with hydrogen, producing synthetic CH₄. If the hydrogen is Green Hydrogen, the CH₄ produced from its combination with recycled CO₂ is e-NG.



Alternatively, methanol (CH₃OH) can be produced, as e-methanol. -NG is in gaseous form at room temperature, e-methanol in liquid form. The key variables are the mass of H₂ and the amount of renewable electrical energy required to produce e-NG or e-methanol, and as such its cost of production.

On **January 9, 2024**, **Nikkei Asia** (at <https://asia.nikkei.com>, under [Sumitomo eyes biodiesel mass production in Japan for decarbonization](#)) reported that **Sumitomo Corporation** is considering the production of bio-diesel using sugarcane and wood waste, and for these purposes intends to develop a pilot plant on Tanegashima, Japan, to gasify waste from free thinning and sugarcane production.



Europe and the UK

Sea Lhyfe prospering: At the end of **January 2024**, it was reported that **Lhyfe** has achieved success in respect of the testing of its **Sealhyfe** offshore hydrogen production facility. In late **November 2023**, with the transportation to deck, the production facility testing was concluded to be viable. The intention now is to scale-up the offshore production capacity from 1 MW to 10 times, and then to 100 times overtime.

European Union (EU) releases the final draft of the Corporate Sustainability Due Diligence Directive (CS3D): On **January 30, 2024**, **CS3D** was released. On adoption, **CS3D** will impose requirements on corporations and other organizations in respect of environmental, social, and governance standards relating to climate change both within the corporation or organization and along its supply chains. The **CS3D** is likely to be adopted during Q2 of 2024, and to come into effect in phases starting in 2027.

EFRAG exposes drafts: On **January 25, 2024**, it was reported widely that the **European Financial Reporting Advisory Group (EFRAG)** had released its [exposure drafts](#) in respect of the proposed reporting standards for small and medium sized enterprises. In time, the reporting standards will be finalized and come within the EU **Corporate Sustainability Reporting Directive**.

Thyssenkrupp Steel tenders for H2: On **January 22, 2024**, it was reported widely that the **Thyssenkrupp Steel Europe** is tendering for the production and supply to it of **151,000 metric tonnes** of renewable hydrogen. The renewable hydrogen will be used to provide **high-heat temperature** for the **DRI facilities** that **Thyssenkrupp** is developing in **Duisburg, Germany**. The procurement by **Thyssenkrupp** is a model for the development of supply and demand for hydrogen.

EBA to float draft: On **January 18, 2024**, the **European Banking Authority (EBA)** announced a process to consult in respect of [proposed guidelines](#) that will provide a framework for banks to identify, measure, assess, manage and monitor ESG risks, including in the context of the transition of the **EU** to a net-zero economy. The proposed guidelines were developed to align with the [EBA's Roadmap on Sustainable Finance](#).

Reductions and Removals in the EU: On **January 18 and 19, 2024**, there was considerable coverage of the prospect of the **EU** establishing a carbon removal target of 10%, to complement a reduction target of 90% by 2040. This coverage continued during the balance of January. On **January 29, 2024**, it was reported that on **February 6, 2024**, the **EC** would publish a paper on **industrial carbon management**, including the prospect of the trading of CO₂. **Edition 9** of **P₂N₀** will cover the paper.

European Scientific Advisory Board on Climate Change (ESABCC) drops: On **January 18, 2024**, the **ESABCC** published [Towards EU climate neutrality: progress, policy gaps and opportunities](#). The report is essential reading for those following the progress of the EU to the achievement of its GHG avoidance, reduction and removal targets. The **ESABCC** subsequently held a [webinar](#).

Northvolt fully charged: On **January 17, 2024**, it was reported widely that **Northvolt** had closed its **USD 5 billion non-recourse project financing** to enable it to expand manufacturing, production and recycling facilities at **Northvolt Ett**, Sweden. As reported, the financing is the largest green loan financing in Europe to date.

EC approves:

- **Italian State aid:** On **January 31, 2024**, the **EC** approved **€550 million Italian State aid scheme** to support investment in use of hydrogen in industrial processes.
- **French State aid:** On **January 8, 2024**, the **EC** approved a **€2.9 billion French State aid scheme** to support investment in green industries.

The **EC** published a press releases providing details of the approvals.

Polaris operator approved: On **January 3, 2024**, the **Ministry of Energy** for Norway approved **PGNiG Upstream Norway** as the operator for the **Polaris CCS Project**, working with **Horisont Energy** to capture **CO₂** from the **Barents Blue Project** and to store it permanently in the **Artic Polaris field**.

Nordic-Baltic-Hydrogen-Corridor (NBHC) shapes up: On **January 5, 2024**, there was considerable coverage of the **NBHC** – running from **Sweden**, through **Finland, Estonia, Latvia, Lithuania, Poland**, and **Germany**. Transmission system operators in each country will work together develop the hydrogen transmission network that will comprise the **NBHC**.

Germany on target: During the first week of **January 2024**, it was reported widely that **Germany** had matched **55%** of the load across its grid with electrical energy from renewable sources, with reduced dispatch from coal-fired power generation. As a result, the **GHG emissions** (at 676 million metric tonnes) across Germany were the lowest since the early 1950s. Without its policy settings and rate of progress, Germany is aligned to achieve **80%** by 2030.

EU aligned to target: Also, during the first week of **January 2024** it was reported that the **EU** had matched 43.6% of load with electrical energy from renewable sources, and **GHG emissions** across the **EU** were the lowest since the early 1960s.

EU Emission Trading System (ETS) extends to maritime sector: From **January 1, 2024**, the **EU ETS** extended to cover vessels with a gross tonnage of **5,000 metric tonnes** (or more) departing from and arriving at ports in the **EU**: 100% of the mass of **GHG** emissions arising during docking at port and while on the water within the **EU** and 50% of the mass of **GHG** emissions arising on trades to and from the **EU** will be subject to the **EU ETS**. On **January 30, 2024**, the **Official Journal of the EU** published [Commission Implementing Decision \(EU\) 2024/411](#) detailing the administrative authorities for the shipping companies impacted by the application of the **EU ETS**. Again, it is privilege to follow the implementation of policy settings that were hatched only relatively recently.

EC Published CBAM Default Values: On **December 22, 2023**, the **European Commission (EC)** published [Default Values for the Transitional Period of the CBAM between 1 October 2023 and 31 December 2025](#) applicable to imported products. The default values play a role for importers subject to the **EU Cross Border Adjustment Mechanism (CBAM)** if importers do not have actual data and information. In addition, the **EC** published updated guidance on reporting.

Further details can be found at <https://taxation-customs.ec.europa> under [Commission publishes default values for determining embedded emissions during the CBAM transitional period and updated guidance on reporting obligations](#).

HELPFUL PUBLICATIONS AND DATA BASES

While **January 2024** may not have been as heavy on news times as each month in Q4 of 2023, it was notable for the number and quality of publications and databases. The most noteworthy publications read by the author of **P₂N₀** during January 2024 are as follows:

Electricity 2024: On **January 24, 2024**, the **International Energy Agency (IEA)** published [Electricity 2024 – Analysis and forecast to 2026](#). The headlines from the publication are that over the next three years (2024, 2025 and 2026) the demand for electrical energy is going to increase, and that the increased demand will be matched by new renewable and nuclear electrical energy capacity. As always with the **IEA**, the publication is well-worth a read. Also, check out the **IEA Renewable Energy Progress Tracker**.

CCS and CCUS in EU: In late **January 2024**, **CO₂ Value Europe** published [The Contribution of Carbon Capture & Utilisation Towards Climate Neutrality in Europe – A Scenario Development and Modelling Exercise](#). The publication is well-worth a read.

Clean Air Task Force provides an on-line tracking-tool for CO₂ storage projects across Europe. The tool provides access to an excellent database.

Climate-related financial impact guide: During **January 2024**, the **World Business Council for Sustainable Development** published [Climate-related financial impact guide – Supporting business assessment and disclosure](#). The publication is a great summary of where things stand on disclosure and reporting, and as such well-worth a read.

Renewables 2023: On **January 11, 2024**, the **IEA** published [Renewables 2023 – Analysis and forecast to 2028](#). The publication is compulsory reading for those active, or that have any interest, in the renewables sector.

Scaling Up Hydrogen: On **January 11, 2024**, the good folk at **BloombergNEF** published [Scaling Up Hydrogen: The Case for Low Carbon Steel – A BNEF and Climate Technology Coalition White Paper](#). The **White Paper** is excellent, providing the facts and stats relevant to the iron and steel sector, and the outlining the basis for the use of hydrogen.

Hydrogen Market Formation: On **January 10, 2024**, the good folk at the **EFI Foundation** published [Hydrogen Market Formation: An Evaluation Framework](#). The publication provides a bottom-up assessment and is well-worth a read.

Achieving a European Market for CO₂ transport by ship: On **January 9, 2024**, the **Carbon Capture and Storage Association (CCSA)** and **Zero Emissions Platform (ZEP)** published, jointly, [Achieving a European Market for CO₂ transport by ship](#). The publication sets the scene for the expected development of the carriage of liquified CO₂. The publication is well worth a read.

E-Fuels: In **December 2023**, the **International Energy Agency (IEA)** published [The Role of E-fuels in Decarbonising Transport](#). The publication is excellent.

Clean Ammonia: On **January 3, 2024**, the **Institute for Sustainable Process Technology (ISPT)** published its [Clean Ammonia Roadmap](#) report. The report is excellent and well-worth a read.

World Economic Forum (WEF) publications:

- **Green Hydrogen:** During the second week of **January 2024**, the **WEF** published [Green Hydrogen: Enabling Measures Roadmap for Adoption in India, Insight Report](#). The **Report** is excellent.
- **CDR Best Practice:** During the first week of **January 2024**, the **WEF** published [Carbon Dioxide Removal: Best-Practice Guidelines, January 2024, White Paper](#). The **White Paper** provides a high-level overview, as a helpful point of reference.
- **Low carbon MENA:** On **December 20, 2023**, the **WEF** published [Enabling Measures Roadmap for Low-Carbon Hydrogen Middle East and North Africa](#). The **Publication** provides a helpful and informed perspective.
- **Biodiversity Credits:** During **December 2023**, the **WEF** with **McKinsey & Co** published [Biodiversity Credits: Demand Analysis and Market Outlook, Insight Report](#). Whatever one's reaction to the biodiversity credits, the **Report** is well-worth a read.

Carbon Capture, Usage and Storage:

- During **December 2023**, the **UK Government** (Department for Energy Security & Net Zero) published [A Vision to Establish a Competitive Market](#). The publication pulls together the policy settings and thinking of the UK, and as such provides a helpful summary of the outcomes to date, and the plan for the development of the CCS / CCUS market into a self-sustaining market.
- During **December 2023**, **McKinsey & Co** (McKinsey Sustainability) published [Carbon removals: How to scale a new gigaton industry](#). The publication provides a pithy perspective, and is well-worth a read.

Hydrogen Insights: During **December 2023**, the **Hydrogen Council** and **McKinsey & Co** published the most recent in their Hydrogen Insight series (click [here](#) for the previous edition), [Hydrogen Insights 2023](#). The publication is well-worth a read, and follows relatively soon after the publication on **November 16, 2023**, of the **Hydrogen Council** and **McKinsey & Co** published [Global Hydrogen Flows – 2023 Update](#).

An Eye On Methane: During **December 2023**, the **UN Environment Programme** published [An eye on methane: International Methane Emissions Observatory 2023 Report](#). The **Publication** is excellent. All know that methane is a potent GHG, having a 100-year GWP 28 to 34 times that of **CO₂**, and over a 20-year GWP of 80 to 86 times that of **CO₂**, and that as a result avoiding and reducing **CH₄** emissions offers a near to medium opportunity to slow the rate of GHG emissions. The **Publication** outlines, in detail, the sources of **CH₄** emissions, and what is needed to avoid and to reduce them.

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* Michael Harrison is the primary author of **P₂N₀**, and editor. Any errors are Michael's. **P₂N₀** is written early each Saturday morning. Michael new items sources from original material. If a news item is covered broadly, the words **reported widely** connote that at least three publications have covered that news item, and **reported** connotes at least two sources. If there is only one source that is not the original source for the new item, that source is named.

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