



Welcome to the **tenth edition** of **P2N0** covering the drive to reduce greenhouse gas (**GHG**) emissions to net-zero (**NZE**). **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.

The **eleventh edition** of **P2N0**, covering April 2024, will be published during the first week of May 2024.

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

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Edition 10: covering significant news items arising during March 1, to March 31, 2024.

HEADLINES FROM MARCH 2024

During **March 2024**, the following matters seem to us to be the most news-worthy in the context of progress towards net-zero:

- **CERAWeek and Copenhagen Climate Ministerial:**
 - **CERAWeek:** On **March 22, 2024, CERAWeek** (held in Houston Texas this year) came to a close. It is the most important energy sector conference each year, and this year, rightly, it grabbed the headlines.

Among other things, the mood of the week was set by the draft regulations in respect of clean hydrogen (see the clean hydrogen table on page 7 below) and the hold placed on LNG export approvals in the US (which has resulted in 16 US States filing lawsuits against the US Federal Government). These matters are key to driving the energy transition. Both the draft regulations and the hold on LNG export approvals have been announced since the end of COP28, and the agreement on the transition away from fossil fuels.

Following COP28, the momentum was high. While momentum remains, it needs to be bolstered. If there is to be a transition away from fossil fuels, policy settings need to align with this, and those best placed to fund the energy transition need to be allowed to do so, and markets need to develop that will allow the transition.

- **Copenhagen Climate Ministerial:** On **March 20 and 21, 2024**, Denmark hosted a meeting of climate leaders and ministers to scope the objectives for COP29. As reported, this was the first meeting of climate leaders and ministers since the end of COP28. As might have been expected, the following matters were discussed – climate change adaptation, loss and damage, and mitigation, and nationally determined contributions (**NDCs**). See the following link for further detail <https://unfccc.int/news/climate-action-plans-are-blueprints-for-investing-in-our-future-simon-stiell-at-copenhagen>.

On **March 20, 2024**, at the **Copenhagen Climate Ministerial**, the **United Nations Framework Convention on Climate Change** and the **International Energy Agency (IEA)** announced their intention to work closely “to drive progress on the energy commitments made at ... COP28 ... with the goal of limiting global warming to 1.5°C [above pre-industrial levels]”. What this will mean in practice is tracking and reporting on progress, building consensus on the action necessary to limit global warming to 1.5°C; and supporting the next round of **NDC** setting.

- **International Maritime Organization (IMO) closing in on pricing carbon:** On **March 22, 2024**, after two weeks of discussions in London, the **IMO** appears to be progressing towards a decision to impose a price on GHG emissions. The adoption of a price on GHG emissions would provide impetus to the GHG emission reduction targets of the IMO – 30% by 2030, at least 70% by 2040, and net zero by 2050. Accompanying this initiative is work on goal based marine fuel standards for well-to-wake GHG emissions.

By way of a reminder: [Edition 9 of P₂N₀](#) reported that:

“During **February 2024**, the **World Shipping Council (WSC)** launched its **Green Balance Mechanism (GBM)**. The **WSC** has floated the concept of global **GHG** pricing before. The **GBM** is outlined at www.worldshipping.org, under [Delivering net zero by 2050: Introducing Green Balance Mechanism](#).

The **WSC** notes that global “climate regulations are necessary to make it possible for carriers to operate on green fuels, and to incentivize fuel and energy providers to invest in new production capacity”. Conceptually, the **GBM** takes forward a notion floated by the **WSC** previously (in 2022): there is a **GHG** price, the **GHG** price is collected, and transferred to the **Green Balance Fund (GBF)**, with allocations from the **GBF** to vessels using **Alternative Fuels**. This is a variation on the mechanics of the **EU ETS** applied to the global maritime sector.”

- **Net-Zero Banking Alliance Reinforce (NZBA) Guidelines for Climate Target Setting:** On **March 13, 2024**, the UN-convened, bank led, **NZBA**, updated, to reinforce, [Guidelines for Climate Target Setting – Version 2](#). The core principles remain – reaching net-zero by 2050 or sooner, and to set targets for reductions in GHG emission by sector so that there is no or low chance of overshooting the objective of limiting the increase in global average temperatures to 1.5 °C above pre-industrial levels. The updated version of the guidelines will apply to all new targets and any new iterations of existing targets set by **NZBA** member banks after April 22, 2024.
- **European Union (EU) directionally:**
 - **EU Corporate Sustainability Due Diligence Directive (CSDDD):** On **March 27, 2024**, the European Commission (**EC**) approved the [CSDDD](#). Under the **CSDDD**, corporations of a certain size (employees and turnover) will be required to undertake due diligence in respect of corporations operating within the **EU** with whom they do business. Depending on the size of corporations, the **CSDDD** will be phased on over the next three, four and five years. The next step is for the **CSDDD** to be adopted by the European Parliament (**EP**).
 - **EU Energy Performance of Buildings Directive:** On **March 12, 2024**, the **EP** adopted the [Energy Performance of Building Directive](#). Consistent with other policy settings introduced by the **EU**, the **Directive** is intended to reduce, progressively, the level of energy consumption in buildings (which account for around 50% of the total energy consumption across the EU). The **Directive** requires each Member State to achieve a 16% reduction in energy use in residential buildings by 2030, and 20 to 22% by 2035. All new buildings must be zero emissions by 2028 (in the case of public buildings) and 2030 (in the case of all other buildings), and photovoltaic solar capacity must be installed into all non-residential buildings by 2030.
 - **EU Green Claims Directive:** On **March 12, 2024**, the **EP** approved the adopted position of the [EU Green Claims Directive](#), which requires substantiation and communication of explicit environmental claims. The **EU Green Claims Directive** is intended to complement the [Directive Empowering Consumers for the Green Transition through Better Protection against Unfair Practices and Better Information](#), passed by the EP on January 17, 2024, and adopted by the European Council on February 21, 2024.
- **USA Disclosure:** On **March 6, 2024**, the **Securities and Exchange Commission (SEC)** adopted (the long awaited) [Rules to Enhance and Standardize Climate-Related Disclosures for Investors \(SEC Rules\)](#). Under the final rule, the **SEC Rules** were to come into effect 60 days after being published in the Federal Register. However, on April 4, 2024, the SEC issued an order staying the final rules pending the completion of judicial review of the rules. At least

nine challenges against the rules have been filed in various federal circuit courts. The petitions have been consolidated and will be heard in the U.S. Court of Appeals for the Eighth Circuit.

In summary, the **SEC Rules** apply to public companies and in public offerings, as following matters must be disclosed:

High level summary of matters to be disclosed under SEC Rules
<p style="text-align: center;">High Level Principles</p> <p>Climate-related risks that have had or are reasonably likely to have a material impact on the business strategy of the company, results of operations or financial condition.</p> <p>The actual or potential material impact of any identified climate-related risk on the strategy of the company, or its business model or outlook.</p> <p>Information about the climate-related targets or goals, if any, that have materially affected or are reasonably likely to materially affect the business, results of operations or financial condition of the company¹.</p> <p>Specified disclosures, if any, regarding activities of a company to mitigate or adapt to a material climate-related risk including use, if any, of transition plans, scenario analysis, or internal carbon prices.</p>
<p style="text-align: center;">Role of Board and company processes</p> <p>Any oversight by the board of directors of climate-related risks and any role by management in assessing and managing the material climate risks of the company.</p> <p>Any processes the company has for identifying, assessing and managing material climate-related risks and if the registrant is managing those risks, whether and how any such processes are integrated into the overall risk management system or processes of the company.</p> <p>For large-accelerated filers (LAFs) and accelerated filers (AFs) that are not otherwise exempted, information about material Scope 1 emissions or Scope 2 emissions, or both (the SEC's Rules do not require use of the Greenhouse Gas Protocol, the most widely used GHG emissions accounting standard today).</p> <p>For each company required to disclose Scope 1 or Scope 2 emissions, or both, report at the limited assurance level, which, for an LAF, following an additional transition period, will be at the reasonable assurance level.</p> <p>[Note: In passing, it is noted that the SEC Rules do not include Scope 3 emissions]</p>
<p style="text-align: center;">Notes for financial statements</p> <p>If a company has undertaken activities to mitigate or to adapt to a material climate-related risk, a quantitative or qualitative description of material expenditures incurred and material impacts on financial estimates and assumptions that directly result from such mitigation or adaptation activities.</p> <p>The capitalized costs, expenditures expensed, charges and losses:</p> <ul style="list-style-type: none">• incurred as a result of severe weather events or other natural conditions², subject to applicable 1% and de minimis disclosure thresholds;• related to carbon offsets and renewable energy credits or certificates if used as a material component to achieve its disclosed climate-related targets or goals, <p>must be disclosed as a note to financial statements.</p> <p>If the estimates and assumptions that the company uses to produce the financial statements were materially impacted by risks and uncertainties associated with severe weather events and other natural conditions or any disclosed climate-related targets or transition plans, a qualitative description of how the development of those estimates and assumptions was impacted, disclosed as a note to the financial statements.</p>

¹ Disclosures to would include material expenditure and material impacts on financial estimates and assumptions as a direct result of the target or goal of actions taken to make progress toward meeting such target or goal.

² Such as hurricanes, tornadoes, flooding, wildfires, extreme temperatures, and sea level rise.

More detail is included in the following publication from Baker Botts: [SEC Adopts Final Rules Requiring Disclosures of Climate-Related Risks, Financial Impacts, and Greenhouse Gas Emissions](#). As the **SEC Rules** come into effect, **P₂N₀** (in **A Deeper Dive**) will compare the **SEC Rules** with the **International Financial Reporting Standards** from the **International Sustainability Standards Board (ISSB IFRS)** (see [Edition 4 of P₂N₀](#)) and **EU Corporate Sustainable Reporting Directive (CSRD) / European Sustainability Reporting Standards (ESRS)** (see [Edition 7 of P₂N₀](#)). In March 2024, the good folk at the **Taskforce on Nature-related Financial Disclosures (TFND)** published the five TFND modules in a box – [TNFD in a Box](#).

In passing: A shout-out to **Walmart** which has disclosed that it has removed **1 gigatonne (1 billion metric tonnes)** of **CO₂-e emissions** from its supply chain, and continues to invest in renewable electrical energy generation, with commitments to **1 GW of clean energy on-site by 2030**, and **2 GW** of community photovoltaic projects.

- **During March the International Renewable Energy Agency (IRENA) published:**
 - [Renewable Capacity Statistics 2024](#): Each **IRENA** renewable capacity statistics report provides a wealth of detailed information on a country by country basis. This year's publication indicates that during 2023 **473 GW** of new renewable electrical energy capacity was installed globally, with Asia, in large measure, China, leading the way with **297.6 GW** of new installed capacity.
 - [Tracking COP28 Outcomes – Tripling Renewable Power Capacity by 2030](#): One of the key outcomes of **COP28**, was to call for parties to the Paris Agreement to contribute to the: "Tripling renewable energy capacity globally ... by 2030" (see **Paragraph 28** of the [Outcome of the first Global Stocktake](#)). The tripling of renewable energy capacity reflected the long-standing perspective of **IRENA**, and stated in absolute terms, having **11,000 GW** (or **11 TW**) of installed renewable electrical energy capacity by 2030.

This **IRENA** publication tracks the progress, both actual and projected, towards the achievement of this target. The conclusion of this publication is that even with a record for new renewable electrical energy capacity during 2023 (of 473 GW), there is a need to triple this rate of development and deployment to **1,100 GW** new capacity each year.

- On **April 1, 2024**, **IRENA**, in partnership with the **Clean Energy Ministerial Multilateral working group**, published what it refers to as a brochure for [The Global Atlas for Renewable Energy – A Decade in the Making](#). The brochure presents the [globalatlas.irena.org](#) platform, stated to be a "platform to increase the share of renewable energy worldwide". While there many data bases and tools, this seems to be the most comprehensive platform developed (and shared) to date.
- On **March 1, 2024**, the **IEA** reported that during **2023** record levels of **CO₂** were emitted to the climate system at **37.4 Giga-tonnes** (or **37.4 billion metric tonnes**), an increase of **410 million metric tonnes** from 2022. One of the reasons for the increase was a reduction in the generation of electrical energy using hydroelectric capacity as a direct result of the drought conditions experienced in a number of countries during 2023. (See [Major growth in clean energy limited the rise in global emissions in 2023](#) and [CO₂ Emissions in 2023](#).)

NEWS FROM AROUND THE WORLD



Africa, Middle East and South Asia

UAE releases National Policy on biofuels: On **March 21, 2024**, the UAE [announced](#) that the UAE Cabinet had approved the **National Policy on Biofuels** aiming to develop regulations and controls to oversee the distribution of

biofuels, establish standards governing the production and utilization of biofuels and implement criteria and mandate for biofuel production with the country.

Qatar Blue Ammonia Plans: During **March 2024** it was reported widely that Qatar intends to develop Blue Ammonia production capacity as follows:

- **QatarEnergy Ammoni-7 Project** – located in Mesaieed Industrial City produce **1.2 million metric tonnes** of Blue Ammonia by 2026;
- **QatarEnergy** to aim to develop further projects with up to **5 million metric tonnes** of production capacity by 2030, 20 million metric tonnes by 2040, and 30 million metric tonnes by 2050.

Oman hydrogen production nearly good to go:

- **ACME and Yara happily conclude:** On **March 20, 2024, Oil Price** (at <https://oilprice-com>, under [Oman Takes The Lead in Green Hydrogen](#)) reported that **ACME Cleantech Solutions Pvt Ltd** had concluded a long-term green ammonia offtake contract with **Yara**. As reported, under the offtake contract **Yara** will offtake **100,000 metric tonnes** of green ammonia a year, commencing in 2027.
- **Hydrom and VNG Corporation happily collide:** On **March 18, 2024, Hydrom** and **VNG Corporation** signed a memorandum of understanding to assess the green hydrogen and green ammonia chain between Oman and Germany, with the objective of concluding an offtake agreement.

By way of a reminder:

- **Edition 1 of P₂N₀** reported that: “On **May 14, 2023, Zawya** (under [OQ Alternative Energy plans 2 GW of renewable projects in Oman](#)) reported that **OQ Alternative Energy** (part of the **OQ Group**) is to develop **2 GW** of renewable electrical energy capacity, with the capacity to be used to power Green Hydrogen and Green Ammonia projects within the **Sultanate of Oman**. **Hydrogen Oman SPA (Hydrom)** has signed three agreements granting the blocks to allow the development of these projects. The three agreements are with **Amnah, BP Oman, and Green Energy Oman**”.
- **Edition 5 of P₂N₀** reported that: “On **November 9, 2023, the Oman Daily Observer** (at <https://www-omanobserver-om>, under [Oman to establish Carbon Capture, Blue Hydrogen regulatory framework](#)) reported on the execution of a Terms of Reference “to establish a regulatory framework for blue hydrogen and carbon capture utilization policies in the Sultanate of Oman”.

Energy Statistics India 2024: On **March 14, 2024**, the **Government of India** (Ministry of Statistics and Programme Implementation National Statistical Office published) [Energy Statistics India 2024](#). The publication is compulsive reading.

India and Green Hydrogen: During **March 2024**, the good folk at the **Harvard Kennedy School, Belfer Center**, published [India – The New Global Green Hydrogen Powerhouse](#). This publication is a helpful introduction.

Morocco lands on green: On **March 11, 2024**, it was reported widely that the **Moroccan Government** is going to allocate **300,000 hectares** of land to allow the development of green hydrogen production capacity. As reported, it is understood that both domestic and overseas investors will be able to apply for allocations of land. This will be a story worth watching unfold.

Japan and Oman compressing progress on synthetic methane production: On **March 10, 2024, Nikkei Asia** (at <https://asia.nikkei.com>, under [Japan and Oman to mass produce e-methane in decarbonization push](#)) reported on the plans of **Hitachi Zosen** to work with **Oman LNG** to produce synthetic or e-methane from the combination of hydrogen and carbon dioxide.

The methanation trend is a continuing trend: on **March 19, 2024**, it was reported widely that Engie, Mitsubishi Corporation, Osaka Gas, Sempra Infrastructure, TES, Toho Gas, Tokyo Gas and TotalEnergies intend to establish the e-

NG Coalition. On **March 21, 2024**, a positive final investment decision was taken in respect of the development the first on-shore liquid gas receiving terminal in Germany – the **Hanseatic Energy Hub**, to be located on the River Elbe, near the city of Hamburg. The **Hanseatic Energy Hub** will import and regasify LNG and synthetic or e-methane.

To state the obvious, **e-methane** or **e-NG** allows the use of existing LNG carriers and existing natural gas infrastructure, and, if the CO₂ is captured at the point of use of the **e-methane** or **e-NG**, this will make a considerable impact on progress to net-zero emissions.

By way of reminder:

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. e-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.



Americas

Qualifying Advanced Energy Project Tax Credit (48(C)): On **March 29, 2024**, the **US Department of Energy (DOE)** and the **Inland Revenue Service (IRS)** announced **USD 4 billion** of tax credits in respect of more than **100 projects** across **35 US States** to accelerate domestic clean energy manufacturing and to reduce GHG emissions at industrial facilities. The amount of the tax credits is for **Clean Energy Manufacturing and Recycling** (in the amount of **USD 2.7 billion**), **Critical Materials Recycling, Processing and Refining** (USD 800 million), and **Industrial Decarbonisation** (USD 500 million).

WEA tenders close: On **March 27, 2024**, the **US States** of **Connecticut (800 MW)**, **Massachusetts (3.6 GW)** and **Rhode Island (1.2 GW)** closed their combined tender for up to **6.8 GW** of offshore wind energy areas (**WEAs**).

USD 6 billion earmarked for energy intensive industries: On **March 25, 2024**, the **DOE** announced support for **33 projects** in more than **20 US States** to accelerate the decarbonization of energy intensive industries to reduce GHG emissions, aluminum and metals, cement and concrete, chemicals and refining, food and beverage, glass, iron and steel, process heat and pulp and paper.

For details of each of the **33 projects** click on this [link](#).

Higher levels of funding support			
Plans Cemented	Heidelberg Materials (up to 500 million) for carbon capture and storage at its Mitchell, Indiana, cement works	National Cement Company (up to USD 500 million) for the displacement of fossil fuels by biomass for high heat processing	Brimstone (up to USD 189 million) to produce cement from carbon free calcium silicate rock rather than limestone
Plans Distilled	ExxonMobil (USD up to 331.9 million) to use clean hydrogen to displace natural gas at its olefins plan in Baytown, Texas	T.EN Stone & Webster Process Technology (up to USD 200 million) for a Sustainable Ethylene from CO ₂ Utilization with Renewable Energy	Eastman Chemical (up to USD 375 million) for the chemical recycling of waste plastic products into polyethylene terephthalate

Plans Forged	Cleveland-Cliffs Steel (up to USD 500 million) for direct-reduced iron plant for its Middletown Works, Ohio	SSAB (up to USD 500 million) to develop green steel production using its Hybrit design using renewable energy from Hy Stor with H ₂ storage in a salt cavern	Vale (up to USD 282.9 million) to introduce hot briquette iron (HBI) production capacity to the US Gulf Coast.
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ExxonMobil and JERA: On **March 25, 2024**, it was reported widely that **ExxonMobil** and **JERA** had agreed to assess jointly the development of a low-carbon hydrogen and ammonia production project. As reported, **JERA** may contract to offtake up to **500,000 metric tonnes** a year of low-carbon ammonia from the **ExxonMobil Baytown Complex**. As noted, below **JERA** is testing the use of blue ammonia to co-fire with coal to reduce the CO₂ arising from its **Hekinan** coal-fired power generation.

Edition 8 of P₂N₀, (under **Clean H₂ CI Production**) reported that: "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**". And that comments were sought on the draft proposed regulations by **February 26, 2024**, with a public hearing proposed for **March 25, 2024**.

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

Throughout the last couple of weeks of **February 2024**, there was considerable reporting. The best example that that the author came across was provided by **hydrogeninsight** at <http://hydrogensight.com>, under **Too strict or not enough? Draft guidance for US clean hydrogen tax credit draws tens of thousands of comments**) on **February 27, 2024**, providing balance. As reported, over **30,000 comments** were received in respect of **Section 45V Credit for Production of Clean Hydrogen**. For those wishing to consider the comments received before **February 26, 2024**, please click [here](#).

On **March 25, 2024**, the public hearing began.

Contracts for difference (CfDs) considered for US: During **CERAWeek**, the **DOE**, through Ernest Moniz (lead of the DOE **Hydrogen Demand Initiative**), stated that **DOE** is considering the use of **CfD** "to provide demand side support for unlocking the market potential" for clean hydrogen across the seven [Regional Clean Hydrogen Hubs]. While **CfDs** are being considered, Ernest Moniz noted that the use of **CfDs** may "not be the right match here".

Canada and Germany saddle up: On **March 18, 2024**, it was reported widely that **Canada** and **Germany** had signed a memorandum of understanding under which the two countries provide a framework to work together to develop a trade in clean hydrogen. On the same day, the **Port of Argentia**, Newfoundland and Labrador, Canada, and **Hamburg Port Authority**, Hamburg, signed a letter of intent to work together on the export and the import of clean hydrogen.

Beefing up BESS: On **March 18, 2024**, **Energy Storage** (at <https://www.energy-storage.news>, under **US BESS installations 'surged' in 2023 with 96% increase in cumulative capacity, ACP says**), reported that during 2023, the operating capacity of battery storage in the US **increased by 7.9 GW** with the result that the US now has **17GW of installed BESS**. In contrast, during 2023, the **EU Member States** installed a little over 10 GW of BESS – see [European Market Monitor on Energy Storage](#).

US outlines plans for:

- **Plans for commercial development of geothermal power:** On **March 18, 2024**, the **DOE** released the [Pathways to Commercial Liftoff: Next-Generation Geothermal Power](#). The **Pathway** report indicates how the US may develop up to **90GW** of geothermal energy production by 2050.
- **Plans for 1 billion tons of biomass a year:** On **March 15, 2024**, the **DOE** released the [2023 Billion-Ton Report \(BT23\)](#). The **BT23** indicates how the US may triple its production of biomass on a sustainable basis. The headline is that this level of production of biomass would allow the US to more than match the demand for **sustainable aviation fuel (SAF)** to decarbonize the aviation industry within the US.

US grants USD 750 million in funding: On **March 13, 2024**, the **DOE** [announced](#) that it had granted funding in respect of **52 clean hydrogen projects across 24 states**. As announced, the funding is intended to reduce dramatically the cost of clean hydrogen production – among other things, the funding is aimed at supporting the production of 10 GW of electrolyser capacity a year and 14 GW of fuel cell capacity a year.

By way of a reminder: [P₂N₀ Edition 4](#) reported: “On **October 13, 2023**, seven **Regional Clean Hydrogen Hubs (H₂ Hubs)** were announced, with the **H₂ Hubs**, between them, to be eligible for up to **USD 7 billion** in US Federal Government funding. The funding will be provided under the [Bipartisan Infrastructure Law](#). A link is attached to the White House announcement (under [Biden-Harris Administration Announces Regional Clean Hydrogen Hubs to Drive Clean Manufacturing and Jobs](#)). As announced, four hubs will produce Blue Hydrogen, five hubs will produce Green Hydrogen, and two hubs will produce Pink Hydrogen.”

Chile heats up: On **March 1, 2024**, it was reported widely that **300,000 metric tonnes** a year **green ammonia production** project (Volta Project) is to be developed by **Mejillones Ammonia Energy**. As reported, the green ammonia production facilities are to be located in the precinct of the port at the **City of Mejillones**, in the Antofagasta region of Chile. The renewable electrical energy to power the electrolyzers to produce green hydrogen, and to power the air separation facilities to derive nitrogen, and to power the Haber-Bosch technology to combine the hydrogen with the nitrogen, will be sourced from the Atacama region, with world class photovoltaic solar and wind resources.

By way of a reminder: [Edition 4 of P₂N₀](#) reported that: “On **October 9, 2023**, fuel cells works (under [HiF Global Submits Environmental Permit for Cabo Negro eFuels Facility in Chile](#)) reported that **HiF Global** had lodged its environmental permit to the Environmental Assessment Service, for the **Magallanes Region**, Chile. If the environmental permit is approved, **HiF Global** will be able to proceed with the development of its **USD 830 million** e-fuels facility, with the capacity to produce 170,000 metric tonnes a year of e-methanol, which may be converted into **70,000** metric tonnes a year of **e-gasoline** and 8,030 metric tonnes a year of **e-LG**. The e-methanol plant (the e-) will be powered by the 384 MW Faro del Sur Wind Park”.



APAC

Green Hydrogen plant planned for Uzbekistan: On **March 15, 2024**, **Solar Quarter** (at <https://solarquarter.com>, under [LONGi Hydrogen and ACWA Power Join Hands in Green Hydrogen Project in Uzbekistan](#)) reported that **LONGi Hydrogen** and **ACWA Power** had signed a cooperation agreement to develop a **3,000 metric tonnes** a year Green Ammonia (pilot) production project as the first phase. The second phase is to develop a **500,000 metric tonnes** a year Green Ammonia project, with renewable electrical energy to power the electrolyzers supplied by **Longi** to comprise **2.4 GW** of wind power capacity.

Green Hydrogen plant planned for Quang Tri: On **March 15, 2024**, **HydrogenCentral** (at <https://hydrogen-central.com>, under [Chinese SOE Huadian plans \\$2.4 bn green hydrogen plant in Vietnam](#)) reported that **Huadian Group** and **Minh Quang JSC** had lodged a proposal with Quang Tri government authorities to develop a **60,000 metric tonnes** a year Green Hydrogen production facility to be located **Dong Gio Linh industrial area** in Quang Tri province. As reported, the renewable electrical energy to power the electrolyzers will comprise **0.8 GW** of photovoltaic solar and **1.2 GW** of wind capacity.

By way of a reminder: [Edition 9 of P₂N₀](#) reported (under **Vietnam spring roll out**) that: “On **February 22, 2024**, Vietnam rolled-out its **Hydrogen Strategy**. The **Strategy** outlines a plan to develop between **100,000** and **500,000 metric tonnes** of production capacity by **2030**, and between **10 and 20 million metric tonnes** by **2050**. The **Strategy** is agnostic as to **Blue** or **Green Hydrogen**, and is open to domestic and export market use. In the context of the domestic market, the **Strategy** is targeting the **10% of final energy demand** in Vietnam to be met by hydrogen. Given the dynamics in Vietnam, it is possible to see the use of hydrogen primarily across the transport sector and to decarbonize difficult to decarbonize industries”.

JERA commences co-firing: In previous publications, the author has reported on the proposed co-firing of ammonia with coal to reduce the CO₂ emissions arising from coal-fired power generation. On **March 26, 2024**, it was announced that **JERA** was to commence co-firing at its **Hekinan coal-fired power station**. As reported, the co-firing is part of a test program, which will complete on **June 19, 2024**. On **April 1, 2024**, **JERA** commenced co-firing.

Carbon capture and storage (CCS) at sea in SEA: On **March 28, 2024**, **The Straits Times** (at www.straitstimes.com, under [Oil giants plan to buy massive amounts of CO₂ in South-east Asia](#), being an article originally published by Bloomberg) reported that “Indonesia and Malaysia are among the few places where CO₂, once captured, can be stored viably underground”. The article sets the scene for someone seeking an overview.

Japan to develop offshore wind field (OWF) in exclusive economic zone (EEZ): On **March 12, 2024**, it was reported widely that the Japanese Government had approved an amendment to legislation to allow the development and deployment of **OWF** capacity within the **EEZ** of Japan. The development and deployment of **OWF** capacity is considered likely to allow Japan to accelerate transition to renewable electrical energy.

Air Liquide and Vopak Jurong Island study: On **March 11, 2024**, it was reported widely that **Air Liquide** and **Vopak** had signed a memorandum of understanding in respect of the development of low-carbon ammonia supply chains, including the possible development of an ammonia cracking plant.

Australia declares third OWF zone: On **March 6, 2024**, the **Federal Australian Government** declared its third offshore wind this area, in the **Southern Ocean**, located between 15 and 20 kms of offshore of the coast of the Australian State of Victoria, and covers an area of 1,030 km².

By way of a reminder: [Edition 1 of P₂N₀](#) reported that: “On **June 28, 2023**, the **Federal Government of Australia** commenced consultation in respect of the declaration of a third **offshore renewable energy zone** to be located in the **Southern Ocean** (with capacity to install up to **14 GW** of offshore wind field capacity), from **Port MacDonnell to Warrnambool**. The consultation period runs from **June 28, 2023**, to **August 31, 2023**.”

CCS in Singapore: On **March 1, 2024**, it was reported widely that **ExxonMobil** and **Shell** are working with Singapore (having signed a memorandum of understanding (**MOU**) with **Singapore Economic Development Board**), to develop a cross-border **CCS** project. As reported, **ExxonMobil** and **Shell** have established a consortium, **S-Hub**, for the purposes of the development of the **CCS** project. On development, the **CCS project** will capture and store permanently **2.5 million metric tonnes** of CO₂.



Europe and the UK

EC approves French funding support: On **March 28, 2024**, the **European Commission** approved the provision of up to **€900 million** in funding support by the **French Government** to allow the development of production capacity to produce renewable hydrogen and biofuels for use by the industrial and transport sectors.

Stahl-Holding-Saar holds tender: On **March 27, 2024**, it was reported widely that **Stahl-Holding-Saar** is running a tender to procure **50,000 metric tonnes** of renewable hydrogen for use to displace the use of fossil fuels needed for the high heat processes used to produce direct-reduced iron.

The development of demand side for hydrogen is critical, with supply to remain a little ahead of demand side. There have been a number of instances of demand side signaling the need to develop supply side. By way of a reminder:

- **Edition 3 of P₂N₀** reported that: "On **September 14, 2023**, it was reported widely that **TotalEnergies** is to run a tender for **500,000 metric tonnes** a year of Green Hydrogen to displace its use of grey hydrogen at its refineries across Europe. This is a prime example of demand side committing to a feedstock, allowing supply side to match that demand: to produce **500,000 metric tonnes** of Green Hydrogen, **10 GW of renewable energy capacity** is required to power around **5 GW** of electrolyser capacity, requiring an investment of **€14 billion** (in today's money). Also on **September 14, 2023**, **TotalEnergies** announced (at <https://totalenergies.com>, under **TotalEnergies and Air Liquide joint Forces on Green Hydrogen to Decarbonise the Normandy Platform**) that it had signed an agreement, with **Air Liquide**, for the "long-term supply of green and low carbon hydrogen to the **TotalEnergies** refining and petrochemical platform in Normandy", by **Air Liquide**".
- **Edition 8 of P₂N₀** reported that: "On **January 22, 2024**, it was reported widely that the **Thyssenkrupp Steel Europe** [was] 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".

Majors plans:

- **TotalEnergies publishes Sustainability and Climate report:** On **March 25, 2024**, **TotalEnergies** published its [Sustainability & Climate 2024 Progress Report](#).
- **Shell publishes Energy Transition Strategy 2024:** On **March 12, 2024**, **Shell** published its [Energy Transition Strategy 2024](#).

UK Government grants Development Consent Order: On **March 22, 2024**, the **UK Government** (Department of Energy Security and Net Zero) granted a **Development Consent Order (DCO)** to allow the development of the **HyNet North West CO₂ Pipeline**. In addition, the **DCO** will allow **Eni UK**, as the transportation and storage operator for the HyNet North West Cluster, to operate and to maintain the Pipeline to transport CO₂ into the carbon storage facilities at the storage site to be operated by Eni UK in Liverpool Bay. With the grant of the **DCO**, the **HyNet North West Cluster** inches ever closer to a **positive final investment decision**.

German Government launches €4 billion auction for carbon contracts for differences (CCfD): On **March 14, 2024**, the **Federal German Government** launched the first round of bids to incentivize German industry to transition to lower, low or no GHG emission processes. The **CCfDs** or **climate protection contracts** are intended to accelerate the transition (by providing a positive incentive), with a clear recognition that the price on carbon under the **EU ETS** not sufficient (as a negative incentive).

By way of reminder: **Edition 9 of P₂N₀** reported that:

“On **February 24, 2024**, the **EC** approved the provision of **€4 billion** of funding support under **15 year** contracts for differences (**CfDs**), characterized (and named) as two-way carbon contracts for differences (or **CCfDs**) or climate protection contracts. Readers of **P₂N₀** will know that the Netherlands uses a similar policy setting.

In context, the current price for emissions permits under the **EU ETS** is around **€60 per emission permit**, representing **one metric tonne of CO₂-e** emitted. This is not a price point that will provide sufficient incentive to decarbonize: the price point of emissions permits needs to be considerably greater. Indeed, given current dynamics in the **EU ETS** market for emissions permits it seems likely that other policy settings will be needed to ensure decarbonization.

To encourage acceleration of decarbonization, the **German Federal Government** is to incentivize industrial emitters to decarbonize sooner than they would otherwise, and the amount payable under the climate protection contracts will compensate emitters for the difference between the cost of decarbonization and the cost of emissions permits. The climate protection contracts will be awarded through auctions, the first of which is expected during 1H.”

For those readers interested in **CfDs** and **CCfDs**, the good folk at the **Clean Air Task Force** have published [Designing Carbon Contracts for Difference – A comparison of incentives for carbon capture and storage in Europe](#), which provides a helpful reference tool.

Italian Government to launch €1.1 billion to develop manufacturing capacity: On **March 11, 2024**, it was reported widely that the **Italian Government** is to launch a **€1.1 billion fund** to provide a source to subsidize the development of energy transition manufacturing capacity across Italy. As reported, the focus will be to subsidize the development of electrolyser capacity. As always, the provision of subsidies by a Member State of the EU requires the approval of the **European Commission (EC)**, which the **EC** gave on **March 8, 2024**.

UK Government to allocate GBP 1 billion + in Allocation Round 6 (AR6): On **March 6 / 7, 2024**, the **UK Government** (Department of Energy Security and Net Zero) announced that it has allocated over **GBP 1 billion** to provide funding under **CfDs** to subsidize the cost of renewable electrical energy, with up to GBP 800 million allocated for under AR6.

By way of a reminder: [Edition 5 of P₂N₀](#) reported that: “On **November 15, 2023**, it was reported widely that the **UK Government** is to increase the strike price for the contracts for differences awarded to successful bidders for offshore wind field capacity in AR6. The strike price will increase **£73/MWh** (for fixed bottom wind), and **£176/MWh** (for floating wind). The announcement from the UK Government can be found at <https://www.gov.uk>, under [Boost for offshore wind as government raises maximum prices in renewable energy auction](#).

Norwegian Government announces two areas of CCS: On **March 6, 2024**, the **Norwegian Government** (Ministry of Energy, Norwegian Offshore Directorate) announced **nr. 1-2024** under which two areas were announced for CCS under the [CO₂ Storage Regulations](#). Attached are links to the [press release](#) from the **Ministry of Petroleum and Energy** and the [Invitation to apply for licenses for storage of CO₂](#). The closing date for the applications to be lodged is April 24, 2024. While **nr.1-2024** was understood to be on the way, it is good to see progress. In passing, it is noted that the **Sleipner CCS project** in the Norwegian sector of the North Sea has stored permanently CO₂ since 1996.

HELPFUL PUBLICATIONS AND DATA BASES

The most noteworthy publications read by the author during **March 2024** are as follows:

- **Greenhouse Gas Protocol:** In late **March 2024**, the **Greenhouse Gas Protocol secretariat** published (in [draft](#)) the results of the feedback on the *Scope 3 Standard and Scope 3 Technical Guidance*. The publication is well-worth a read, based on over 230 representations made.
- **Global Methane Tracker 2024:** In **March 2024**, the **IEA** published its [Global Methane Tracker 2024](#). The publication is fact and stat rich, and well-worth a read.

- **CCS for shipping, concept to reality:** In **March 2024**, the good folk at **The Oxford Institute of Energy Studies** published [What do we need to know to make CO₂ shipping for CCS a reality?](#) The publication is excellent, providing many nuggets of information within a clear narrative.
- **Risk Allocation and Regulation for CO₂ Infrastructure:** On **March 14, 2024**, the good folk at the **Clean Air Task Force** published [Risk Allocation and Regulation for CO₂ Infrastructure: A UK Study](#). The publication is well-worth a read, providing a helpful overview of elements of the UK regulatory regime.
- **Market Assessment for CCUS in MENA Region:** On **March 12, 2024**, the good folk at the **International Energy Forum** published [Market Assessment for CCUS in MENA Region](#). The publication is a helpful scene setter of a region in which CCS is likely to play a material and long-term role in allowing the continued production of petroleum products.
- **Australian Climate Risk Assessment:** On **March 13, 2024**, the **Federal Australia Government** (Department of Climate Change, Energy, the Environment and Water or DCCEW), published its first [National Climate Risk Assessment](#). The publication is subtitled, **First Pass Assessment report**, and its length and subject matter reflect this. Nevertheless, the publication is well-worth a read, whether or not one lives in the Great Southern Land.
- **Energy Taxonomy:** During the first half of **March 2024**, the **IRENA** published its [Energy Taxonomy – Classification for the energy transition](#). The publication is a helpful reference work.
- **European Climate Risk Assessment:** On **March 11, 2024**, the **European Environment Agency (EEA)** published its first [European Climate Risk Assessment](#). The publication is weighty in size and subject matter. The key benefit of the publication is that it provides a clear basis for action across the whole of the continent, the continent that is the fastest-warming continent. Both the **Executive Summary** and the **unedited long form** of the publication are excellent.

In addition to the **EEA publication**, the good folk at Centro Euro-Mediterraneo sui Cambiamenti Climatici (**CMCC**) have published (as part of its **G20 Climate Change Atlas**), [European Union Climate Impact](#). And the good folk at **Carbon Gap** publish their [Carbon Removal Policy tracker](#).

- **CCS Globally:** During early **March 2024**, the **IEA** published its [CCUS Projects Database](#). The **Database** details all large-scale CO₂ capture, transport, storage, and utilization projects commissioned and planned globally.
- **CCS in Germany:** On **March 5, 2024**, the good folk at the **Global CCS Institute** published [CCS in Germany's Decarbonisation Pathway: State of Play and Way Forward](#). The publication reflects the announcement of the German Federal Government on **February 26, 2024**, of its **Carbon Management Strategy and long-term strategy for negative emissions**.

As always with the Institute the publication is well-worth a read. The key point is that the:

“... first wave of CCS projects [will] focus ... on CO₂ capture and transport that would enable Germany to export its CO₂ to countries with storage resources. At the cross-border level, the ratification of the amendment to Article 6 [by] the 2009 London Protocol amendment would be needed to allow Germany to export CO₂ [for dumping in the marine environment]”.

By way of reminder: [Edition 9 of P₂N₀](#) reported (under **Germany moves to CCS**) that: “On **February 26, 2024**, [draft amendments](#) to the **Carbon Dioxide Storage Act**, a **Carbon Management Strategy**, and **long-term strategy for negative emissions** were published by the German **Federal Ministry of Economic Affairs and Climate Action**. Together, these documents outline a comprehensive plan for **capture and storage permanently offshore** of CO₂ arising from activities in **Germany** over the long-term. This represents pragmatic policy setting and is a welcome development”.

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