



Welcome to the **fourth edition** of **P2N0** covering the drive to reduce greenhouse gas (**GHG**) emissions to net-zero (**NZE**). In addition to **P2N0**, it is anticipated that articles on matters relevant to **NZE** will be published quarterly. At the moment, we anticipate publishing articles on **Carbon Capture Utilization and Storage** (during Q4 of 2023) and **Carbon Credits and developing Voluntary Carbon Markets** (during Q1 of 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.

Please access previous editions of P2N0 by clicking on the following hyperlinks: [Edition 1](#), [Edition 2](#), and [Edition 3](#).

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Edition 4: October 1, to October 31, 2023 (covering news items arising during this period)

HEADLINES FROM OCTOBER 2023

October 2023 was another “news-rich” month, with the following matters seeming to us to be the most news-worthy in the context of progress towards net-zero.

- **The State of New York third round results:** On **October 25, 2023**, it was reported widely that **Attentive Energy One, Community Offshore Wind, and Excelsior Wind** had each been successful in their bids on the third solicitation round of the State of New York. As reported, up to **4.032 GW** of offshore wind field capacity will be installed across the three areas:

Summary of scale and size			
Consortium	Attentive Energy One	Community Offshore Wind	Excelsior Wind
Consortium Members	Corio Generation, Rise Light & Power and TotalEnergies	National Grid Ventures and RWE	Copenhagen Infrastructure Partners
Capacity	1.404 GW of OWF capacity	1.314 GW of OWF capacity	1.314 GW of OWF capacity

- **EU Wind Power Package:** On **October 24, 2023**, the **European Union (EU)** announced its [European Wind Power Action Plan](#). The **Plan** is (both needed and) welcome, and it is hoped that it will add renewed impetus to the development of wind capacity across the **EU**. The announcement from the **European Commission** (at <https://ec.europa.eu>, under [Commission sets out immediate actions to support the European wind power industry](#)) provides a helpful summary of the background to, and the purpose of, the **Plan**. The **Plan** is needed because the **EU** is committed to the sourcing of 42.5% (see **EU to mandate use of Renewable Hydrogen** below) of its electrical energy demand from renewable sources by 2030: with a roadmap to have installed **111 GW of wind capacity by 2030**, and an action plan to address challenges across the industry.
- **IEA World Energy Outlook 2023:** On **October 24, 2023**, the **International Energy Agency (IEA)** published its [World Energy Outlook 2023 \(WEO 2023\)](#). (Links to the [WEO 2021](#) and [2022](#) are attached.) As with all **IEA** publications, **WEO 2023** is well-worth a read. The headlines emerging from **WEO 2023** are as follows: **1.** The world

is on track to achieve peak GHG emissions before 2030; **2.** New dynamics for investment are taking shape, with investments in renewable energy projects exceeding investments in non-renewable projects, with the gap increasing as we progress to 2030; **3.** Achieving increased rate of sustainable development is key; **4.** Increased manufacturing capacity provides a clear path for photovoltaic solar deployment; **5.** "A wave of new LNG export projects is set to remodel gas markets"; **6.** "Affordability and resilience are watchwords for the future"; and **7.** "We need to go much further and faster, but a fragmented world will not rise to meet our climate and energy security challenges".

- **H2 Turbine Testing:** On **October 17, 2023**, it was reported widely that **HYFLEXPOWER** (comprising **Siemens Energy**, and **ENGIE Solutions, Centrax, DLR**, and a number of universities) had operated successfully a hydrogen gas turbine: the hydrogen is produced by a **1 MW** electrolyzer provided by **Siemens Energy** (located at the **Smurfit Kappa paper mill** in Saillat-sur-Vienne, France), the green hydrogen from which is stored in a 1 metric tonne tank, and then combusted using a hydrogen gas turbine provided by **Siemens Energy**.
- **US Regional Clean Hydrogen Hubs:** 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.

The **H₂ Hubs** are: **1. Appalachian Hydrogen Hub**, eligible for up to USD 925 million; **2. California Hydrogen Hub**, eligible for up to USD 1.2 billion; **3. Gulf Coast Hydrogen Hub**, eligible for up to USD 1.2 billion; **4. Heartland Hydrogen Hub**, eligible for up to USD 925 million; **5. Mid-Atlantic Hydrogen Hub**, eligible for up to USD 750 million; **6. Midwest Hydrogen Hub**, eligible for up to USD 1 billion; and **7. Pacific Northwest Hydrogen Hub**, eligible for up to USD 1 billion. The **US Department of Energy (DOE), Office of Clean Energy Demonstrations**, administers the **H₂ Hubs** program. It is understood that the **DOE Loan Program Office** has received an application from one of the **H₂ Hubs**. Please click [here](#) to view a Baker Botts article published soon after the announcement of the **H₂ Hubs**.

- **From the boardroom to the boiler-room:**
 - On **October 11, 2023**, **DNV** published its [Energy Transition Outlook 2023 \(ETO 2023\)](#). As with all publications from **DNV**, **ETO 2023** provides cogent insights in respect of matters relevant to and impacting the energy transition. As ever, the **ETO 2023** is punchy, with the following six headlines: **1.** The energy transition is still on the starting blocks; **2.** From the mid-2020s renewables sources will outrun fossil sources; **3.** Energy security is on the podium as an issue; **4.** Policy settings are having an impact; **5.** Bottlenecks and gridlock (and bunching of the field) is slowing progress; and **6.** GHG emissions will reduce but not fast enough.
 - On **October 9, 2023**, **DNV** published guidelines for [Onboard Carbon Capture Systems on Board Ships](#).
- **Transition Plan Taskforce (TPT) Disclosure Framework drops:** On **October 9, 2023**, the **TPT** published its [Disclosure Framework](#). The **Framework** is a masterwork, and is being referred to as a gold-standard: the **Framework** provides a clear basis for corporations to disclose climate change transition plans, and reporting in line with the **International Sustainability Standards Board**. The **Framework** is compulsory reading: this is indeed a "brave new world" in which "past is prologue".

The **Framework** is intended to result in corporations collecting and disclosing data and information, in form and substance, explaining how they intend to mitigate and to adapt to climate change, through their business models, through their operations and through their products and services, including GHG emissions reduction and carbon credit strategies. In addition, read the [IFRS S2 Climate – related Disclosures – TPT Disclosure Framework](#)

Technical Mapping and **TCFD Recommendations and Guidance – TPT Disclosure Framework – Technical Mapping**.

Coverage in other editions of P₂N₀

TNFD launched: Among other things¹, **Edition 1** of **P₂N₀** stated: “On **September 18, 2023**, the **Taskforce for Nature-related Disclosures (TNFD)** framework will be launched. Following the road well-travelled, including by the **Taskforce Climate-related Financial Disclosures**, together they will provide a comprehensive framework to assess climate-related and nature-related disclosures. The fact that progress has been made across the **ISSB**, the **CSRD** and the **TNFD** in a relatively short period of time provides cause for cautious optimism”.

On **September 18, 2023**, the **Taskforce on Nature-related Financial Disclosures (TNFD) Recommendations** were launched. As expected, the publication did not disappoint, providing clear and crisp guidance in respect of the recommended disclosures on **Governance, Strategy, Risk and Impact Management and Metrics and Targets**, being the **four pillars**, with **14 indicators** for reporting across sectors, and recommendations that are sector specific. (In addition, the good folk at **WBCSD** have published **CTI.v4.0 (Circular Transition Indicators V4.0)**.)

There now exist recommendations and guidance for the market to adopt a method driven, and technically sound, basis for disclosing and reporting on nature-related financial matters. The **TNFD** and **Science Based Targets Network (SBTN)** frameworks are integrated, with **SBTN** applied alongside **TNFD** recommendations and principles. The **TNFD** and **SBTN** have eight shared outputs, and the further releases from **SBTN** will be aligned with **TNFD**.

- [Taskforce on Nature-related Financial Disclosures \(TNFD\) Recommendations](#)
- [Executive Summary of the TNFD Recommendations](#)
- [Getting started with adoption of the TNFD Recommendations](#)
- [Guidance on the identification and assessment of nature-related issues: the LEAP approach](#)
- [Additional guidance for financial institutions](#)

- **EU to mandate use of Renewable Hydrogen:** On **October 9, 2023**, the **Member States** of the **EU** approved the **Renewable Energy Directive**. Among the slew of policy settings, is that **42%** of hydrogen used for industrial purposes within the **EU** by **2030**, and **60%** by **2035**, **must be renewable**.

As noted by the author, including in **Edition 3** of **P₂N₀**, supply and demand need to develop in tandem. The supply of renewable hydrogen in Europe will be assisted by the European Hydrogen Bank (**supply side**), and the supply side knows the size and shape of the demand side, because its renewable hydrogen is going to displace grey

¹ **European Sustainability Reporting Standards:** On **June 9, 2023**, the **European Commission (EC)** published the **European Sustainability Reporting Standards (ESRS)**. As reported, the **ESRS** would soften some of the provisions anticipated as likely to be contemplated by the **Corporate Sustainable Reporting Directive (CSRD)** of the **European Union**.

On **July 31, 2023**, the **EC** adopted the **ESRS**. The **ESRS** must be used by corporations that are the subject of the **CSRD** (it is estimated over 50,000 corporations will be subject to the **CSRD**). The **EC** website states that:

“The [ESRS] cover the full range of environmental, social and governance issues, including climate change, biodiversity and human rights. They provide information for investors to understand the sustainability impact of the companies in which they wish to invest. They also take account of discussions with the [ISSB] and the [GRI] in order to ensure a very high degree of interoperability between the EU and the global standards to prevent unnecessary double reporting by companies”.

In the **third week of October 2023**, the **European Parliament** approved the **ESRS**: see <https://denkstatt.eu>, **European Sustainability Reporting Standards (ESRS) in a nutshell**. The headlines are that the **ESRS** must be adopted by each **Member State** (of the EU) during 2023, with reporting under the **CSRD** to be mandatory from 2024, with first reports based on **CSRD** due in 2025. Given that it is necessary for a corporation to demonstrate that climate change risk is not material, it is expected that most corporations the subject of the **CSRD** will report. One of the key features of the **CSRD** is that corporations must report on the climate risks that may be material to its business, and the climate risks to which its business may give rise (so called, **double-materiality** reporting). In contrast, under **ISSB** materiality is financial.

hydrogen. While this is policy setting 101, it is wonderful to see. It is hoped that Japan and South Korea will continue to progress to the same supply and demand side development.

- **CBAM goes live:** On **October 1, 2023**, the EU **Cross-Border Adjustment Mechanism (CBAM)** commenced its **Transitional Phase** which will apply through **December 31, 2023**. As noted in **Edition 1** of **P₂N₀**:

“During the **Transitional Phase**, those that will be subject to **CBAM** from January 1, 2026, ... will have to report on the embedded carbon in the goods or electrical energy imported into the EU, providing a learning period with the opportunity to make amendments to the means of determining embedded carbon and reporting on it².”

By way of reminder, currently **CBAM** covers the following goods imported into the **EU**: **aluminum; cement; chemicals** (including hydrogen); **fertilizers** (including ammonia); and **iron and steel**, and to **electrical energy** imported into the **EU**. Please click [here](#) to view the Implementation Regulation.

For the **EU**, the **CBAM** is its “... landmark [policy setting] to put a fair price on the carbon emitted during the production of carbon intensive goods that are entering the EU, and to encourage cleaner industrial production in non-EU countries”, i.e., to encourage other countries to place an equivalent price on carbon to incentivize progress towards the use of lower, low and no carbon intensive means of production.

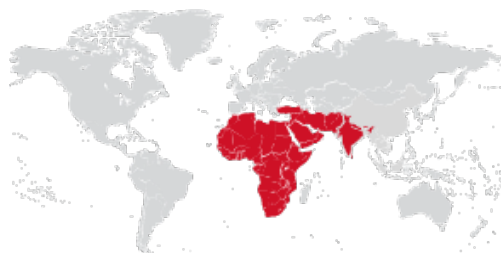
For those wishing to take a deep dive into the determination of the carbon intensities of **aluminum; cement; chemicals; fertilizers** and **iron and steel**, the **EU Joint Research Centre (JRC)** has published an excellent technical report entitled [Greenhouse gas emission intensities of the steel, fertilizers, aluminum and cement industries in the EU and its main trading partners](#). Helpfully, the **European Commission** has published fact sheets about **CBAM**: [Aluminum](#), [Cement](#), [Hydrogen](#), [Fertilizers](#), and [Iron and Steel](#).

By way of a reminder, on January 1, 2024, the two-year phase-in period will commence for the application of the **EU ETS** to the maritime sector. During the two-year phase-in period emissions permits will have to be acquired and surrendered in respect of 40% of the mass of GHG emissions arising in 2024, increasing to 70% in 2025 and 2026, and 100% from January 1, 2027. The **EU ETS** will place a price on carbon in respect of 100% of GHG emissions arising from maritime activities within the **EU**, and 50% arising from trade between **EU** countries and **non-EU** countries. The **EU** continues to develop and to implement a set of coherent policy settings.

- **Germany and Japan scope cooperation:** In late **September** and early **October 2023**, it was reported widely that Germany and Japan are discussing cooperation including in respect of procuring hydrogen.

². The basis for carbon accounting under **CBAM** is based on the **carbon footprint of products** or **CFP** (and in the case of electricity, services) imported in the **EU**. We say based on the **CFP** because **CFP** measures **GHG** emissions arising from upstream and downstream processing and treatment, and manufacture, transportation, use, and through life cycle. This means of measurement covers a broader footprint, than the measurement for the purposes of the **EU ETS**, and as such downstream, transportation, use and life cycle **GHG** emissions as not measured.

NEWS FROM AROUND THE WORLD



Africa, Middle East and South Asia

Big week for Namibia:

- **EU pledges investment:** On **October 28, 2023**, **The Namibian** (under [EU to pump N\\$20b into Namibia's green hydrogen, raw materials sectors](#)) reported that the **EU** had pledged to invest in the green hydrogen and critical metals and mineral sectors. The investment will be concentrated on the development of the **Walvis Bay-Maputo Corridor**, one of 11 strategic corridors that the **EU** has identified as part of its [EU-Africa Global Gateway Investment Package](#). The **Walvis Bay-Maputo Corridor** is well-placed, being a natural gateway for international trade, including to the Southern African Development Community, with around 300 million people.
- **Debt funding for Hyphen:** On **October 25, 2023**, **H2 View** (under [Hyphen plans to enter loan agreement for \\$10 bn Namibian green hydrogen project](#)) reported that **Hydrogen Energy** is progressing discussions with the **Development Bank of South Africa (DBSA)** to borrow to enable it to develop its **7 GW** of renewable energy, and **3 GW** of installed electrolyzers, **2 million metric tonnes** a year green ammonia project.

Indian Cabinet Green Lights Green Energy Corridor: On **October 19, 2023**, the **Cabinet Committee of Economic Affairs** approved the development of a **7.5 GW** photovoltaic solar farm development in the **Ladakh region** in the north of India, and of a **12 GWh BESS**. This development may be seen as further progress of the Green Energy Corridor initiative. The initiative is to be led by the **Power Grid Corporation of India** with an estimated cost of **USD 2.5 billion**.

KSA aiming for 50% renewables by 2030: On **October 11, 2023**, **Arab News** (under [Saudi Arabia advances with clean energy projects, aiming for 50% renewables by 2030](#)), reported that the **KSA** is planning to continue to advance with the development of "**22.8 GW of renewable energy projects**" at "different stages of development". As reported, 2.8 GW on renewable electrical energy projects will be operational by the end of 2023, the development of an additional 4 GW will commence soon, a further "8 GW entering the execution phase", and with a tender for 8 GW of renewable electrical projects to be issued by the end of 2023.

KSA and India size interconnectors: On **October 9, 2023**, it was reported widely that the **Minister of Energy of the Kingdom of Saudi Arabia (KSA)** and the **Union Minister for Power and New & Renewable Energy of the Government of India** had signed a memorandum of understanding to establish a framework for cooperation between **KSA** and **India** to assess the development of **HVDC interconnectors**, and the **generation of renewable electrical energy**, and the **production of green and clean hydrogen**.

Aramco:

- **Tests eRACT™:** On **October 9, 2023**, it was reported widely that **Aramco** and **Topsoe** are to work together to build a demonstration plant and the **Shaybah Natural Gas Liquids recovery plant** to test the use, at scale, of **eRACT™** technology to convert natural gas into low-carbon hydrogen; and
- **Measures DACs for size:** On **October 8, 2023**, it was report widely that **Aramco** and **Siemens Energy** are to work together to develop a **Direct Air Capture (DAC)** pilot project.

These news items continue an essential theme of decarbonization and the energy transition: there are a number of means to avoid, reduce and remove **CO₂**, and they each have a role, the extent of that role is being assessed on an ongoing basis, and that each National Oil Company and International Energy Company has a key role to play.

ADNOC tailored for DACS and CCS:

- On **October 3, 2023**, it was reported widely that **ADNOC** and **Occidental** are to undertake a study jointly to assess the development of a **one million metric tonnes** a year **DAC** facility, with the **CO₂** captured by the **DAC** to be injected and stored permanently using existing **ADNOC** **CO₂** infrastructure³, with the **DAC** using **Occidental** technology.
- On **October 9, 2023**, it was reported widely that **ADNOC** had taken a positive final investment decision in respect of the **USD 17 billion Hail and Ghasha** off-shore-come-on-shore carbon capture and hydrogen project. As reported, the carbon capture and storage facilities will be able to storage permanently up to **1.5 million metric tonnes** of **CO₂** a year.

Blue Carbon scopes US 1.5 billion carbon credit development deal: On **October 2, 2023**, it was reported widely that **Blue Carbon** had entered into a memorandum of understanding (**MoU**) with **Zimbabwe** to develop projects in Zimbabwe that will give rise to mitigation of climate change, and the creation and issuance of carbon credits. As reported previously, around a **fifth of the landmass of Zimbabwe** is the subject of the **MoU** with the intention to develop projects that protect forests from deforestation and that rehabilitate land. It is understood that this is the fourth carbon credit development deal for **Blue Carbon**, with deals already scoped for Liberia, Tanzania, and Zambia.

By way of reminder: **Edition 2 of P2N0 reported:**

“Zimbabwe lands on carbon credit split: On **August 17, 2023**, Zimbabwe released regulations on the revenue share in respect of carbon credits arising from projects within the country. The final split is nothing to the point of principle raised by Zimbabwe. The point of principle for countries in which activities and projects giving rise to carbon credits are undertaken is for those countries to treat the value arising from carbon credits as a resource, in which those countries should in the revenue arising from those carbon credits.

This is a long-standing point of principle (pointed out by the author since the mid-2000s) the point of principle provides a basis for the grant of concessions for projects to derive carbon credits, and for that revenue to be shared. A new form of production sharing contract. Whole-of-country carbon credit schemes will allow countries to maximize revenue, and to forward sell carbon credits.”

Republic of Ghana goes live under Article 6.2: At the start of **October 2023**, the **Republic of Ghana** submitted an **initial report** pursuant to **Article 6.2** of the Paris Agreement in respect of the **Promotion of climate smart agriculture practices for sustainable rice cultivation in Ghana**. The initial report (and its publication by the UNFCCC’s accounting and reporting platform) is the first step for a host country seeking to bring a project within the **Article 6.2** framework.

Article 6 provides as follows:

1. Parties recognize that some Parties choose to pursue voluntary cooperation in the implementation of their nationally determined contributions to allow the higher ambition in their mitigation and adaptation actions and to promote sustainable development and environmental integrity.
2. Parties shall, where engaging on a voluntary basis in **cooperative approaches**⁴ that involve the use of **internationally transferred mitigation outcomes [ITMOS]** towards nationally determined contributions [NDCS], promote sustainable development and ensure environmental integrity and transparency, including in government, and shall apply robust accounting to ensure, inter alia, the avoidance of

3. **Edition 3 of P2N0** reported: **“ADNOC announces CCS project:** On **September 11, 2023**, **The National News** (at <https://www.thenationalnews.com>, under **How the UAE is advancing efforts to strengthen its carbon capture commitment**) reported that **ADNOC** had announced the development of a **1.5 million metric tonne a year** **CO₂** capture and storage project. The **CO₂** will be captured from the Habshan gas processing plant”.

⁴ **Article 6** avoids the use of / does not use the word markets, but **cooperative approaches** may be regarded as contemplating markets.

double counting, **consistent with guidance⁵ adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.**

While this news item is better placed under **APAC**, given the theme of **Article 6.2** of the **Paris Agreement** we have placed here: during the first week of October 2023, **Singapore** published the criteria it will require to be satisfied if a carbon credit is to be used to offset against emissions the subject of the carbon tax to be levied in Singapore (**International Carbon Credit eligibility**). From 2024 the carbon tax will be payable as follows: from **2024 SGD 25** per metric tonne, from 2026 through 2027 **SGD 45**, and up to **SGD 80** by 2030. The carbon tax will be levied on corporations and other organizations whose activities give rise to 25,000 (or more) metric tonnes of GHG emissions a year. Corporations and other organizations may offset up to 5% of their carbon taxable emissions with carbon credits. Those carbon credits must be compliant with the **Article 6.2 agreements** entered into by Singapore with other countries, themselves compliant with **Article 6.2**. On **October 11, 2023**, **Grace Fu, Minister of Sustainability and the Environment of Singapore** indicated that the guidance would be provided on **International Carbon Credit eligibility** by the end of 2023.

In a similar vein, and better placed under the **Americas**, **Suriname** has indicated that it intends to be the first country to sell carbon credits arising from the ITMOS regime provided by **Article 6.2** of the **Paris Agreement**. Around 95% of the land mass of **Suriname** is forested. Under **Article 6.2 Suriname** will develop a base line as to the mass of CO₂ being absorbed by those forests, and then measure, monitor, record, report and verify activities and projects that increase the mass of CO₂ absorbed, with carbon credits to be issued in respect of real, verified and additional CO₂ absorbed from those activities and projects. Given that **Suriname** does not need carbon credits to achieve its NDC (as a nation it is said to be carbon negative), it will sell those carbon credits.

As noted in previous publications from the author (and as anyone who has spent more than five minutes with the author since COP-26), watch out for whole-of-country carbon credit regimes, with carbon credits owned by governments, and with forward sales of those carbon credits.



Duke Energy to go end to end: On **October 28, 2023**, **Reuters** reported that **Duke Energy** intends to develop “an end-to-end system to produce, store and combust 100% green hydrogen, in Florida” to be located at existing facilities of Duke Energy at DeBary. The system is a demonstration project.

John Cockerill to go live in Texas: On **October 26, 2023**, **hydrogeninsight** (under [Hydrogen hub / John Cockerill to open electrolyser gigafactory in Texas next year](#)) reported that the **John Cockerill** is to develop the first alkaline electrolyser factory at scale in the US, capable of manufacturing up to **1 GW** of electrolyser capacity a year.

Getting to grips with system integrity:

⁵ The **Guidance** on cooperative approaches was agreed at **COP-26**. Among other things, it provided for: **I. ITMOS** are: (a) real, verified, and additional; (b) emission reductions and removals; (c) measured in metric tonnes of CO₂-e in accordance with IPCC methodologies and metrics; (d) from a cooperative approach; (e) generated in respect of mitigation from 2021 onward; (f) are authorized; and (g) emission reductions issued under the mechanism if authorized for the purposes of Article 6(2); **II.** Participation; **III.** Corresponding adjustments; **IV.** Reporting; **V.** Review; **VI.** Recording and tracking; and **VII** Ambition in mitigation.

- On **October 18, 2023**, the **US Department of Energy (DOE)** announced a [Grid Resilience and Innovation Partnerships \(GRIPS\)](#) initiative (under [Biden-Harris Administration Announces \\$3.5 Billion for Largest Ever Investment in America's Electric Grid, Deploying More Clean Energy, Lowering Costs, and Creating Union Jobs](#)). The **GRIPS** initiative, as announced, is intended to “strengthen grid resilience and reliability”, with 58 projects, across 44 States, at a cost of **USD 3.5 billion**. This is part of the broader **USD10.5 billion** GRIPS initiative.
- On **October 30, 2023**, the **DOE** announced that three transmission grids, being developed by the **Berkshire Hathaway, Grid United**, and **National Grid**, had been selected for access to the **DOE Transmission Facilitation Program** (a USD 2.5 billion fund), with **USD 1.3 billion** of conditional commitments, with the **DOE** serving as “an anchor customer” to purchase capacity in the transmission grids to allow the grids to be developed.

HiF Global warming-up in Chile: 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.

Purchasing power of combined procurement: On **October 4, 2023**, it was reported widely that the **US States of Connecticut, Massachusetts, and Rhode Island** had signed a memorandum of understanding providing a framework for the three States to procure up to **6GW** of offshore wind field capacity.

Purchasing carbon credit loss insurance: On **October 3, 2023**, **carbon credits** (under [Carbon Credit Purchases in Canada Are Now Protected with Kita](#)) reported that **Kita Earth** is offering carbon credit insurance for the loss of carbon credits issued in respect of CO₂ removal. One of the key risks in respect of any contract for the forward sale and purchase of carbon credits is that the activity or project giving rise to the carbon credit will be lost in whole or in part, for example, by drought or fire, or a combination of both. To the knowledge of the author, the **Kita Earth Carbon Purchase Protection Cover** is a world first.



APAC

South Australia constant renewal: On **October 27, 2023**, it was reported widely that the State of **South Australia** had averaged 99.8% of the load by electrical energy dispatched from “net renewable” sources across the State (and imported from the neighbouring State of Victoria) for a seven-day period.

Federal Australian Government enters the ARENA: On **October 24, 2023**, it was reported widely that the **Federal Government of Australia**, announced that it is to double the level of funding support for the development of critical metals and minerals (**CMM**) projects. The announcement was made by the **Prime Minister, Anthony Albanese**, on a state visit to the US, and provides a basis for Australia to supply **CMM** to the US.

Queensland Government to lock-in renewable electrical energy: On **October 24, 2023**, the **Energy Minister** for the **State of Queensland** introduced to the state parliament the **Energy (Renewable Transformation and Jobs) Bill 2023** under which a commitment to the development of renewable energy (with a commitment to 50% renewables electrical energy by 2030, 70% by 2032, and 80% by 2035), and to the retention of majority public ownership of generation capacity, will be legislated.

SIEW gives rise to slew of announcements: During the week beginning **October 23, 2023**, **Singapore International Energy Week** was held, and number of announcements were made marking the continued progress that Singapore continues to make, in the context of progress towards net zero, the following were the most noteworthy:

- A request for proposals (**RfP**) for the supply of around 100,000 metric tonnes of “**zero-carbon ammonia**” to be used as fuel for a gas-fired turbine; and
- An approval to **Sembcorp Utilities** and **Petro Vietnam Technical Services** to import **1.2 GW** of low carbon electrical energy from Vietnam.

The approval of the import of electrical energy from Vietnam is the fourth project announced in recent times. **Edition 2 of P2N0** noted “On August 28, 2023, **Singapore** and **Vietnam** exchanged side-letters to allow for the expansion of cooperation under the **Singapore-Vietnam Connectivity Framework Agreement**. The exchange of side-letters is an indication of the continued progress towards the development of the Asian Grid through bi-lateral agreements.”

Also, during **SIEW**, Singapore announced plans to ensure energy security: as announced, **Gasco**, will procure the supply of natural gas and liquified natural gas to ensure that Singapore’s **Gencos** are assured of supplies. As noted by the author on many occasions, natural gas and liquified natural gas is an energy transition fuel and is essential to progress towards net zero.

South Australian Government progress GH2 tender: On **October 22, 2023**, **reneweconomy** (under [South Australia names winners of world-leading hydrogen tender in race to 100 pt renewables](#)) reported that the **South Australian Government** had announced **ATCO** and **BOC Linde** as its **preferred partners** to develop **250 MW** of electrolyser capacity and a **200 MW** hydrogen-fired power plant.

Federal Australian Government enters the ARENA: On **October 10, 2023**, it was reported widely that the **Federal Government of Australia**, via **ARENA**, had opened applications for its **AUD 2 billion Hydrogen Headstart** program. Under the program it is expected that two or three green hydrogen and ammonia production projects will be provided with funding assistance.

Masdar and MIDA to develop 10 GW: On **October 9, 2023**, it was reported widely that **Masdar** and the **Malaysian Investment Development Corporation (MIDA)** had agreed to develop up to **10 GW** of renewable electrical energy projects within Southeast Asia.

CRI and Jiangsu Sailboat set sail: On **October 4, 2023**, **Carbon Recycling International (CRI)** announced (under [Carbon Recycling International \(CRI\) and Jiangsu Sailboat Start Up World’s Most Efficient CO2-to-Methanol Plant](#)) that **Jiangsu Sailboat** and it had commenced operations successfully at the **Jiangsu Sailboat methanol plant** located in the **Shenghong Petrochemical Industrial Park**. The plant is operated by **Jiangsu Sailboat** using **CRI emissions-to-liquids** proprietary technology. The plant has capacity to recycle **150,000** metric tonnes of CO₂ a year to produce **100,000** metric tonnes of methanol, with the CO₂ sourced from the **Shenghong Petrochemical Industrial Park**. The methanol (a monomer) will be used as a feedstock that the park, to produce polymers.



Europe and the UK

UK concludes consultation: On **October 30, 2023**, the **UK Government** concluded consultation on [Proposals for hydrogen production and industrial carbon capture regulations](#), with the intention to proceed based on its proposals.

Gas Storage Denmark running CO₂ storage tender: On **October 25, 2023**, **Gas Storage Denmark** opened its tender for the first onshore **CO₂ storage** capacity to be provided at the **CO₂RYLUS** project. The tender offers **two million metric tonnes** of CO₂ storage over a **10-year period**, with the CO₂ to be stored to be transported by tanker. The tender closes on November 17, 2023.

CDR a hot topic: During the week beginning **October 23, 2023**, the **EU** continued to make progress in respect of policy settings and regulation of carbon dioxide and removal (**CDR**).

- On **October 23, 2023**, the **Environment, Public Health, and Food Safety Committee (ENVI)** of the **European Parliament** discussed the final draft of the **Carbon Removal Certification Framework (CRCF)**, with the final draft approved on **October 24, 2023**, with the final draft now to be voted on by the **European Parliament** during November 2023;
- On **October 25 and 26, 2023**, the **European Commission** hosted discussions in respect of the **CDR methodologies** provided for under the **CRCF**, including consideration of increased use of biochar and enhanced weathering.

As will be apparent from this **Edition 4** of **P₂N₀**, progress is being made in the development of CCS and CDR, and yet that progress remains behind that which is needed to meet targets for CCS and CDR in the EU, and globally. The good folk at **Carbon Gap** published paper entitled [Carbon Removal Certification Framework: Carbon Gap welcomes ENVI Committee Vote](#), which is well-worth a read.

In the context of the **Net Zero Industry Act** the **European Parliament ITRE Committee** approved a report on the Act which contemplates the firming up of a target of **50 million metric tonnes of CCS capacity in the EU by 2030**.

Coach and HGV solutions sought: On **October 19, 2023**, the **UK Government** (Department of Transport) published a call for evidence in respect of [Infrastructure for zero emission heavy goods vehicles and coaches](#). The evidence will inform decisions as to the development of infrastructure: over 80% of domestic freight (1.64 billion metric tonnes a year) is transported by heavy goods vehicles in the UK, contributing 20% of GHG emissions arising from domestic transport.

Heidelberg Materials keeps moving: On **October 18, 2023**, **Heidelberg Materials** announced the development of a pilot carbon capture unit at its cement plant in **Devnya, Bulgaria**. As announced, the pilot unit, called **ANRAV.beta**, will be a key proof of concept for [its] full-chain carbon capture, utilisation, and storage (CCUS) project ... [to] show the scalability of the new OxyCal capture technology." As described, the **OxyCal** technology adds pure oxygen to the (high heat temperature) combustion process to produce clinker, resulting in "a CO₂-rich flue gas with a high degree of purity that can be reused or [stored] safely".

Off-shore to go offshore: On **October 18, 2023**, the **Jersey Council of Ministers** proposed that the **Channel Island of Jersey** auction rights to develop **1 GW** offshore wind field off-shore of Jersey.

Denmark and The Netherlands travel together: On **October 17, 2023**, the **Carbon Herald** (at <https://carbonherald.com>, under [Denmark And The Netherlands To Partner On Carbon Capture and Storage](#)) reported that Denmark and The Netherlands had signed a memorandum of understanding (**MOU**) under which they agreed to "**partner on CO₂ capture and storage (CCS) and CO₂ transport**". As reported, the **MOU** "facilitates the transfer of CO₂ between the two nations for ... storage in vacant oil and gas reservoirs situated within the exclusive economic zones ... of [each nation] in the North Sea."

Porthos takes positive final investment decision: On **October 17, 2023**, the **Porthos** proponents, **Port of Rotterdam Authority, Gasunie** and **EBN B.V.**, took a positive final investment decision to develop the **€1.3 billion, 2.5 million metric tonnes a year**, CO₂ transport and storage system, taking **CO₂** (captured within the precincts of the Port of Rotterdam) for injection and storage around 20 km offshore, 3 km below the seabed. **Edition 2** of **P₂N₀** reported as follows:

"On **August 16, 2023**, the **Council of State** determined that the minor, or the one-off, deposition of nitrogen during construction of the **Porthos Project** would not have a significant impact on the areas surrounding the **Porthos Project**. The determination will allow the Porthos Project to proceed: the Project is intended to store permanently

around **2.5 million** metric tonnes of CO₂ a year. The **Porthos Project** has indicated that it intends to commence construction in 2024, and that the Project will be operational by 2026.”

Eni and UK Government aligned on Liverpool Bay: On **October 17, 2023**, it was reported widely that **Eni UK** and the **UK Government** had agreed heads of terms on the transportation and storage of **CO₂** in Eni’s depleted natural gas field beneath the seabed of Liverpool Bay in the Irish Sea. As reported, the Liverpool Bay injection and storage complex will be developed in two phases, **phase 1** with capacity of **4.5 million metric tonnes** of a year of capacity, and **phase 2** with capacity of up to **10 million metric tonnes** a year.

Marubeni goes long on UK: On **October 12, 2023**, **renews** (under [Marubeni pledges to invest £10 bn in UK clean energy](#)) reported that **Marubeni Corporation** had entered into a memorandum of understanding with the **UK Government** in respect of “comprehensive cooperation” on clean energy projects that will result in the investment of up to **£10 billion** over the next **ten years** in **offshore wind field** developments and **low carbon hydrogen** developments.

Celtic Wind Blowing offshore: On **October 2, 2023**, it was reported widely that **The Crown Estate** had increased the size of each area (**Project Development Area** or **PDA**) in respect of which leases are to be auctioned, with each **PDA** to allow the development of up to 1.5 GW of offshore wind capacity. As reported, it is expected that auction of the three **PDA**s will take place during 2024.

HELPFUL PUBLICATIONS AND DATA BASES

CCS in the EU: On **October 20, 2023**, the **EU Joint Research Centre** published [Carbon Capture, Utilisation and Storage in the European Union – Status Report on Technology Development, Trends, Value Chains and Markets](#). The publication is excellent and has been travelling with the author of **P₂N₀** since its publication.

India difficult to decarbonise industries: During the third week of **October 2023**, the **Council on Energy, Environment and Water (CEEW)**, with **BP**, published a series of publications considering difficult to decarbonise industries in India, including [Evaluating Net-zero for the Indian Cement Industry](#) and [Evaluating Net-zero for the Indian Steel Industry](#). Each of the publications is well-worth a read.

Electricity Grids and Secure Energy Transitions: On **October 10, 2023**, the **International Energy Agency (IEA)** published a “special report on the critical topped of Electricity Grids”. The special report provides “a stocktake of the world’s grids, examining how to ensure they don’t become a bottleneck for energy transitions and undermine electricity security.”

Urgent action to reduce CH₄ emissions: On **October 11, 2023**, **IEA** published a report entitled [The Imperative of Cutting Methane from Fossil Fuels](#), published during **MENA Climate Week**. As has been known for some time, and as is repeated in the report, reductions in **CH₄ emissions** within this decade (consistent with the [Global Methane Pledge](#)) “could avoid up to a 0.1°C [increase] in global temperature rise”.

OIES on CCS and Decarbonisation: During the third week of **October 2023**, **The Oxford Institute for Energy Studies (OIES)** published [Carbon Capture Usage and Storage the new driver on the EU Decarbonization Plan?](#) which provides a pragmatic and timely assessment of the policy settings and likely impact of them on the use of CCS / CCUS across the EU.

IEA Energy and Carbon Tracker 2023: During the second week of **October 2023**, the **IEA** published an updated version of its [IEA Energy and Carbon Tracker 2023](#). The **Tracker** provides a rich mix of data and information presented in graphs and by country.

Conceptual note on short-term climate scenarios: During the first week of **October 2023**, the good folk comprising the **Network for Greening the Financial System** (Central Banks and Supervisors) published a [Conceptual note on short-term climate scenarios](#). The publication considers five scenarios to assist policy makers, regulators, financial institutions, and central banks, to assess the short-term impact of climate change and mitigation and adaptation policies on the real economy, individual financial institutions, and the broader financial system. The publication is excellent.

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