P2N0

NEWS AND VIEWS ON THE DRIVE TOWARDS NET-ZERO GHG EMISSIONS

Welcome to **Edition 30** of **P_2N_0** covering the drive to avoid, reduce and remove greenhouse gas (**GHG**) emissions to reach net-zero emissions (**NZE**).

P_2N_0 covers significant news items globally, reporting on them in short form, focusing on policy settings and legal and project developments and trends. This **Edition 30** covers news items arising during the period **April 14** to **April 30, 2025** (a function of the bumper bundle of new items during this period).

Edition 31, covering **May 1** to **May 16, 2025**, will be published on **May 19, 2025**.

P_2N_0 does not cover news items about climate change, M&A activity, or news items that are negative.

Access previous editions of **P_2N_0** at bakerbotts.com.

Content

HEADLINES FROM APRIL 14 TO APRIL 30, 2025

Opening observations:

The second two weeks of **April 2025** (and May 1, 2025, to include the reconstruction agreement between Ukraine and the US) provided some weighty news items with consistent themes continuing to arise.

- **Spain and Portugal – all falls down**: On Monday, **April 28, 2025**, at 12.33 CEST there were widespread power outages across Spain and Portugal, and Southern France for up to 10 hours, longer in some areas.

  At the centre of the power outages was **Red Eléctrica España** or **REE** (the transmission system operator in Spain). Neither **REE** nor the Spanish Government have been able to confirm the cause of the power outages. What is clear from the data is that at 12.33 CEST there was a sudden drop in electricity transmission across the grid, by some estimates in the region of 15 GW.

  In the time leading up to the sudden reduction, France stopped importing electrical energy from Spain, there was a spike in wind generation, and as the circumstances unfolded, nuclear power plants received an overload alert, with the result that electrical energy ceased to be sent out from them. Add to this the fact that photovoltaic solar dispatch reduced by 10 GW from 18 GW to 8 GW, and you have whole of grid instability.

  From all that I have read there was sufficient available generation capacity, and yet the dispatch of it was not managed given the supply-side events that took place within a very short period of time. What is clear is that when different sources of electrical energy cross a grid, grid management is complex, and maintaining integrity and stability increasingly complex.

- **Critical metals and minerals (CMM)**: The coverage around critical metals and minerals continues.
  - On **May 1, 2025**, **Ukraine** and the **US** signed an agreement under which a reconstruction fund will be established, to be managed by Ukraine and the US jointly.

    The reconstruction fund will comprise funding from various sources, with Ukraine itself, to be a key source, with 50% of the profits received by the Government of Ukraine from new energy and resource developments (after the developments have been in operation for 10 years) to be paid into the fund. New energy and resource developments the subject of the agreement include CMM and Rare Earth Elements (**REEs**) (with 55 materials specified) projects, and natural gas and oil projects.
  - On **April 24, 2025**, the **US** announced an order titled the Unleashing America's Offshore Critical Minerals and Resources (at https://whitehouse.gov). Among other things, the order stipulates that within 60 days:
    - the Secretary of Commerce is to provide a report on the feasibility of an international benefit-sharing mechanism for seabed mineral resource extraction and development in areas beyond the national jurisdiction of any country; and
    - the Secretary of Defence and the Secretary of Energy are to provide a report to address the feasibility and any potential benefits or drawbacks of using the National Defence Stockpile for storage of materials derived from seabed polymetallic nodules and of entering offtake agreements for these materials.

    The order is well worth a read, signalling, as it does, a real intent to source CMM and REEs from seabed mining. The order has received considerable coverage across news outlets.
  - On **April 18, 2025**, the **US** announced the **First Wave of Critical Mineral Production Projects** (at https://www.whitehouse.gov, under Trump Administration Advances First Wave of Critical Mineral Production Projects) in response to the Immediate Measures to Increase American Mineral Production executive order.

    The initial selected projects listed are: Resolution Cooper Project, Stibnite Gold Project, Warrior Met Coal Mines, McDermitt Exploration Project, South West Arkansas Project, Caldwell Canyon Mine Project, Libby Exploration Project, Lisbon Valley Copper Project, Silver Peak Lithium Mine, and Michigan Potash.
  - During **April 2025**, two excellent publications dropped as follows:
    - the Critical Minerals Institute (**CMI**) published its CMI Critical Minerals List 2025. The publication is well-worth a read, describing **23 Critical Minerals** (**CMM**s)[1] that are essential to progress in

[1] The **CMMs** listed are: **1**. Bauxite, High Purity Alumina, and Aluminum; **2**. Antimony; **3**. Beryllium; **4**. Bismuth; **5**. Cobalt; **6**. Copper; **7**. Gallium; **8**. Germanium; **9**. Graphite; **10**. Indium; **11**. Lithium; **12**. Magnesium; **13**. Manganese; **14**. Nickel; **15**. Niobium; **16**. Platinum metals; **17**. Rare Earths Elements (**REE**s); **18**. Silicon and Silicon metals; **19**. Tantalum; **20**. Titanium and Titanium metal; **21**. Tungsten; **22**. Uranium; and, **23**. Vanadium.

sectors key to defence and environmental security, and the geographical source of them (including the US, Canada and Australia). Of the **23 CMMs**, **five** are distinguished as **Key Strategic Minerals**: **1**. Cobalt; **2**. Copper; **3**. Gallium; **4**. REEs; and **5**. Uranium; and

- the **US Geological Survey**, the **Geological Survey of Canada**, and **Geoscience Australia**, published the Critical Minerals in Ores – geochemistry database (**CMiO**) as part of a **Critical Minerals Mapping Initiative** (**CMMI**).

  As described, "Critical minerals are commodities essential to modern industrial and strategic technologies and are highly vulnerable to supply chain disruption".

- Also, during **April 2025**, the good folk at:
  - The **Indian Defence Review** (at **indiandefencereview.com**, under A Rare Mineral Deposit Estimated in Billions of Euros Discovered in Rural France Whose Exact Location Is Kept Secret by the French Government) reported that REEs had been discovered in the vicinity of the village of Saint- Agnès.

    As reported, **REEs** are "indispensable to modern technologies, playing a key role in the manufacture of smartphones, electric vehicles, wind turbines, and advanced military systems";
  - **Western Digital** published Advanced Recycling and Rare Earth Recovery at Scale. The publication is punchy (at 10 pages) and packs a punch.
  - **International Institute for Sustainable Development** published International Trade Investment Agreements and Sustainable Critical Minerals Supply. The publication is worth a read.

- **China restrictions on some REE exports impact supply chains**: **Edition 29** of **P_2N_0** (under **Export controls on Heavy and Medium Rare Earth Elements** on page 10) reported that the **Ministry of Commerce and General Administration of Customs** in China announced a Decision on Implementing Export Controls for Certain Medium and Heavy Rare Earth Elements. The export control relates to **REEs**, **Dysprosium**, **Gadolinium**, **Lutetium**, **Samarium**, **Scandium**, **Terbium**, and **Yttrium**.

  This continues a theme of **CMM** and **REE** security. During the balance of **April 2025**, the impact of the restrictions was reported widely on the adverse impacts on supply chains, including in the US. While it is too early to reach a clear-sighted perspective, it is clear that the restrictions on **REE**s exports are forcing countries to look for alternative sources of, and, in the medium to longer term, to develop their own **REE** resources.

- **Natural Gas and LNG momentum continues**:

Edition 29 of **P_2N_0** stated that there are **17 REEs** as follows: Cerium (Ce), Dysprosium (Dy), Erbium (Er), Europium (Eu), Gadolinium (Gd), Holmium (Ho), Lanthanum (La), Lutetium (Lu), Neodymium (Nd), Praseodymium (Pr), Promethium (Pm), Samarium (Sm), Scandium (Sc), Terbium (Tb), Thulium (Tm), Ytterbium (Yb) and Yttrium (Y).
To provide some context given the progress that the US is making on promoting the development of CMM and REE production (domestically and internationally), further reading that will be helpful may be found at How to Advance US – Africa Critical Minerals Partnerships in Mining and Geological Sciences, published at https://carnegieendowment.org.

- On **April 30, 2025**, it was reported widely that **Woodside Energy Limited** had made a positive final investment decision to develop its **USD 17.5 billion Louisiana LNG project**.

  On **April 23, 2025**, it was reported widely that the **Dutch Government** had committed to acquire increased quantities of natural gas from North Sea producers to lessen the dependence of the Netherlands on the import of natural gas and LNG from outside the EU. It is understood that the Dutch Government wants to reduce dependence on imports of natural gas from Russia, and LNG from the Middle East and the US. As reported, the **Dutch Government** is committed to the continued supply of natural gas until 2045.

- On **April 22, 2025**, the **USD 4.5 billion** Barossa natural gas project offshore of the North of Australia received approvals to allow the development of the project.

- On **April 16, 2025**, legislators in the US **State of Maryland** voted in favour of an omnibus legislative package (The Renewable Energy Certainty Act (HB 1036/SB 931)) that allows the development of natural gas projects and renewable electrical energy projects. In many ways, this captures the moment – the pragmatism of the need for natural gas electrical generation capacity, and the principle of continued development of renewable electrical energy.

  There is more to the legislation than is stated in the headlines, and for those interested in competing perspectives the legislation, and the commentaries on it, make for interesting reading. The legislation is now on the desk of the Governor of the State of Maryland for signature.

- On **April 14, 2025**, **Eni** and **YPF** signed a **memorandum of understanding** (**MOU**) to provide a framework for **Eni** to assess participation in two floating LNG projects (each capable of producing **6 mtpa** annually)[2].

News headlines:

- During **April 2025** the good folk at**:**

  - The **International Energy Agency** (**IEA**) published Carbon-Free Electricity in G-20 Countries. What is written on the tin is in the tin: the publication considers the extent to which each G-20 country is progressing to decarbonise generation of electrical energy. The publication is a great resource, providing data and information as to policy settings and the progress to the achievement of them.

  - The **Global Wind Energy Council** (**GWEC**) published its Global Wind Report 2025. The publication highlights that during 2024, 117 GW of wind capacity was installed globally. The publication highlights common and key themes arising around the world. As with the publications from **IRENA** covered below, the publication recognises that the development and deployment of wind

[2] Eni has experience in developing **FLNG** projects, with Coral Su I (offshore Mozambique) and Tango (offshore Congo). **By way of reminder**: **Edition 29** of **P_2N_0** under (**Coral Norte project approved**) reported that: "On **April 8** and **9, 2025**, it was reported widely that the Government of Mozambique had approved the Eni **USD 7.2 billion Coral Norte** floating liquified natural gas (FLNG) project. This continues the approval of LNG projects (land based and floating) expected during 2025".

capacity was not progressing at a rate commensurate with the need to triple renewable energy capacity by 2030.

- **The Federal Ministry of Finance of Austria** and **the International Organising Committee for the World Mining Congress** published World Mining Data 2025. As the full form title states, the publication covers Iron and ferroalloy metals, non-ferrous metals, precious metals, industrial minerals and mineral fuels. The publication is outstanding: it is data rich with seams of information, and nuggets within each.
- The **World Energy Council** (**WEC**) published World Energy Trilemma 2024, Evolving with Resilience and Justice, assessing the three elements of the trilemma (as defined by it): energy security, energy equity, and environmental sustainability. The **executive summary** (pages 6 to 11) is well worth a read. Follow this **link** to access the previous **14 WEC World Energy Trilemma** publications.
- **BloombergNEF** published its 2025 New Energy Outlook (**NEO**) – one of the must-reads each year. **NEO 2025** outlines the following two key findings:

  1. Continuing demand decline for coal and oil, although the rate of decline is not clear; and

  2. GHG emissions globally may have peaked in 2024, GHG may plateau or may commence decline during 2025.
- The **International Renewable Energy Agency** (**IRENA**) published The Powerful Role in Geopolitics is to Manage the Energy Transition. The publication is authored by Francesco La Camera, and provides a clear-sighted and nuanced perspective, including in respect of energy security and the supply of materials. For these purposes, the publication ties back to Geopolitics of the Energy Transition: Energy Security and Geopolitics of the Energy Transition: Critical Materials. The three publications are well worth reading in one sitting.
- The **IRENA** published Renewables in 2024: 5 Key Facts Behind a Record-Breaking Year. The five key facts being:

  1. Record-high renewable energy capacity additions in 2024 – with 585 GW of new capacity installed during 2024;

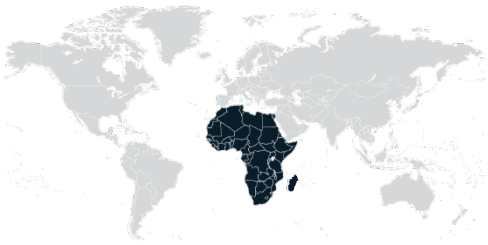
  2. Renewable electrical energy installations accounted for more than 92% of total power expansion in 2024;

  3. Solar power takes the lead, with 42% of the global electrical energy mix now solar;

  4. Asia dominates the newly installed renewable electrical energy capacity; and

  5. The rate of installation of new renewable electrical energy capacity is still less than the rate required to triple renewable electrical energy capacity by 2030, which was recognised at **COP-28** and is covered in **Edition 6** of **P_2N_0**.

- **Largest LCO_2 carrier launched**: On **April 16, 2025**, it was reported widely that the world's largest liquid carbon dioxide (**LCO_2**) carrier had been launched. As reported, the **LCO_2** carrier has the capacity to carry **22,000** m^3 of LCO_2. The **LCO_2 carrier** is the first of four LCO_2 carriers (with a total cost of **USD 756 million**) ordered by the Greek shipping company, **Capital Clean Energy Carriers**, from South Korean shipbuilder, **Hyundai Mipo**.



Africa

- **Mission 300 tested**: On **April 24, 2025**, the good folk at **devex** (at www.devex-com.cdn.ampproject.org, under **One year in, Mission 300 tests what it takes to power Africa**) reported that global finance leaders from the **World Bank** and the **International Monetary Fund** were meeting to discuss progress of **Mission 300**; **Mission 300** is the plan to bring electrical energy to **300 million** people in Africa by 2030.

  As reported, the **World Bank** is to provide up to **USD 30 billion** and the **African Development Bank** is to provide up to **USD 18.2 billion**.

- **Kenya 2026**: On **April 14, 2025**, the **International Energy Agency** (**IEA**) published Kenya 2024 – Energy Policy Review. The **Government of Kenya** and the **IEA** jointly developed the publication.

  As might be expected, the publication is divided into sections as follows: **Electricity** (section 2), **Renewable Energy** (section 3), **Access to electricity** (section 4), **Access to clean cooking** (section 5), **Energy security** (section 6), **Energy efficiency** (section 7), **Energy and climate** (section 8), and **Energy investment** (section 9).

  Except for access to clean cooking in developing economies, the purpose of recounting the sections is that their subject matter is the same whichever country one assesses, with developed or developing economies, with the circumstances of each country informing the assessment.

  Kenya (a country with a population of approximately 57 million of which approximately 30% is urbanised) has **3.3 GW** of installed electrical energy capacity, of which **950 GW** is geothermal (**750 MW** of which has been installed in the last 10 years or so), **800 MW** is hydroelectric, and **800 MW** is photovoltaic solar and wind. With the installation of renewable energy, Kenya leads the East African region with over 80% of the population having access to electricity, up from 37% in 2013, and targeting 100% by 2030.

  The balance of the energy mix of installed capacity comprises diesel and bioenergy. **Bioenergy** offers opportunities to develop capacity to use industrial waste to produce bioethanol to promote clean cooking, and animal and municipal waste (having a high organic fraction) offers opportunities to produce biogas, and, once processed, biomethane, using anaerobic digester technologies.

  The electrical energy transmission grid of Kenya is connected to Ethiopia, Tanzania, and Uganda via interconnectors. Over time, this may offer opportunities for optimisation across an interconnected grid.

  By way of background: The publication reminds us of that which we know: "Government action is pivotal in building secure, inclusive and sustainable energy systems. Energy policy is critical not just for the energy sector but also for meeting environmental, economic and social goals". It helps to be reminded of this essential truth.

- **Decentralised renewable energy for agriculture in Zimbabwe**: On **April 22, 2025**, the **IRENA** published [Decentralised renewable energy for agriculture in Zimbabwe].

  While the publication has been prepared with Zimbabwe as its subject, the publication assesses challenges that are common to many countries, in particular countries with developing economies, including electrical energy for irrigation pumps, cold storage and drying, and processing facilities. Decentralised renewable energy (**DRE**) generation will address these challenges, and, in so doing, provide a basis to close the energy gap.

  The publication outlines the form that **DRE** generation may take. As might be expected, photovoltaic solar, accompanied by BESS, is regarded as the most appropriate technology. The price tag for the build out of these technologies is estimated at around **USD 7 billion**. The publication outlines sources of funding. For those active in **DRE** generation development, the publication is well worth a read.

  The publication should be read with **IRENA** publication [Decentralised renewable energy for agriculture in Malawi].

Middle East, Central Asia, and South Asia

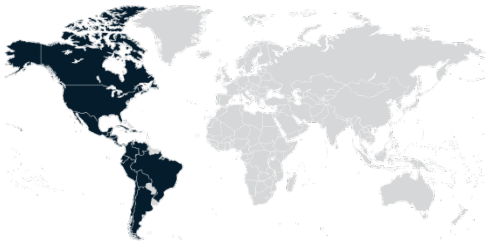
- **Oman to auction land for further hydrogen production**: On **April 30, 2025**, it was reported widely that the **Sultanate of Oman** is to auction up to 300 km^2 of land in the vicinity of Duqm. This is the third land auction that has been undertaken.
- **India to penalise non-achievement of targets**: On **April 29, 2025**, the **times of india** (at www.timesofindia.indiatimes.com, under **Carbon-heavy sectors handed green targets, liable to fines**) reported that is to impose **GHG emission intensity** (**GEI**) reduction targets on 282 entities across India. If a corporation or other organisation with a GHG emission reduction target does not achieve it, it will be penalised. This places a price on carbon. It is understood that the regime will come under the Carbon Credit Trading Scheme, 2023.
- **REC Power Development and Consultancy** (**RECPDCL**) **commences tender**: During **April 2025**, the good folk at **Mercom India** (at https://www.mercomedia.com, under RECPDCL Invites Bids to Evacuate 3.7 GW Power from Pumped Storage Projects) reported that **RECPDCL** had invited bids "to develop an interstate transmission system" to transmit electrical energy from **Pumped Storage Projects** (**PSP**s) in Sonbhadra district, Uttar Pradesh, under a build, own, operate and transfer (**BOOT**) model.

  As reported, bids for the BOOT must be received by **June 27, 2025**.
- **Energy Transition in Georgia**: On **April 16, 2025**, **IRENA** published its Energy Transition Assessment: Georgia. The publication provides a helpful appraisal of the energy transition potential of **Georgia**, it is both thorough and timely. **Georgia** has considerable bioenergy and hydroelectric capacity, and even greater geothermal, photovoltaic solar and wind capacity development potential.

The publication concludes that the existing and potential resources offer **Georgia** a clear pathway to energy transition.

IRENA developed the publication jointly with the **Ministry of Economy and Sustainable Development** (**MoESD**) and will be used "to inform the development of Georgia's forthcoming revised Nationally Determined Contribution to the Paris Agreement (NDC 3.0)".

- **Saudi Vision 2030 Annual Report for 2024 highlights the mining sector**: During the final week of **April 2025**, the **Vice-Minister of Industry and Mineral Resources for Mining Affairs**, for Saudi Arabia, Khalid Almudaifer, reminded us that the **Kingdom of Saudi Arabia** is progressing to develop its metal and mineral resources. The publication Mining and the Mineral Sector – A Major Transformation Journey Under Saudi Vision 2030 provides a helpful summary.



Americas

- **EPA and TRC sign MOA**: On **April 29, 2025**, it was reported widely that the US **Environmental Protection Agency** (**EPA**) and the **Texas Railroad Commission** signed a memorandum of agreement (**MOA**) outlining the plans for the State of Texas to administer programs relating to carbon storage wells, aka, Class VI wells, to provide the State of Texas with primacy.

  By way of reminder: **Edition 27 of P_2N_0** reported that: "Four US States, Louisiana, North Dakota, West Virginia and Wyoming, have Class VI primacy, with a further nine US States, including Arizona and Texas, having applications pending for primacy. **New Mexico** (between Arizona and Texas) has recently engrossed House Bill 457 (the **Geologic Carbon Dioxide Sequestration Act**) to promote progress towards primacy for Class VI wells, with the State House of Representatives having passed the Bill on **March 11, 2025**".

- **Bahia and GoVerde Energia sign letter of intent**: On **April 28, 2025**, it was reported that the **State of Bahia** and **GoVerde Energia** had signed a letter of intent to provide a basis for discussion about the development of an industrial park to produce ammonia and methanol, with the electrolysers to produce the green hydrogen to be powered by 1.5 GW of photovoltaic solar capacity.

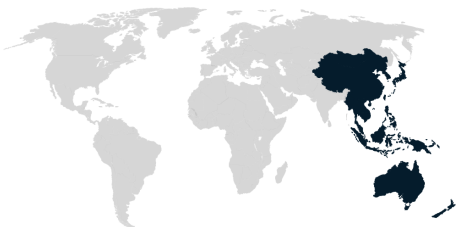
- **Guatemala opens 1.4 GW auction**: On **April 25, 2025**, the good folk at **pv magazine** (at https://www.pv-magazine.com, under Guatemala opens 1.4 GW energy auction) reported that the **Ministry of Energy and Mines and National Electric Energy Commission** (**CNEE**) had commenced the process under which it would award 15-year contracts for a total of up to **1.4 GW** of "guaranteed capacity and associated energy", with supply to commence in 2030. As reported, the cost of the development of the electrical energy generation capacity and the transmission infrastructure will be in the **USD 3** to **5 billion range**.

- **ExxonMobil and Calpine sign CO_2 T&S deal**: On **April 25, 2025**, it was reported widely that **ExxonMobil** had signed an agreement with **Calpine Corporation** for the transportation and storage of up to **2 million metric tonnes** of CO_2 a year. This is one of a number of agreements that **ExxonMobil** has signed (after CCS offtake agreements with **NG3**, **CF Industries**, and **Nucor**), bringing its total contracted carbon storage volume to around 16 million metric tons per year.
- **World scale deposit of lithium unearthed in Arkansas**: On **April 24, 2025**, the good folk at the farmingdale observer (at www.framingdale.observer.com, under A Massive Lithium Deposit Discovered in An Unexpected Location Is Shaking Up The Global Resource Landscape) reported that the **Smackover Formation** in Arkansas has between **5** and **19 metric million tonnes** of lithium resource. In the context of US **CMM** supply security, the development of the resource would reduce, and possibly remove, the need to source supplies of lithium from Argentina, Bolivia and Chile.
- **Photovoltaic solar continues to shine and wind continues to blow**: During **April 2025**, the **Federal Energy Regulatory Commission** (**FERC**) reported that a little less than 98% of new electrical energy generating capacity across the US, with around 75% of that new capacity comprising photovoltaic solar.
- **Microsoft continues to inform the hard voluntary carbon credit market**: On **April 16, 2025**, it was reported widely that **Microsoft** had contracted with the **AtmosClear** project in respect of the removal of GHG emissions arising from the **AtmosClear BECCS** project that is under development at the **Port of Greater Baton Rouge**, in the US State of Louisiana. The **AtmosClear BECCS** project produces electrical energy from the combustion of biomass (a renewable fuel source). As reported, the biomass to be combusted will include the residual organic matter from the production of sugar and forestry activity.

  By way of background: **Microsoft** is seeking to be carbon negative by 2030: i.e., on a net-basis Microsoft wants to be able to offset its GHG emissions with "carbon credits" so that its actual GHG emissions less its carbon credits will equal a negative number.

  > "By 2030 Microsoft will be carbon negative, and by 2030 Microsoft will remove from the environment all the carbon the company has emitted either directly or indirectly or by electrical consumption since it was founded in 1975".

  This is a moving target for **Microsoft** and will continue to be so as Generative AI continues to increase the use of electrical energy.



APAC

- **China approves construction of 10 new reactors**: On **April 28, 2025**, **world nuclear news** (at https://www.world-nuclear-news.org, under Ten new reactors approved in China) reported that the **State Council** of China had approved the development of "five new nuclear power projects – Fanchenggang Phase III, Haiyang Phase III, Sanmen Phase III, Taishan Phase II and Xiapu Phase I – with a total of 10 reactors, including eight Hualong One units".

- **China to strengthen commitment to GHG emission reductions**: In **April 2025**, **President Xi Jinping** announced that ahead of **COP-30** in **Brazil** later in 2025, China would commit to new targets (to be achieved by the end of 2035) across "the entire scope of the economy, including all greenhouse gases". In other words, China is going to commit to targets for the avoidance, reduction and removal of all GHG emission, not CO_2 alone.
- **No gas, just wind**: At 5.45 pm on **April 19, 2025**, the **State of South Australia** (poster child for renewable electrical energy and BESS) broke the record wind generation in the State, with wind 2,147 MW of dispatched wind. This record marks the continued progress of South Australia to achieve a secure 100% renewable energy grid by 2027 (leading Australia and the world).
- **Pumped storage development inches closer: On April 18, 2025, it was reported widely that the Government of the State of Queensland, Australia**, had included in its five-year energy plan further funding to allow further assessment of the development of the proposed **2 GW Mount Rawden Pumped Storage** project.
- **First auction for offshore wind capacity**: On **April 17, 2025**, it was reported widely that **Government of the State of Victoria, Australia**, will undertake an auction in **September 2025** (having commenced a **Registration of Interest** process, to close during **May 2025**, to be followed by a **Request for Proposal Process** to close during **September 2025**) for the purposes of awarding contracts-for-difference by **October 2026** for the supply of renewable electrical energy. The **State of Victoria** has set itself renewable energy deployment targets as follows: **2 GW by 2032**, **4 GW by 2035**, and **9 GW by 2040**.
- **And another first for China**: On **April 17, 2025**, the **South China Morning Post** (at www.scmp.com, under China has world's first operational thorium reactor thanks to 'strategic stamina') reported that fuel was loaded to a thorium molten salt reactor while it was in operation. As reported, the reactor, located in the Gobi Desert, in the west of China, uses molten salt as a vector of fuel and coolant, and thorium.

  By way of reminder: Thorium is a radioactive element that produces, what has been described as, "minimal radioactive waste". While this a small-scale reactor, it provides a basis for further assessment of the use of thorium, rather than uranium.

  By way of background: The technology to use thorium as a fuel and a coolant in **molten salt reactors** (**MSR**) is not new.

  > "Thorium is a naturally occurring, slightly radioactive metal discovered in 1828 by the Swedish chemists Jons Jakob Berzelius, who named it after Thor, the Norse god of thunder. It is found in small amounts in most rocks and soils, where it is about three times more abundant than uranium …
  >
  > Thorium (Th-232) is not itself fissile and … is not usable directly in a thermal neutron reactor. However, it is 'fertile' and upon absorbing a neutron will transmute to uranium … which is an excellent fissile fuel material …
  >
  > There are seven types of reactor into which thorium can be introduced as a nuclear fuel. The first five [Heavy Water Reactors (PHWRs), High-Temperature Gas Cooled Reactors (HTRs), Boiling (Light) Water Reactors (BWRs), Pressurised (Light) Water Reactors (PWRs) and Fast Neutron Reactors (FNRs)] of these have all entered into operational service at some point. The last two [MSRs] and Accelerator Driven Reactors (ADs) are both conceptual".
  >
  > Source: world-nuclear.org.

- **Another first for China**: On **April 15, 2025, hydrogeninsight** (at www.hydrogeninsight.com, under World's first offshore platform to produce green hydrogen, ammonia and methanol completed in China) reported that a pilot project, located off of Shandong province, has three electrolysers located on an offshore platform powered by an array of floating photovoltaic solar panels and fixed solar panels on the platform itself, with no power from onshore. Water (sourced from the ocean) will be electrolysed to produce green hydrogen.
- **China Uranium Find**: On **April 15, 2025, ecoticias** (at www.ecoticias.com, under 30 million tons under this desert – China doesn't need America anymore) reported that China had discovered a large uranium deposit in **Jingchuan**, the **Ordos Basin**, in the North of China. From the reporting, further work is required to firm up the quality and size of the reserves (and as such the cost of mining and production). The article from the good folk at **ecoticias** is well worth a read.
- **Vietnam approves Amended PDP8**: On **April 15, 2025, Vietnam** published amended PDP8 – the Revised National Power Development Plan for 2021-2030, with a forward-looking perspective to 2050 (**PDP8**). In the context of **P_2N_0**, the key takeaway is that GHG emissions from electrical energy generation are to be capped at 197 – 199 million metric tonnes of CO_2 by 2030, representing a reduction of 27 million metric tonnes from current "business as usual", and 170 million metric tonnes of CO_2 by 2030 if JETP is utilized in full.

  In the context of **PDP8**, it would seem that the aim is to phase out use of coal by 2050: by 2050, the power mix will comprise approximately 74 to 76% of renewable energy. Under the forward-looking perspective is Total Capacity of 490,529 MV to 573,129 MW, comprising:

  - photovoltaic solar of 168,594 MW to 89,294 MW (33% to 34.4%);
  - offshore wind 70,000 MW 91,500 MW (14.3% to 16%); and
  - offshore wind 60,050 MW to 77,050 MW (12.2% - 13.4%),

  With the balance comprising, among others, storage power sources, thermal power using biomass and ammonia, hydro, biomass, waste to energy, geothermal or new energy, LNG and hydrogen.

  By way of background: A number of countries, with developing economies, have signed **Just Energy Transition Partnership** (**JETP**) agreements[3] with countries and blocs, with developed economies. At COP-28 in 2023, Vietnam presented a 200-page implementation plan for the purposes of the **Vietnam JETP**. Among other things, under the **Vietnam JETP**, USD 7.75 billion in funding was pledged for energy transition projects.

  For further reading about the offshore wind potential for Vietnam, read Wind Energy Technical Potential Over Offshore Areas in Vietnam published by the **Vietnam Meteorological and Hydrological Administration** (**WNMHA**), the **United Nations Development Programme** (**UNDP**) and the **Embassy of Norway** in Vietnam.
- **Australia's "Critical Minerals Strategic Reserve" likely to progress. Edition 29** of **P_2N_0** reported that: "On **April 4, 2025**, the Prime Minister of Australia announced plans to restrict the export of some

[3] In addition to Vietnam, countries, with developing economies that have signed JETPs are Indonesia, Senegal and South Africa.

commodities from Australia to make Australia more resilient against global trade measures, and to assure Australia of a secure supply of CMM. Given the re-election of the **Australian Labor Party** (**ALP**), it is likely that this **Critical Minerals Strategic Reserve** will become a policy setting of the new ALP government.

Europe and the UK

- **The Netherlands progress Green Growth Package**: On **April 28, 2025**, it was reported widely that the **Council of Ministers** had approved around **€2.8 billion** in funding support to develop supply and demand side for green hydrogen within the Netherlands. As understood, around **€2.1 billion** of funding support will be provided in respect of the development of green hydrogen production capacity (supply side) and **€662** million of funding support will be provided in respect of demand-side initiatives.

  With the carrot of funding support, comes a stick requiring the use of 4% of renewable energy by 2030.

- **Spain has permitted 65.8 GW of photovoltaic solar projects**: On **April 25, 2025**, the good folk at **pv magazine** (at https://www.pv-magazine.com, under **Spain hits 65.8 GW of solar projects with grid permits in March**) reported that Spain has **129.5 GW of renewable electrical energy projects** permitted to connect to the transmission grid, with **65.8 GW of photovoltaic projects permitted**.

- **Eni FID for CCS in Liverpool Bay**: On **April 24, 2025**, it was reported widely that **Eni** had taken a positive final investment decision, and achieved financial close (in respect of **£2 billion** of funding) with the **UK Government** (**Department for Energy Security and Net Zero**), to develop the **Eni** carbon injection and storage project in Liverpool Bay, in the Irish Sea, as part of the **HyNet** decarbonisation initiative in the North-West of England.

  The positive final investment decision was taken as **Eni** was granted a **carbon storage permit** from the **North Sea Transition Authority**. This is the second carbon injection and storage project to take a positive final investment decision in the UK, the first being the Northern Endurance project in late 2024.

  By way of reminder: The Liverpool Bay project will have the capacity to inject and to store up to 4.5 million metric tonnes of CO_2 a year, progressing to up to 10 million metric tonnes.

- **HySpeed plans**: On **April 14, 2025**, it was reported widely that a consortium (comprising **Centrica**, **Heidelberg**, **ITM Power**, **JCB**, **Johnson Matthey**, and National Gas), called **HySpeed**, is engaging with the **UK Government** about plans to develop **1 GW** of green hydrogen production capacity (across 16 GH_2 production facilities, ranging from **50** MW to **300MW**) so as to achieve the benefit of economies of scale, and achieve a production cost of **USD 7.80 per kilogram**.

HELPFUL PUBLICATIONS AND DATA BASES

In addition to publications covered by this edition of **P_2N_0**, the most noteworthy publications read by the author during the second two weeks (and a bit) of **April 2025** are:

- **Guide to CDR policy settings**: The good folk at **Carbonfuture** have published The 2025 Guide to Carbon Removal Policy – For Buyers and Sellers. This is the third edition of the Guide. While the author has not yet read the publication, based on the previous two editions, it is assumed that the publication will be a helpful publication.

APRIL FOOLS SPECIAL

Edition 29 of **P2N0** included an **April Fools** news item which was about an FSRU in Switzerland. A land-locked country! At the suggestion of a number of readers, any future April Fool news item will be noted.

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