



JAPAN NRG WEEKLY

JAN. 23, 2023

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NEWS

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ANALYSIS

[A NEW BEGINNING: OVERVIEW OF THE LONG-TERM DECARBONIZED CAPACITY AUCTION](#)

Japan plans to introduce a new auction system that will provide price guarantees for non-fossil power generation. It should reduce the risk of investing in building new sources of electricity that don't emit CO2. The system will be an extension to the existing power capacity market, but with different rules. It promises one of the biggest changes for the industry. Successful bidders will win 20-year contracts that offer fixed revenue for operable capacity. In return, the govt hopes to improve the security of Japan's electricity supply, which has deteriorated in recent years.

[THE EU'S CROSS-BORDER CARBON TAX: BOON OR BUST FOR JAPAN?](#)

Geopolitics have brought Japan and the EU closer together. One area, however, where the two were expected to clash was over carbon pricing. Japan has long feared a carbon tax at the EU border, claiming it could put its exports at a disadvantage. That EU carbon tax system takes effect later this year, and paradoxically it might be a boon rather than a bust for Japan. While lagging in development of its domestic carbon markets, Japan has several ways that it can use the new EU mechanism to its advantage.

GLOBAL VIEW

A wrap of top energy news from around the world.

EVENTS SCHEDULE

A selection of events to keep an eye on in 2023.

HYBRID SEMINAR

Meet Japan Power 2023
Jan. 25, 2023

JAPAN NRG WEEKLY

Events

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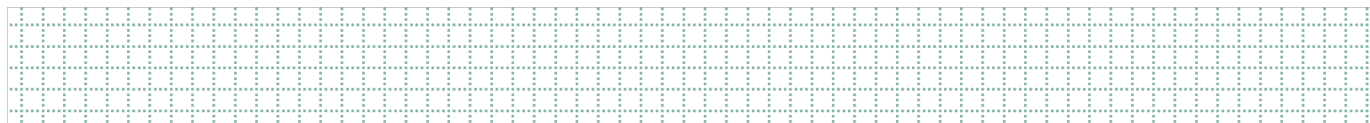
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OFTEN USED ACRONYMS

METI	The Ministry of Energy, Trade and Industry	mmbtu	Million British Thermal Units
MOE	Ministry of Environment	mb/d	Million barrels per day
ANRE	Agency for Natural Resources and Energy	mtoe	Million Tons of Oil Equivalent
NEDO	New Energy and Industrial Technology Development Organization	kWh	Kilowatt hours (electricity generation volume)
TEPCO	Tokyo Electric Power Company	FIT	Feed-in Tariff
KEPCO	Kansai Electric Power Company	FIP	Feed-in Premium
EPCO	Electric Power Company	SAF	Sustainable Aviation Fuel
JCC	Japan Crude Cocktail	NPP	Nuclear power plant
JKM	Japan Korea Market, the Platt's LNG benchmark	JOGMEC	Japan Organization for Metals and Energy Security
CCUS	Carbon Capture, Utilization and Storage		
OCCTO	Organization for Cross-regional Coordination of Transmission Operators		
NRA	Nuclear Regulation Authority		
GX	Green Transformation		

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NEWS: ENERGY TRANSITION & POLICY



Japan posts ¥20 trillion trade deficit in 2022

(Government data, Jan. 19)

- Thanks in part to surging commodity prices and a weak yen, Japan's trade deficit was ¥19.97 trillion (about \$155 billion) in 2022. Exports were up 18% YoY to ¥98 trillion but imports jumped 39% to more than ¥118 trillion.
- Crude oil accounted for 11.21% of the total import value; LNG 7.2% and thermal coal 4.1%. Fossil fuel imports, including refined oil products and coking coal, accounted for 28.3% of the total.

2022 imports

	Quantity	Vs 2021	Value	Vs 2021	Share of total
<i>Crude oil</i>	156.6 mln kl	+8.5%	¥13.3 trillion	+91.5%	11.21%
<i>LNG</i>	72 mln tons	-3.1%	¥8.5 trillion	+97.5%	7.2%
<i>LPG</i>	10.5 mln tons	+0.2%	¥1 trillion	+41.7%	0.9%
<i>Thermal coal</i>	115.4 mln tons	+2.5%	¥4.9 trillion	+196.7%	4.1%

- Russian LNG imports were 6.9 million tons, up 4.6%, while crude oil was 2.3 million kl, down 56.4%, thermal coal 8 million tons, down 41.4%.
- **TAKEAWAY:** In addition to high energy prices, a key reason for the trade deficit was the weak yen. It was down almost a third at one point against the USD, which is the base currency for most of the world's commodities. The extra national expenditure filtered into domestic prices for fuels and power and led the government introduce trillions of yen worth of subsidies for gasoline, electricity, natural gas and other energy sources.
- This year, the trade deficit is likely to narrow thanks to a cooling of energy prices. But there is also a high possibility of demand contraction for Japanese exports due to a recession in key markets including the U.S. and Europe. Meanwhile, questions continue around Russian energy imports and the potential for disruptions due to political and logistics issues.

METI specifies time, category for ¥20 trillion GX bond issuance

(Denki Shimbun, Jan. 16)

- METI plans to raise ¥20 trillion with the "GX Economy Transition Bond" (tentative name) from FY2023 to FY2032. To articulate how this bond differs from other bonds, METI will distinctively issue it as a "Transition Bond" approved by the International Capital Market Association (ICMA) along with other bonds such as construction debt.
- The GX bond will be paid with state revenue from carbon pricing.
- METI will submit the bill to the Diet session starting Jan 23.

- **CONTEXT:** *The detailed concept of carbon pricing and the GX Bond was described at the third and fourth session of GX Council.*
- **TAKEAWAY:** Since GX are not “green” bonds, which is a more familiar category for global investors, they have already received some skeptical international media coverage. Green bonds tend to refer to fundraising for renewable energy projects. Transition bonds can be used for a broader range of technologies that reduce emissions. In some cases, that may include fossil fuel projects that nevertheless lead to a reduction in CO2.
- Japan as a country has never issued green bonds, though municipalities like Tokyo City and some companies have. The “transition” bonds category is gaining popularity in Asia, but also has a number of critics that question how any investment in fossil fuels is a positive for climate action.

METI to revise five laws to promote GX

(Denki Shimbun, Jan. 16)

- To promote GX policies, METI will submit revisions of five laws to the Diet starting Jan 23, namely Electricity Business Act, FIT Act, Atomic Energy Basic Law, Nuclear Reactor Regulation Act, and Revised Reprocessing Contribution Act.
- With those revisions, utilities will be technically able to operate NPPs for more than 60 years to account for the years the facilities were idle after the Fukushima accident.
- To make maximum use of renewables, an FIT grant will be issued to projects that reinforce power transmission lines from the start of the construction period.
- **TAKEAWAY:** The legal frameworks are cementing the policy directions already announced by the Cabinet and METI. What may be interesting to note, however, is how many laws need revising for each policy tweak. That will be one of the logistical challenges for the government to implement its GX strategy since the parliament’s calendar is usually tightly packed.

Ex-minister Amari calls for Japan to use more biofuels, utilizing abandoned arable land

(Japan NRG, Jan. 18)

- Former METI minister Amari told a biofuel symposium in Tokyo that Japan should make use of abandoned arable land to grow its feedstock for carbon neutral ethanol.
- Amari said there’ll be demand for carbon neutral fuel as not all vehicles will run on batteries, ie. aircrafts and legacy petrol-engine cars. New car sales may move towards EVs, but second-hand cars will still be on the road for many years to come.
- **CONTEXT:** *The government’s GX strategy calls for low-carbon fuel to be commercially available by 2035 when the domestic sale of cars with a gasoline-only engine will stop.*
- Amari and his supporters seek changes in carbon-counting rules for bio and synthetic fuels. This includes asking for emission reduction credits to be allocated to countries where the bio fuels are consumed rather than produced.
- **TAKEAWAY:** Amari is an influential voice in the ruling party and now heads an LDP lawmaker group on bio and synthetic fuels. His supporters point out that Japan can utilize biofuels in the near term to reduce its emissions from transport and in addition to imports it can also increase domestic production of feedstock necessary to make these fuels. There are 0.4 million hectares of abandoned arable land in Japan.
- Supporters of biofuels still need to convince the agricultural lobby of the merits. Still, it is expected that PM Kishida will bring up the potential for greater use of biofuels at the G7 meeting in Hiroshima later in the year.

Kishida will seek to unite the position of industrialized economies on bio and synthetic fuels, while also giving assurance to the developing countries that this would not impact on food production.

- SIDE DEVELOPMENT:

- Industry pushes METI to improve its view on bioethanol consumption

- (Japan NRG, Jan. 17)

- METI's proposal to keep until March 2028 the annual bioethanol consumption target for oil refiners unchanged at 0.5 million kiloliters (crude oil equivalent) is questionable, industry stakeholders told Japan NRG. The proposal was open to public consultation that closed on Jan 17.
 - One person suggested raising the consumption target, saying the number was set without sufficient consultation with the automotive and energy retail sectors.
 - Another questioned if bioethanol consumption will ever increase by maintaining the consumption target unchanged.
 - One livestock feed trader said it would be more efficient to import than locally produce bioethanol. While Japan's production of dented corn, the main feedstock for ethanol and animal feed, is just under 10,000 tons/ year, the farms consume 12 million tons/ year.
 - *CONTEXT: Most bioethanol supplies are imported. METI argued that its policy priority is the development of local bioenergy supplies that are sustainable and do not clash with edible foods. All comments filed to METI, and the ministry's responses, will be disclosed in several weeks.*

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JOGMEC to survey three Hokkaido coastal zones for future offshore wind projects

(Government statement, Jan. 13)

- JOGMEC will conduct geological and wind surveys at Ganwu-Minami Shiribeshi, Shimasaki, and Hiyma coastal zones in Hokkaido to analyze their potential as offshore wind project sites.
- METI is centralizing JOGMEC survey efforts to speed up project deployments. Following the surveys, METI and MLIT will decide if the areas could be designated as Offshore Promotional or Preferential Zones.
- The surveys are expected to start in fiscal 2023.

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JERA teams up with U.S. and Norway to supply blue ammonia

(Japan NRG, Jan. 18)

- JERA signed separate MoUs for the development, sales and purchase of clean ammonia with CF Industries, U.S., and a subsidiary of Norway's Yara International. Both are the world's leading suppliers of ammonia.
- *CONTEXT: JERA held the world's first large-scale tender to supply 500,000 tons of ammonia in February 2022; 40 companies applied and even more showed interest. So far, CF Industries and Yara are the only companies with which JERA has announced an MoU to supply the fuel.*
- JERA published almost identical statements about its deals with CF and Yara, saying in each one that the partner first will be involved in procuring the 500,000 tons of ammonia from 2027 until 2040s for unit 4 of the Japanese utility's Hekinan Coal Fired Thermal Power Plant.
- All three companies will also study a 1 million tons per annum ammonia production project in the U.S. Gulf Coast.

- **TAKEAWAY:** Hekinan will be the first Japanese power plant to add ammonia as a second fuel and to use it for 20% of its total fuel mix. Ammonia co-firing at thermal power plants is a policy embraced by Japan's energy sector to clean up coal-fired power plants and to help lower overall GHG emissions.

JFTC opens draft guidelines on collective green initiatives for public consultation

(Japan NRG, Jan. 13)

- The Japan Fair Trade Commission opened for public consultation its proposed guidelines on collective sustainability initiatives. These clarify trade agreements and initiatives that could potentially violate the Antimonopoly Act (AMA).
- There are four sections: collective initiatives, selection of business partners, abuse of superior position, and mergers.
- Renewable power and fossil-fuel power will be categorized as non-substitutable services, meaning they'll be defined as separate services when assessing merger impacts in the power competition landscape.

Some examples of clear AMA violations

Joint R&D agreement	A sector-wide scheme to improve the carbon footprint of existing infrastructure that clearly excludes the possibilities of deploying options developed outside the group.
Joint procurement	Joint purchase agreement of a raw material that reduces emissions, which may have a strong impact on product prices.
Collective sustainability action plans	Agreement on sustainability actions that included a joint price hike to pass on carbon and other costs.

- **CONTEXT:** *The guidelines were written after a METI panel review on competition regulation's impact on large hydrogen and ammonia projects. The panel concluded amendments in the AMA won't be required but will issue new guidelines. Public consultation closes on Feb 13.*
- **TAKEAWAY:** JFTC's oversight is limited to competition rule enforcement and has little role in forming industrial policies; while in some other jurisdictions, competition and industrial policies are integrated. This means that while a trade agreement may be illegal in Japan, it may be legal elsewhere if the authorities determine it's instrumental in fulfilling a wider sustainability goal in the future, business lawyers told Japan NRG.
- JFTC's analysis of joint purchase agreements, which may increase on the back of tightening supplies, has also raised questions. The draft guidelines point out the impact on end-product prices to determine antitrust compliance. The regulator will probably need to make deeper analysis including the impact on the development of substitute products.

Gas Act cutoff amendments for large consumers during emergencies takes effect

(Government statement, Jan. 16)

- The amendments to the Gas Business Act that allows METI to cut supplies to large consumers in times of emergencies took effect Jan 16.
- The Electricity and Gas Market Surveillance Commission, which oversees competition rule compliance, will not have any authority over the emergency measures.

Japan, Thai companies sign agreements on ammonia, carbon capture

(Government and company statements, Jan. 17)

- Japanese and Thai companies from the power, plant manufacturing and cement sectors signed agreements on ammonia and carbon capture at the sideline of Japan-Thai energy policy dialog held in Bangkok.
- The joint projects are positioned to realize the Asia Zero Emission Community.

JERA	Electricity Generating Public Company (EGPC)	Ammonia co-firing, writing decarbonization roadmaps
JERA, Mitsubishi Heavy Industries, Mitsubishi Corporation	EGPC, Banpu Power Public Company, BCLP Power	Ammonia co-firing at BCLP coal power plant; CO2 reduction initiatives
Mitsubishi Corporation, Chiyoda Corporation	BCLP Power	CO2 capture and emission reduction at BCLP power plant
Nittetsu Engineering, Thai Nippon Steel Engineering and Construction	SCG Cement, The Siam Cement	CO2 capture and emission reduction at cement plants in Southeast Asia

NEDO reports progress in moonshot project to create biodegradable plastics

(Government statement, January 2023)

- NEDO announced results from its Moonshot R&D programs focused on creating marine biodegradable plastics. The program also includes innovation in nitrogen cycling by Zeolite, a calcium carbonate circulation system for construction, and direct air capture (DAC).
- The technologies were described as “promising”, but only a few are ready for commercialization. NEDO’s website has short videos on each project, in Japanese and English.
- *CONTEXT: NEDO began this Moonshot Program in 2020. It is hoped that its success could lift Japan’s standing in the global community as a climate action leader.*

Japan forestry association to launch platform for forest-derived carbon credits in March

(Kankyō Business, Jan 18)

- The Japan Federation of Forestry Cooperatives and Norinchukin Bank, in cooperation with Japan Offset Design Soken, announced the launch of a platform for forest-derived credits by the end of March.
- The platform will establish a system to provide comprehensive support from credit creation to sales, and will serve as a sales intermediary for companies and organizations that need to purchase domestic forest-based credits.
- Forests cover about two-thirds of Japan’s land area. Stable inflow of private capital into forests and forestry is expected to help sustainable forest management.

Fuji Electric to enter small-size CCS business in FY2026

(Denki Shimbun, Jan. 17)

- Fuji Electric will enter the CCS business with newly developed small-sized CCS equipment, mainly for marine vessel engines.
- Fuji Electric is now developing CCS technology with Kyushu University. The business will start in FY2026.
- Besides Fuji, MHI plans to develop CCS technology for marine vessel engines.

IHI and GE to collaborate on ammonia gas turbine

(Nikkei, Jan. 18)

- IHI and GE will collaborate on development of gas turbines fired solely by ammonia.
- The project will convert GE-produced LNG turbines to run on ammonia.
- Commercial release is planned for 2030.
- The availability of ammonia in Asia makes a more realistic fuel option than hydrogen.

Kawasaki to develop hydrogen-powered marine engine

(Nikkei, Jan. 17)

- In collaboration with Yanmar Power Technology and Mitsubishi affiliate Japan Engine Corp, Kawasaki Heavy Industries agreed to develop a hydrogen-powered marine engine as part of a project financed by government-backed NEDO.
- Development begins next year; the technology should be ready to test on ships by 2027.
- While the engine will start with traditional fuel oil, it will then run entirely on hydrogen.
- The project will face challenges due to the leak-prone nature of hydrogen gas and the difficulty of controlling hydrogen combustors.

Will carbon-negative concrete catch on?

(Nikkei XTech, Jan. 12)

- NEDO's green innovation fund has invested ¥55 billion in projects to develop ways of infusing concrete with CO₂ during manufacturing.
- Kashima Corp, Denka and Takenaka Corp seek to develop "carbon negative concrete": a building material that has a negative carbon footprint.
- The University of Tokyo and Shimizu are working on a calcium carbonate concrete (CCC) blend they aim to introduce in low-rise buildings by 2030.
- While it remains to be seen whether these environmentally friendly concrete alternatives will catch on, CCC is being trialed in tunnel construction.

Marubeni signs MoU with Singapore's SMRT to start EV business in ASEAN and Japan

(Denki Shimbun, Dec. 16)

- Marubeni signed a MoU with SMRT Road Holdings Group for the decarbonization of transportation in ASEAN and Japan by providing an electric Mobility as a Service ("eMaaS") business.
- Marubeni and Strides will establish an EV fleet management business and an eMaaS business to accelerate the use of commercial EVs in ASEAN, as well as a business that responds to diverse mobility needs centered on these businesses.

Ta'ziz, Fertiglobe, GS Energy, Mitsui to develop ammonia plant in UAE

(The National, Jan. 18)

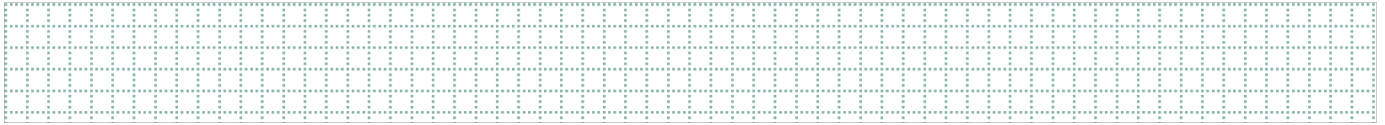
- Abu Dhabi Chemicals Derivatives Co., also known as Ta'ziz, plans to develop a low-carbon ammonia plant with one million tons annual capacity near the city of Ar-Ruwais.
- The project is supported by Fertiglobe, South Korea's GS Energy and Japan's Mitsui.
- The plant is set to begin in 2025, and is part of a multibillion-dollar refining expansion.

Three former TEPCO top executives found not guilty of negligence, again

(Nippon Television News, Jan. 18)

- Three ex-top TEPCO officers – former Chairman Tsunehiko Kawamata, former VP Takekuro Ichiro, and former VP Sakae Muto – were found not guilty of responsibility for the fallout from the Fukushima NPP Accident. The Tokyo High Court upheld the ruling of the first trial in 2019.
- The trial centered on whether it was possible to predict a large tsunami at the Fukushima NPP site (i.e., more than 10 meters high) and whether management had done enough to prevent damage from such an event.
- *CONTEXT: One TEPCO subsidiary had published a calculation in 2008 saying that a 15.7-meter tsunami could hit the nuclear power station site. However, it was not a mainstream idea in the government's long-term evaluation for the site.*
- The trial noted that the tsunami that eventually hit on March 11, 2011 was the highest in recorded history in Japan. Therefore, it was impossible to prevent a crisis.
- **TAKEAWAY:** Prior judicial rulings showed different opinions about tsunami forecasts. Which will prevail is unclear, but the continued trials of former TEPCO executives show the depth of public interest in the accident and its impact.

NEWS: POWER MARKETS



TEPCO to ask for 30% increase in Tokyo household power prices

(Nikkei, Jan. 20)

- TEPCO looks to raise household power prices by around 30% for the first time in 11 years due to rising fuel costs.
- Company will apply to METI for approval as soon as the coming week. It will take several months for the application to be approved.
- *CONTEXT: Other major power companies across Japan are also keen to raise power prices. The only companies that are not applying to do so are those which have restarted nuclear reactors.*

All-electric households see power bills double

(Yamagata Shimbun, Jan. 19)

- Subscribers in Japan's northeast who use electricity for heating and cooking say power bills doubled in the past year; monthly electricity bills can now reach ¥100,000.
- Many residents who opt for all-electric dwellings do so hoping to save money on gas bills. However, energy bills at all-electric households are currently higher than those that use gas for heating and cooking.

Output of Japan's geothermal power plants fell 30% in 25 years; future prospects bleak

(Nikkei, Jan. 18)

- According to the Thermal and Nuclear Power Engineering Society, the total electric power output of Japanese geothermal power plants was 2.66 billion kWh in 2020, which decreased 30% compared with 3.75 billion kWh at the peak in 1997.
- After the U.S. and Indonesia, Japan has the world's third largest geothermal resources. Tokyo plans to increase geothermal power output fourfold by 2030.
- The development of geothermal first took off in the 1970s but then stagnated.
- **TAKEAWAY:** While the government has set a goal of quadrupling Japan's annual geothermal output to 11 TWh by 2030. Geothermal is renewable with stable output, and contributes to GX goals. However, since hot spring companies are concerned about losing business to geothermal power plants, it's difficult for them to cooperate. Also, only 30% of geothermal exploration is successful. Thus, it probably won't be easy to boost geothermal energy fourfold by 2030.

Crisis-hit Chugoku Electric may trigger sector consolidation

(Facta, February 2023)

- After a record loss last year, Chugoku Electric faces an even bigger deficit of over ¥200 billion due to surging fuel costs and a cartel penalty.
- PM Kishida may trigger a power sector consolidation in order to save Chugoku Electric. Talk of a merger with rival Kansai Electric has resurfaced. For Kishida, this would be a way to support the government's pro-nuclear policies.
- The cost of restarting Chugoku's Shimane NPP, planned for next year, has now ballooned to ¥680 billion and it's only a matter of time before the financials start to spark concern among creditors.

ENEOS merges solar, wind assets with those of Japan Renewable Energy

(Company Statement, Jan. 16)

- ENEOS agreed by April 1 to transfer its renewables assets to Japan Renewable Energy (JRE), including solar, onshore wind, and offshore wind power generation.
- ENEOS acquired all shares of JRE in January 2022. The oil refining major is combining renewables assets with its new subsidiary.
- JRE will gain 295 MW of renewables projects in operation or under construction. Of that, 290 MW is in solar and the rest in wind.
- *CONTEXT: This move brings the total generating capacity of JRE's renewable energy projects in operation or under construction in Japan and overseas to approximately 1 GW.*

Renova plans to develop 168 MW onshore wind plant in Iwate

(New Energy Business News, Jan. 20)

- Renova plans to develop an onshore wind farm in Morioka City, Iwate Prefecture with a maximum output of 168 MW.
- The project area is about 5,674 ha; between 22 to 40 wind turbines will be installed.
- Nearby is Green Power Investment's Yabukawa Area wind farm project.

JERA to develop 340 MW offshore wind farm near Akita Prefecture

(Denki Shimbun, Jan. 17)

- JERA plans to develop an offshore wind farm with a maximum output of 340 MW at Oga, Katagami and Akita Cities, Akita Prefecture.
- JERA will build 29 bottom-mounted offshore wind turbines. Each will have capacity ranging from 12 to 18 MW.
- In December 2022, this area was designated for ocean energy development; and other companies, such as TEPCO Renewable Power, Tokyo Gas / Marubeni, and Osaka Gas / Mitsui, also applied to METI for offshore wind farm projects.

Kyushu Electric admits to improperly accessing subscriber data

(Yomiuri Shimbun, Jan. 19)

- Kyushu Electric admitted to improperly accessing competitors' subscriber data.
- The revelations come in the wake of a similar admission from KEPCO.
- Kyushu Electric breached the Electricity Business Act, which prohibits utilities from sharing customer information.
- Staff accessed the information via PCs loaned by a transmission operator. Subscriber details were only to be accessed in the case of an emergency.
- Kyushu Electric promised to conduct an urgent compliance audit.
- *CONTEXT: To ensure transparency and fairness in power retail business, EPCOs are prohibited to share information with their power transmission subsidiary companies.*
- **TAKEAWAY:** Only 4 years have passed since the unbundling of EPCOs, yet still the HQ of Kyushu Electric and Kyushu Electric Power Transmission and Distribution are at the same address. Thus, it's quite easy for Kyushu Electric to ask their classical staff to show information about new power market players. Equally important, EPCO staff should downplay new power market players. This is why so many EPCO people easily gained unauthorized access.

Japan claims 'clean coal' power experiment starts to bear fruit

(Asia Nikkei, Jan. 16)

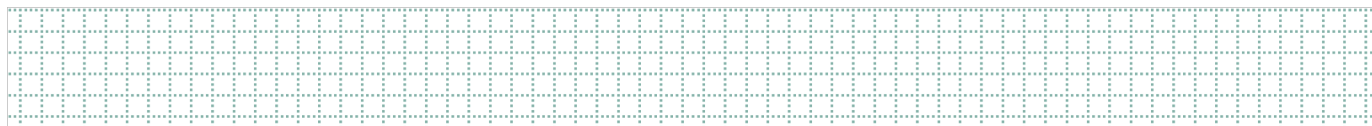
- An experiment with "clean" coal-fired power generation technology will take place in March in the town of Osakikamijima, Hiroshima Prefecture. A JV between J-Power and Chugoku Electric, called Osaki CoolGen, manages the ¥49 billion project.
- The operator claims the tech, which gasifies coal before burning it, reduces emissions because it requires less fuel and is 15% more efficient than regular coal-fired plants. Emissions are cut by another 90% by use of a "relatively cheap" carbon capture facility.
- Hydrogen is generated as a byproduct of gasifying the coal, which could be another way to develop the technology.
- *CONTEXT: PM Kishida represents the Hiroshima area and will host the G7 there this year. He may look to highlight Japanese energy innovations such as this technology.*

Hitachi Energy gets major order for offshore wind farms in Poland

(Company statement, Jan. 16)

- Hitachi Energy won two major orders from Equinor and Polenergia to provide an AC grid connection and power quality solution for their jointly owned MFW Baltyk II and MFW Baltyk III offshore wind farms, which have a combined generating capacity of 1.44 GW in the Polish sector of the Baltic Sea.
- Hitachi Energy will provide each of the wind farms with an offshore grid connection that will receive power from the turbines and transfer it to shore, a mainland grid connection that will transmit power into the national transmission system, and a STATCOM power quality solution to ensure that power flows reliably and stably.
- MFW Baltyk II and MFW Baltyk III are pending a final investment decision in 2024, and are scheduled to deliver first power in 2027.
- **TAKEAWAY:** STATCOM (Static Var Compensator) is mainly used for dynamic compensation in power systems. Hitachi Energy has provided STATCOM for over 80 projects worldwide.

NEWS: OIL, GAS & MINING



Japan plans to increase domestic fertilizer production

(Nikkei Shimbun, Jan. 17)

- The govt will support domestic fertilizer production to bolster the agricultural sector.
 - About 90% of phosphorus for fertilizers is imported from China, which presents certain risks.
 - Local governments plan to subsidize the construction of recycling facilities to produce fertilizers from municipal solid wastes (MSW). Chemical fertilizers are sold at ¥2,000-4,000/ 20 kg, while those made from MSW are available at about ¥700.
 - The Ministry of Agriculture, Forestry and Fisheries (MAFF) plans to invest at least ¥10 billion in R&D and create a website for matching producers and consumers, and to share information about fertilizers made from MSW.
- **TAKEAWAY:** Japan's calorie-based food self-sufficiency rate is about 38%, which is not very high. Considering the various risks in the world today, building a strong fertilizer supply chain is a smart move for Japan.

Activist investor takes near 20% stake in Japan's third-largest oil refinery group

(Japan NRG, Jan. 12)

- The activist investor Murakami has acquired 19.96% of Cosmo Energy Holdings, Japan's No. 3 oil refinery major and an investor in offshore wind.
 - The company has tried to rebuff the effort, which includes free allotment of call options to shareholders who aren't large buyers. Cosmo requires parties intending to acquire a stake of 20% or more to give prior written notice of their purposes.
 - Murakami said he won't acquire a stake of 20% or more in Cosmo.
- **TAKEAWAY:** Murakami is one of Japan's most feared and notorious activist investors. He is said to have helped broker the merger of Showa Shell and Idemitsu, which formed Japan's second-largest oil refining group. Murakami is not known as a long-term investor, so his actions could be an attempt to force further consolidation in Japan's oil sector.

Aged oil tankers are sold at double price

(Nikkei Shimbun, Jan. 16)

- Oil tankers aged 15 years or older now sell at high prices, partly due to high freight costs. These ships are often referred to as "shadow fleets" involved in transporting crude from Russia or countries under embargo.
- Clarkson Research UK reported that a 15-year-old, 120 kilo-ton-class oil tanker was sold at \$37 million in early January, 2.6 times higher than the week before. Similarly, 15-year-old, 300 kilo-ton-class (VLCC) tankers were priced double.
- Usually, oil tankers are in use for about 20 years and then scrapped. However, sales of old oil tankers increased to 49 in 2022, compared to less than 20 in 2021. The old oil tankers have higher risk of accidents and insurance may not cover damages.

Itochu to procure 1 million tons of LNG from NextDecade in the U.S.

(Company Statement, Jan. 19)

- NextDecade will supply trading house Itochu with 1 million tons of LNG annually for 15 years; sourced from its Rio Grande LNG export project in Texas. The price is indexed to Henry Hub on a free-on-board basis.
- NextDecade is due to make final investment decisions on the first three trains related to the project during 1Q 2023; with FIDs of its remaining trains to follow thereafter.
- SIDE DEVELOPMENT:

[JAPEX signs long-term LNG contract with Brunei](#)

(Bloomberg, Jan. 16)

- JAPEX, the oil and gas exploration company signed a long-term supply deal with Brunei after its LNG contract deal with the MLNG Tiga project in Malaysia ended.

JGC and SHI win EPCC contract with Petronas for first floating LNG facility

(Offshore Energy, Jan. 9)

- JGC Corp and Samsung Heavy Industries (SHI) secured an engineering, procurement, construction and commissioning (EPCC) contract with Petronas in Malaysia.
- The planned floating LNG facility, to be completed in 2027, will have an annual capacity of 2 million tons of LNG.
- JGC will cover the EPC work and SHI will build the floating LNG hull EPC work.
- CONTEXT: *JGC's portfolio includes two other newly-built floating LNG projects and JGC is now doing the FEED for a floating LNG project in Nigeria.*

LNG stocks rise to 2.62 million tons

(Government data, Jan. 19)

- LNG stocks of 10 power grids stood at 2.62 million tons as of Jan 15, up from 2.48 million tons a week earlier. The end-January stocks last year were 1.8 million tons. The five-year average for this time of year is 1.67 million tons.

December LNG imports slip 13.8% to 6.1 million tons

(Government data, Jan. 19)

- Japan imported 6.1 million tons of LNG in December, down 13.8% from a year ago. LPG imports were also down 3.5% to 0.9 million tons. Crude oil imports were up 1.2% to 14.9 million kiloliters, while thermal coal was up 7.4% to 10.6 million tons.

ANALYSIS

BY TORU HATTORI
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A New Beginning: Overview of the Long-Term Decarbonized Capacity Auction

Later this year the government plans to introduce a new auction system that will provide price guarantees for non-fossil power generation. In effect, it should reduce the risk of investing in building new sources of electricity that don't emit CO₂, thus contributing to Japan's carbon-neutrality goals.

The system will be an extension to the existing power capacity market, but with some markedly different rules. It promises one of the biggest changes for the power industry in recent times. Successful bidders will win 20-year contracts that offer fixed revenue for operable power plants. In return, the government hopes to improve the security of Japan's electricity supply, which has deteriorated in recent years due to competitive pressures and rising market risk.

Coming about 10 years after the launch of the Feed-In Tariff (FIT) program, which acted as a catalyst for the rollout of solar and other renewables, the new system will cover a broader set of clean energy sources. And while no single system is a silver bullet, the development is likely to stimulate new interest in Japan's power markets.

Policy and reality

In 2016, Japan fully liberalized the electricity market, which led to a growing number of new entrants, with many seeking to capitalize on growing interest in renewable energy. The major power utilities, such as TEPCO, Kansai Electric, and other EPCOs, adjusted to the new competitive landscape by shuttering older, less efficient stations. One downside was the threat of insufficient reserve capacity for emergencies.

In response, the government created a centralized forward capacity market as a mechanism to pay operators to have power capacity available as needed. The first capacity auction was held in 2020. It should be noted that revenue from a capacity market is generally less than what a power plant will earn from the sale of electricity.

Even before the first auction it was clear that a capacity market alone would struggle to attract investment into new power plants. In theory, the model works because the capacity price falls when the market is saturated, encouraging inefficient capacity to exit and new, more competitive plants to take its place. In practice, however, things are more complicated.

New investment always carries a risk. Successful bidders can only secure annual capacity contracts at the market clearing price. That price fluctuates based on the balance between demand (i.e., the targeted amount of capacity) and supply (i.e., the capacity on offer) within the auction's geographical area. As examples in other countries show, capacity prices can move a considerable amount.

Building new power plants is a massive capital outlay. It requires long-term, stable revenue forecasts to secure final investment decisions and to attract financing. So, if a

capacity market price rises based on a supply-demand shortage at one particular time, it can also deflate. That factor worries potential capacity market bidders and impacts investment decisions.

To address the issue, the government initially considered the introduction of a long-term capacity contract to guarantee bidders fixed revenue for multiple years. A similar scheme was adopted in the UK, where operators can secure contracts for up to 15 years.

In October 2020, another event greatly impacted Japan's power market design. Then Prime Minister Suga declared that Japan would become carbon neutral by 2050. Most of the required new generation would need to align with this policy; investment would also need to be stimulated.

Since then, Japan's energy strategy has made clear that in addition to the "conventional" non-fossil energy sources such as renewables and nuclear, the country would transform its thermal capacity by replacing fuels like coal and natural gas with hydrogen or ammonia, which don't emit CO₂ when burned. The decision relates to both the national carbon-neutrality and energy security goals. Thus, co-firing had to be accommodated in any new changes to the capacity market.

The above helped prepare the ground for the new capacity market mechanism that's due to start in FY2023. Its full name is the *Long-term Decarbonized Capacity Auction* system.

Features of the new system

The new market mechanism is treated as a type of special auction in the capacity market to address a policy measure not planned *ex ante*. Successful bidders will secure 20-year contracts for specific power capacity, which will be consistent with the contract period for the FIT and Feed-In Premium (FIP) programs used for renewable energy.

Several capacity sources will be eligible including renewables, nuclear, power storage, and thermal plants that plan to transform to burning hydrogen or ammonia as part of their fuel mix. The latter can take part in the auctions provided that the power plant in question will eventually switch to 100% non-fossil power generation.

The minimum auction capacity lot will be 100,000 kW (100 MW), except in the case of storage, for which the bar is set at 10,000 kW. While regular capacity market contracts come into force four years after the auction, the maximum period before a contract enters into force in the new decarbonized capacity system will be decided based on the type of energy source.

The new system's format will be "pay-as-bid", unlike the "pay-as-clear" used in regular capacity auctions. There will be caps on price offers for different types of capacity, though the general ceiling will be ¥100,000/ kWh.

A striking feature of this auction will be a special arrangement that affects how offer prices are set. In regular capacity auctions, capacity providers offer prices mostly based on their estimates of cost (annualized CAPEX and OPEX), net of their expectations for revenue from electricity markets (which include the spot, balancing

and day-ahead platforms). After all, it's difficult to precisely estimate revenue four years into the future, especially in electricity wholesale.

Under the new auction system, bidders will need to refund "marginal revenue". This refers to revenue from the wholesale or balancing market, less variable costs, such as fuel expenses. In effect, this motivates bidders to set their offers around the level of their fixed costs.

A rational operator would only generate electricity when wholesale prices are greater than their variable costs. Since the auction format is "pay-as-bid," and successful bidders can cover their annual fixed costs for 20 years, revenue risks can be fully eliminated (assuming operator calculations are accurate).

Toward structural changes

Of course, by itself the new system also eliminates the incentive to generate. Operators are only required to make capacity available as per the contract. Thus, it has been suggested that capacity providers would be required to refund only around 90% of their marginal profit. In that case, they'd earn a profit of 10% if they generate power.

Such an arrangement prevents generators from earning excess profits, but it also eliminates market risk from adding new non-fossil power capacity. So, it's a tradeoff.

Under the new system, the maximum amount of capacity offered in the first auction is set at 4 GW. Of that, 1 GW is allocated to thermal capacity that will be upgraded to burning hydrogen/ammonia; another 1 GW for power storage, including pumped-hydro.

Will this new auction system really encourage investment in clean energy? It certainly offers the kind of long-term revenue certainty that financiers and investors crave. However, its parameters may not work well for all. For example, it won't help projects with long lead times and uncertainty around construction costs.

In addition, as the government itself admits, it could discourage large, fixed-capital capacity projects in a competition based on fixed cost. Over time, that could change the structure of the nation's electricity industry.

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ANALYSIS

BY FILIPPO PEDRETTI

The EU's Cross-border Carbon Tax: Boon or Bust for Japan?

Japan has long feared the introduction of a new carbon tax at the EU border, claiming that it could put its exports at a disadvantage. After all, Japan's primary energy balance is dominated by fossil fuels. The introduction of the EU carbon tax system later this year, however, potentially looks like a boon rather than a bust for Japanese manufacturers.

Geopolitics have brought Japan and the EU closer together in recent years. In 2019, the two enacted one of the world's largest free trade deals and have worked to synchronize energy and climate strategies in the face of supply disruptions caused by the war in Ukraine, among other challenges.

Still, one area where the two were expected to clash was over carbon pricing. The EU was one of the world's first to introduce a carbon price cap system, based on which this coming October the bloc will roll out a Carbon Border Adjustment Mechanism (CBAM) that will impact a number of specific products in carbon-intensive sectors. Japan, on the other hand, has lagged in development of domestic carbon markets and is yet to commit to a wholesale surcharge on CO₂ emissions.

Instead, key policy and industry leaders on both sides are talking up increased mutual trade and collaboration as a result of CBAM. It seems as though Japan has several ways that it can use the new mechanism to its advantage.

What is CBAM?

The CBAM will operate by charging a tariff on goods imported into the EU and which were produced based on lower environmental standards than EU legislation allows. In this way, the EU seeks to create fair market competition for goods produced in accordance with its Emission Trading System (ETS) regulations and for those produced by emitting more GHGs. The balance is needed to avert the phenomenon of "carbon leakage," in which manufacturers move to areas with lower costs due to less stringent environmental regulations.

Thus, CBAM's twin goal is:

- 1) Ensuring competitiveness for EU producers who operate in accordance with the European Climate Law; and
- 2) Encouraging EU partners to introduce similar carbon-related policies.

The products in question fall mainly into the following categories:

- i. Electricity;
- ii. Cement;
- iii. Iron and Steel;
- iv. Aluminum; and
- v. Fertilizers.

Some downstream products and hydrogen (under certain conditions) will also be covered by CBAM.

Currently, the EU has an interim agreement in place to launch CBAM, which will be finalized later this year. The mechanism will be implemented in two phases. The first “transitional” phase starts in October 2023 and will only require importers to report the volume of GHGs emitted to make the goods, with the aim of collecting data.

Full implementation of CBAM is scheduled for around 2026, which is when carbon charges will start to be levied.

Impact on Asia

According to data for 2015-2019, Russia accounted for 16.7% of European imports in goods that will fall under CBAM. The next largest suppliers were China (10.1%) and the UK (8.5%). China represented 14% of Europe’s total steel and iron imports (annual value of over \$5.15 billion) and 6% of its aluminum imports (\$1.28 billion).

Outside of China, India and South Korea held a significant share of Europe’s steel and iron imports over the same period (6.4%, value: \$2.29 billion; and 7%, value: \$2.50 billion, respectively). Meanwhile, Vietnam accounted for 6.1% of Europe’s cement imports.

With much of the Asian region still heavily reliant on coal burning to generate electricity, the impact from CBAM could quickly add up. Even if Asian exporters switch their sales to less stringent regulatory jurisdictions, the EU’s approach is expected to be taken up elsewhere in the coming years, including in the U.S. Also, the EU plans to expand CBAM by the end of this decade to cover all products.

EU officials hope that by setting out their stall early and showing the trend, many of their suppliers in Asia will be motivated to lower carbon emissions in their industrial bases. Some critics of the approach, however, have raised concern about CBAM’s compatibility with WTO rules.

Japan’s winning formula

Japan’s economic burden from CBAM could be lower than many originally feared. Data from 2015-2019 show that Japanese imports represented only about 1.1% of those that will fall under CBAM. Nearly all were for iron and steel products (value about \$700 million). Japan also ranks as one of the EU’s lowest carbon-intensive trade partners.

A much bigger impact might come when CBAM’s range of products expands towards the end of the decade. Japanese suppliers of plastics, chemicals and polymers have significant market share in Europe. This is why decarbonizing the chemicals industry was one of the 22 areas mentioned in Prime Minister Kishida’s recent *Basic Policy to Implement a Green Transformation (GX)*.

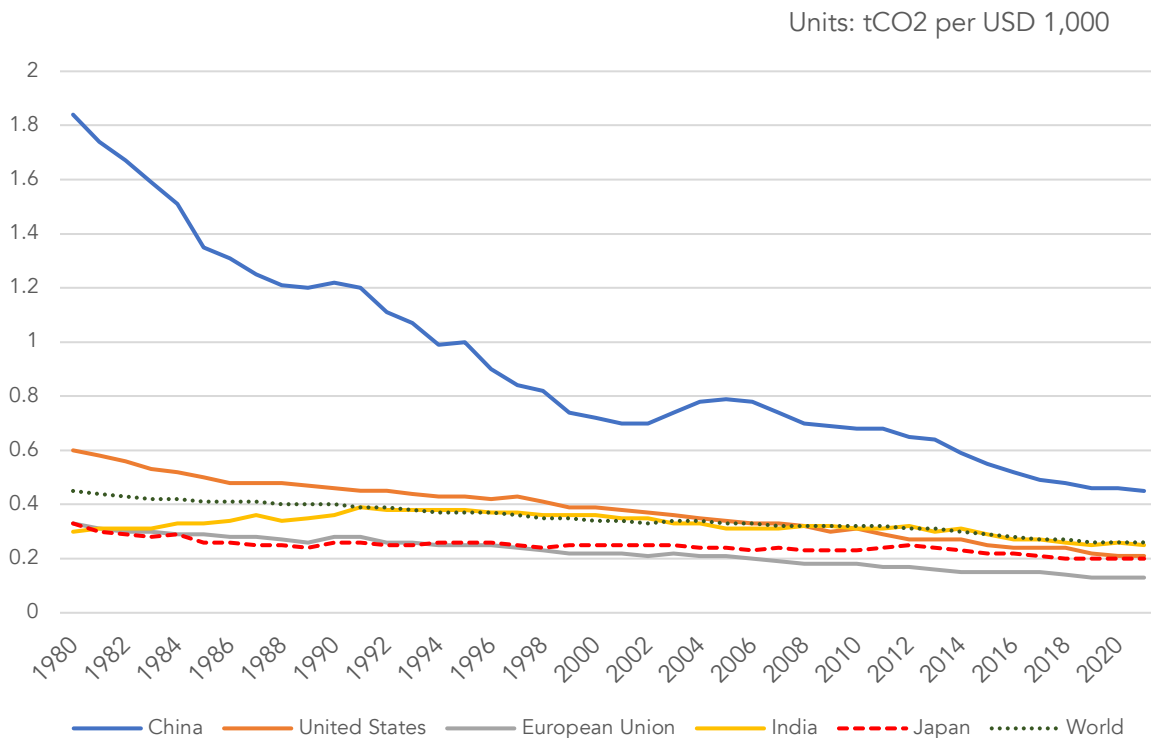
Still, Japan’s top business lobby, the Keidanren, is not overly concerned, estimating CBAM’s direct impact on the Japanese economy as negligible. A similar belief was expressed recently by several European leaders such as EU Commission Vice President Frans Timmermans.

Part of this sentiment derives from the Japan economy’s relatively low CO2 intensity in the Asian and global context. In 2021, it was below the global level – 0.26 tons of

CO2 equivalent per \$1,000 of GDP, according to IEA data. India's economy emitted 25% more and China's 125% more.

Also, Japan has outlined ambitious industry-specific targets to cut emissions, and its climate commitments are not cemented in law. In that context, Japanese producers would likely gain market share in the EU rather than lose it.

CO2 emissions intensity of GDP, 1990-2021



Source: IEA

To be sure, there are complicating factors regarding CBAM. While both Japan and the EU share 2050 net-zero commitments, Tokyo has yet to fully establish carbon pricing both through emissions trading and a carbon levy. These elements will be necessary for CBAM calculations.

Japan's GX strategy sees the implementation of full-scale carbon trading in around FY2026. The government has also committed in principle to a carbon surcharge, but details of that are still unclear, with only the top emitters expected to be initially impacted. Without these two elements in place, the EU would likely need to consider Japan's Global Warming Countermeasure Tax as the country's equivalent carbon levy; but that tax is much lower than the European one.

Japanese officials will seek to mitigate any damage by arguing that the country's coal and oil taxes are relatively high and should be taken into consideration for CBAM calculations.

Toward a solution

Optimistic voices from Japan and the EU on CBAM's impact are supported by academic research, especially considering CBAM's future developments. Initially,

CBAM will only include direct emissions (the so-called Scope 1 emissions from boilers, furnaces, vehicles during manufacturing, etc.). Later, it will add Scope 2 emissions (from electricity generation, steam, heat and cooling during manufacture). A recent study from KU Leuven in Belgium suggests that this should benefit Japan.

The size of the manufacturing base of other Asian countries indicates that Japan will be in a good position to benefit from CBAM's introduction, as long as it moves forward with its own net-zero or GX program. It will also need to be resolute with unveiling carbon pricing, rather than waiting for a more opportune time for the economy to do so.

As the EU tests out its new mechanism other questions and queries will likely arise. Japan's ability to demonstrate a commitment to decarbonization will be important to keep on track its trade and policy cooperation with the EU.

GLOBAL VIEW

BY JOHN VAROLI

Below are some of last week's most important international energy developments monitored by the Japan NRG team because of their potential to impact energy supply and demand, as well as prices. We see the following as relevant to Japanese and international energy investors.

Africa/ Renewable energy

Masdar, the leading clean energy company in the United Arab Emirates, signed deals for projects with a total generation capacity of 5 GW in Angola, Uganda, and Zambia. Etihad 7, a global development fund launched by the UAE, plans to provide 100 million people across African continent with clean electricity by 2035

China/ EVs

The country accounts for 70% of global EV sales; Chinese consumers will buy as much as 10 million EVs in 2023, up from a record 6.5 million in 2022 and 3.5 million in 2021. This compares with nearly 3 million in Europe and 2 million in the U.S.

China/ Commodities

Mining company BHP said China would act as a "stabilising force" for commodity demand this year as Beijing's pro-growth policies offset weak economies in other developed markets.

COP28/ Energy transition

Sultan al-Jaber, head of ADNOC and president of COP28, called for a tripling of renewable energy generation by 2030. He also called for supporting oil and gas from the "least carbon intensive producers", saying the world was "way off track" to meet climate goals.

EU/ Energy transition

European Commission head Ursula von der Leyen told the WEF meeting in Davos that the EU's Green Deal will make the bloc a center for clean technology. The EU plans to utilize state aid and a sovereignty fund to keep innovative firms from moving to the U.S.

Insurance/ Energy transition

Insurance group Aviva aims to be the world's top renewable energy insurer by 2027. Four years ago, Aviva stopped insuring fossil-fuel power projects, and it's now building up its renewable energy insurance portfolio in wind, solar and battery storage.

Saudi Arabia/ Oil payments

Saudi Arabia said it's open to discussing oil trade settlements in currencies other than the U.S. dollar. The Saudi move could be another threat to the dominance of the U.S. dollar in global oil trade. Saudi oil exports have supported the petrodollar system from the 1970s.

Spain/ Renewable energy

EDP Renewables, the world's fourth-largest renewable power producer, turned on its first hybrid wind-solar farm on the Iberian Peninsula. The plant 186 miles north of Lisbon, combines 17,000 new PV panels in an area with wind turbines.

UAE/ Renewable energy

The U.S. and United Arab Emirates will allocate the first \$20 billion of their \$100 billion renewables energy partnership to fund 15 GW of projects by 2035. Led by Masdar, the deal includes \$7 billion in private sector cash equity and \$13 billion in U.S. debt financing.

UK/ Oil and gas

TotalEnergies, the second-biggest oil and gas producer in the North Sea, expects a \$2.1 billion loss from windfall taxes in the UK and EU on 2022 earnings, with half the bill coming from the UK. A 25% energy profits tax introduced in May increased to 35% on January 1, increasing the headline tax rate on UK oil and gas production to 75%.

UK/ Offshore wind

King Charles will redirect to the “wider public good” profits from a Crown Estate wind farm deal that would have generated a multimillion pound surge in royal revenues in the next few years. Six new offshore wind energy lease agreements, which came into effect on Thursday, were set to generate more than £8 billion for the Crown Estate over the next decade.

2023 EVENTS CALENDAR

A selection of domestic and international events we believe will have an impact on Japanese energy

January	<ul style="list-style-type: none"> ○ METI Minister Yasutoshi Nishimura met with US DOE Secretary Jennifer M. Granholm in Washington D.C ○ PM Kishida met with IEA Executive Director Fatih Birol in Paris ○ Kishida-Biden summit meeting (January 13) ○ Last day to solicit public comments about GX (January 22) ○ Indonesia takes over as chair of the ASEAN for 2023 ○ JCCP (Japan Cooperation Center for Petroleum and Sustainable Energy) Symposium (January 26) ○ Japan's parliament convenes (late January) ○ Lunar New Year (January 21-27) ○ Ammonia as Fuel World Summit (January 30-February 2) ○ Toyota group launches trial runs of FC truck transport system ○ IMO carbon regulation enters into force for all ships ○ China expected to announce the volume of rare earth production permitted by the government for the first months of 2023
February	<ul style="list-style-type: none"> ○ Japan Energy Summit (February 28-March 2) ○ FIT solar auction (February 20-March 3) ○ IEA Global Methane Tracker 2023 release (TBD) ○ GX roadmap to be approved in a Cabinet meeting (February)
March	<ul style="list-style-type: none"> ○ REvision 2023 Symposium by Renewable Energy Institute (March 8) ○ Japan Atomic Industrial Forum Seminar (March 13) ○ World Smart Energy Week (March 15-17) ○ Small solar, wind operators subject to tighter technical rules due to Electricity Business Act amendments (March 20) ○ FIT on-shore wind auction (March 6-17) ○ IPCC to release sixth assessment report ○ End of 2022/2023 Japanese fiscal year ○ China hosts National People's Congress to appoint top government officials
April	<ul style="list-style-type: none"> ○ Enforcement of Acts to Promote Non-Fossil Energy and Sophisticated Supply Structure enters Phase II (April 1) ○ Amendments to Energy Conservation Act take effect (April 1) ○ Process for non-firm renewable connection to local transmission lines starts (April 1) ○ Rare earth mining will require state licensing (April 1) ○ Canadian Sigma Lithium to start commercial production at its Brazilian mine, one of the five largest lithium projects in the world ○ GX League becomes fully operational ○ Eurus, Cosmo and Looop to bring online Japan's largest onshore wind farm ○ Japan holds local elections for governors, mayors and legislatures

May	<ul style="list-style-type: none"> ○ May Golden Week holidays (May 3-5) ○ General election in Thailand (May 7) ○ World Hydrogen Summit (May 9-11) ○ G7 Hiroshima Summit (May 19-21)
June	<ul style="list-style-type: none"> ○ 35th OPEC and non-OPEC ministerial meeting (June 4) ○ IEA annual global conference on energy efficiency (June 6-8) ○ General and presidential election in Turkey (June 18) ○ Lithium Supply and Battery Raw Materials 2023 (June 20-22) ○ Happo Noshiro, Murakami-Tainai, Oga-Katagami-Akita and Saikai-Eshima wind project auctions close (June 30) ○ JERA, Shikoku Electric start running new coal power plants
July	<ul style="list-style-type: none"> ○ LNG 2023 World Conference (July 10-14)
August	<ul style="list-style-type: none"> ○ China expected to announce the volume quota allowances of rare earth production for the balance of 2023
September	<ul style="list-style-type: none"> ○ G20 New Delhi Summit (September 9-10) ○ 2023 UN SDG Summit (September 19-20)
October	<ul style="list-style-type: none"> ○ IEA World Energy Outlook 2023 Release ○ BP Energy Outlook 2023 Release ○ Connecting Green Hydrogen Japan 2023 ○ Japan Wind Energy 2023 summit
November	<ul style="list-style-type: none"> ○ COP 28 (November 30-December 12) ○ U.S. hosts the APEC summit in San Francisco
December	<ul style="list-style-type: none"> ○ ASEAN-Japan summit to mark 50 years of cooperation ○ Last market trading day (December 30)

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