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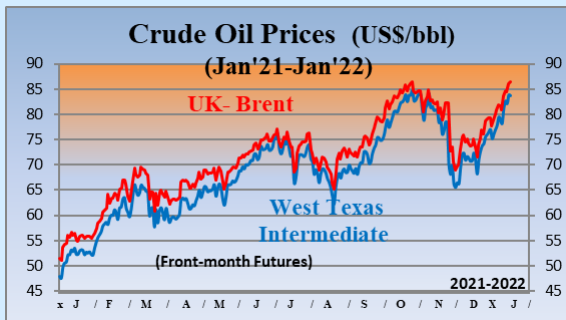
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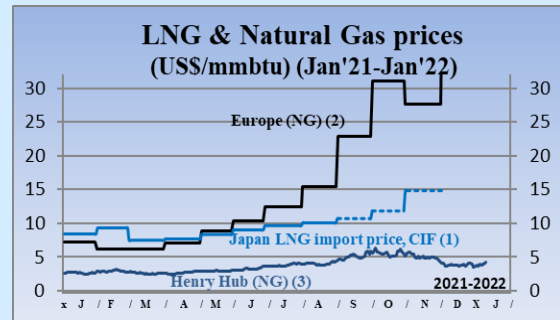
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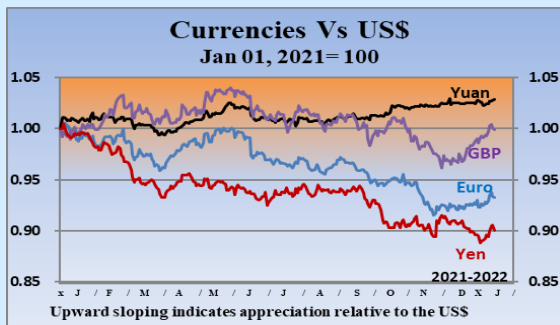
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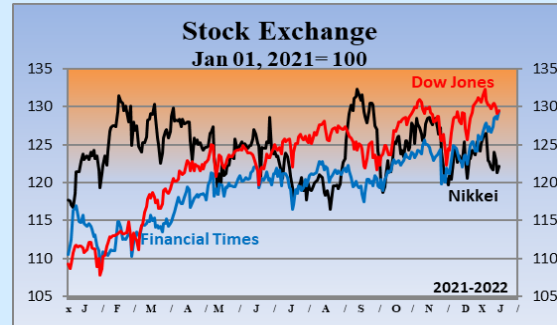
Sources:  
(1) DOE-EIA  
(2) Investing.com



Sources:  
(1) Ministry of Finance "Japan Trade Statistics"  
(2) Ministry of Economy, Trade and Industry (arrival month basis)  
(3) Estimated by World Bank (Netherland Title Transfer Facility)  
(4) DOE-EIA, NYMEX (Front-month Futures)



Source: x-rates.com



Sources:  
(1) Finance. Yahoo.com  
(2) Investing.com

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## Summary

### 【 Key Points for 2022 (1) 】

#### I. Overall Energy Policy

Last year, the Sixth Strategic Energy Plan was approved by the Cabinet. This year, the clean energy strategy will be formulated as part of “a new form of capitalism” pursued by the Kishida administration, aiming to bring about a virtuous cycle of the economy and the environment.

#### II. World Energy and the Environment

##### 1. Oil

The focus for the international oil market in 2022 is the resurgence of the Covid-19 pandemic and the possibility of OPEC Plus restarting production cuts. Oil prices are predicted to be at \$70 for Brent.

##### 2. Natural Gas (LNG)

The immediate concern in the global natural gas and LNG market in 2022 are short-term supply and demand balance and price developments. Securing investment and smooth construction activities are a focal point to ensure supply sources for the future.

##### 3. Coal

Coal prices soared in 2021 against the backdrop of cuts in coal production by China. Coal prices are expected to fall in 2022 due to an increase in coal production and other measures taken to ease supply-demand balance, but prices could fluctuate wildly amid the trend away from coal.

##### 4. Renewable Energies

This year marks the tenth anniversary of the FIT system in Japan. With enormous amounts of renewables set to be introduced to meet the 2050 carbon neutrality target, it will be necessary to discuss using renewables not only for electricity, but also in the form of hydrogen through conversion.

##### 5. Nuclear Power

Russia’s state nuclear power company Rosatom is strengthening its presence each year in the international nuclear new build market. In recent years, the company has developed other business areas such as hydrogen and non-nuclear equipment manufacturing; its activities deserve attention.

##### 6. Energy Efficiency

This year, the European parliament will be preparing to adopt the Energy Performance of Buildings Directive, which covers energy-efficient renovation of existing houses and other buildings. Japan will discuss revising the Act on the Rational Use of Energy to include non-fossil fuels.

##### 7. Hydrogen and Carbon Recycling

In 2022, full-scale discussions will begin on specific measures to support the introduction of hydrogen and ammonia, as set out in the Sixth Strategic Energy Plan. Debates on the GHG footprint of hydrogen in other countries are also worth monitoring.

##### 8. Policies Related to Climate Change

The focus points for 2022 will be whether each country will revisit or strengthen its 2030 target, and what kinds of specific policies and measures each country will introduce for attaining the target, based on the outcome of COP26.



## I. Overall Energy Policy

**Shigeru Suehiro**, Senior Economist, Manager  
Econometric and Statistical Analysis Group  
Energy Data and Modelling Center

In October last year, the Sixth Strategic Energy Plan completed its three-yearly revision and was approved by the Cabinet. The Plan reaffirmed Japan's basic energy policy of "S + three Es," which stands for safety, energy security, economic efficiency, and the environment, featuring Japan's goals of "attaining carbon neutrality in 2050" and "reducing GHG emissions by 46% in 2030" declared by former Prime Minister Suga, while laying out the issues and measures to address them. Going forward, more specific policies and institutional designs in the respective areas for reaching the goals will be discussed.

Recently, preliminary figures for Japan's GHG emissions for FY2020 were announced. Japan's emissions decreased for the seventh straight year to 1,149 million tonnes (in CO<sub>2</sub> equivalent), down 5.1% from the previous fiscal year. This is an 18.4% decrease from FY2013 and appears well on track to reach the FY2030 reduction target of 46%. However, it must be noted that the large reduction in FY2020 owed much to the coronavirus-induced economic slowdown; GHG emissions may start increasing as economic activity recovers, and there is absolutely no room for optimism. With nine years to go till the end of FY2030, it is necessary to formulate policies and institutional designs with real and immediate effect very soon.

The Kishida administration has named coronavirus measures, a new form of capitalism, and foreign policies and national security as its core policies. Not much is new regarding the administration's energy and environment policies, which inherited the policies and discussions of the Suga administration. However, as one form of new capitalism, its trademark policy, the new administration is aiming to spur economic growth by implementing climate measures. The "economic measures to overcome new coronavirus infections and to carve out a new era," which were approved in November last year by the Cabinet, set the "clean energy strategy for achieving carbon neutrality in 2050" as part of Japan's growth strategy. Mr. Kishida expressed his expectations for green growth in his policy speech in December last year, stating that the administration will "transform climate change, the social issue that is common to the entire human race, into a growth area that gives rise to new markets."

The Ministry of Economy, Trade and Industry is set to start discussions on devising the clean energy strategy mentioned in the policy speech. One of the key points will be investing in clean energy to bring about a virtuous cycle of the economy and the environment. Investments will be made with the aim of expanding R&D activities and capacities for all energy options, including nuclear and hydrogen, in addition to promoting the electrification of automobiles, securing production bases for batteries and semiconductors, and making renewables a main power source. The new strategy for transforming into a decarbonized society is due to be drafted by around June this year.

At present, international resource prices remain at high levels. Last November, the government announced that it would release national oil reserves to curb the increase in gasoline prices. With a tight electricity situation predicted this winter, various measures are being considered to secure a stable supply of electricity. Some think that the current challenges in securing stable and affordable energy supplies might be a side effect of the rapid progress of decarbonization. How to minimize negative impacts during the transitional stage to carbon neutrality is a major issue for policymakers.



## II. World Energy and the Environment

### 1. Oil

**Tetsuo Morikawa, PhD**  
Senior Economist, Manager  
Oil Group

Fossil energies & International Cooperation Unit

The points of focus for the international oil market in 2022 are the resurgence of the Covid-19 pandemic and the possibility of OPEC Plus restarting production cuts.

At the regular reporting session on December 23, 2021, the IEEJ forecasted the average Brent price at \$70/bbl for 2022. This forecast assumes that the pandemic will not worsen to catastrophic levels, OPEC Plus will continue to increase production, though at a slower pace, and the supply and demand will remain largely in balance. As such, a resurgence of the pandemic and OPEC Plus reverting to production cuts will be major uncertainties for oil prices this year.

With new cases surged from the start of Q4 2021 forced some European countries to introduce lockdowns again. Concerns about a resurgence have increased globally since the World Health Organization (WHO) designated the omicron variant a “variant of concern (VOC)” in late November. In the market, which was already beset by oversupply problems, the arrival of the omicron variant sent oil prices tumbling by as much as 17% (14 dollars) in the 30 days from November 1. Few people expect the omicron variant will not result in explosive contagions like those in 2020 but as breakthrough infections and yet more variants could emerge, a major resurgence of the pandemic will remain the most significant cause of oil price drops in 2022.

Meanwhile, OPEC Plus decided at the meetings held on December 1 and 2 last year to maintain its production increase at 0.4 mb/d in January. It is generally believed that OPEC Plus decided to continue to produce more despite the US-led release of national oil reserves and the emergence of omicron, out of concern for the US and other consumer countries. However, OPEC is already weary of resurgences and has declared that it is ready to adjust (meaning stop increasing or reduce) production immediately if necessary. If OPEC Plus, which produces 50% of the world’s oil supplies, restarts production cuts, it would undoubtedly put significant upward pressure on oil prices. However, it is also true that a prolonged production cut would make it harder to maintain cohesiveness among the OPEC Plus countries. For example, the UAE, which is expanding its production capabilities and is hoping to produce more, is likely to oppose steeper or longer production cuts as it did in July 2021.

2021 saw a series of threatening situations for energy security, and once again highlighted the difficulty of decarbonization. Higher oil prices were recognized as a macroeconomic risk and prompted the US, Japan, and others to release their strategic oil reserves. Japan must take action to secure upstream investments, such as encouraging producer-consumer dialog for stabilizing the oil market, and thereby help restore the balance in S+3Es (safety, energy security, economic efficiency, and the environment), the pillar of Japan’s energy policy.



## 2. Natural Gas (LNG)

**Hiroshi HASHIMOTO**

Head of Gas Group

Fossil Energies & International Cooperation Unit

The immediate concern in the global natural gas and LNG market in 2022 are short-term supply and demand balance and price developments.

Spot gas prices in Asia and Europe sustained the highest levels ever in the history in 2021. Since July, those spot gas prices have been more expensive than crude oil. As seasonal demand fluctuations have been larger, the industry has had difficult challenges to cope with excessive fluctuations and surges of prices. Spot gas prices during the ongoing Northern Hemisphere winter are susceptible to weather conditions and performances of LNG production facilities. As low levels of underground gas inventories are expected in Europe, prices are also expected to maintain bullish trends. Buyers are already undertaking advance procurement activities to overcome further excessive price surges in the next year. Mutual interactions of prices between different geographical regions, as well as different energy sources, are likely to become closer.

The sustained excessive levels of spot gas prices have been a reminder of the importance of long-term contracts for both LNG and pipeline gas. When a spot price is adapted as an index of a contract price, it is necessary to consider measures to mitigate volatility and dodge excessively high and low prices. Combining different indexes could mitigate volatility of the weighted average price. For term contract pricing, the share of crude-oil indexation, as well as slopes of indexation and fixed components to mitigate fluctuations should be carefully considered.

The global natural gas demand, recovering from a 2% decrease in 2020 to an estimated 3.5% increase in 2021, is expected to grow by 1.5% in 2022. However, the pace and size of growth are still subject to uncertainty caused by the pandemic. Additionally, as natural gas and LNG cushion fluctuations of renewable and nuclear power outputs, a wide variety of regional demand changes and unexpected changes of the global gas demand can be observed.

The world is estimated to have traded 375 million tonnes of LNG internationally in 2021, recovering from the minimized growth in 2020. The year 2022 is expected to see a 6% - 7% year-on-year growth to 400 million tonnes. The global supply capacity is expected to be 413 million tonnes assuming trouble-free operations. In 2021, the LNG import growth was driven by China, followed by Korea, Japan and South America. While the United States dominated the export growth, Australia and Qatar, the current top exporters, maintained their respective export levels in the year. The United States is expected to be the largest exporter of LNG in the world in 2022.

Another focal point in 2022 is how much LNG production capacity will undergo investment decisions and how smoothly construction activities will advance. The high prices and term-contract procurement activities have supported project progresses, although uncertainty over available funding on fossil fuel development and long-term demand poses challenges.



### 3. Coal

**Yoko ITO**, Senior Researcher, Manager  
Coal Group  
Fossil Energies & International Cooperation Unit

In 2021, the coal market recorded its largest climb in history. After plummeting to around \$50/tonne in April–September 2020 due to the pandemic, spot prices for steam coal (FOB, shipped from Port of Newcastle, Australia) turned upward from autumn of that year and surpassed \$100/tonne around Q2, 2021, and then continued to rise as coal demand in major consumer countries recovered. Domestic coal prices soared in China from around June as the domestic coal shortage worsened, followed by a sharp rise in imports in September to prepare for wintertime demand, causing international coal prices to soar past \$200/tonne in October and then exceed \$250/tonne. The supply-demand balance has eased since September 2021 after China took steps to expand domestic coal production, and the price has plunged to around \$150/tonne.

In addition to China which contributed to the price surge, the supply of coal tightened in India as well, and both countries suffered serious power shortages. Further, high energy prices caused growing concern about energy supply stability in many countries.

In the area of policy, the international trend to move away from coal grew stronger, as shown by the debate over phasing out coal-fired power at COP26. Indonesia, Vietnam, and others expressed their willingness to reduce and abolish their coal-fired power plants, and the statement led by the UK, the COP26 host, called for an end to unabated coal-fired thermal power (without measures such as CCUS in place) at the earliest possible timing in the 2030s for developed countries and in the 2040s for others. Major coal producer and consumer countries such as China and India oppose a rushed abolition of coal, but both have indicated a policy to accelerate efforts to expand the use of renewable energy. China aims to become carbon neutral by 2060 and India by 2070.

In 2022, policies to move away from coal and efforts to stabilize the energy supply will be pursued simultaneously. While efforts to reduce energy consumption and coal-fired power will be implemented under an international framework, in the short term China and India will boost domestic coal production and imports, as shown by China's decision to boost domestic coal production from September 2021, and Southeast Asia will maintain coal consumption and imports. Against this backdrop, the market is expected to calm down in 2022, with spot prices of steam coal falling from a high of \$172/tonne on average in the second half of 2021 to the upper \$120/tonne range towards the end of 2022. However, the supply and demand for coal and its price could fluctuate wildly if drastic policies to reduce or abolish coal are introduced and coal demand falls dramatically, or if coal supply becomes extremely limited. To simultaneously achieve energy supply stability and decarbonization, it is important for the coal industry to develop decarbonization technologies such as mixed ammonia combustion, as well as their economic viability, and to demonstrate the role of coal-fired power in the smooth transition to carbon neutrality.



## 4. Renewable Energies

**Yoshiaki Shibata**, Senior Economist, Manager  
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Renewable electricity output measured approximately 7,400 TWh in 2020 (including 4,300 TWh of hydropower and 3,100 TWh of non-hydro renewables), accounting for 28% of the total electricity output. The increase in installed capacity marked a record high for one year with 260 GW. This came about as the additional renewable power resulting from the acceleration of decarbonization efforts by major countries exceeded the decrease due to Covid. Though it depends on the future situation of the pandemic, at the current rate, new renewable capacity equivalent to that introduced in 2020 is likely to be added in 2021–2022.

According to an analysis by the IEEJ, renewables are estimated to account for 22% of Japan's total electricity output in FY2022 (with 8% hydropower and 14% non-hydro renewables). Meanwhile, the 2030 renewable electricity target of 36–38% consists of 103.5–117.6 GW of solar PV, 23.6 GW of wind power (17.9 GW land-based, 5.7 GW offshore), and 8.0 GW of biomass. As of the end of June 2021, the installed capacities of solar power, wind power, and biomass were 62.4 GW, 4.6 GW, and 5.4 GW, respectively. Combined with the capacities from licensed but non-operating FIT projects (18.5 GW, 11.3 GW, and 5.1 GW), this would give a total of 80.9 GW, 15.9 GW, and 10.5 GW; to reach the 2030 target, an additional 22.6–36.7 GW of solar PV and 7.7 GW of wind power would still be needed.

As such, Japan will continue to rely on solar PV, which can enter operation relatively quickly, to meet the target. To secure the necessary land, it will be essential to accelerate positive zoning under the revised Act on Promotion of Global Warming Countermeasures, facilitate the reuse of abandoned farmland and unclaimed land, and actively adopt solar PV in the public sector. Meanwhile, the Feed-in Premium (FIP) system will start to be applied to large-scale solar PV and wind power capacities from FY2022. Under this system, like other power producers, renewable power producers will be required to sell to the wholesale market and bear imbalance costs.

Another notable discussion point going forward is how to utilize energy storage technologies, which will be essential with the mass introduction of variable renewable energies (VREs). Among the energy storage technologies, pumped-storage hydroelectric power and batteries will be relevant only to the electricity sector as they function basically by charging and discharging. Meanwhile, Power to Gas (PtG) must be discussed in the context of the entire energy system, as the hydrogen produced by water electrolysis in PtG can be used in sectors other than electricity. At the Tokyo Olympic and Paralympic Games last year, the torches and hydrogen engine vehicles were supplied with hydrogen produced at NEDO's Fukushima Hydrogen Energy Research Field (FH2R) from renewable electricity. PtG demonstration projects are also being carried out on other subjects, including using the hydrogen produced from excess electricity in industry and transport, and using water electrolysis for demand response as a means to balance match the supply and demand for electricity.

This year marks the tenth anniversary of the FIT system in Japan. With enormous amounts of renewables set to be introduced to meet the 2050 carbon neutrality target, it will be necessary to discuss using renewables not only as electricity, but also as hydrogen through conversion.



## 5. Nuclear Power

**Tomoko Murakami**, Senior Economist, Manager  
Nuclear Energy Group, Strategy Research Unit

As of the end of 2021, ten nuclear power plants have restarted after completing the safety assessment in accordance with the new regulation standards, and two more plants or so may be restarted in 2022. To accelerate the pace of restarting, in April 2021, the Federation of Electric Power Companies set up the “Restart Acceleration Taskforce” to provide coordinated support to each company to restart their plants. As the details of the Taskforce’s activities are not disclosed, it will take a few years to know whether the Taskforce has been successful in helping several plants to restart as expected.

Outside of Japan, five additional commercial nuclear power plants went online on 2021, all in non-OECD countries: two in China and one each in Pakistan, India, and the UAE. There are more than 10 plants under construction in China, five in India, and a few each in the UAE, Russia, and South Korea, among others. While several of these are expected to go online in 2022, some plants are expected to shutdown in the UK, the US, Germany, and other developed countries. As a result, it is estimated that the world’s installed nuclear capacity will increase slightly or remain at current levels in 2022.

Among international nuclear power companies, Russia’s state nuclear power company Rosatom deserves attention for its strategy and international expansion. Previously, Rosatom focused mainly on uranium leaching and concentration, and provided plant technologies only within Russia or to Eastern European countries or China. Presently, however, Rosatom is not only in business talks with more than 30 countries including in the Middle East, Africa, and Latin America, but is also exploring business in non-nuclear areas such as hydrogen and digital products.

While steadily building a track record in nuclear new builds, Rosatom is also a step ahead in developing small modular reactors (SMR), which the nuclear vendors in developed countries are working on; Rosatom already has a ship equipped with an SMR providing electricity and heat to the Arctic Sea coast. It is also working on the co-existence of nuclear and renewable energy using SMRs and producing hydrogen with a high-temperature gas-cooled reactor. It will be interesting to see how far Rosatom broadens its business horizons in 2022.

On December 2, Canadian electricity producer Ontario Power Generation (OPG) selected the BWRX-300 as the SMR for the new build project at the company’s Darlington Nuclear Generation Station. OPG will be working with GE Hitachi Nuclear Energy, BWRX-300’s vendor, as the technology partner in design and engineering, formulation of plans, and preparation for licensing procedures. The plant is slated for completion in 2028 as Canada’s first commercial SMR.

The Canadian government promises to set regulations for SMRs in its national SMR Action Plan issued in 2020, and its nuclear regulator is also helping to improve the predictability of business through the Pre-Licensing Vendor Design Review system. It is hoped that the project will make steady progress in 2022.





## 6. Energy Efficiency

**Naoko DOI, PhD**

Senior Economist, Manager

Energy Efficiency Group

Climate Change and Energy Efficiency Unit

In 2021, the harsh reality of a global surge in energy prices dealt a blow to businesses and households as the world strived to boost climate measures. This year, the world will renew its recognition that energy efficiency, with its highly cost-efficient options, is the “first fuel”—the first energy source that we should turn to—and step up efforts in this area.

As step 2 of its “Fit for 55” initiative, the European Commission released proposed amendments to its Energy Performance of Buildings Directive. The amendments will be deliberated at the European Parliament this year for adoption. The main amendments are: (1) modernizing existing houses and other buildings that are less energy-efficient, (2) setting a vision for all new houses and buildings to be “zero-emission buildings” from 2030 (from 2027 for public buildings), (3) calculating the lifecycle global warming coefficient for all new houses and buildings starting from 2030, (4) requiring member state governments to set up a legal basis for prohibiting fossil-fuel boilers, and (5) terminating subsidies for fossil-fuel boilers from 2027.

In the UK, the government will require all newly built homes and other buildings, as well as existing buildings undergoing major renovations, in the country to include EV chargers from this year in preparation for automobile electrification. In the state of California, where the revision of the 2022 Building Code was approved last year, and this year, preparations are under way toward implementation in 2023. Hereafter, the state will encourage the use of heat pumps for space and water heating and oblige the installation of cables to make new houses electric-ready. This includes installing cables in parking spaces for EV chargers.

In developing countries, the lack of adequate systems and standards and high initial costs are hampering the widespread adoption of efficient technologies. To overcome this issue, JICA, USAID, and other donor organizations will continue to contribute funds to energy efficiency-related projects and provide assistance to set up institutional systems. A Japanese manufacturer is operating a subscription service for high-efficiency air conditioners (in which consumers pay a monthly fee but do not own the high-efficiency equipment itself) in developing countries in Africa and elsewhere, and its progress is being watched with interest. Last year, the Japanese government joined the Super-Efficient Equipment and Appliances Deployment (SEAD), an international framework for energy efficiency (after leaving once in 2015). To meet SEAD’s goal of doubling the energy efficiency of air conditioners, refrigerators, lighting, and motors by 2030, there are high hopes for the creation of standards in developing countries.

In 2022, Japan will discuss revising the Act on the Rational Use of Energy. The purpose of the current Act is to promote the rational use of fossil fuels, heat, and fossil fuel-sourced electricity, and the revision will add non-fossil fuels to its scope. This means that efforts such as suppressing demand during a supply crunch by shifting demand to the hours of day when there is surplus renewable electricity will be recognized based on the Act. This effort will involve using digital technologies for more precise control of various supply elements, such as production facilities and co-generation systems on the demand side, storage batteries, and hot water supplies and EVs in houses and other buildings.



## 7. Hydrogen and Carbon Recycling

**Yoshikazu Kobayashi**, Senior Economist  
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Fossil Energies & International Cooperation Unit

The Sixth Strategic Energy Plan, which was approved by the Cabinet in October 2021, set a clear numerical target share of 1% for hydrogen and ammonia in the 2030 power mix for the first time, making 2021 a landmark year for those energies. It will not be easy to build a supply chain from the ground up for hydrogen and ammonia, which have never been used as power generation fuels. However, given the acceleration of the global decarbonization effort, 1% should be considered as the minimum target and an ambitious share of 2%, 3%, or even higher should be sought.

Mixed combustion of ammonia in coal-fired power is expected to be the primary method for using hydrogen in the power sector, and in 2022, a full-scale study of policies for its introduction will begin. At the meeting of the public-private council for introducing fuel ammonia held in November 2021, a public-private task force on the fuel ammonia supply chain was established under the Council to discuss the future vision of the fuel ammonia supply chain and market that Japan should work toward. The task force is scheduled to issue a proposal around the summer of 2022, and full-scale discussions are due to commence shortly after the start of the year.

As the use of hydrogen as a GHG reduction measure expands, its GHG emissions (footprint) throughout the process, from production to usage, are receiving more attention. In August 2021, US researchers issued a study stating that natural gas-sourced hydrogen (so-called “blue” hydrogen) is not as clean as generally believed when including the methane leakage during production and transport, attracting much attention among those concerned. In the United States, hydrogen is defined as clean when its emissions are 2.0 kg CO<sub>2</sub> equivalent or less per kilogram at the location of production, under the infrastructure bill enacted in November 2021. At a meeting in December 2021, US Secretary of Energy Jennifer Granholm reportedly reminded industry members that methane leakage must be managed strictly if clean hydrogen certification is to be obtained. The US is scheduled to release its Clean Hydrogen Strategy and Roadmap by May 2022. Europe and international organizations are also discussing the GHG footprint requirements for clean hydrogen, and the discussions for formulating an international standard for clean hydrogen may make further progress in 2022.

It appears that a shared global understanding on the significance and importance of carbon recycling has been established in the past two years. A few carbon recycling technologies have come into practical use, such as concrete that absorbs CO<sub>2</sub> effectively, and plastic products. There are high expectations for the development of recycled carbon fuels that offer even greater emission reductions, and in recent years, there has been much interest in sustainable aviation fuel (SAF) as a replacement for petroleum-sourced fuels. Europe has already set a mandate on the mixing of SAFs, and it is hoped that the regulations will “prime the pump” for more technological development and infrastructure construction for SAF, and its broader use going forward.

## 8. Policies Related to Climate Change

**Takahiko Tagami**, Senior Coordinator, Manager  
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Climate Change and Energy Efficiency Unit

In 2021, Turkey, Russia, Saudi Arabia, Australia, and India newly announced their net-zero emission/carbon neutrality goals ahead of or during COP26. With this, all G20 countries have now announced their goals. Furthermore, the rules for the international carbon market referred to in Article 6 of the Paris Agreement, which avoids the double-counting of carbon credits and enhances transactions, were adopted, completing the formulation of the Paris Agreement “rulebook”. Furthermore, it was decided to establish a work programme to urgently scale up mitigation ambition and implementation and to convene an annual high-level ministerial round table. Regarding the target levels for 2030, aside from the annual consideration of increasing the target described above, a five-yearly assessment of the collective progress towards achieving the purpose and goals of the Paris Agreement (the global stocktake) is scheduled for 2023; the initial process of the global stocktake will start in 2022.

Accordingly, the focus points for 2022 will be: (1) what kinds of specific efforts each country will announce and implement to attain their net-zero emission/carbon neutrality targets, (2) how the international carbon market will be operated, and in what ways its rules will affect the voluntary credit market, and (3) whether countries will revisit or strengthen their 2030 targets.

The points of focus for the policies of each country are as follows:

- China: The development of specific policies and measures for achieving the targets indicated in the “Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality” by the Communist Party of China Central Committee and the State Council
- US: Whether the social spending and climate bill that includes clean energy measures worth \$555 billion will be approved by the Senate, as well as the kinds of policies and measures that will be taken if the bill is rejected
- EU: The discussions between the European parliament, the Council of the European Union, and the European Commission on the draft policies and measures for meeting the 2030 targets
- India: How the energy transition to gas and hydrogen will be carried out, and the implementation of the policies and measures for achieving the targets presented at COP26
- Other: Russia, and several Southeast Asian countries including Indonesia announced their net-zero emission/carbon neutrality goals and are planning to implement or considering a carbon pricing, through an emissions trading system or carbon tax. These moves are partly the result of the EU’s actions regarding the draft carbon border adjustment mechanism. How carbon pricing will be implemented or considered worldwide also deserves attention.

In Japan, whether the “as necessary” revisiting or strengthening of the FY2030 target will be carried out deserves attention. Further, Japan will consider its clean energy strategy for a “green transformation” (GX, transition to a green economy), as well as the design of carbon pricing.



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