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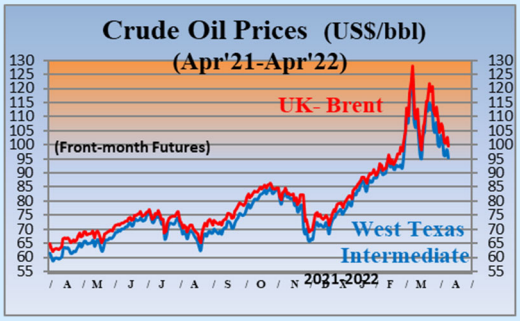
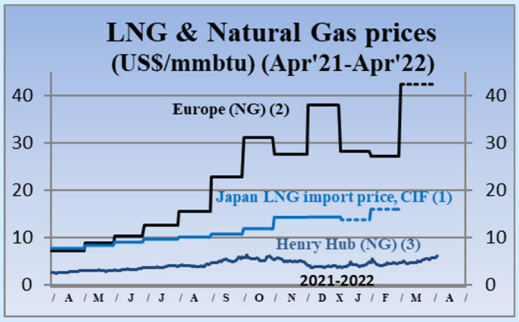
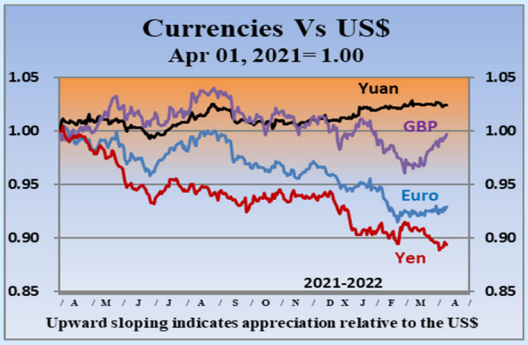


Sources:
(1) DOE-EIA
(2) Investing.com



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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Europe is rapidly revising its initiatives and targets related to renewable energy, hydrogen energy, as well as energy conservation and nuclear power to address energy security. Japan is also expected to steer quickly based on these trends.

1. Developments in Nuclear Power

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On February 24, the Chernobyl nuclear power plant in Ukraine was seized by Russian forces. The plant lost off-site power from the grid at one point and had to rely on emergency diesel generators. The International Atomic Energy Agency expressed its deep concern but, in a statement released on March 9, said that the disconnection from the grid would not have a critical impact as there is sufficient cooling water in the pool to remove heat from the spent fuel. Off-site power was restored on March 14.

Furthermore, on March 4, the Zaporizhzhia nuclear power plant in southern Ukraine caught fire after Russian shelling. Reactor operations were not affected as the fire occurred in off-site facilities. IAEA Director General Rafael Mariano Grossi expressed deep concern and condemned the attacks on the plant at the Board of Governors meeting that began on March 7, commenting that such attacks have "caused unprecedented danger of a nuclear accident, risking the lives of people living in Ukraine and in neighboring countries, including Russia."

Despite these incidents, discussions on strengthening Europe's energy security are progressing rapidly, including on nuclear power as a key point. Following France's nuclear new build programs announced in February, on March 17, Belgium announced a ten-year operational life extension of two of its nuclear power plants, Doel Unit 4 and Tihange Unit 3, to 2035. The decision was made considering the fear that Russia's invasion of Ukraine will drive up already extremely high energy prices even higher.

In parallel with these moves, on March 12, Finland's Teollisuuden Voima Oyj (TVO) announced that the company's Olkiluoto Unit 3 had started to transmit electricity. The plant is the first European Pressurized Reactor (EPR) in Europe to do so. It is also the first new reactor in Finland to start transmitting electricity in roughly 40 years since Olkiluoto Unit 2 in 1979. Plant output will be increased gradually over the next four months or so up to the rated output of 1720 MW, at which point it will enter commercial operations. It is planned to provide about 10% of Finland's total electricity output.

Assessment procedures for introducing new types of reactors are also making progress. On March 7, the UK nuclear regulator announced that it has begun a Generic Design Assessment (GDA) for Rolls-Royce's small modular reactor (SMR). This is the UK's first-ever GDA procedure.

On the topic of uranium prices, media reports have stated that the US Senate has begun discussions on banning Russian uranium imports in the wake of Russia's invasion of Ukraine. Russia produces over 40% of the world's enriched uranium (as of September 2020). Reacting to this move by the US, the spot uranium price climbed to about $60, and is likely to rise further if the US decides to add Russian uranium to its import ban list.

2. Recent Developments in the Oil and LNG Markets

Hiroshi HASHIMOTO
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G7 Energy Ministers' Joint Statement on 10 March 2022 notably underlined the importance of investment in the LNG sector to mitigate potential supply disruptions of pipeline gas to Europe. The European Commission (EC) unveiled its REPowerEU plan on 8 March, followed by an announcement on 11 March of its intention to phase out its dependency on Russian fossil energy supply by 2027. The Commission introduced a proposal of securing gas storage levels and an idea of collective gas purchases on 23 March.

REPowerEU includes procurement of additional 36 million tonnes of LNG as a measure in 2022, which would have a significant impact on the balance in the global LNG market - including Japan and emerging markets in Asia - with little spare supply capacity. Shell's announcement in late February to withdraw from the Sakhalin 2 LNG project sent shockwaves through the LNG industry. Japanese stakeholders should not follow the move in consideration of potential impacts on Japan's energy supply security.

EC is proposing a minimum gas storage filling level of 90% at the beginning of November every year from 2023, following 80% in 2022. Underground storage facilities have been operated differently depending on sizes, facility features, and regulatory requirements by country. Therefore, implementation measures by member countries will also attract attention. It is also a difficult question to define what "phasing out dependency" exactly means - what percentage point, in different EU member countries. It is also important to procure Russian gas stably and safely until phasing out of it.

Additional LNG supply has been already on the way from the United States. In addition to recent completion of Venture Global LNG's new LNG export plant and Cheniere's Sabine Pass Train 6, the two companies have recently announced progresses of next respective LNG production projects - through long-term sales agreements and preparatory activities for construction.

While spot LNG and European gas prices briefly surged to around USD 70 per million Btu in early March, they have been more than USD 30 since Russian invasion in Ukraine and are expected to stay in high ranges.

Crude oil prices have been high, too, with the Brent price reaching USD 139 per barrel on 7 March. As Russian oil export was expected to shrink, the International Energy Agency (IEA) decided on 1 March to release 60 million barrels. While the IEA's Oil Market Report on 16 March forecast a 2.5 million-barrel-per-day reduction of Russian oil export from April, the reduction may be even greater with elevated sanctions and buyers' reluctance. Saudi Arabia, who is supposed to have immediate potential to increase production, is not apparently so eager to do so.

The U.S. Energy Information Administration (EIA) forecast an increase of 1.32 million barrels per day of oil production in the country in 2022 from last year, which would not be sufficient to cover the loss of Russian supply. Significant reduction of demand would be needed to stabilize the global oil market.

3. Update on Policies Related to Climate Change

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On February 28, the Intergovernmental Panel on Climate Change (IPCC) published the Working Group II contribution to the Sixth Assessment Report. The IPCC has three Working Groups, and this report was produced by Working Group II, which assesses the impacts, adaptation, and vulnerability related to climate change. Working Group I published their report in August last year and Working Group III is scheduled to publish theirs in April this year. The report published this time has several novel elements: (1) cross-chapter papers on climate impacts, risks and options to act for cities and settlements by the sea, tropical forests, mountains, biodiversity hotspots, dryland and deserts, the Mediterranean, and the polar regions, and (2) global to regional atlas showing data and findings on climate impacts and risks related to biogeography, drought, flooding, and so on.

For the United States' Social Spending and Climate Bill, which includes clean energy measures worth $555 billion dollars, there is a move to carve out the climate change policy portion, which is believed to be capable of meeting half of the 2030 target (50–52% GHG emissions reduction) on its own, and pass it through Congress independently. However, this has also been stalled, partly because Democratic Senator Ben Ray Luján suffered a stroke on January 27 and had an operation, reducing the number of Democrat votes in the Senate to 49. Senator Luján returned to the Senate on March 3.

Meanwhile, there are moves to limit administrative measures to address climate change. On February 28, the US Supreme Court conducted a hearing on a case in which 19 states and coal companies claimed that there is no legal authority for the US Environmental Protection Agency to issue new policies to regulate power plants. The Supreme Court is due to give its decision in June. Conservative justices currently have a six-to-three majority in the Supreme Court.

Climate measures are also being considered in the area of finance, namely by the US Federal Reserve and the US Securities and Exchange Commission (SEC). The Fed is analyzing the risks that banks will face from climate change. Currently, three of the seven seats on the Federal Reserve Board of Governors are vacant, and Sarah Raskin had been nominated as successor to Randal Quarles, Vice Chair for Supervision of the Fed. However, the Biden administration withdrew her nomination on March 15 after Republican lawmakers and Democrat Senator Joe Manchin opposed the nomination, asserting that Ms. Raskin may pressure banks through the Fed into choking off credit to traditional energy companies, and that thinking about climate change in economic policy is a threat to prosperity.

On March 21, the SEC proposed rule amendments on the Enhancement and Standardization of Climate-Related Disclosures for Investors. The proposed rule requires a company to disclose GHG emissions from upstream and downstream activities in its value chain (Scope 3), if material (if the risks, such as a potential regulation by the climate change countermeasures on upstream and downstream activities, pose an important challenge to its business). While the responsibility for determining whether its Scope 3 emissions are material lies with the company, investors and SEC can file objections on what kind of information the company classifies as material. Views were reportedly divided among the three Democratic Commissioners of the five-membered SEC on the materiality of certain Scope 3 emissions. The rules will be subject to a 60-day public comment period. Heading toward the mid-term elections, the Biden administration is running short of policy measures.

4. Update on Renewable Energies

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Four days after Russia invaded Ukraine, an urgent Special Energy Council meeting was called in Brussels. In the run-up to the meeting, Germany's federal economy and environment minister said that energy sovereignty strengthens a country's security and stressed the importance of fast-tracking the energy transition and expanding renewable energy. About a week later, Germany published draft revisions to the Renewable Energies Act (EEG2023), in which the country unveiled its target to cover its domestic electricity supply almost entirely with renewable energy by 2035 and to raise the share of renewable electricity to 80% by 2030. This is a 15% increase from the current 2030 target and underlines Germany's commitment to accelerating the expansion of renewable energy.

European countries are accelerating their efforts to expand renewables one after another. In the Netherlands, the Cabinet approved plans to designate three additional wind farm zones and increase its offshore wind power capacity to 21 GW by 2030 in March. The aim is to actively expand offshore wind power and make it a main power source of the country. A proposal to invest approximately 1.7 billion euros in the development of wind farm zones is being discussed in the Dutch parliament.

In France, an "Offshore Wind Pact" that cements to accelerating the offshore wind power business was agreed in March. The pact sets a target to work on offshore wind power projects totaling 20 GW by 2030 in order to operate 18 GW of wind power by 2035 and 40 GW by 2050. This is a major jump from the current energy plan which sets a target of introducing 6.2 GW by 2028. Further, in neighboring Belgium, the energy minister is requesting that the 2030 target for offshore wind capacity be raised to 8 GW. With a coastline of just 67 km and a limited Exclusive Economic Zone, Belgium's offshore wind capacity is currently just 2.3 GW. Nevertheless, the country is looking into speeding up the designation of offshore wind energy zones.

In addition to these efforts to expand renewable energy, another move that deserves attention is the acceleration of hydrogen capacity. On March 16, Germany's Vice Chancellor and Minister for Economic Affairs and Climate Action and Norway's Prime Minister had a talk and reaffirmed the importance of speeding up energy development and building related infrastructure to replace Russian oil and gas. As one concrete action, they agreed to carry out a joint survey on laying a hydrogen pipeline to carry hydrogen produced in Norway to Germany. Further, Denmark set a new goal of being able to produce 4 to 6 GW of green hydrogen per year by 2030. With its immense offshore wind power capability, Denmark aims to become a net exporter of green energy by accelerating its production, to help European countries grow independent of fossil fuels.

Amid the fraught world situation, Europe is rapidly revising its renewable- and hydrogen-related initiatives and aims to address energy security. Moreover, some countries are taking concrete steps to utilize nuclear power more actively while also strengthening energy conservation, thus stepping up efforts to change the energy mix. Japan is also expected to steer quickly based on these trends.

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