Japanese Energy Security Is Facing Three Challenges

"The impact of over-reliance on natural gas, for which the global market is still underdeveloped, is significant."
The photo shows an image of natural gas being transported to Japan via the Northern Sea Route.
Photo: Katsuya Noguchi/PIXTA

Shiratori Junichiro, Associate Professor, The Open University of Japan

Prof. Shiratori Junichiro

One of the characteristics of international politics in the 21st century is that the global interdependence of heterogenous states is becoming normalized. With the US-China conflict and the Russian invasion of Ukraine, there are indications of globalization coming to an end, but even if globalization were to stagnate, we still have to consider the current situation of this global interdependence of heterogenous states.

EU countries and Japan are dependent on imported energy resources, and superpower Russia's needs to export its natural resources to cover its war expenditures is a structural situation. Moreover, unlike oil, for which the global market is fairly organized, it is not easy to find new places for importing natural gas. Because of the Russian invasion of Ukraine, chaos in the energy markets is likely to persist for years.

This essay will review Japan's current situation with a focus on energy security. It has often been pointed out that Japanese responses are slow, and that public opinion is divided when faced with an international crisis, but there was stability at least during the first few months of the conflict. When the Russian invasion started, the Japanese government adopted a somewhat hesitant stance, but it then strongly criticized Russia, imposed sanctions, and supported Ukraine in a way that was markedly different from past responses.

Nonetheless, limiting the discussion to economic sanctions against Russia can cause misunderstandings, or unnecessary confrontation. If we value the stable supply of energy, the conclusion would be that imports from Russia are necessary at least in the short term. Conversely, if we value unity in the international community and pressure on Russia, the conclusion would be that stricter sanctions should be imposed.

In reality, all countries occupy a position somewhere in-between. The EU, which has previously deepened its energy dependence on Russia, has reversed its stance by 180 degrees, but is implementing this in stages.

Being interdependent with Russia, excessive sanctions will cause damage to the EU as well, and while this is a partial reason, it is not the whole story. When considering energy issues, it is necessary to take note of the factor of "price" as well as "quantity." Sanctions put upward pressure on oil and natural gas prices, and if purchased by countries not imposing sanctions, this leads to an increase in Russian foreign currency revenue. If the wrong approach is taken, it will benefit Russia, at least in the short term, which means that we are prevented from achieving the objectives of the sanctions.

The EU's sanctions, which appear to have been actively implemented, will take time to actually come into force. The ban on coal imports from Russia, agreed on in April, will not be fully implemented until the beginning of August, while the oil ban agreed on in June will have a six-month grace period for the fulfillment of spot contracts and existing contracts, and another eight-month grace period for petroleum products. These are only some of the various exceptions.

There are certain reasons why Japan, which has less energy dependence on Russia than the EU countries, is shying from sanctions against Russia. This is the first question I want to consider.

Japan's three challenges

In terms of energy security, Japan's current situation is extremely difficult. First, Japan is a resource-poor country that relies on imports for most of its energy resources, and the situation will not change significantly at least for the foreseeable future. Unfortunately, it is highly likely that Japan will continue to be a resource-poor country even if renewable energy comes to play a leading role.

Second, as the "energy shift" becomes more concrete in line with climate change measures, the difficulties are gradually becoming apparent in Japan as well. Amid a lack of progress with regard to the restart of nuclear power plants, the road to securing a stable supply of electricity while increasing the share of renewable energy is narrow and steep. We should also note that the problems surrounding energy are not limited to electric power.

Then there is a third issue: the response to the Russian invasion of Ukraine. It is clear that Russia, which evidently considers energy resource supply as a weapon, is not a reliable or a stable supplier, and not many are directly opposed to reducing Japanese dependence on Russia in the medium to long term. Still, options available to Japan are limited, and the tightrope walk is expected to continue.

Let us examine each of these three challenges.

Japan as a resource-poor country

Japan is a resource-poor country. Water resources are reasonably abundant, but self-sufficiency in underground resources is limited, and the country relies on imports for most energy resources. The energy self-sufficiency rate for FY2020 was 11.2%. Looking at the figures before the Fukushima Daiichi nuclear power plant accident in 2011, it was about 20%, or an overseas import reliance of about 80%.

It is difficult to solve this problem of an extremely low energy self-sufficiency rate by introducing renewable energy. That will not change in the short term or even in the medium to long term. First, after the Fukushima Daiichi nuclear accident, the introduction of renewable energy was pursued at great cost, for example through FIT (feed-in tariffs). However, the total amount of levy (national burden) added to the electricity bill for the introduction of renewable energy reached an annual three trillion yen, approaching its limit. The reason why the energy self-sufficiency rate, which at one time fell to about 6% with the suspension of operations at nuclear power stations, has risen to a certain extent is because the introduction of renewable energy has contributed more than the restart of nuclear power stations has. Yet the effect is limited. Moreover, suitable locations for offshore wind power generation, which is being promoted in other countries as cheap renewable energy, are limited in Japan where there are few shallow coasts.

Second, a stable supply of electricity requires weather-independent base load power plants, so there are limits to the introduction of renewable energy. Although there are regional differences, photovoltaic power generation equipment has already exceeded demand at certain times of the year, and it is not uncommon for "output control" to be implemented when the weather is good. Even if interconnection lines for interchange between electric power companies are reinforced and more storage batteries and similar technologies are introduced, these limitations will not disappear.

Third, electricity is only one part of the energy resources issue, as there are many problems that are unable or difficult to be solved by introducing renewable energy. Most transportation fuel is gasoline and other fossil fuels, and as we will see next, there are challenges involved even if we proceed with the energy shift. Moreover, according to estimates published by the International Energy Agency (IEA) in 2021, even if a global energy shift takes place by 2050, about half of current natural gas and about a quarter of current oil will have been consumed.

It is also important to note that Japan, unlike EU countries, must consider its energy security as a single country. Unlike Europe, where an international power grid is in place, the domestic power grid in Japan is not sufficiently developed. Relations with neighboring countries are not good, so promoting interdependence is fraught with risks.

In any case, little will change with regard to Japan being a resource-poor country for the time being.

Disorder accompanying the energy shift

In October 2020, Prime Minister Suga Yoshihide announced in his Policy Speech at the Diet that by 2050 Japan will aim to reduce greenhouse gas emissions to a net-zero, aiming to achieve carbon neutrality. As the climate change issue was becoming more serious, Japan took a step forward based on the Paris Agreement adopted in 2015.

Having said that, while an energy shift centered on renewable energy is pursued, we should note that a shift from fossil fuel to renewable energy will be accompanied by enormous difficulties even from a global perspective.

As we can see from the two oil crises [in the 1970s] and the situation after the Russian invasion of Ukraine, issues with energy resources have created tensions in international relations. Proponents of renewable energy argue that the energy shift will make these tensions a thing of the past, but it has been pointed out that we will see at least some disorder during this process.

Amid calls for an energy shift, investments in the upstream sector of fossil fuels, such as oil and natural gas, have stagnated. This, combined with the plunge in resource prices in the mid-2010s, has led to a sharp rise in energy prices in 2021, particularly in Europe (there was talk about a risk of tight supply and demand

for natural gas in 2020, but the COVID-19 pandemic postponed this crisis by a year). Perhaps the impact of over-reliance on natural gas, for which the global market is still underdeveloped, is significant.

Also in Japan, the power crisis is becoming a reality, as evidenced by the issuance of the Power Supply and Demand Tight Warning under the jurisdiction of TEPCO on March 22, 2022. This summer and winter will likely be quite tough. The reasons for this are complex, but one reason is that the government is pulling two brakes: on the one hand hesitating to make a shift to renewable energy in power transmission policy to preserve the possibility of full-scale restart of nuclear power stations, and on the other hand decreasing incentives to invest in thermal power as a climate change countermeasure.

You could say that both Europe and Japan are seeing the results of policy mistakes, but like the energy revolution from coal to oil, this ought to be considered a prelude to various forms of disorder that the new energy revolution toward renewable energy will bring.

To be clear, this does not mean that we should not proceed with an energy shift. In order to proceed smoothly with the energy shift, it is necessary to recognize the new risks and issues that arise in the process.

The Russian invasion of Ukraine

Just as the resource-poor country Japan was setting out on its arduous path toward the energy shift, Russia invaded Ukraine on February 24, 2022. In conjunction with subsequent developments, it is clear that Russia has lost its position as a reliable supplier of energy resources.

During the Cold War, the Soviet Union was a source of oil and natural gas alongside the United States and the Middle East. By the turn of the 1970s, while détente was progressing between the superpowers, oil-producing countries also intensified their offensive, and Germany and other West European countries began to seriously consider importing energy resources from the Soviet Union.

In the Third Arab-Israeli War in 1967 and the Fourth Arab-Israeli War in 1973, the Arab oil states used oil as a "weapon" for political purposes. This failed in the former instance but succeeded in the latter, at least in the short term, which led to the 1973 oil crisis. Although the United States objected that relying on the Soviet Union for energy resources would be a risk, the West European countries nonetheless chose to import energy resources by building a pipeline with the Soviet Union.

US concerns were unfounded for about half a century. During the turbulent years at the end of the Cold War and during the dissolution of the Soviet Union, the export of energy resources to the West European countries went almost seamlessly. After the Cold War, there were various frictions with East European countries, which had previously been provided with energy resources with a disregard for market prices, but Russia's actions were based on the conventional wisdom of the energy industry. East European countries such as Ukraine, which cause problems such as siphoning from the pipeline and not paying fees, are troublemakers; this is how many people in the energy industry saw it.

Despite concerns about Russia's foreign policy - such as with the South Ossetia conflict in 2008, the annexation of Crimea in 2014, and the military intervention in the Syrian civil war since 2015 - the West European countries still increased their energy dependence on Russia. The pipeline (Nord Stream 2) that sends natural gas to Germany without going through East European countries was about to open precisely because it regarded Russia as a reliable supplier.

The Russian invasion of Ukraine turned things around. Tough economic sanctions against Russia, mainly from the United States and West European countries, were launched in rapid succession, and Russia, in response, tried to shake things up by demanding ruble payments for natural gas. Germany also announced an indefinite suspension of Nord Stream 2-related businesses when Russia recognized the

independence of the pro-Russian-controlled areas in eastern Ukraine amid continued questionable movements of Russian forces around Ukraine ahead of the invasion. It remains to be seen how effective the EU's sanctions will be - despite the fact that they have been implemented in phases - but there is no doubt that a future exit of the EU's dependence on Russia has been solidified.

The Russian invasion of Ukraine that came about at a time when difficult choices have to be made about the energy shift in response to energy shifts will put the overwhelmingly "resource-poor country" Japan in an even tougher position.

The tightrope walk continues for Japan

Japan has joined sanctions against Russia as a member of the G7, but it is not including energy resources in the same way that the United States, the United Kingdom, and the EU countries are. Apart from the United States, which is an energy exporter, many EU countries have much higher levels of energy dependence on Russia than Japan. Taking natural gas as an example, Germany relies on imports from Russia for about 40%, Italy and France about 30%, and Japan only about 10%. If we examine the dependence on Russia in isolation, Japan's stance may appear to be prioritizing its own economic interests. However, you can see from my explanation so far that the situation is not quite so simple.

Unlike EU countries, which can share power with friendly nations, the resource-poor country Japan is forced to deal with a difficult energy shift on its own. The Russian invasion of Ukraine happened in this context. Moreover, if sanctions against Russia raise energy prices, this will in turn benefit Russia. This characteristic of energy markets cannot be ignored.

This is also one of the reasons why the EU's sanctions have been phased in. Exxon Mobil and Royal Dutch Shell have announced their withdrawal from Russian interests, partly because both companies have interests in others parts of the world and can compensate for their losses by increasing energy prices.

Even after the annexation of Crimea, Japan has continued to approach Russia with the northern territories issue and relations with China in mind, but after the Russian invasion of Ukraine, Japan has clarified its position as a member of the G7. It may seem like Japan is walking one step behind the United States, the United Kingdom, and the EU countries, but we ought to evaluate it as a calm response that also takes into account the negative impact of sanctions.

There are concerns though. First, even if energy resource imports from Russia are maintained for the time being, it is necessary to reduce dependence in the medium to long term. However, that is not an easy path, and if the war is prolonged, Russia may further utilize natural gas as a weapon. It is necessary to consider what kind of responses are viable in anticipation of a supply disruption from Russia in both the short and long term.

Moreover, although the Japanese government's response so far has generally gained public support, there is a real possibility that this support will disappear if the people feel a greater sense of burden, for example due to prolonged inflation. Measures to suppress price increases for gasoline and other fuels through fuel subsidy programs to curb extreme price increases and to alleviate the public's sense of burden cannot be continued indefinitely. An exit strategy needs to be explored urgently.

Energy resources are the foundation of economic management and are inherently closely related to power politics. For the resource-poor country Japan, the energy issue forces a clarification of the country's position within the international community. Including with its handling of the energy shift, what kind of state will Japan move toward within the international community? Once again, Japan's determination is being put into question.

Translated from "'Sanjuku' ni chokumensuru Nihon no enerugi anzenhosho (Japan's Energy Security Facing the 'triple difficulty')," Mita Hyoron (Mita Review), July 5 2022. (Courtesy of Keio University Press) [September 2022]
Originally published by Keio University Press: https://www.mita-hyoron.keio.ac.jp/features/2022/07-6.html (in Japanese)

SHIRATORI Junichiro, Ph.D.
Associate Professor, The Open University of Japan

Born in 1983. Graduated from the Faculty of Law, Keio University in 2006 and earned his Ph.D. (law) from the University in 2013. His publications include *The Energy Resource Diplomacy of a Rising Japan, 1967–1974* and *Heisei no saishotachi—Shidosha 16 nin no shozo* (Heisei prime ministers: Portraits of sixteen leaders).
