

The Ukraine Crisis and Global Energy Transition

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Introduction

The global energy situation is rapidly becoming fluid as a result of the deepening Ukraine crisis, and the world is on the brink of an energy crisis. Stable energy supply and energy security have become issues of top priority around the world, particularly in Europe where there is heavy reliance on Russia for energy, and we face the urgent task of strengthening energy security measures.

Under these circumstances, initiatives toward reducing reliance on Russia, which are increasingly being implemented as the pillar of energy security measures, have become an important concern worldwide. This is because one of the important measures for reducing reliance on Russia is to reduce dependence on fossil fuels, and that could lead directly to promoting decarbonization.

Based on this global energy situation, this paper first discusses the current situation of Ukraine crisis and the associated issues, followed by a discussion on the emphasis on energy security and strengthening of measures emerging from that situation. Thirdly, it discusses the impact that these strengthened energy security measures has on global energy transition, particularly the impact on energy transition toward decarbonization, and finally, examines the future pathway for energy transition.

1. The Ukraine Crisis and Global Energy Situation

The price hikes that occurred simultaneously in the crude oil, natural gas, LNG, coal, and electricity markets from the second half of 2021 were accelerated all at once when Russia launched its military invasion in Ukraine on February 24, 2022, further destabilizing the global energy markets.

All the energy markets saw significant price rises, and historical high prices were recorded across the overall global energy market with the exception of crude oil, which registered its highest prices after the global financial crisis in 2008. Among these, the most dramatic price hikes were observed in European gas prices. Prices on Europe's major trading hub, TTF, hit approximately US\$100 per million BTU in August 2022; this was an abnormally high price at the crude oil equivalent of close to about US\$600 per barrel. This was caused by a significant drop in supply from Russia through major gas pipelines and a sudden surge in concerns about gas shortage in Europe, amidst the heavy reliance on Russia in the European gas market and difficulty of finding

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alternative gas supplies. Thereafter, Europe strongly advanced various measures to stabilize energy supplies, as described later in this paper, even expanding gas storage to over 90% of its storage capacity under the mild weather conditions and gas consumption reduction coupled with efforts to secure additional supplies including procurement of LNG from the United States and other countries. As a result, gas prices dropped significantly, and calm was restored. Moreover, heightened concerns over a global economic slowdown contributed to widespread expectations of a slowdown in oil demand, manifesting in unstable trends such as the significant decline of crude oil prices in September.

However, despite the decline, crude oil prices remain high at around \$80, while European gas prices are also maintaining a high price level at around US\$30-40 per million BTU (crude oil equivalent of around US\$200). Prices may rise significantly again in 2022 as a result of winter temperatures, or other factors such as whether there are unexpected supply disruptions, depending on the scale of such disruptions.

In the event of a large-scale supply disruption, there is also the possibility of major consumer nations competing over the limited “supply pie” to secure their own supplies. Under such conditions, the potential for chaos and instability in the global energy markets remains; depending on the situation, it may become difficult to procure energy (emergence of physical shortage). Even if the seriously troubled gas market manages to ride over this winter in Europe, the gas market will see very low stock conditions at the start of the year 2023. As additional supplies may be limited after 2023 in the global gas/LNG market, it has been pointed out that the tight demand-supply environment may continue for some time.

2. The Shift to the Emphasis on Energy Security

Soaring energy prices and market instability have emerged as one of the most important issues for the global economy. Even developed region/country such as EU and Japan are increasingly strengthening measures to counter the price increases by introducing various forms of energy subsidies. Rising energy prices have accelerated inflation rapidly particularly in the United States and Europe, and the implementation of raising interest rate policies to counter inflation is having a major impact on global economic growth.

In addition to energy subsidies to cover the price increases, countries are moving forward swiftly on the implementation of more fundamental policies to secure stable supplies of energy and strengthen energy security. This can be seen most symbolically in Europe, which is heavily reliant on Russian energy and is bearing the brunt of this energy crisis. At the same time, however, the emphasis on energy security is an important issue shared by countries around the world. This is because energy is an indispensable good to all countries. Furthermore, in a certain sense, precisely because of the indispensable nature of energy, increases in energy prices have a “regressivity” that hits low-income countries and populations more severely. Hence, we cannot overlook the fact that it is becoming an even more serious issue for emerging and developing countries.

Amidst the current Ukraine crisis, countries are focusing on the following four pillars of energy security policies: (1) Reducing reliance on Russian energy; (2) Strengthening emergency response capability; (3) Implementing and securing appropriate investments for securing supply and surplus supply capacity, and (4) Strengthening stable base load power sources.

Firstly, (1) comprises of two elements: measures to reduce dependence on fossil fuels by accelerating the promotion of renewable energy and energy conservation, expanding nuclear power, etc., and measures to procure alternative fossil fuel supplies produced by countries other than Russia. As for (2), in addition to measures by each country to strengthen domestic resilience, the basic measure is to engage in international cooperation between consumer nations and producer-consumer nations to address the instability in energy markets. (3) is an important pillar to ensure the functioning of (1) and (2), and holds the key to success or failure in promoting investments in the fossil fuel sector, particularly natural gas and LNG. (4) involves initiatives to utilize nuclear power, which is a stable base load power source as well as a zero-emissions power supply.

In Europe, where the energy crisis situation is most severe, various policies are being promoted strongly, as represented by the “REPowerEU” plan. In particular, EU and each country are promoting initiatives as a form of crisis response to the aforementioned soaring gas prices and concerns over gas shortage. Strong energy conservation plans have also been drawn up, and coal-fired power generation is being utilized with the acceptance that CO₂ emissions will increase as a result.

With regard to nuclear power, while moves to utilize nuclear power had been observed within the EU before the deepening of the Ukraine crisis, we are now seeing major moves such as moves by France, the United Kingdom, and Eastern European countries to formulate new nuclear power construction plans, extension of the operation of existing nuclear power plants in Belgium, as well as the decision to maintain nuclear power plants in Germany that had been earmarked for decommissioning within 2022, until the spring of 2023 in order to get through this winter.

Prior to the occurrence and deepening of the Ukraine crisis, debates over global energy issues had focused almost solely on the problem of decarbonization and carbon neutrality. However, we can say that the situation has changed dramatically. Serious problems have occurred with the stable supply of energy, which is indispensable to our daily lives, economic activities, and the operation of nations, and this has in turn given rise to the divide of the world and heightened geopolitical tensions. The recognition of this as an important structural problem has changed the situation completely. We can say that the energy security problem has truly become the most pressing issue for the whole world.

3. The Emphasis on Energy Security and Its Impact on Global Energy Transition

The emphasis on energy security as a result of the deepening Ukraine crisis will have diverse and significant impacts on international politics, the global economy, the global energy situation, and many other areas. How various impacts and changes arise will become an important focus for

the world in the future, but amidst that, we cannot overlook the impact that this emphasis on energy security will have on energy transition in a world that is aiming toward decarbonization.

With regard to decarbonization efforts, most countries around the world have already announced policies aimed at achieving net zero emissions around the mid-21st century, and strengthening future measures is vital toward preventing climate change and securing global interests. We can say that the importance of decarbonization remains unchanged regardless of the deepening of the Ukraine crisis.

At the same time, however, in the real world, an emphasis on stable energy supply and energy security is highly likely to impact decarbonization in various ways. The first is, under the present circumstances or from the perspective of crisis measures, securing a stable supply of energy has become the top priority, and depending on the situation, it is very possible for such measures to be incompatible with decarbonization. For example, even in Europe, which is leading the world in its decarbonization initiatives, has not hesitated to utilize coal-fired power generation as a crisis countermeasure. This is because it has no choice but to use all options to secure stable energy supplies. Moreover, many emerging and developing countries are observed to be regressing to coal as a cheaper form of energy, in order to cope with the soaring energy prices. In the short term, the current energy situation could work as an opposing force to decarbonization.

On the other hand, there could be different impacts in the medium- to long-term. This is typically observed in regions such as the EU, where the current policy of reducing dependence on Russian energy takes the form of promoting renewable energy, energy conservation, and the shift to hydrogen and electrification, and the utilization of nuclear power that each country is promoting basically serves to accelerate decarbonization. In light of this crisis, we can take the view that the trend of reducing dependence on fossil fuels as far as possible could strengthen the impact over the medium- to long-term. Of course, this does not apply only to Europe; it could be explored by various countries around the world.

However, there are some uncertainties as to whether efforts to reduce reliance on Russian energy and fossil fuels, equated with efforts to accelerate decarbonization, will go as smoothly as anticipated. This is because when such initiatives and energy transition become too expensive, and especially when coupled with the negative economic situation at that point, it could significantly heighten political and social dissatisfaction. In this crisis, we can already clearly see, even in developed countries, the social impact that soaring energy prices could bring. Thus, this poses a much more formidable challenge to low-income countries. Rather, the question of how to reduce the overall necessary costs for implementing energy transition, has become an extremely important issue. This is another lesson drawn from the Ukraine crisis. To that end, rather than attempting to take an extremely challenging “a leap-frog approach,” it has become more important to take gradual and steady steps through an inclusive approach that corresponds to the economic situation, resource reserves, and technological level of each country. Stabilizing the fossil fuel market is the first pressing issue; once the market has become more stabilized, it will be important to explore and implement pragmatic approaches to decarbonization, in order to strike a balance between decarbonization and energy security in the world.

Conclusion

Efforts aimed at striking a balance between energy security and decarbonization will be the most important energy policy issue worldwide in the future. In Japan, too, future energy policies will be based on domestic and foreign strategies aimed at achieving this balance. In addition to strengthening initiatives to achieve the targets set out in its Strategic Energy Plan, Japan will need to advance the review of policies and strategies based on the new situation, toward the formulation of the next Strategic Energy Plan.

Writer's Profile

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Dr. Koyama joined IEEJ in 1986. He got his PhD in 2001 from University of Dundee, Scotland. He has held many senior positions in IEEJ, including Head of the World Oil & Energy Group, Senior Research Fellow, Energy Strategy Unit. He has served as a committee member of energy policy related councils and advisory committees of Japanese government in many occasion. His specialized field of research is: energy security issues and geopolitics of energy; and analysis for global energy market and policy development with emphasis on the Asia-Pacific region. He has authored numerous publications in the area of energy economics.