Special Bulletin

A Japanese Perspective on the International Energy Landscape (626) March 2, 2023

Thinking about Energy Crisis: The Past, the Present and the Future

Ken Koyama, PhD
Chief Economist, Managing Director
The Institute of Energy Economics, Japan

Undoubtedly, energy is one of the various indispensable goods for our day-to-day lives and economic activities. Without energy use, modern life could not be sustained. Electricity, gas, petroleum products and other energy sources support our lives. Anything we do requires the use of energy. For that reason, it is important to acquire indispensable energy stably and rationally at affordable prices.

The international situation over such indispensable energy has been remarkably destabilized. As the Ukraine crisis has been prolonged to affect stable energy supply, Japan and other major energy consuming countries have been plagued seriously with energy price volatilities and market destabilization. The impact of price spikes for indispensable goods is significant. Another important problem is that, while price spikes for indispensable energy sources affect all consumers, they exert particularly serious negative effects on low-income consumers. The regressivity of energy price spikes is more serious for lower-income people and countries.

Energy price spikes, though being a grave problem in this sense, fall short of being called a true energy crisis. Difficulties in procuring indispensable energy and physical energy shortages lead to a true energy crisis. An energy crisis in a true sense is closely linked to physical energy shortages. As a matter of course, physical shortages are accompanied by price spikes.

The international energy market history indicates that energy crises linked closely to physical shortages have been extremely exceptional. Although energy price spikes have occurred frequently, physical shortages have rarely escalated to the extent to plunge the international energy market into a critical situation. This report considers important factors behind rare energy crises and verifies how these factors worked in real energy crises. Then, it considers a potential crisis scenario for the future.

I think that there are five important factors that could lead to an energy crisis linked closely to physical shortages. They are (1) a tightening supply-demand balance, (2) heavy dependence on specific supply sources, (3) limitations on substitute energy sources over a short term, (4) risk events triggering large-scale supply disruptions and (5) growing geopolitical tensions over major supply sources. It can be suspected that an energy crisis may emerge as these factors coexist and generate composite effects. I would like to review the international energy market history to confirm the relationship between energy crises and the five factors.

The first oil crisis 50 years ago is cited as the past representative energy crisis. The oil crisis, as indicated by its name, was an international oil market crisis. Given oil's dominant importance for the energy market at the time, the oil crisis represented an energy crisis. Let me check the relationship between the above five factors and the oil crisis. First, the supply-demand balance in the international oil market was tightening from the beginning of the 1970s, prompting crude oil prices to follow an

uptrend. Second, the whole world, including major oil consuming countries, depended heavily on oil in the Middle East. Third, oil stockpiling arrangements were then insufficient while the market had no substitute oil production capacity. Fourth, Arab countries invoked the so-called Arab oil embargo to reduce oil supply to consuming countries. Fifth, the fourth Middle East war broke out, clarifying Arab countries' confrontation with Israel, the United States, Europe and Japan. In such situation, crude oil prices inevitably shot up. In a more significant development, oil supply shortage fears grew in Japan and other major oil consuming countries and led to panicky actions, deteriorating the oil market chaos further. Major oil consuming countries made desperate efforts to procure oil for their respective stable supply, bringing about the collapse of their cooperation. At the same time, however, they enhanced energy security policies to respond to the crisis and established the International Energy Agency to reconstruct their cooperation.

Half a century after the first oil crisis, the world faces a new energy crisis. That is the international energy market's remarkable destabilization through the Ukraine crisis. Let me check the abovementioned five factors regarding the current crisis. First, all energy prices began to rise in the second half of 2021 as the supply-demand balance tightened. Second, Europe in particular has depended heavily on Russian energy supply. Third, there has been no surplus production capacity for gas/LNG for which the supply-demand balance tightened most seriously. The international market has lacked LNG stockpiling for the purpose of emergency preparedness. Fourth, Western countries introduced a Russian oil and coal embargo, with natural gas supply through pipelines from Russia declining substantially. Fifth, the division of the world has deepened as the Western bloc's structural confrontation with the China-Russia group has been clarified. In such a situation, gas shortage fears grew seriously in Europe, triggering abnormal price spikes. In the face of gas supply shortage fears, European countries raced to procure additional LNG from existing projects while global supply declined on a fall in Russian exports. A stable energy supply was recognized globally as the most important challenge, paving the way for energy security policies to be enhanced.

Any energy crisis can exert enormous impacts on the world. While efforts to address problems after the emergence of an energy crisis are important, the prevention, suppression and avoidance of a crisis are basically important. In this sense, it is significant to consider a potential energy crisis in the future. Oil, gas/LNG, coal, electricity and other energy markets may plunge into critical situations. However, I now pay attention to a critical situation scenario regarding energy or energy transition. The scenario is for critical minerals required for energy transition. As for the first factor for a critical situation, the supply-demand balance is expected to tighten for critical minerals as their demand increases dramatically amid the promotion of energy transition. As for the second factor, the world is expected to depend heavily on some supply sources for some critical minerals. As for the third factor, it may be difficult to find substitutes for critical minerals, with no strategic reserves accumulated. The fourth factor is discussed below. As for the fifth factor, geopolitical tensions and confrontation are expected to remain as the division of the world becomes structural. If large-scale supply disruptions or constraints emerge as the fourth factor, a crisis situation may appear. As a matter of course, the future is uncertain. A critical mineral crisis is nothing more than one of the possibilities. Given the analysis of the factors for a crisis, however, the potential crisis scenario may become a risk scenario subject to strategic consideration.

Contact: report@tky.ieej.or.jp
The back issues are available at the following URL
http://eneken.ieej.or.jp/en/special_bulletin.html