

## **A Discussion on Energy Security Threat and Risk Factors**

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Energy is an indispensable good for all economic activities and civic life. It is also a military good, serving as a strategic good. Therefore, energy security for maintaining and ensuring stable, necessary and sufficient energy supply at reasonable prices that do not affect economic activities and life is a key challenge for any country or agent.

Since the industrial revolution, particularly, it has basically grown more important to ensure energy security as modern energy consumption has expanded with international energy trade and markets developing and with energy security problems being more complicated. Particularly, major countries have historically increased interests in energy security and given priority to energy security enhancement measures as they have grown dependent on energy imports with domestic energy supply failing to catch up with rising energy demand. Among them are the United States that became a net oil importer in the 1960s, China and India that have grown more dependent on energy imports through their rapid economic growth in recent years, and Japan that has originally been poor with resources and heavily depended on energy imports.

Factors that increase public interests in energy security include not only problems arising from the abovementioned growing dependence on energy imports but also threat and risk factors involving stable energy supply. In fact, the history of domestic and overseas energy markets indicates that there have been various threat and risk factors that have always existed as market-shaking factors in energy policy and market stakeholders' minds. The presence and identification of threat and risk factors are the essential part of the energy security issue.

Threat and risk factors involving energy security vary wide as the energy market is complicated. Based on my research and analysis, however, I believe that these factors can be divided into contingent and structural risks.

Contingent risks represent unexpected and accidental risk events leading to emergency. Among them are (1) energy supply disruptions caused by war, revolution, terrorism, rioting or any other political incident in major oil producing (or energy supplying) and consuming countries and (2) those triggered by accidents, natural disasters or unexpected events in some part of the overall energy supply chain. The second group represents various risks including accidents involving energy production and shipment facilities, transportation infrastructure and the final consumption stage. Typical and grave events related to the first group include the Fourth Middle East War and the first oil crisis, and the Iranian Revolution and the second oil crisis. Among those related to the second

group are Hurricane Katrina in the United States and the Great East Japan Earthquake.

Contingent risks include not only the abovementioned two groups but also (3) consumers' panicky behaviors. These panicky behaviors' impacts cannot be ignored, given price hike acceleration and market confusion attributed reportedly to Japan's panicky energy procurement in the international market amid the oil crises in the 1970s. Panicky behaviors that accelerate market confusion further represent a grave risk to energy security.

When thinking about supply chain accident risks, we now must pay attention to cyber security, which has emerged as a new element for contingent risks.

Structural risks include problems contained in the energy supply and demand structure, international politics and economy, and energy markets and institutions. These problems are not unexpected but formed through some passage of time. They range wide, including (1) politically imposed economic sanctions and embargoes over fixed periods of time, (2) supply-side market power, (3) depletion of resources, (4) longer-than-expected continuation of demand expansion, (5) investment shortages restricting supply expansion and (6) energy supply bottlenecks caused by environmental regulations, market deregulation or other institutional factors.

Specific actual cases of risks in the six categories have been seen in the past international energy market. Their generation and concerns about their generation have been recognized as serious threats to energy security. These structural risks are more complicated in a sense and difficult to solve. Not only structural energy security problems but also other structural problems are difficult to solve. Some time is required for solutions to some structural problems to be implemented and produce effects. No quick remedy can be expected to most structural problems that should be identified and analyzed for the quick implementation of solutions.

When reviewing these various categories of energy security risks, we can find various actual problems that are potentially grave and can be included into these categories. Actual contingent risks include very high geopolitical risks in the Middle East that no one can ignore. Growing North Korea tensions should also be kept in mind as one of the contingent energy security risks. As for structural risks, how to secure necessary energy investment amid energy market deregulation has surfaced as an urgent, complicated problem.

What policies should be implemented to ensure energy security must always be considered in today's context. At present, international energy prices are relatively low, with the supply-demand balance easing. However, a key viewpoint indispensable for thinking about energy security problems is that war must not be forgotten in times of peace.