

The Evolution of the Energy Security Concept and APEX Energy Cooperation

By **Kazutomo Irie**

OVERVIEW

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Energy security was originally perceived as a stable supply of energy (mainly oil as the most important energy resource) against geopolitical risks such as conflicts between or within nation state(s).

Since the beginning of the 21st Century, three major incidents have changed and expanded this classical concept of energy security including new threats and energy sources to be protected: firstly, the September 11 attacks in 2001; secondly, the Russia-Ukraine gas dispute during 2005-06; and thirdly Hurricane Katrina in 2005.

In energy cooperation under the framework of Asia-Pacific Economy Cooperation (APEC), energy security as a new broader concept is being pursued, especially through APEC Oil and Gas Security Exercises (OGSE). In each exercise, new facets of a broader concept are focused on. These practices are expected to enlighten energy policymakers in the APEC Region on the new broader concept of energy security.

METHODS

Historical analysis of the concept of energy security since the beginning of the 21st Century, mainly referring to policy documents.

RESULTS

The concept of energy security originated from oil supply instability in Europe during the Suez Crisis in 1956. After two oil crises in 1973 and 1979 triggered by the Yom Kippur War and the Iranian Revolution respectively, energy security was originally perceived as a stable supply of energy (mainly oil as it was the most important energy resource) against geopolitical risks such as conflicts between or within nation state(s), especially in the Middle East region, as Martin, Imai and Steeg once suggested.

This classical concept of energy security was one of the most important criterion, if not the most important, for energy policy for most countries by the end of the 20th Century. Developed countries formed the International Energy Agency (IEA) in 1974 and pledged to build oil stockpiles in order to countervail oil supply restrictions by petroleum producing countries.

Since the beginning of the 21st Century, three major incidents have changed and expanded the definition of energy security, even though the stability of energy supply, which once was the core meaning of energy security, remains unchanged.

Firstly, the September 11 attacks in 2001 have shown not only nation states, but also violent non-state actors (VNSA) can be a threat to national security. As an integral part of national security, energy security has also had to cope with VNSA or terrorists. In addition to oil trade, other energy supply systems such as the electricity supply system have come to be considered as potential target for terrorist attacks. Because of the enormous radiological hazard, nuclear power stations and related facilities have become important targets in need of protection. The International Atomic Energy Agency (IAEA) has integrated various protective measures under the new concept of 'nuclear security.' Moreover, in addition to physical attacks, cyber attacks have become a threatening tool used by terrorists because information and communication technology (ICT) has been well developed and widely employed in energy supply systems. As a result, a new concept of 'cyber security' was formed and used by energy policymakers. These three new elements, a new type of actor, additional high-risk energy supply systems and a new means of threatening action, were added to the definition of energy security.

Secondly, during 2005-06 the Russia-Ukraine gas dispute caused a supply shortage of natural gas in Europe. Though oil remains the world's dominant fuel, natural gas has become another major fuel source for heating and power generation. In addition, unlike oil, natural gas is very difficult to stockpile and has therefore become a major concern for energy security. Energy Ministers of APEC instructed senior energy officials and Asia Pacific Energy Research Centre (APEREC) to launch OGSE in 2012 and APEREC later expanded it to APEC Oil and Gas Security Initiative (OGSI) in 2014.

Thirdly, Hurricane Katrina severely damaged crude oil production and petroleum refining facilities in the Gulf of Mexico in the United States in 2005. The U.S. Department of Energy released its strategic petroleum reserves and the IEA called for release of members' oil stockpiling based upon the Initial Contingency Response Plan (ICRP). This meant natural disasters such as Hurricane Katrina were recognised as a threat to energy security. Unlike the aforementioned terrorism, natural disasters cannot be classified as a geopolitical risk. In other words, a completely new category of threat was added to the energy security concept. Thereafter, natural disasters have continued to threaten energy security in various countries. The Great East Japan Earthquake in 2011 seriously damaged energy infrastructure in Eastern Japan, including the Fukushima Daiichi nuclear disaster. Hurricane Sandy in 2012 damaged infrastructure in the northeastern United States, and the Super Typhoon Haiyan in 2013 hit energy infrastructure in the Philippines. Thus, as the hosting economy of the APEC Energy Minister Meeting in 2015, the Philippines proposed 'energy resiliency' as one of policy targets for APEC energy cooperation. Focusing on the physical sturdiness of energy infrastructure against natural and man-made disasters, energy resiliency will be further developed as a subordinate concept of energy security.

In the energy policy cooperation framework of APEC, energy security as a new broader concept is being pursued, especially through OGSE. In each exercise, new facets of a broader concept are focused on.

As the first OGSE, the Joint Southeast Asian Exercise was held in September 2013 involving seven economies: Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. The two stages of the oil and gas emergency scenarios were prepared by APERC and they reflected the evolution of the energy security concept. In the first stage of the hypothetical emergency situation, a terrorist group sabotaged the shipment of oil and natural gas export from Middle East, using both a physical and a cyber-attack. While the second stage presented the assumption that a natural disaster, such as a typhoon, or another type of accident damaged gas facilities in each economy.

In the second OGSE held in October 2013 in Jakarta, Indonesia, a three-stage oil emergency scenario was presented. In the first stage of the scenario, an earthquake damaged Indonesia's Cilacap Refinery leading to decreased petroleum production. The second stage of the scenario envisaged a worsening of the situation at the refinery because of a major aftershock. The third stage scenario considered a cut of crude oil supplies to the Dumai Refinery because of local residents' action to decrease its refining capacity.

In the third OGSE, and the first after being incorporated under the OGSI project, the Philippines hosted an exercise in December 2015. In this exercise, diversified threats to energy security were assumed in three stages of an emergency scenario. In the first stage, the collision of a cargo ship and an oil tanker caused the cargo ship to sink and to damage the Malampaya underwater gas pipeline. In the second stage, a strong typhoon caused damage to the Petron Refinery. In the last stage, the typhoon that hit the Philippines also made a landfall in Chinese Taipei and caused damage to two oil refinery facilities, which resulted in a reduction of their oil products exports to the Philippines.

The fourth OGSE, the second as a part of OGSI, was held in March 2017 in Melbourne, Australia, extended invitations to several APEC economies in order to encourage regional capacity building for emergency preparedness. In this exercise, gas supply security was addressed as well as oil supply security. Emergency scenarios for the exercise also introduced diversified threats.

CONCLUSIONS

Since the beginning of the 21st Century, the concept of energy security has expanded with the addition of non-state actors and the inclusion of natural disasters, man-made disasters and cyber attacks as threats. The concept also now includes natural gas and other energy infrastructure more generally as objects requiring enhanced protection. In order to attain the current broader concept of energy security, energy experts (policymakers, business leaders and policy researchers) should familiarize themselves with these newly emerging factors for energy security: non-state actors, natural and man-made disasters and cyber attacks. This familiarity is necessary in order to secure the stable supply of natural gas, electricity and oil. The related notions of 'nuclear security', 'cyber security' and 'energy resiliency' should also be kept in mind. As a part of such efforts, APEC has carried out emergency exercises that assumed scenarios of terrorist attacks, including cyber attacks, natural disasters such as earthquakes or typhoons and man-made disasters such as the collision of ships. In each exercise, new facets of the broader concept are focused on. These practices are expected to enlighten energy policymakers in the APEC Region on the new broader concept of energy security.

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Interviews continued

EINAR HOPE, PAST PRESIDENT AND VICE PRESIDENT FOR CONFERENCES.

My first encounter with IAEE goes back to 1984 to the International Conference in New Delhi; a most memorable conference event, under the leadership of R. Pachauri. Since then I have followed the development of the Association with keen interest and active involvement.

The IAEE conference concept has appealed to me right from the start, with its focus on research based knowledge of quality and relevance in an interface with business and policy to discuss contemporary energy economics issues in an international setting. In my opinion the IAEE organization has evolved in quite a constructive way, expanding in terms of geographical as well as topical coverage. Geographically, IAEE is becoming a truly international association with affiliates and chapters more or less globally and with regional conferences becoming an important aspect of the conference portfolio.

However, there is still scope for further development, with regard to both membership growth and regional conference initiatives. The current Present President, Ricardo Raineri Bernain, has taken an interesting initiative for such developments.

For me personally, it has been even more interesting to observe the topical expansion of energy economics into new fields, like engineering, psychology, and political science, incorporating theories and elements from such fields to broaden the scope and relevance of energy economics as traditionally understood. However, it is the integration of energy and environmental economics that I consider as one of the most important aspects. Seeing these changes, I took the initiative, when I was the IAEE President in 2010, to establish a new journal: Economics of Energy and Environmental Policy (EEEP). Today with the The Energy Journal, the EEEP as well as the Energy Forum, the Association has a well- balanced portfolio of high-quality ranking journals. Given also its conference portfolio, I am happy to say that IAEE is well "in tune with the times". However, the Association should always strive to be updated and actively picking up developments within energy and environmental economics, and related fields, in its conferences and journals.



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