

REVISITING ENERGY SUPPLY SECURITY: THE CASE OF APEC ENERGY COOPERATION

Kazutomo Irie, Asia Pacific Energy Research Centre, Japan, Phone: +81 3 5144 8551, E-mail: kazutomo.irie@aperc.iecej.or.jp

Overview

'Energy security' was originally synonymous with 'energy supply security,' in contrast to energy demand security. Since the beginning of the 21st Century, the threats for energy security have diversified, and both energy supply security and energy demand security have become obsolete concepts. However, the concept of energy supply security is once again necessary in focusing the supply side of energy security, not only the supply side purpose of energy security but also its supply side measures. In the case of APEC energy cooperation, regional aspirational goals of reducing energy intensity and doubling the share of renewable energy are regarded not to enhance energy security but to achieve the global climate goals. However, APEC is expected to remain dependent mainly on fossil fuels and the supply gap in fossil fuels would widen. This implies APEC will face more challenges in a stable supply of energy in future. APEC will need to address energy security by focusing on supply security of all fossil fuels and electricity as the most important secondary form of energy.

Methods

Historical analysis of the concept of energy supply security, mainly referring to policy documents.

Results

'Energy security' was originally synonymous with 'energy supply security' in contrast to energy demand security. In the 20th Century the threats to energy security for energy importing countries were mainly perceived as geopolitical risks such as a war involving energy exporting countries or a revolution within an energy exporting country. The main purpose of energy security has been considered as ensuring a stable supply of energy. Following this perception, the International Energy Agency (IEA) defines energy security as "the uninterrupted availability of energy sources at an affordable price."

Since the beginning of the 21st Century, the concept of energy security has expanded. Now the threats to energy security are not limited to geopolitical ones. They include threats by natural disasters and man-made disasters to the energy supply system. Energy exporting countries are no longer immune from risks in their energy supply system. The term energy supply security has become obsolete. Instead, energy security is widely used.

However, the concept of energy supply security is once again necessary in focusing the supply side of energy security. As mentioned above, the concept of energy security has expanded in this century. Asia Pacific Energy Research Centre (APEREC) produced a special report on energy security in 2007 for energy cooperation under the framework of Asia Pacific Economic Cooperation (APEC). The report proposed the 4 A's of energy security: Availability, Accessibility, Acceptability, Affordability. In the report, accessibility is discussed in supply side in terms of transportation, workforce or technology transfer for energy resource development and utilization. Now accessibility is interpreted more from the demand side, focusing on energy access from an end-user's perspective. Acceptability is discussed in the context of environmental impact of energy consumption which also belongs to the demand side. In order to discuss the traditional purpose of a stable supply of energy, the concept of energy supply security needs to be revived.

In addition, the concept of energy supply security is necessary in focusing not only on the supply side purpose of energy security but also its supply side measures. In the case of APEC energy cooperation, senior energy officials of APEC member economies formed the Energy Working Group (EWG) in 1990 and held semiannual meetings since then. Among four aims of EWG, energy security comes first: "Strengthening regional and domestic energy security and resilience across the region." Thus, enhancing regional and domestic energy security has been a key component of APEC's energy agenda. Toward this goal, the EWG established the Energy Security Initiative (ESI), endorsed by APEC Leaders in October 2001, which comprises a series of measures to respond to temporary energy supply disruptions and longer-term challenges facing the region's energy supply. The agendas of EWG biannual meetings were designed according to the ESI. In other words, almost all agenda items were linked to energy security.

However, as the international community has become concerned with climate change in recent years, APEC members have shifted their focus of energy policy from energy security to climate change. Policy measures for energy security such as improving energy efficiency or introducing renewable energies are now evaluated more from the viewpoint of climate change. In 2007, APEC Leaders agreed to a regional aspirational goal of reducing energy intensity and agreed again in 2011 to substantially increase the goal. In 2014, APEC Leaders endorsed a new aspirational goal to double the share of renewable energy in APEC's overall energy mix. These aspirational goals are regarded to achieve the global climate goals. The EWG web page clearly shows 'Reducing Energy Intensity' and 'Doubling Renewable Energy' as separated items from 'Enhancing Energy Security' in their major goals.

According to the APEC Energy Supply Demand and Supply Outlook 6th Edition published in 2016 by APERC, APEC remains dependent on fossil fuels with over 80% of the fuel mix in 2040. In addition it stated that the energy supply gap would widen in APEC as the region would become a net gas importer and net oil imports would continue to rise. This implies APEC will face more challenges in stable supply of energy, especially oil and gas, in the future. APEC has already started the effort to enhance energy security in a number of ways including the APEC Oil and Gas Security Initiative (OGSI).

However, OGSI does not cover coal. In fact, coal reserves are abundant in the APEC region. On the other hand, as coal emits much more carbon dioxide (CO₂) than other fossil fuels, there is a growing anti-coal movement in the world from the view point of climate change. In order to supply electricity in affordable prices in some countries, coal will be needed in foreseeable future. Coal's role in energy security should be reevaluated and a balanced view on coal's role not only from the viewpoint of climate change but also from that of energy security must be discussed.

Moreover, OGSI partly covers electricity security with regards to gas power generation, but it does not cover other parts of electricity security such as security of grid system or distribution networks. Electricity's role in modern societies will expand further. It is noteworthy that the electricity supply system is more vulnerable than other energy supply systems. It employs extensive networks of cables both in transmission and distribution. They are not as sturdy as oil pipelines or gas pipelines. In addition, electricity is very difficult to stockpile. Electricity supply require maintaining frequency, but its control is not easy.

Conclusions

APEC will face more challenges in a stable supply of energy in future. While oil and gas security will continue to be a major task for APEC energy cooperation, the role of coal in energy security should be revisited as coal is an abundant resource in the APEC region and thus inexpensive, even though coal is criticized because it emits more CO₂ than other fossil fuels. It would not be realistic policy option for APEC economies to simply phase out coal use. Instead, promoting cleaner use of coal would strengthen energy supply security by having a diverse portfolio of fuels – both fossil and renewable. Coal's role in energy security should be reevaluated and a balanced view on coal's role not only from the viewpoint of climate change but also from that of energy security must be discussed. At the same time, since electricity becomes more and more important in peoples' lives as the most important secondary energy, its security should be pursued more consciously. Electricity supply system is more vulnerable than other energy supply systems since it employs networks of cables and electricity is difficult to stockpile and to control its frequency. With clear attention in supply side purpose and supply side measures, APEC will need to address energy security focusing on supply security of all fossil fuels and electricity.

References

APEC Energy Working Group (EWG) web page. <https://www.ewg.apec.org/>

Asia Pacific Energy Research Centre (APERC) (2007). A Quest for Energy Security in the 21st Century

APERC (2016). APEC Energy Demand and Supply Outlook 6th Edition

International Energy Agency (IEA) web page. <https://www.iea.org/>

Irie, Kazutomo (2002) "Enerugi Anzenhoshō Gainen no Kochiku ni kansuru Kenkyū (Trans: Study on the Conceptualization of Energy Security)" [in Japanese], Enerugi Seisaku Kenkyū (Trans: Energy Policy Studies) 1(1)

Irie, Kazutomo (2017) "The Evolution of the Energy Security Concept and APEC Energy Cooperation", Meeting the Energy Demands of Emerging Economies (Proceeding of 40th IAEE International Conference, Singapore, June 18-21, 2017)