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THE EVOLUTION OF THE ENERGY SECURITY CONCEPT: NEW THREATS TO SUPPLY SECURITY

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Overview

Energy security was originally defined 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).

Since the beginning of the 21st Century, three major incidents have changed and expanded the concept of energy security.

Firstly, the September 11 attacks in 2001 have shown violent non-state actors (VNSA) or terrorists can be a threat to energy security. In addition to oil trade, the power supply system, especially nuclear power stations, came to be considered a potential target for terrorist attacks. Moreover, cyber attacks also have become a threatening tool used by terrorists.

Secondly, during 2005-06 the Russia-Ukraine gas dispute resulted in the stability of natural gas supply as a major concern to energy security.

Thirdly, Hurricane Katrina in 2005 proved that natural disasters can be a threat to energy security. The Great East Japan Earthquake in 2011 and the Super Typhoon Haiyan in 2013 have further deepened this concern.

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 (or the 2nd Arab–Israeli conflict) in 1956. After two oil crises in 1973 and 1979 triggered by the Yom Kippur War (or the 4th Arab–Israeli conflict) and the Iranian Revolution respectively, energy security was originally defined 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, among others.

This classical meaning of energy security was the most important target, or at least one of the most important targets, in 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, that is the core meaning of energy security, remains unchanged. Firstly, the September 11 attacks in 2001 have shown not only nation states but also VNSA can be 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 a potential target for terrorist attacks. Due to the enormous radiological hazard, nuclear power stations and related facilities have become the most 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, not only physical attacks but also cyber attacks have become a threatening tool used by terrorists, since 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. Most recently, the Group of 7 (G7) at the Kitakyushu Energy Ministerial Meeting in 2016 has warned of cyber threats to more digitized energy networks. Thus, 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 for heating and power generation. In addition, unlike oil, natural gas is very difficult to stockpile and therefore has become a major concern to energy security. To address these concerns, the IEA compiled *Gas Emergency Policy: Where do IEA Countries Stand?* in 2011. Energy Ministers of Asia-Pacific Energy Cooperation (APEC) instructed APEC senior energy officials and Asia Pacific Energy Research Centre (APEREC) to launch the APEC Oil and Gas Emergency

Exercise (OGSE) in 2012 and to expand it to the APEC Oil and Gas Emergency Initiative (OGSI) in 2014. Furthermore, the G7 at the Kitakyushu Energy Ministerial Meeting in 2016 advocated for enhancing gas supply security.

Thirdly, Hurricane Katrina severely damaged crude oil production and petroleum refining capacity 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 above-mentioned 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 continue 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, and the Super Typhoon Haiyan in 2013 hit energy infrastructure in the Philippines. 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 physical sturdiness of energy infrastructure against natural and man-made disasters, energy resiliency will be developed as a subordinate concept of energy security.

Conclusions

Since the beginning of the 21st Century, the concept of energy security has expanded by the addition of non-state actors as a threatening actor and with the inclusion of natural disasters, man-made disasters and cyber attacks as threats. The concept also now includes natural gas, electricity system and 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 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 and electricity as well as 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 emergency scenarios of terrorist attacks including cyber attacks, natural disasters such as earthquakes or typhoons and man-made disaster such as the collision of ships in its OGSE and OGSI projects.

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