

Press Briefing Paper

8 March, 2016

The Institute of Energy Economics, Japan

World Economic Forum; Global Energy Architecture Performance Index Report 2016 and Japan Energy Security Roundtable

- Background

- World Economic Forum has released the 'Global Energy Architecture Performance Index Report 2016' which is the 4th edition since 2013 publication. It creates indexes to analyze energy system in each country in light of following 3 pillars namely; Economic Growth and Development, Environmental Sustainability, and Energy Access and Security.
- In an occasion of 2016 publication of the report, the Institute of Energy Economics, Japan (IEEJ) and leading experts (from government, academia, and private sector) are gathered at roundtable to discuss its implication for Japan.
- Two other reports were provided as materials for thought;
 - ◇ Risk assessment index of fossil fuel import, the Agency for Natural Resources and Energy (ANRE), government of Japan.
 - ◇ Long-term energy security assessment index, the Economic Research Institute for ASEAN and East Asia (ERIA [edited by IEEJ]).

(see the Reference for outline and characteristic of each analysis)

1. First, the participants were shared understanding that each analysis has their own characteristics. The World Economic Forum's report is distinctive in wider geographical coverage (126 countries) and wider aspect of assessment. The ERIA's report, although it only covers Asian countries and assessment view point is narrower than World Economic Forum's one, it is distinctive in looking at long term transition since 1970s. The ANRE's report, which is focused on fossil fuel import risk, is distinctive in its method of creating indexes. It was noted in the roundtable that discussion shall based on recognition for each characteristic, and analyses can complement each other to deriver deeper implication.
2. All the reports are commonly indicates remarkably low level of Japan's self-sufficiency. A recognition was commonly shared that Japan is naturally contain vulnerability of heavy dependence for import of her energy supply which arises from lack of fossil fuel resources, halt of the most of nuclear power plant operation, and being en route to disseminate renewable energy use.

3. **In terms of energy import risk, difference of analysis result between that of World Economic Forum and ANRE** was drew attention. The latter rank Japan at low because of low fossil fuel self-sufficiency rate, high Middle East dependence, and sea-lane risk. The report also said that it has further deteriorated after shut down of nuclear power plant since 2011. While the former rank Japan at relatively high (21st among 125). It explains that low self-sufficiency is complemented by sufficient commercial energy supply and well diversified import partner and fuel choice. ERIA's analysis which assesses long-term transition is supporting World Economic Forum's analysis. Based on these analysis, **participants were shared an idea that it is importance for Japan to continue promoting diversify import partner and fuel mix to cope with her inherent security risk.**

4. **In the World Economic Forum's report, Environmental Sustainability is the lowest ranked element for Japan** (89th among 125). Environmental Sustainability evaluates air pollution including CO₂, average fuel economy of automobile, and share of renewable energy and nuclear in primary energy supply. Background of low rank is lower share of renewable energy and nuclear, and accordingly higher air pollution. Round table was discussed necessity of increase use of renewable energy to develop more robust energy system. **At the same time, rationality of combined use of nuclear was mentioned since renewable energy still has challenges in its availability and economic efficiency in particular for short to mid-term.**

Reference) Outline and Characteristic of Each Analysis

	World Economic Forum	ERIA (IEEJ)	ANRE
ication	every year since 2013	June 2012	December 2014
Assessment year	<u>single year</u>	<u>10 yrs. average from 1970 to 2009 年</u> (assess long term transition)	compare 2010 and 2012 <u>(before and after of the 2011 earthquake)</u>
Subjected countries	<u>126 countries</u>	ASEAN, Australia, China, India, Japan Korea, New Zealand (16 countries)	G7 countries, EU, China, Czech, Denmark, India, Korea, Norway, Poland, Russia, Sweden, Vietnam (18 countries and region)
Assessment item, method	3 pillars and 6 elements for each. - Economic Growth and Development electricity price, diesel/gasoline price, energy import/export cost, GDP/toe - Environmental Sustainability automobile fuel economy, PM2.5, CH ₄ , N ₂ O, CO ₂ , share of renewable energy/nuclear - Energy Access and Security self-sufficiency, diversity of import partner/TPES, electrification rate, quality of electricity supply, solid fuel use	Divide energy security into a several elements through supply chain. - Resource acquisition self-sufficiency, R/P, diversity of import partner/TPES/power supply, Middle East dependence - Resilient domestic supply chain reserve margin, blackout frequency / time, access for commercial energy - Demand management energy efficiency - Emergency contingency on land oil stock - Environmental sustainability CO ₂ emission	<u>Focus on fossil fuel import risk</u> Calculate expected value and deviation of crude oil production. Lower deviation is defined as lower risk. Frequency of war/conflict and sea-lane risk are added.
Evaluation of Japan	- 50 th among 126 - Low self-sufficiency - High electricity price - Low non-fossil fuel supply - Shut down of NPP has worsen a situation	- Has been improved self-sufficiency, diversity of TEPD/electricity, and energy efficiency - Difficult to reduce Middle East dependence because of geographical condition	- Fossil fuel supply risk is higher than other countries - Shut down of NPP has increased a risk - Import from low risk country (North America, Austria) is beneficial

