Chapter 1

Introduction

Study on the Development of an Energy Security Index and an Assessment of Energy Security for East Asian Countries Working Group

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CHAPTER 1
Introduction

1. Background of the Study

In many East Asian countries, energy demand is expected to grow continuously in the long run, with high economic growth and social development driving this trend. It is also expected that energy production, particularly fossil fuel production, in the East Asian region will not be able to keep up with the speed of energy demand growth, and that the region will have to face rising energy import dependence. At the same time, it is important to note that there are emerging challenges on the energy supply side in the world energy market which include: geopolitical risks, market power risks, natural disaster/accidental risks, under-investment, resource nationalism, and so on. Given these background factors, the enhancement of energy security is becoming one of the top priorities for each East Asian country, as all commonly need to achieve sustainable economic growth and development.

It is also essential to recognize that East Asian countries have a wide range of diversity in such areas as their energy resource endowment, economic development stage, industrial structure, stage of technology development and deployment, and so forth. Under these circumstances, it is necessary to analyze the energy security situation and policy implications in each East Asian country, with due consideration to the diversity mentioned above.

Furthermore, since East Asian countries have already deepened their economic and energy relationships in a bid to explore regional integration, it is very important

to promote the enhancement of security, not only in each country but also in the East Asian region as a whole, through regional cooperation.

Given the above recognition, we have conducted a study on the development of an Energy Security Index and have made an assessment of energy security policy for East Asian countries.

2. Objective

The first objective of the study is to develop an index that quantitatively indicated the country by country energy security situation, and could thereby, help policymakers to accurately gauge the energy security situation in their country.

The second objective is to analyze the linkages between policies and the historical trends shown in the index, and thereby assess the impact that policies have on the energy security situation.

The last objective is to offer policy recommendations to policymakers in East Asian countries on improving energy security based on the following analysis:

- What methods and approaches are effective for improving energy security
- What kinds of regional cooperation are useful for improving energy security

3. Summary of Research

Research will be conducted in three stages over a three-year period of time. The following table contains a description of the research that will be conducted as part of each stage. Stage two, or second year, research was performed in 2012.

Table 1: Time Line of the Study

1st year: Develop & calculate indicators (A) Development of Energy Security Index - Assume "Energy Security Index" be comprised of several major indicators which reflect principal component of energy security. (B) Data collection and calculation of Energy Security Index for each country - Necessary historical data will be collected for each indicator, and for each country. Publicly available statistic; IEA, IMF, BP, etc National statistic; expect to provided by each member Timeframe; 1970 - latest available Transparency of the data - Then based on the developed method mentioned in the part (A) above, Energy Security Index for each country will be calculated.
2nd year: Analyze relationship between ESI and policy **(C) Analysis of past energy security policy taken in each country** **- Past energy security policy will be examined by literature, by internet and provided by each member** **(D) Assessing the effectiveness of past policy on the status of energy security** **- Quantitative assessment of past policy** **- Relation between historical change of the Index and past policy** **(E) Drawing useful lessons from the past experiences** **- From the above analysis and exercise, policy recommendation will be drawn with regard to such areas as;** **what can be the better approach/practice to be adopted** **what will required to actually implement the identified approach/practice; etc**

4. Working Group Activities in 2011

In 2011, the WG was held for 2 times in October 2011 and April 2012, both in Jakarta, Indonesia.

During the first meeting, the WG discussed and developed the 2010 study plan and each member provided information on their country's energy security. As an overview of the study, its significance and objectives were shared, and an overall image of the multi-year project was presented. In this context, members confirmed the positioning of the work streams for the fiscal year. In the reports made by the WG members, the changes in the energy supply and demand environment in their

countries were described, along with changes in policy, the issues currently confronting their countries, etc. In addition, an ESI case example was presented, and this served as a basis for discussion. During that discussion, a wide range of views was exchanged on a variety of topics, including the selection of indicators and the data collection methods. Lastly, a request was made to WG members to provide the information essential for carrying the study forward.

During the second meeting, the WG discussed the calculation results for the ESI. During the discussion, a variety of views was exchanged on the ESI, such as the relevance of the data utilized for calculating the indices and the indicators which ought to be selected. It should be noted that missing data were supplemented and that data reliability was improved through the contribution of WG members. It was also an extremely important achievement that a wide-ranging discussion was successfully held on the approach for assessing the calculated indexes. Accordingly, it was decided that the knowledge of the WG members and the discussion outcomes would be reflected in the study report.

5. Working Group Activities in 2012

In 2012, the WG was held for 2 times in November 2012 in Jakarta and April 2013 in Tokyo.

During the first meeting the WG discussed the calculated index. Discussions revolved around the use of econometric modeling as one method for assessing the impact that policies in each country have had on changes in the index. There are a number of elements that have caused the index to change, including macro economic conditions, industrial structure and fluctuations in energy prices, but it was pointed

out that analysis using econometric modeling would make it possible to breakdown the impact from each. There are limitations, however, posed by an econometric modeling analysis. Furthermore, at least 20-years worth of accurate data would be required for such an analysis, which would be extremely difficult to collect since the number of countries that could provide such data is very limited. Additionally, it was pointed out that government policies did have an effect on changes in the index and that some sort of correlation does exist.

Next, WG members talked about the energy policy of their countries, followed by a question and answer session. During this time, the difficulty of looking into past government policies, particularly with regards to developing countries, was pointed out. In addition, members also noted the importance of policies on renewable energy and electricity, whereby confirming that the effects of these policies should be analyzed appropriately.

Given the discussion from the first meeting, an analysis was performed on the correlation between policy and ESI, and at the second meeting the WG discussed this correlation between policy and ESI. During these discussions, it was noted that there are a variety of elements affecting changes in the ESI and no single element could be used to explain all of the changes in ESI. Based on this, it was decided that consideration will be given to a variety of related elements during future analysis of the correlation between policy and ESI.

Next, a discussion was held on the impact that past government energy policies have had on the energy security situation. These discussions once again confirmed the difficult nature of assessing past government policies. Additionally, in most countries policy related to the reduction of CO2 emissions has only been enacted recently. As a result, it is too early to measure the effects of such.