Chapter 4

Major Findings and Policy Implications

November 2015

This chapter should be cited as

Kutani, I., M. Motokura and P. Han (2015), 'Major Findings and Policy Implications', in *Scenario Analysis of Energy Security in the East Asia Summit Region*. ERIA Research Project Report 2014-35, Jakarta: ERIA, pp.43-49.

Chapter 4

Major Findings and Policy Implications

4.1. Major Findings

In this study, three future risk scenarios were created by using the scenario planning approach. Scenario planning aims to extract, through the exchange of opinions and discussion amongst participants, events that are considered to have high uncertainty in the future but with significant influence on the energy market. The turning points of the extracted three scenarios can be broadly divided into 'crude oil price level' and 'restrictions on the use of coal'. In other words, these two elements are highly uncertain and have a possibility of significantly influencing the energy security of the EAS nations.

Scenario		Turning point
1-1	Supply uncertainty in the Middle East and Russia	Uncertainty in the Middle East and Russia, and increase in crude oil prices caused by that uncertainty
1-2	Low oil price	Increase again in crude oil prices
2	Cheap coal utilisation	Restrictions on the use of coal stemming from supply–demand balance and environmental regulations

4.1.1. Crude oil price level

Uncertainties in the future of crude oil prices and the degree of influence they bring are easy to understand. Crude oil prices have been repeatedly observed to change abruptly in the past, for example, in the oil crises in the 1970s and the global financial crisis triggered by the bankruptcy of the Lehman Brothers in 2008. In addition, oil prices have steeply decreased for a year or so. Factors that determine oil prices vary. Recently, geopolitical risks have increasingly become prominent; climatic conditions have been changing causing severe weather conditions, such as hurricanes; and linkages amongst financial markets have been reinforced. All these have an impact on the supply–demand balance of oil. Hence, oil prices substantially affect the global economy and the investment activities of all

participants in these transactions. As it may not be possible to understand all the causes of these events, and due to these uncertainties, forecasting crude oil prices is difficult.

It is easy to imagine the extremely large influence of oil because oil accounts for more than 30 percent of the primary energy supply of the world. Oil takes on an overwhelmingly dominant position as fuel for automobiles and any fluctuation of its price directly impact car users. Of the fossil fuels, oil is the most expensive (when compared by heat equivalency) and is widely traded. Consequently, changes in oil prices have a significant impact on the economy of both oil-exporting and oil-importing countries.

In light of these facts, it becomes inevitable that crude oil prices were selected as an element that significantly influences the future energy security of EAS nations.

4.1.2. Restrictions on the use of coal

Due to the unique background of EAS nations, restrictions on the use of coal were identified as an element that may significantly change their vision of the future. Coal accounts for 29 percent (IEA, 2012) of the total primary energy consumed in the world as of 2012. But this percentage jumps to 52 percent in the EAS region. This is because a huge amount of coal is used to generate electric power in China and India, which are members of the EAS. In addition to China and India, many members of the Association of Southeast Asian Countries (ASEAN) have been increasingly using coal to ensure a stable and economical supply of electricity and to reduce risks that may result from the diversification of energy source. For these nations, therefore, whether they can continue using coal at low prices or not has a significant influence on their future vision of energy security.

In the meantime, the importance of combating pollution and climate changes has been increasing. From this viewpoint, it is vital to reduce the use of coal because it is the energy source that emits the most pollutant. Regulations on environmental pollution have been increasingly tightened and, as for greenhouse gas (GHG) emissions, discussions on international frameworks are going on, embroiling developing countries as well. In addition, some international financial institutions are limiting their loans intended for coal-fired power plants. The environment that allows the use of coal has been rapidly changing. It can be understood that restrictions on the use of coal were undertaken because of the uncertainty of the future of the environment if the world continues to use coal.

4.2. Policy Implications

The policy implications for each country, based on the three generated scenarios, are discussed in the following sections.

4.2.1. Two different preferences for future crude oil price

Two viewpoints emerged concerning preference for crude oil prices. One adheres to the idea that as-low-as-possible crude oil prices are desirable because of concerns over increases in energy cost and economy in oil-importing countries. By contrast, the other viewpoint believes that oil-exporting countries welcome high oil prices are welcome by oil-exporting countries in order to maintain profits and for development incentive, and that even oil-importing countries prefer high oil prices to a certain extent because they wish to push forward structural reforms in their markets and to accelerate the development of renewable energy.

Of these two viewpoints, the one that believes that even oil-importing countries prefer oil prices at a specifically high level is to be noted. Many EAS countries import oil. Simply viewed, lower oil prices would appear better for them. However, while low oil prices may appear more attractive for oil-importing economies, they could be an obstacle to reforms over the medium to long term. This is clear from the experience during the oil crises 1970s, which served as impetus for developed nations to begin the use of alternative energy to oil, and to dramatically improve energy efficiency. Bold structural reforms need a powerful driving force. In this sense, oil prices that are high, to some extent, can be tolerated or are even required.

4.2.2. Implication of oil price scenario

Both the scenarios that use crude oil prices as a turning point indicate a high possibility that crude oil prices will rise again in the future. Then what is the sign that could point or predict an increase in crude oil prices? Unfortunately, there is no clear answer to this question. As in the past, future changes in crude oil prices will be influenced by complicated factors, such as geopolitical risks, climate, and economic problems. Not even one of these factors would sufficiently indicate a sign of a price hike in the future.

What should be learned from these scenarios is probably that extremely low or high

crude oil prices are not sustainable. Extremely low oil prices will cause stagnation of new investment in exploration and production. On the other hand, extremely high oil prices cause stagnation of the economies of importing countries and a fall in oil demand. Therefore, the prices will need to be adjusted sometime. In other words, an oil price level that exporting countries or importing countries feel is unsustainable will be inevitably adjusted.

Then what should be done if crude oil prices continue changing in the future? The answer is clear. There is a need to create a healthy and resilient energy supply–demand structure that can withstand changes in crude oil prices. In oil-importing countries, such structure is but a diversified energy mix that reduces dependence on oil. It means that importing countries should aim to expand the use of renewable energy, improve self-sufficiency rate by enhancing energy efficiency, and expand the use of energy other than oil. For oil-exporting countries, this means establishing a diversified oil export target (country) and an economic structure that does not rely on oil export. The goal is to develop the manufacturing and service industries to make up for a decrease in earnings from oil export with other industries.

These planned actions may be easy to understand, but what should be noted is that it takes a long time, possibly in about 10 years, to achieve these targets. The economic structure and energy supply–demand structure of one country cannot be changed within a short period regardless of how audacious the policy taken. Even if it can be done, the side effect will be enormous. Structural reforms require a long time; hence, policymakers need to make decisions based on a long-term vision, and make diligent and steady efforts towards achieving such reforms.

4.2.3. Implications of the coal scenario

What will bring a change that could substantially restrict the use of coal? What will possibly cause a drastic change in the near future is probably a discussion on a framework that will restrict greenhouse gas emissions starting 2020. If international society agrees on an ambitious target, rigid restrictions will be imposed on the use of coal-fired power generation. It is, therefore, important to carefully monitor such a discussion.

How should we react to the possibility of a change that can take place in the future?

One way is to promote the construction of an energy supply–demand structure that does not rely on coal, as described in subsection 4.2.2. For example, increasing the use of natural gas, renewable energy, and nuclear power generation can be cited. As these changes take a long time to happen, maybe in about 10 years, the action taken should also adopt a long-term view.

On a shorter time frame, the cleaner use of coal, specifically the aggressive promotion of development and use of high-efficiency power generation technology and environmental protection technology can be cited. Coal is unpopular from the environmental viewpoint but highly desirable in terms of stable supply and economy. Ensuring energy supply and economy are important elements, especially for developing economies, and it would be a great loss not to utilise this supremacy of coal. The cleaner use of coal is a practical alternative for balancing these and should be positively studied. While aiming at a cleaner structure in the long run, the gap must be bridged by the cleaner use of coal over the short or medium term as it takes a long time to complete such fundamental structural change. Policymakers who are responsible for industries and the lives of people in their countries will be required to take practical approaches, taking reality and the long-term ideal vision into consideration while aiming at the cleaner structure. In that sense, the cleaner use of coal can be said to be an appropriate choice especially for developing countries.

4.3. Conclusion

This chapter presented the policy implications based on three future scenarios generated by using a scenario planning approach. During the scenario planning, both the present situation and future prospect were analysed from various angles, but the certainty of the vision of the future drawn by the scenarios is not necessarily high. The energy market is always changing and each country continues to take measures against that change. Consequently, a scenario that may be adopted in the future will also change. In the world where everything changes rapidly, the scenarios drawn from this study may quickly become obsolete. It may be required to extract new scenarios in accordance with the changes in the energy market and to analyse policy implications from other angles.

Reference List of Raised Implications

Country	Implication
Cambodia	• Cheaper oil price is better. • High oil price affects electricity retail price. • Renewable energy cost is still higher but hydro contributes to reducing electricity price.
China	• Stable and cheap oil price is better. • Domestic energy market reform is needed. • The use of more gas and electricity, and improvement in the quality of oil products is needed in the transport sector. • Lower-priced coal is preferred but there is a need to impose carbon tax to improve the environment. • Improved new technology is needed. • Sustainable use of renewable energy is required.
Indonesia	• The country prefers a higher oil price scenario at US$80–US$100/bbl. • Introduce other energy sources, new renewable energy (NRE), nuclear, and others. • Utilise cheap coal domestically, export the high-grade coal. Low-quality coal can also be used for the chemical industry. • A shift to electric vehicles in the transport sector will increase coal consumption. • Implement deep decarbonisation, such as carbon capture and storage (CCS)/clean coal technology (CCT). • International policy change, moving away from coal, will affect Indonesia's coal export.
South Korea	• The lower oil price the better, but US$80–US$100/bbl should be kept. • Continuous policy implementation is needed, regardless of oil price change. • Coal is important in South Korea, but cleaner use should be pursued. • Research and development and new technology are keys to energy security.
Lao PDR	• The country prefers low oil price, lower than US$50/bbl. • Increase coal utilisation in the electricity sector. • Promote electric mobility/vehicles.
Malaysia	• The country prefers a stable and reasonable price, at US$80–US$100/bbl. • Increase the utilisation of NRE. • Increase coal in energy mix, but should impose a higher standard technology (e.g., CCT and CCS), and of emission standard. • Undertake subsidy removal from electricity price to promote and enhance energy efficiency (EE) and NRE.

Country	Implication
	• Consider long-term (2035) decarbonisation, and nuclear power.
Myanmar	• Prefers an import oil price of US$80–US$100/bbl. • Needs to reduce oil import requirement. • Onshore exploration and production • Increase NRE. • Use of gas, CNG, for the transportation sector. • New technology for coal power plant, increase importation of coal.
Singapore	• Oil prices affect the Singapore oil sector, thus, the lower the better. • High oil price may positively impact the transportation sector, electric vehicles • Solar PV use, but remain at small share
Viet Nam	• Prefers an oil price of US$80–US$100/bbl. • Promote NRE and EE. • Remove subsidy, domestic market reform is required. • Promote coal blending—high quality and low quality. • Implement CCT. • Interconnect the electricity grid.