

SUMMARY OF MASTER'S DISSERTATION

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Title			
Quantitative Analysis of Middle and Long Term Energy Security in East Asia Region			
Abstract			
<p>East Asian countries such as China and India have increased their energy consumption due to the rapid economic growth and the population increase, which is now becoming a global concern. With the expansion of the energy consumption, East Asian countries have increased their dependencies on imports from outside of their regions. Consequently, it has brought serious issues, such as rising oil prices and a tightening in the global energy. However, energy experts project that the demand for fossil fuel, especially for oil, will continue to grow until 2030. Securing the supply of energy is essential to the sustainable economic development of East Asia. In addition, the environmental issues resulting from the energy usage are now global concern. Ensuring energy security does not just simply mean securing stable energy resources, but also includes the development of environmentally-friendly energy.</p> <p>We have approached this research from the perspective of sustainable economic development in East Asia, firstly we quantify the energy security level, and secondly we identify and assess the effectiveness of energy policies and measures to improve each country's level of energy security.</p> <p>The definition of energy security has become a subject of debate among many energy experts and policy makers. In this research, the notion energy security is defined as "ensuring sufficient energy in order to benefit the economy and the public". Risk is defined as "The loss of welfare which might occur as a result of price fluctuation in the international energy market". Under these definitions we evaluate the energy security level of the four countries in East Asia: China, India, Indonesia and Japan. The evaluation is conducted by applying the International Energy Agency (IEA)'s Energy Security Price Index (the price volatility risk in international market concentration) but the indicator is extended by making it possible to compare among countries with economic disparities.</p> <p>As a result, the Energy Security Price Index appeared to be high in the countries with large share of net imports in their Total Primary Energy Supply, hence a reduction of the oil import dependency will improve the</p>			

country's energy security level. Furthermore, the size of the economy is a significant factor. Those countries with higher GDP amongst the 4 countries had less impact in price volatility. Among the four countries, Indonesia had the highest risk despite the fact that Indonesia is rich in natural resources with the exception of oil.

As for policy measures on the improvement of energy security, the assessment has been taken by comparative analysis. The introduction of clean energy/renewable energy and nuclear power development was selected for supply-side policy. The promotion of energy conservation is considered as demand-side policy. As a result, the promotion of energy conservation is demonstrated to significantly reduce the risk and improve the country's energy security level. This result indicates that the promotion of energy conservation is essential for the sustainable economic development for East Asia Region.

Key Word(5 words)

Energy Security, East Asia, Quantitative Analysis, Energy Policy