An Examination of Future Energy Mix in the Three Northeast Asian Countries and Its Implication

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Abstract:
With the increasing threat of climate change, nuclear power, as an emission-free energy source has been paid high attention by Northeast Asian countries especially by Korea, Japan and China. It is worth noting that the current total operable nuclear capacity of the three countries accounts for 20% of the world total, and the additional reactors under construction and planned will account for almost 32%. After Fukushima accident, nuclear safety has emerged as a hot issue again with discussions of replacing nuclear power with coal or LNG to address the safety issues. But, considering energy security and the CO₂ emission problems in which China is the biggest CO₂ emitter while Japan and Korea are also listed within the world top ten, nuclear power seems to be inevitable choice.

Referring to a long-term energy forecast, following two cases for the three countries are evaluated to see the potential role of nuclear power in terms of the future CO₂ emission reduction and energy security: The first case is to replace nuclear power with coal or LNG based on total power generation and its share. The second case is to evaluate that based on planned capacity.

The energy mix of these three countries and their future nuclear plan is to be examined in detail. Meanwhile, the potential problems of some inland nuclear power plants which are located around earthquake zone in China are being discussed. The choice of nuclear power for Chinese in terms of her long-term energy security is being discussed while nuclear safety problems of her own and neighboring countries are also noted by identifying the earthquake zone with a couple of inland nuclear development plan and regional wind direction. Further discussions on the institutionalizing the most advanced framework on nuclear energy among the three countries follows. It would be necessary to set a ‘Northeast Asian Nuclear Council’ which may be similar to that of ‘EURATOM’ in Europe to enhance the cooperation for the safety of nuclear power development.

References: