

### **3E's+S Challenges Facing Asia: Discussions in Malaysia**

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On February 13 and 14, I had an opportunity to discuss Malaysia's energy situation and challenges with Malaysian government and energy industry officials and energy researchers. I made a presentation on world energy problems under the new situation, including the inauguration of the new U.S. administration, and the Asian 3E's plus S (energy security, environmental protection and economic efficiency plus safety) and had discussions with the Malaysian energy policy stakeholders.

As explained below, Asia is facing with the most serious or urgent 3E's plus S challenges or problems in the world. As the gravity center of the international energy market shifts to Asia, serious problems facing Asia and their solutions will grow more important for the whole of the international energy market.

What are 3E's plus S challenges for Asia? The key to answering the question is substantial Asian energy demand growth attributable to economic growth, population expansion, urbanization and growing middle-income population. According to the IEEJ Asia/World Energy Outlook, global primary energy demand will post an increase of about 40% from 2014 to 2040, of which Asian emerging and developing countries including China, India and the Association of Southeast Asian Nations will account for more than 60%. Fossil fuel will capture most of the increase. Even if advanced technologies are introduced and diffused, fossil fuels will account for more than 70% of primary energy demand in 2040 in Asia and the world.

As a result, Asia will increase its dependence on energy imports more and more as regional energy supply growth fails to catch up with demand growth. This is the first problem emerging for Asia. Asia now depends on imported oil for more than 70% of oil supply and on imported gas for about 30% of gas supply. These percentages will increase further undoubtedly. As of 2015, furthermore, Asia depended on the Middle East for 53% of regional oil supply and for 37% of regional LNG supply. Given that the Middle Eastern situation remains highly uncertain with geopolitical risks growing, the high dependence on the Middle East is likely to become a major challenge for Asia. The future course and impacts of the U.S. Trump administration's Middle East policy also represent a problem that cannot be ignored. In this respect, Asia will have to take a close look at the stability in the Middle East and sea lanes for stable transportation of oil and LNG from the Middle East to Asia.

A large energy mix share for coal and other fossil fuels is also a fundamental cause of

Asian environmental problems. Asia is required to substantially reduce carbon dioxide emissions to address climate change over a long term. At the same time, Asian emerging countries like China and India are plagued with serious air pollution including the PM2.5 concentration. Asia is thus doubly forced to tackle environmental problems.

Regarding the third E, or economic efficiency, energy markets in many Asian countries are still dominated by state-run companies, with regulated energy prices and subsidies, lagging behind Western industrial countries in reforming energy markets. As Japan has implemented a full-fledged electricity and gas system reform ahead of other countries in Asia, many other Asian countries have grown interested in learning lessons from the Japanese reform as well as Western experiences. As for the S, or safety, Asia is urgently required to enhance nuclear safety based on lessons from the Fukushima accident as global nuclear power generation expansion concentrates in Asian emerging countries such as China and India.

These issues for the whole of Asia have attracted attention from Malaysian policy makers as important challenges. Malaysia has already become a net oil importer. The country, though still remaining a net gas exporter, has started LNG imports while implementing LNG exports. The combination of gas exports and domestic gas consumption has exceeded domestic gas production and is expected to expand further. Under such situation, Malaysian policy makers are growing interested in energy security, as indicated at the discussions.

In Malaysia, coal accounts for more than 40% of power generation and natural gas for more than 30%. The combination of coal and natural gas accounts for about 80%. As there are numerous plans to build new coal power plants to secure competitive electricity sources, Malaysian coal demand is expected to robustly increase. As a result, carbon dioxide emissions are expected to expand, increasing environmental load. In this respect, interests are growing in policy discussions on how to respond to the Paris Agreement and set future emission reduction targets. The promotion of energy conservation and non-fossil energy sources is becoming a key energy policy issue from the viewpoints of energy security and environmental protection. The best energy mix for Malaysia has also grown controversial. In this respect, Malaysia is importing electricity through international grids linking hydroelectric plants in neighboring ASEAN countries and considering nuclear power generation as a long-term option. Nuclear energy discussions have led to growing interests in nuclear safety and in Japan's nuclear energy policy including the restart of nuclear reactors under new safety regulations.

Furthermore, momentum is increasing for an electricity and gas market reform in Malaysia, with specific initiatives being implemented. In a specific development, a legislative action was taken last year to authorize third party access to natural gas infrastructure including LNG import terminals. While this institutional reform has yet to lead to any actual moves or initiatives regarding imports and supply, political initiatives have been implemented to promote market competition to improve consumers' convenience. In this respect, Malaysian policy makers are highly interested in Japan's market deregulation. I felt that Malaysia has a strong ambition to promote discussions on market deregulation. I would like to continue discussions with Malaysian government and industry

stakeholders on the Malaysian energy mix and the relationship between its realization and market deregulation.

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