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Featured Analysis

Asia-Pacific Energy Demand and the Increased Threat from Complex Nuclear Disasters

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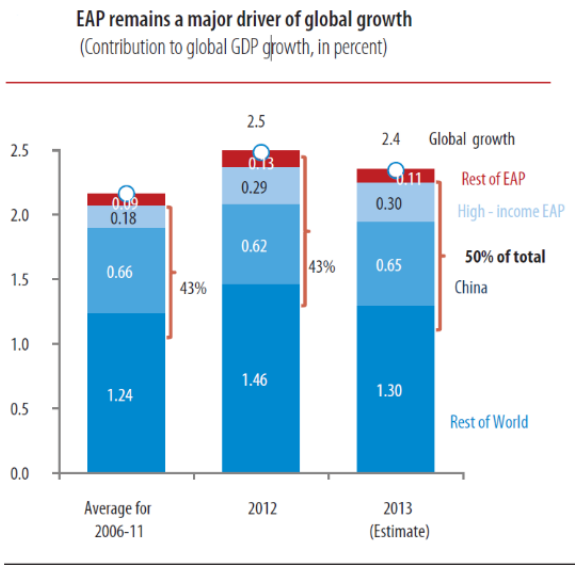
Opportunities and challenges are often two sides of the same coin, and nowhere is this more evident than in the Asia-Pacific, where economic expansion is increasing the demand for energy that is reliable, affordable, and does not pollute the atmosphere. Given the simultaneous pressures of assuring an affordable energy supply to support growth and the need to reduce emissions, nuclear power has emerged as a preferred source of energy. But for all the benefits that nuclear power offers, there are also tradeoffs to consider. The potential for complex nuclear disasters (from both natural disasters and man-made causes) will increase as more nuclear power reactors are constructed in the Asia-Pacific to supply secure, low-emission energy.

In the Asia-Pacific, strong economic progress has increased the demand for energy. East Asia and the Pacific are home to nearly a third of the world's population and a quarter of global economic output; regional economies accounted for over 40 percent of the growth in global GDP in 2013.[1] East Asia is the largest contributor to global economic growth and is expected to expand by 7.1 percent in 2014 and outpace global economic growth by 4.1 percent during the same period. In the developing world, East Asia will remain the fastest-growing region, with China leading the way in 2014 at 7.6 percent.[2]



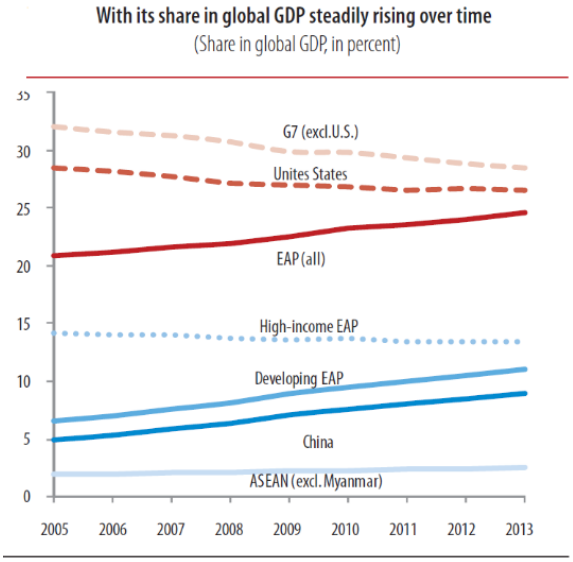


Figure 1: World Bank East Asia Pacific Economic Update April 2014, p. 5, retrieved May 23, 2014. Reproduced with permission. (http://www.worldbank.org/content/dam/Worldbank/document/EAP/region/eap-update-april-2014-full-report.pdf)

In order to keep pace with this growth, electricity demands in the Asia-Pacific are projected to double between 2010 and 2035, with the demand for coal and oil increasing by 52.8 percent and 59.3 percent respectively.[3] The growth in fossil fuel consumption will contribute to a jump in CO2 emissions in the region from 13,404 million tons in 2010 to 22,113 million tons in 2035.[4] As the engine of growth in the region, China in particular is experiencing the negative effects of pollution due to the widespread use of coal. According to the National Academy of Science, in recent decades Southern Chinese on average have lived at least five years longer than their northern counterparts because of the destructive health effects of coal use in the north.[5] In addition, recent tensions in the Ukraine have led Gazprom, the key gas provider to the European market, to warn of possible supply disruptions in Europe[6], showing the fragility of energy supply chains. It should therefore be no surprise that since China desires reliable, secure, emission-free energy, it is making nuclear power an increasing part of its energy portfolio. Mainland China has 20 nuclear power reactors in operation and 28 more under construction.[7] While the greatest growth in nuclear power generation is expected in China, South Korea, and India, there are 49 plants under construction in East and South Asia and firm plans to build an additional 100.[8]

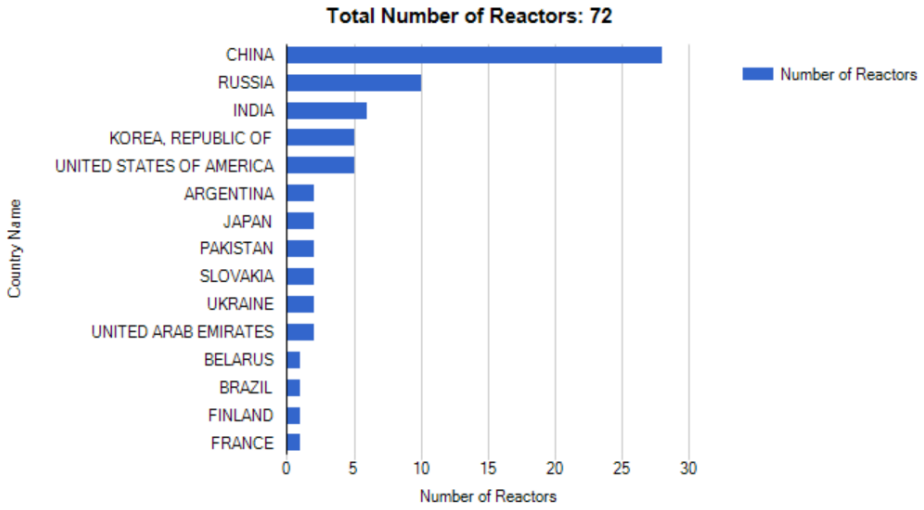


Figure 2: IAEA Under Construction Reactor Status Report, retrieved May, 23, 2014. Reproduced with permission. (http://www.iaea.org/PRIS/WorldStatistics/UnderConstructionReactorsByCountry.aspx.)

Nuclear power is an attractive means for meeting increasing energy demands in the Asia-Pacific. Amid concerns about the use of fossil fuels and its effect on global warming, nuclear power offers an alternative, low-emission source of energy. Another benefit of nuclear energy is the abundance and relative stability of global uranium supplies.[9]

Nuclear energy may be a cleaner and more consistent source of power in comparison to oil or gas, but it is not devoid of risk. Japan's triple disaster involving the Fukushima Daiichi nuclear power plant was a stark reminder of the response and remediation challenges posed by a nuclear accident. The world has endured three major nuclear power generation accidents (Three Mile Island, Chernobyl, and Fukushima), and while the frequency of occurrence has been low thus far, the required response and remediation have been herculean, costing both significant resources and lives. The growth in the number of nuclear power reactors across the Asia-Pacific may again threaten U.S. equities in the region as it did in Japan in 2011 if another natural or man-made disaster results in the nuclear or radiological contamination of soil, water, and air.

The United States has prioritized the Asia-Pacific region as vitally important for U.S. foreign policy as well as domestic economic growth and job creation,[10] and as the U.S. continues to strengthen its integration with the region, it will have an increasing stake in protecting its investments and policy commitments. Protecting U.S. equities and assisting Asia-Pacific allies in the event of a nuclear disaster necessitates a whole-of-government response plan. However, no such blueprint exists to coordinate a comprehensive U.S. Government response to international nuclear disasters.[11] To that end, the U.S. interagency has spent the last year and a half reflecting on lessons learned from Japan's triple disaster, and the National Security Council has led a series of interagency meetings aimed at developing a protocol to help guide the next whole-of-government, international CBRNe (chemical, biological, radiological, nuclear, and high yield explosive) disaster response.[12]

While the U.S. Government works to codify its response to international CBRNe events, the risk of complex nuclear disasters remains a real threat in the Asia-Pacific, and the push for nuclear power as a secure, low-emission energy source will only exacerbate this threat. Just as the expansion of complex cities made fire departments a necessity in the industrial age, the growth of nuclear energy will necessitate more coherent and capable international response capabilities in the 21st century. It is therefore critical that the U.S. Government not only codify its response to nuclear or radiological disasters in the Asia-Pacific, but also exercise the protocol once it is developed.

This article was adapted from opening remarks by Lt. Gen. Wallace "Chip" Gregson, Chair of Banyan Analytics, at a Banyan Analytics conference, "International CBRNe Response: Identifying Challenges to Delivering Capabilities in the Asia-Pacific," April 14, 2014, http://www.anser.org/node/784.

Chip Gregson is the Chair of Banyan Analytics. Eric Weiner is an Analyst at Banyan Analytics. The views expressed are soley the authors'.

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[1] "FY 2015 Budget Request for the Bureau of East Asian and Pacific Affairs," testimony by Daniel R. Russel, Assistant Secretary of State, Bureau of East Asian and Pacific Affairs, before the House Foreign Affairs Committee, Subcommittee on Asia and the Pacific, Washington, DC, May 20, 2014. http://www.state.gov/p/eap/rls/rm/2014/05/226360.htm.

[2] World Bank East Asia Pacific Economic Update, April 2014, ix, 19.

http://www.worldbank.org/content/dam/Worldbank/document/EAP/region/eap-update-april-2014-full-report.pdf.

[3] Asian Development Bank Energy Outlook for Asia and the Pacific (2013), http://www.adb.org/sites/default/files/pub/2013/energy-outlook.pdf.

[4] Ibid.

[5] Edward Wong, "Pollution Leads to Drop in Life Span in Northern China, Research Finds," *New York Times*, July 8, 2013. http://www.nytimes.com/2013/07/09/world/asia/pollution-leads-to-drop-in-life-span-in-northern-china-study-finds.html.

[6] "Gazprom says disruptions of gas supplies to Europe Possible,: *ITAR-TASS News* Agency, March 3, 2014. http://en.itar-tass.com/economy/721798.

[7] Nuclear Power in China. World Nuclear Association. http://www.world-nuclear.org/info/Country-Profiles/Countries-A-F/China--Nuclear-Power/.

[8] Asia's Nuclear Energy Growth. World Nuclear Association. http://www.world-nuclear.org/info/country-profiles/others/asia-s-nuclear-energy-growth/.

[9] World Energy Needs and Nuclear Power. World Nuclear Association. 2014. http://www.world-nuclear.org/info/Current-and-Future-Generation/World-Energy-Needs-and-Nuclear-Power/.

[10] Testimony by Scot Marciel, Principal Deputy Assistant Secretary of State, Bureau of East Asian and Pacific Affairs, statement before the Senate Committee on Foreign Relations, Subcommittee on East Asian and Pacific Affairs, Washington, DC, December 18, 2013. http://www.state.gov/p/eap/rls/rm/2013/12/218291.htm.

[11] "The 2011 Earthquake, Tsunami, and Nuclear Accident in Japan: Coordinating the U.S. Government Response" A Banyan Analytics Case Study, p. 36. http://www.anser.org/docs/banyan_analytics/Fukushima_Case_study.pdf. (*A classified plan exists to respond to international terrorist incidents involving radiological or nuclear components).*

[12] Carol Chan, Deputy Director, USAID/OFDA, speaking at a Banyan Analytics conference, "International CBRNe Response: Identifying Challenges to Delivering Capabilities in the Asia-Pacific," April 14, 2014, http://www.anser.org/node/789.

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