

## Japan's National Security of Fertilizer: Its connection with Africa

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The issues of natural resources, Japan's Achilles' heel, are deeply intertwined with Japan's policy toward Africa. The problem of procuring rare metals, especially rare earth elements, has received increased attention over time. However, fertilizer availability is another important issue that requires attention.

The raw materials required for fertilizer production include mineral phosphate for phosphate fertilizers, potash ore for potash fertilizers, and ammonia for nitrogen fertilizers. Natural gas is used to synthesize ammonia; therefore, the raw material required for nitrogen fertilizer production is natural gas.

The world's largest producer of mineral phosphate and phosphate fertilizers is China, where the production of phosphate fertilizers has expanded rapidly. China's reliance on imports decreased considerably during the 1990s. By 2007, the country had export surplus. In 2008, China began to impose an export tax of over 100% on mineral phosphate and phosphate fertilizers in order to prioritize domestic consumption and, thereby, control exports.

The United States is the second-largest producer of mineral phosphate in the world. However, the country's natural resources are gradually depleting. As a result, embargos have been imposed on the export of these resources. Despite these facts, the United States continues to be the world's largest exporter of phosphate fertilizers. Russia is the third-largest producer of these products. Both Russia and the United States have reduced their export volumes. In the past, Japan imported mineral phosphate from China. Currently, however, Japan is gradually replacing these imports with procurements from South Africa and Morocco. Japan's phosphate fertilizer production has declined by 50% since the 1970s; its dependence on imports has grown by as much as 50 percent.

About 53% of potash ore reserves are located in Canada, which leads the world in both the production and export of potash fertilizers. Russia is the world's second-largest producer and exporter of potash fertilizers. Canada provides the majority of Japan's potash fertilizer supply.

Japan was an exporter of nitrogen fertilizers until 1960s, but its production decreased rapidly after the Oil Crisis in 1970s. Presently, production has declined, and Japan imports approximately 20% of its nitrogen fertilizers from China and other countries.

In 2008, prices for raw materials used in fertilizer production increased sharply while overall crop prices also increased. To address this issue, the fertilizer industry began to take action. In 2010, BHP Billiton, world-largest natural resources company, attempted to buy a major Canadian potash fertilizer company. The Canadian government blocked this attempt. In 2011, two major Russian potash fertilizer companies merged. In addition, the Russian government attempted to bring the Belarusian fertilizer industry under its control. Mineral phosphate and potash ore are natural resources, distribution of which reserves is uneven. As stated previously, Canada has the largest portion of the world's potash reserves. The combined potash

resources of Russia and Belarus make up 30% of the world's reserves. Oligopolization of potash resources is progressing in much the same way as it has occurred with mineral resources. Two companies dominate the sales of chloride of potash, the raw materials used in potash fertilizer production: Canpotex Ltd., located in Canada and the Belarusian Potash Company, located in Belarus. Some might say that these companies are monopolizing sales. Unlike the situation with phosphorus, China is the world's largest importer of potash and depends heavily on imports from the Belarusian Potash Company. In fact, in an effort to secure its potash interests, China is seeking to invest capital in the Belarusian fertilizer industry.

In order to create product portfolios that can increase both the profits and the efficiency of production systems for the agricultural industry, Japan must secure a stable supply of fertilizers. On the international level, assurance of food security is critical to the maintenance of stable trading relationships with countries that supply agricultural products to Japan. On the domestic level, different methods will be needed to reconstruct and revive Japan's agricultural industry.

At one time, nitrogen fertilizer production was an export industry. Presently, however, domestic production has decreased while dependence on fertilizer imports has increased. The quantities of fertilizers available worldwide cannot supply the increasing demand from China and other emerging markets. It is important to note that the oligopolization of supplies continues to progress. Therefore, it will become increasingly important for Japan to strengthen relations with North African countries that export fertilizers and/or fertilizer raw materials.

In 2011, a consortium of four companies (Sojitz Corporation, Sumitomo Corporation, Toyo Engineering Corporation, and Mitsubishi Heavy Industries, Ltd.), received an order to construct a fertilizer plant in Angola for the production of ammonia and urea using the country's natural gas. This year, an agreement was made between a Nigerian urea fertilizer company (Notore Chemical Industries Limited) and Mitsubishi Corporation to begin construction on a new plant. Several other Japanese companies have begun construction of fertilizer plants in non-African developing countries. All Japanese industries share a common problem in that, despite high technological skills, they cannot generate profits due to the decrease in size of the domestic market and the decrease in competitiveness of domestic production. However, if Japanese companies decide to transfer its technologies to developing countries, they can reawaken their earning capacity.

One of the main causes of poverty in Africa is the underdevelopment of agriculture. To overcome this problem, African governments must make strong policy determinations, which will be measured by the amount of income from natural resources that are channeled into agricultural investment during the current period of economic growth. In addition, private investment by foreign companies including Japanese ones, is beginning to increase in anticipation of the potentially enormous future demand for fertilizer in Africa.

I firmly believe that Japan needs to strengthen its agribusiness. Over the years, the Ministry of Agriculture, Forestry, and Fisheries has protected aging farmers who will soon leave production. Assurance of national security of fertilizer is essential in order to sustain the new generation of producers who will lead Japanese agriculture when their elders retire. Today, the domestic market for

fertilizer is shrinking and domestic production is losing its competitive edge. However, Japanese companies can generate profits through the expansion of Japanese technology to developing countries where future markets will continue to grow. Ultimately, this action will contribute to the assurance of food security not only for Japan but also for the world.