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Role of Fertilizer Policy in Transforming Agriculture of Myanmar

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INTRODUCTION

Approximately 70 percent of the population of Myanmar lives in rural areas and 60 percent of the workforce is involved in agriculture. It is estimated that agriculture contributes to 36 percent of the GDP and 20 percent of the foreign exchange earnings for Myanmar. While agriculture is important for growth in Myanmar, it is primarily rain-fed so agricultural growth is erratic. Due to small farm sizes, increasing food production is dependent on improved policies and technologies that can increase output per hectare. One of the main policy objectives of the Government of Myanmar is to increase food security and the quantity, quality, and variety of crops through partnerships and private sector investment. Improving the private sector participation in the trade and distribution of fertilizer has the potential to reduce fertilizer costs and increase their usage and thus improving farm productivity and food security.

Chemical fertilizers were first introduced to Myanmar in 1956, but widespread use did not occur until 1978 when the government encouraged fertilizer use by subsidizing fertilizer prices and building three urea processing plants (located at Sale-A, KyunChaung, and KyawZwa) with a planned production of 300,000 MT/year.

Policy Regimes

Table 1: Summary of fertilizer policy phases

Phase I 1962-1987:	State control of agricultural marketing as well as the import and distribution of fertilizers. During this period the agricultural sector remained stagnant and yields actually declined. Subsidized fertilizer pricing scheme.
Phase II 1987-2002:	Period of transition from a state controlled to a liberalized fertilizer sector. Government objectives were to commercialize agriculture and maintain food security; policy measures included: liberalization of rice trade, allocation of fallow land to private investors (for agricultural purposes), and exemption of import tariffs on agricultural inputs but no clarity about regulation on fertilizer import.
Phase III 2002-2013:	Liberalized, private sector-based fertilizer program; no fertilizer subsidy. No import tariffs on agricultural inputs and no involvement of SOEs in import and marketing of fertilizers (except distribution of small quantity of urea from state-owned factories).

Although the fertilizer sector was liberalized in 1987, few private companies were willing to import and distribute fertilizer because of uncertain domestic demand and unclear importing procedures. Since 2002, the government has attempted to boost imports by providing import duty exemptions; this has increased private sector trade in the sector.

In 2002 the government created the Fertilizer Law that explains the laws and regulations for fertilizer utilization, production, and distribution. The objectives of the law were to: encourage fertilizer use to develop the agriculture sector, enable systematic control and supervision of fertilizer businesses, support conservation of soil and the environment, enable extensive research for the systemic use of fertilizer, and to encourage cooperation between government departments and organizations, international organizations, and NGOs with regard to fertilizer. Companies wanting to produce, import, or export fertilizer for commercial purposes have to apply to the Fertilizer Committee for a permit, while companies wanting to compound, mix, repackage, and store fertilizer must apply for a business license from the Myanmar Agriculture Service.

Fertilizer Use and Efficiency

Low nutrient fertilizer application is causing declining agricultural productivity in Myanmar. When compared with neighboring countries, Myanmar's fertilizer application is much lower. Nitrogen deficiencies occur in all of the major rice growing regions of Myanmar (Ayeyarwaddy, Bago, Mandalay Division, and Dry Zone areas) as a result of low fertilizer use efficiency, low organic matter content, poor indigenous nitrogen supply, and alkaline and calcareous soils. Other nutrient deficiencies in the soil include phosphate, zinc, and sulfur.

Table 2—Fertilizer utilization in Myanmar and neighboring countries (kg/ha)

Countries	1999	2000	2001	2002	2003	2009
Myanmar	15.9	19.6	9.0	12.5	9.5	5.0
Thailand	91.7	81.1	87.2	87.8	120.9	100.7
Vietnam	264.8	278.6	215.6	222.1	253.2	262.4
India	106.4	98.4	102.0	94.8	98.9	156.2
China	252.9	231.5	229.4	258.7	336.2	432.1

Source: FAO, 2009

Urea is the primary fertilizer used in Myanmar, followed by NPK and phosphate but consumption data is lacking in part because of the size of the informal sector and a lack of capacity and resources for effective monitoring and inspection. Macro and micro data differ on fertilizer use rates. According to macro data (in Table 1 above) farmers in Myanmar, on average, use 5 kg/ha however, a micro household survey (of 652 households) in the Naypyitaw district found that average fertilizer use was 99 kg/ha of nutrients or 220 kg/ha of products, namely, 125, 15, 11, and 69 kg/ha of urea, TSP, potash, and NPK, respectively; significantly higher than the macro estimates. The large discrepancy between macro and micro data indicates that unregistered fertilizer marketing exists.

Market Structure and Performance

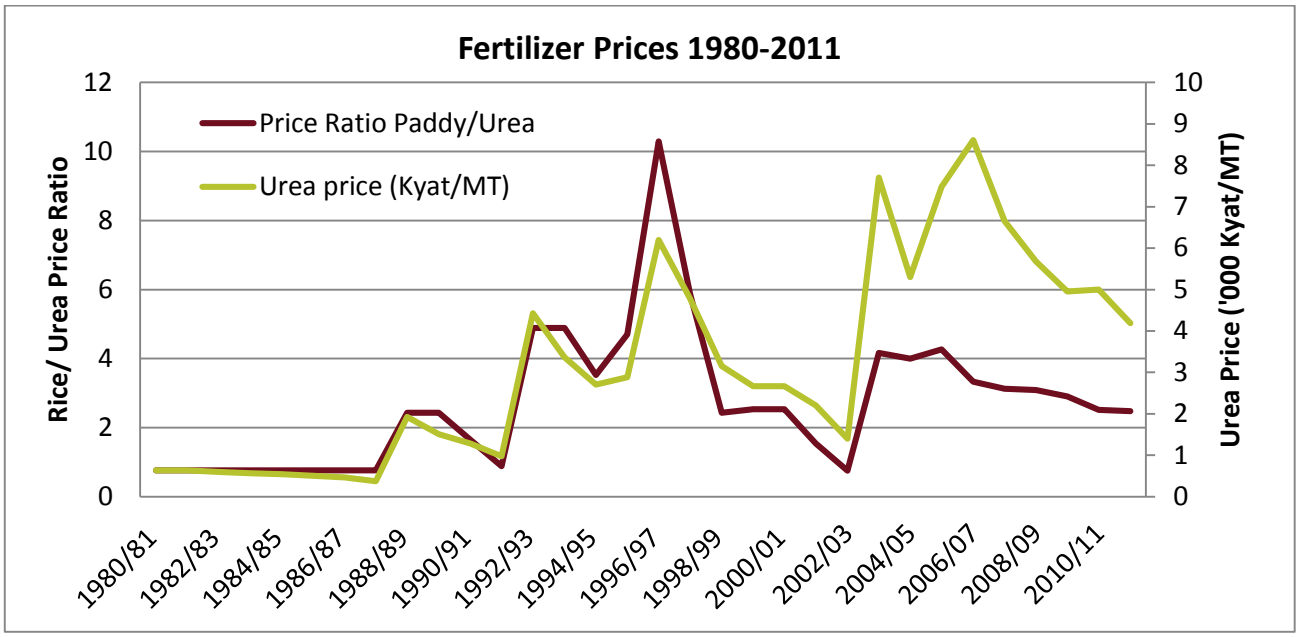
The structure of the fertilizer market has changed significantly since the adoption of a market economy system in 1989. Domestic fertilizer industries primarily produce urea fertilizer because of the natural gas resources in Myanmar, but fertilizer production is not enough to meet local demand. Production is estimated between 4,000-10,000 MT/year, which is far below consumption. Most fertilizers therefore need to be imported, the majority of which come from China.

Myanma Petrochemical Enterprise (under the Ministry of Energy) has five state-owned fertilizer factories, but only three of these are operational and production has been stagnant due to the limited availability of natural gas which is primarily exported to generate foreign exchange. The other raw materials for fertilizer production including phosphate rock and potash deposits exist in the country but their small quantities do not justify domestic production. There are no private fertilizer manufacturers in Myanmar.

Since 2002, the government has not been widely involved in the import, pricing, and distribution of fertilizers but it continues to own fertilizer factories and enforce legal frameworks for the management of the sector. During the 2008 world food crisis the government did however subsidize fertilizer for crops. The government has been attempting to promote the fertilizer sector by providing easy import procedures, national fertilizer production, coordinating foreign exchange requests, registering distributors, helping develop markets, and preparing and analyzing the statistics of fertilizer use, sales, price, etc.

The removal of government subsidies in 2002 led to an increase in domestic fertilizer prices, causing increased imports, particularly from China. Urea application was linked to price, after the price increased as a result of the removal of the fertilizer subsidy, urea use decreased. Since 2004 fertilizer price has been influenced by exchange rates (exchange rate changed from 6.517 in 2000 to 5.444 in 2010 to 933.57 in 2013).

Figure 1—Urea fertilizer price trend, 1980-2011



Source: CSO Various Issues

However, the price ratio of urea to paddy (real cost of urea) has decreased since the government removed fertilizer subsidies and liberalized paddy prices. The incentive for smallholder farmers to use fertilizers is the fertilizer/crop ratio that measures the amount of production that is required to produce 1 kg of fertilizer. Generally, crop output and domestic wholesale prices of crops have increased after the liberalization of markets in 2002. After full liberalization, real price of urea (kg of paddy needed to buy one kg of urea) had fluctuated between 2 and 4. Since paddy's response to urea use varies between 5-10 kg paddy per kg of urea, urea use seems profitable for paddy production. More detailed analysis is needed in the future research.

Yangon and Mandalay are the primary markets for fertilizer distribution. Yangon is the primary port for fertilizers imported through sea routes and supplies fertilizers to all of Myanmar; whereas Mandalay is the nearest market to the Chinese border point at Muse. Since a large amount of fertilizer comes to Myanmar from China, Mandalay is of increasing importance to the fertilizer sector.

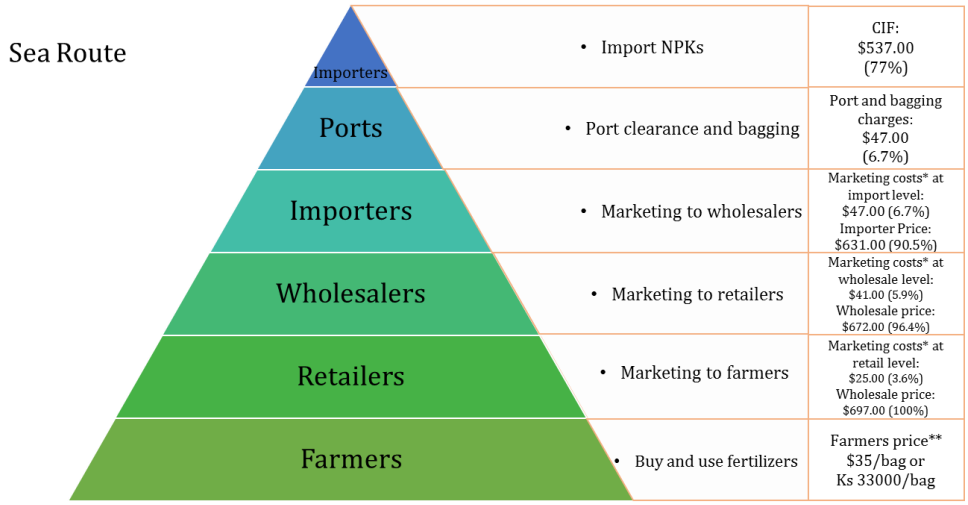
Supply Chain

There are two supply chains in Myanmar: one for domestically produced urea, and other for imported fertilizer products including urea, TSP, MOP, and NPKs. Because imports come by both land and sea, cost components differ significantly.

Domestically produced fertilizers can be purchased directly from the three operational fertilizer factories by local traders and farmers with a buying permit from the Myanma Petrochemical Enterprise (MOE) headquarters. This method of distribution avoids price manipulation by traders and increases direct distribution to farmers, which reduces transaction costs. The MOE gives fertilizer permits to local governments that then give permits to local dealers and farmers. The criteria for the allocation of permits are unclear and the government's involvement in fertilizer distribution distorts the market. Unfortunately, few smallholder farmers know how to directly purchase fertilizer from the factories.

To import and register fertilizer, companies must receive approval from MOAI and an import license from the Ministry of Commerce. Diamond Star, Golden Lion, and Myanma Awba are the largest of the 254 companies that import fertilizer. Most licensed fertilizer companies import NPK compounds by sea for CIF Yangon prices. These companies mostly import fertilizer from Viet Nam, India, Germany, Russia, Belarus, and Malaysia.

Figure 2—Supply chain: fertilizer imports via sea route (NPK 16-16-8 from Singapore)

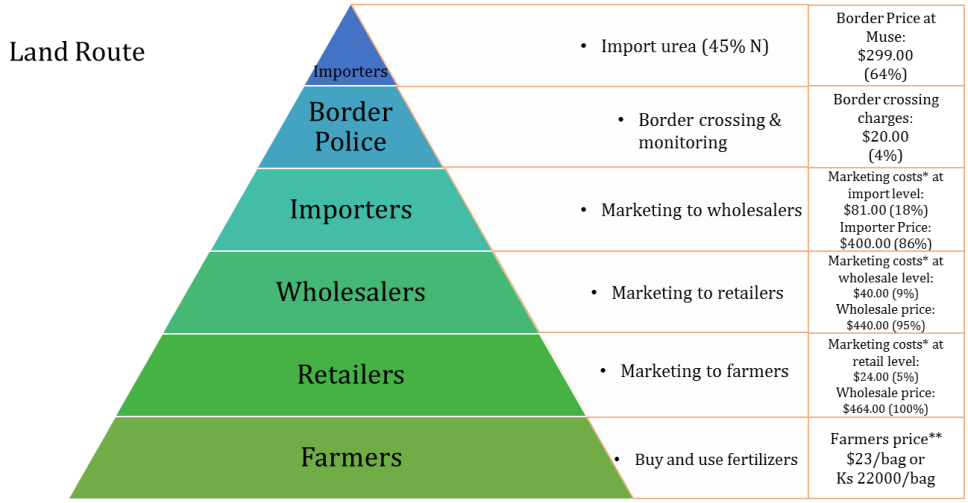


FOB Price: Singapore $490; insurance and freight: $47
( ) = % share in retail price
*Includes margins; numbers may not add due to rounding
** 20 bag/MT
Exchange rate: Ks 950/USD

Source: Authors based on key informant interviews

Large fertilizer companies are generally responsible for importing over land from China. Although the price of Chinese fertilizers are considerably cheaper than sea imports there have been complaints that they are of lower quality, fake, and unregistered. Although domestically produced urea contains that full 46 percent of nitrogen, farmers continue to prefer urea with uncertain nutrient content from China because of its fertilizer grain uniformity, hardness, and good appearance. As fertilizer moves from the border to farmers an additional 37 percent of the retail cost is added above the border price. Terms of sale to distributors and farmers varies depending on the fertilizer importing companies. Credit-based sales have an interest rate of 3-5 percent per month because of the inherent risk of crop failure. This interest rates are higher than those of a bank and add to final retail cost to farmers.

Figure 3—Supply chain: fertilizer imports via land route (Urea from China)



FOB Price: Singapore $490; insurance and freight: $47
( ) = % share in retail price
*Includes margins; numbers may not add due to rounding
** 20 bag/MT
Exchange rate: Ks 950/USD

Source: Authors based on key informant interviews

Key Challenges and Options for the Future

Privatization, liberalization, and the removal of subsidies have been the primary mechanisms for increasing the efficiency of the fertilizer sector in Myanmar. Although progress has been made, there are still many more measures that need to be taken. Key areas for policy reform and research are listed below.

Strengthening Private Sector Participation: Private sector involvement in the fertilizer sector has shown a reduction in transaction costs and further involvement will increase efficiency in the sector. Greater dialogue between the public and private sectors is needed to continue to push through reforms. This dialogue should focus on

- Providing access to credit given the high interest rates charged by private fertilizer businesses to retailers and farmers.
- Making licensing and registration procedures more transparent will also simplify imports and likewise reduce illegal trade which remains a large problem manifesting in unregulated and low quality fertilizers.
- Finding the resources to improve the capacity and frequency of quality monitoring will encourage compliance with fertilizer standards and ultimately benefit poor consumers.
- Promoting supply chain efficiency through investments in transportation, infrastructure, and ports to reduce fertilizers costs.
- Reducing government participation in the fertilizer sector by selling off state-owned fertilizer plants. Natural gas, one of the key inputs of urea production, is currently sold abroad to generate foreign exchange but domestic industries should be able to access these supplies on equal footing as all other buyers.

Research and extension: Fertilizer data is limited demonstrating a need for better research. Increased data availability and as well as on-farm research will allow policymakers to make more informed decisions about the sector. Research should focus on increasing fertilizer use efficiency, complementary varieties and yield responsiveness as well as soil and water management techniques.

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