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The Fertilizer Subsidy Program in Sri Lanka

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Executive Summary

Rice is not only the staple food of Sri Lanka, but also a part and parcel of the rural livelihood of the country. The Government of Sri Lanka has introduced a number of policies and programs to increase paddy[1] production since independence. The fertilizer subsidy program is one of the longest-lasting, most expensive, and most politically sensitive policies implemented to promote rice cultivation in Sri Lanka. It was initiated in 1962 (that is, at the onset of the Green Revolution) with the main objective of encouraging farmers to switch from traditional rice varieties to high-yielding varieties (HYVs) that are highly responsive to chemical fertilizers. Since then, however, the provision of the subsidy has become customary, and successive governments have been under tremendous pressure to continue the subsidy despite budgetary constraints.

The subsidy policy has evolved over time. During the period 1962–89 the subsidy was provided for all three main types of fertilizers—nitrogen (N), phosphorus (P), and potassium (K)—targeted primarily at paddy. Subsidies were not provided during 1990–94 but were reintroduced in 1995 for all three types of fertilizers. The subsidy was limited to urea during 1997–2004. Since 2005, the subsidy has again been expanded to cover all three types. The price of a 50-kilogram bag of fertilizer has been set at US$3.07 regardless of the world market price. Paddy farmers are eligible to apply for the fertilizer subsidy provided that they have legal title to their paddy lands.[2] The subsidy payment constitutes 2.24 percent of total government expenditures and has become a massive burden on the Treasury.

It is widely accepted that the fertilizer subsidy has led to increased land productivity and encouraged farmers to expand the land under paddy cultivation (Central Bank of Sri Lanka, various years). It has, however, resulted in certain policy failures too. Once purchased, fertilizer is also applied to paddy that is cultivated on lands without legal titles as well as to crops other than paddy. Furthermore, the media often report on inefficiencies associated with the distribution of fertilizer by the Agrarian Services Centers (ASCs) of the Ministry of Agricultural Development and Agrarian Services. Certain environmentalists, based on their preliminary findings, have initiated discussions in the public media of the pollution of waterways by heavy metals, such as cadmium, caused by application of inorganic fertilizer. They also argue that accumulation of cadmium in water bodies as well as in plant and animal tissues have led to increased prevalence of chronic renal failures.

Paddy cultivation provides livelihood opportunities for more than 1.8 million farmers in the country, and hence the government has been under constant pressure to continue the fertilizer subsidy. Any significant deviation from the status quo could damage the political power base of the ruling party.

Your assignment is to propose amendments to the prevailing fertilizer subsidy policy, assuming that the Sri Lankan government will have to make appropriate revisions to the current policy in order to more efficiently and effectively achieve several objectives: (1) support the livelihoods of paddy farmers; (2) achieve national self-sufficiency in rice; (3) reduce the burden on the Treasury; (4) curtail transaction costs and inefficiencies associated with distribution; and (5) minimize environmental pollution due to the overapplication of fertilizer.

Background

Rice is the staple food in Sri Lanka, and annual per capita consumption is estimated to be around 101.13 kilograms (kg) (Department of Census and Statistics 2007). Paddy cultivation is part and parcel of the rural agricultural setting, and at present Sri Lanka produces approximately 96 percent of its rice requirement. This sector provides livelihood opportunities for more than 1.8 million farmers, and it is estimated that more than 30 percent of the total labor force is directly or indirectly involved in the paddy sector. The cultivation of this crop is centered on two major rainy seasons: *Maha* and *Yala*.[3]

[1] Paddy is rice with husk.

[2] Tenants who do not own land are also entitled to the subsidy; they need to produce documentary evidence showing their cultivation rights.

[3] *Maha* and *Yala* are synonymous with two monsoons. *Maha* falls during the northeast monsoon from September to March, and *Yala* lasts from May to the end of August. Generally *Yala* is the combination of the first inter-monsoon and southwest monsoon rains. Because it

Total paddy production in 2009 was reported at 3,652,000 metric tons, harvested from 539,000 hectares (ha) in the *Maha* season and from 303,000 ha in the *Yala* season (Central Bank of Sri Lanka 2009).

Studies carried out in dry-zone villages of Sri Lanka (see Kodithuwakku 1997; Kodithuwakku and Rosa 2002) have demonstrated not only that cultivation of paddy is the livelihood of the majority of rural inhabitants, but also that most of their socioeconomic activities are tightly linked to the paddy plant and its life cycle. Paddy cultivation, according to these studies, can be divided into three distinct phases: (1) land preparation and planting; (2) crop management practices; and (3) harvest and postharvest preparation activities. The first and third phases (known as peak labor seasons) generate high demand for labor and farm power; hence inmigration of labor from the other parts of the country is a common phenomenon during these two phases. The demand for labor and farm power in the second phase (from crop establishment to maturity) is very low, and this phase is regarded as the off season, or slack period, with abundant wage labor force available. Figure 1 summarizes key findings regarding the socioeconomic activities of the rural inhabitants and their variations across these phases.

Given the significance of paddy as a major source of rural livelihoods, successive governments since independence have taken great care when intervening in the sector. Governments have made longer-term investments with the objective of further improving the paddy sector. Some of the policies, programs, and strategies for enhancing paddy production have included large-scale irrigation projects coupled with land development and settlement schemes, free provision of irrigation water, provision of concessionary credit (and the writing off of previously obtained credit), extension services, seeds at concessionary rates, and guaranteed output and input prices. Of these policies, the fertilizer subsidy is the longest-lasting, the most expensive, and the most politically sensitive. This intervention in the fertilizer market results from a recognition of the importance of fertilizer in the cultivation of high-yielding varieties (HYVs). The subsidy policy was designed to promote the application of fertilizer at the levels recommended by the Department of Agriculture.[4] These recommendations determine the quantity of fertilizer to be issued to famers through the subsidy scheme.

Currently, most of the country's required inorganic fertilizer is imported. Urea (that is, the main inorganic N fertilizer) is imported primarily from China and the United Arab Emirates (UAE). Although Sri Lanka has its own phosphate deposits[5] in Eppawela in the North Central Province, the government has a small plant that can only process rock phosphate into low-soluble phosphate fertilizer, which is a low-grade fertilizer. Sri Lanka imports all of its required high-soluble triple superphosphate, because the government cannot afford to invest in adding value to the phosphate fertilizer produced in the country.[6] Several private companies also mine dolomite (limestone) in Sri Lanka.

Data from the National Fertilizer Secretariat show that the paddy sector used about 53 percent[7] of the fertilizer supplied in 2006. Figure 2 shows the fertilizer use pattern and the status of paddy production in the country since 1971.

lasts for only two months, the *Yala* season is considered the minor growing season in the dry zone. The major growing season for the whole country, *Maha*, begins with the arrival of the second inter-monsoon rains in mid-September/October and continues through late January/February with the northeast monsoon rains.

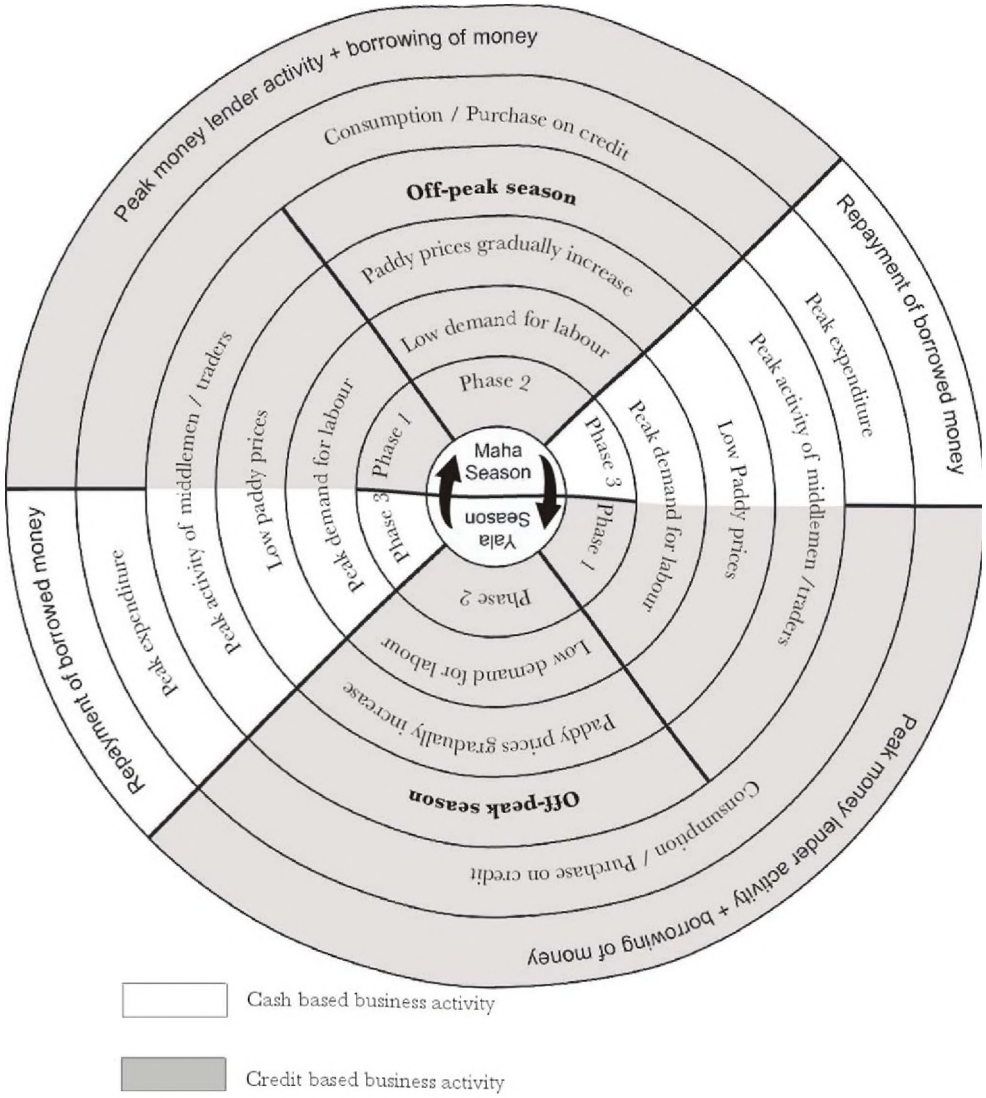
[4] The Department of Agriculture developed its latest fertilizer recommendations for paddy in 2001. These recommendations are based on productivity levels (7, 6, 5, and 4 metric tons per ha), agroclimatic zones (low-country dry and intermediate zones, low-country wet zone, and up-country and mid-country wet and intermediate zones), and the age of the plant (3, 3½, 4, and 4½ months).

[5] These deposits are in the form of a mineral known as appetite.

[6] Evidence shows that Government of Sri Lanka is planning an 800-million-rupee fertilizer plant that would produce single superphosphate (SSP), a low-grade fertilizer. The government cannot afford the high level of capital expenditure required for the production of high-grade fertilizer (Anonymous 2007).

[7] The paddy sector used 132,800 metric tons of the 252,800 metric tons of fertilizer supplied in 2006.

Figure 1: Paddy-related Socioeconomic Activities That Have Created Opportunities for Other Business

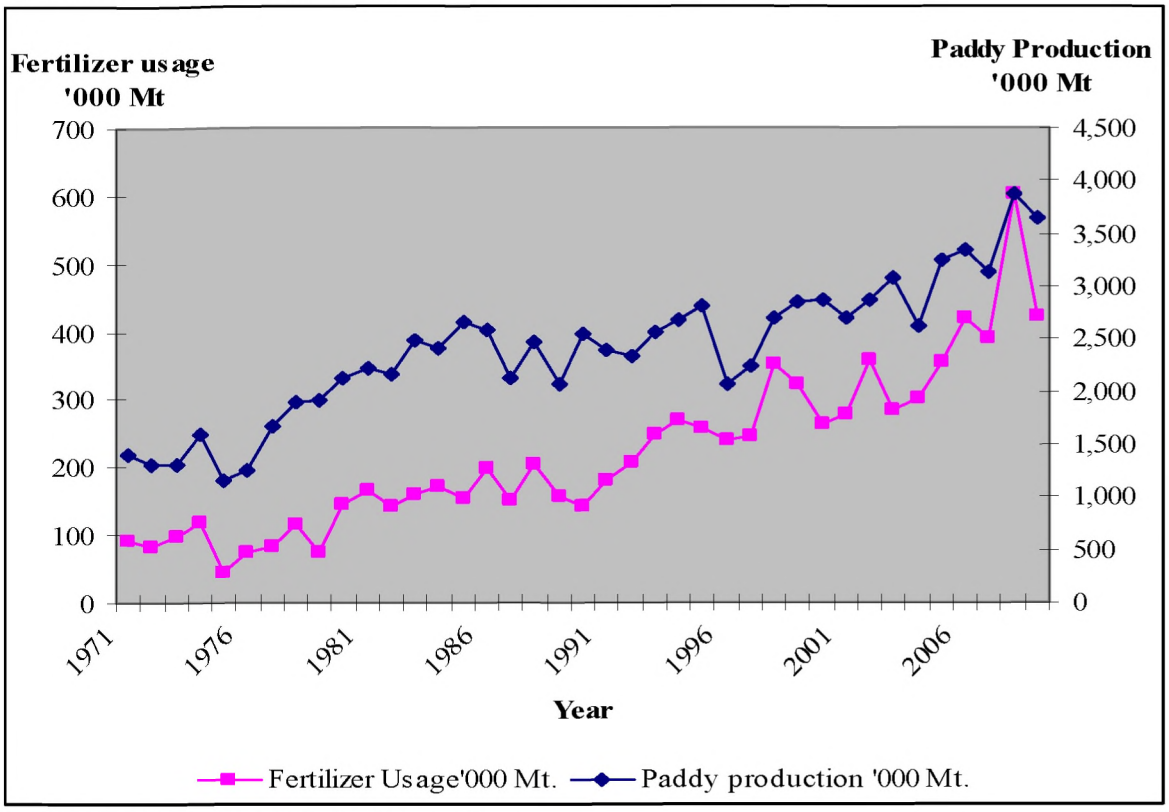


Source: Kodithuwakku (1997).

Policy Issues

Figure 3 shows the equilibrium in the fertilizer market with a fixed and a variable subsidy at a theoretical level. Suppose that P_W is the world market price of fertilizer and a fixed subsidy is given to fertilizer importers at a level of s, in which case the retail prices in the domestic market will vary depending on the variations in the world market prices. In such a context, the price of fertilizer in the retail market will be $(P_W - s)$ and the quantity imported at this price will be F. If the government continues to provide the subsidy at a level of s, regardless of the world market price of fertilizer, when the world market price falls to P_n the retail price of fertilizer would be $(P_n - s)$. At this price, F_n units will be imported. Alternatively, the government could fix the retail price at $P_W - s$, in

Figure 2: Fertilizer Use and Paddy Production in Sri Lanka, 1971–2010



Source: Central Bank of Sri Lanka (various years).

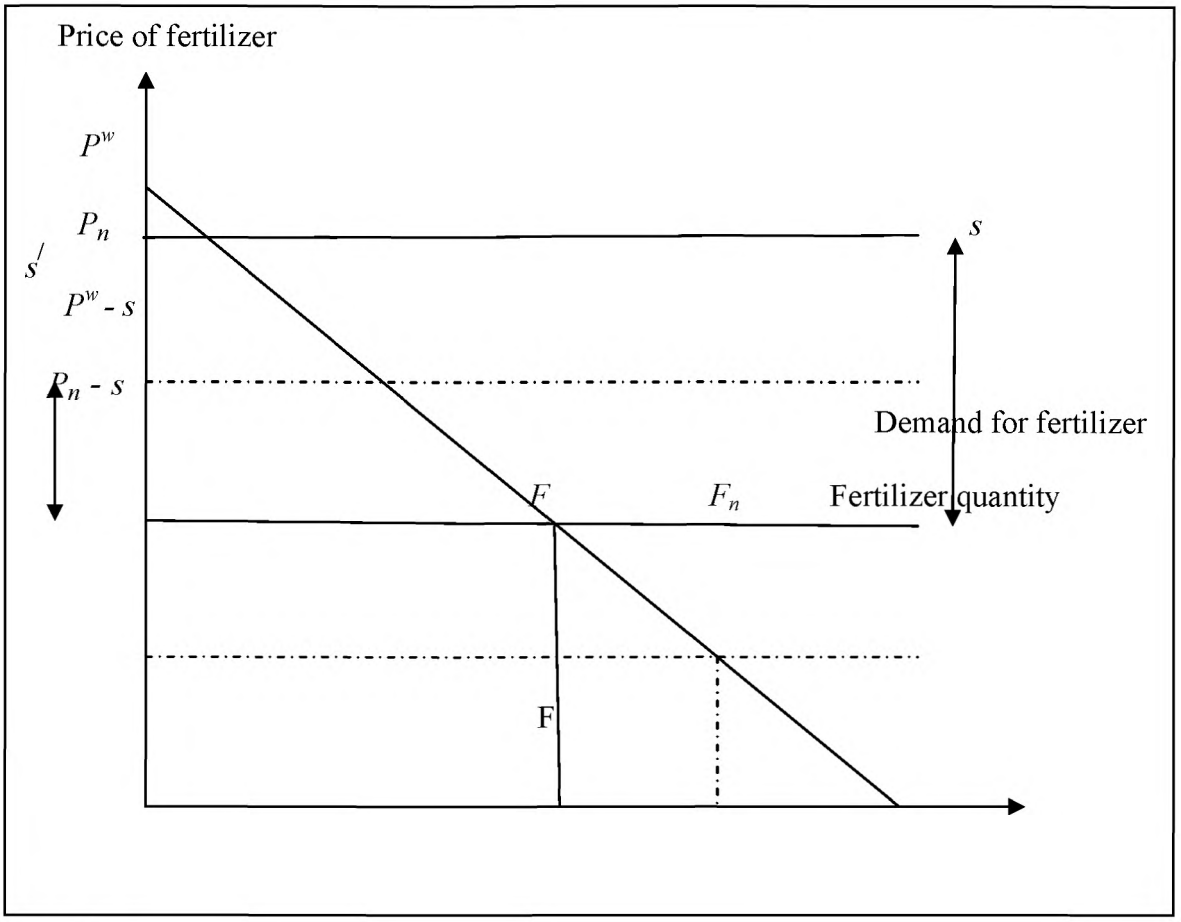
which case the level of subsidy will have to be adjusted depending on the world market price. In this situation, the quantity of fertilizer demanded and imported will be equal to F regardless of the price of fertilizer in the world market. The level of the variable subsidy at a world market price of P_w will be s, and the level of the variable subsidy at a world market price of P_n will be s'. The variable subsidy approach does not allow the local fertilizer market to adapt to changes in the world market and provides a predictable environment for farmers.

When the world market price is P_w, the cost of the subsidy to the government would be $F \cdot s$ regardless of whether the subsidy is variable or fixed. When the world market price falls to P_n with a fixed subsidy of s, the cost of the subsidy would be $F_n \cdot s$. With a fixed price—that is, a variable subsidy—the cost of subsidy would be lower and amount to $F \cdot s'$.

Chronology of the Fertilizer Subsidy Policy

The Government of Sri Lanka established a price subsidy for fertilizer for the first time in 1962, at the onset of Green Revolution. The goal of this initiative was to make fertilizer available to farmers at a lower cost in order to maximize the benefits from HYVs introduced by the Green Revolution. Policy makers expected that low fertilizer prices would increase the adoption of HYVs, enhance land productivity, and reduce the cost of production, resulting in more profitable paddy farming. It was also expected that the increased paddy production would lower the prices of paddy and rice, thereby making rice affordable to the urban poor.

Figure 3: Equilibrium in the Fertilizer Market



Source: Authors.

The fertilizer subsidy policy in Sri Lanka took three distinct forms over the years (Ekanayake 2006; Central Bank of Sri Lanka 2007–2009):

1. Category I: Subsidy provided for all three main fertilizers (1962–89, 1995–96, 2006–09)
2. Category II: No subsidy provided for any type of fertilizer (1990–94)
3. Category III: Subsidy provided only for urea (1997–2005)

At the inception of the subsidy program in 1962, a fixed fertilizer subsidy was introduced for the paddy crop. Different fertilizer types[8] were subsidized at different rates, leading to different retail prices for different fertilizer types at a given point in time during the period 1962–75. This scheme was criticized for allowing leakages of fertilizer to other crop sectors (Ekanayake 2006). In 1975 a uniform subsidy (at a rate of 33 percent) was introduced across all crop sectors, and a number of price revisions[9] were also introduced for

[8] Nitrogen fertilizer in the form of urea and sulphate of ammonia, phosphorus fertilizer in the form of rock phosphate and triple superphosphate, and potassium fertilizer in the form of muriate of potash.

[9] The subsidy rate was increased to 85 percent and 75 percent for urea and other fertilizers, respectively, in 1979. The subsidy rates ranged from 60 percent to 85 percent for urea and 40 percent to 75 percent for NPK mixtures during 1979–83. Although not announced as a variable subsidy policy, fixed fertilizer prices had been maintained during 1983–87 regardless of the world market price fluctuations. The price of fertilizer significantly increased in the world market in 1988, and hence the subsidy rates were reduced to cut the cost of the

all chemical fertilizers until 1988. Subsidy payments for sulphate of ammonia (SA) and rock phosphate (RP) were eliminated in August 1988, which left the price subsidies only for urea, triple superphosphate (TSP), muriate of potash (MOP), and the nitrogen-phosphorus-potassium (NPK) mixture. The fertilizer subsidy was completely eliminated between January 1990 and October 1994. Urea, SA, MOP, and TSP came under the variable subsidy program reintroduced in 1994, leading to fixed retail price levels.[10]

The most recent major change in fertilizer policy for paddy took place with the latest fertilizer subsidy scheme, implemented after the 2005/06 *Maha* season. This policy consists of the following key elements (Wickramasinghe, Samarasinha, and Epasinghe 2009):

1. The subsidy is targeted only to small paddy farmers (owners or tenants) who control less than five acres of land.
2. All three main fertilizers—urea, TSP, and MOP—are subsidized to achieve a fixed price of Rs. 350 (US$3.48 based on the 2005 exchange rate) per 50 kg.
3. State agencies procure, distribute, and issue fertilizers on the basis of recommendations from the Department of Agriculture.

The majority of Sri Lanka's paddy farmers are smallholders, with less than five acres of land under their control. The subsidy is issued based on the extent of paddy land (whether cultivated or not). Tenant farmers can also receive the subsidy if they provide documentary proof of legal ownership of the land (to prove that the land is not an encroached government land). Box 2 elaborates, in chronological order, the key policy interventions in the fertilizer market.

The Current Subsidy Policy in Detail

Responsibility for implementing the fertilizer subsidy has been entrusted to the National Fertilizer Secretariat (NFS) operating under the Ministry of Agriculture and Lands. The activities of the NFS include (1) formulating subsidy policies; (2) scrutinizing subsidy claims; (3) arranging payment; (4) issuing licenses for fertilizer importers, blenders, and manufacturers; and (5) inspecting at the wholesale and retail levels for problems such as adulteration.

Since 2006, subsidies have been provided for paddy and plantation crops (tea, rubber, and coconut) grown by smallholders. Importation and distribution of fertilizer for paddy and plantation crops are carried out by different institutions. Two state-owned companies[11] import fertilizer for the paddy sector (there is no involvement by the private sector). The distribution of subsidized fertilizer for paddy farmers is entirely done by the Agrarian Service Centers[12] (ASCs) of the Agrarian Services Department. Before every cultivation season, the ASCs call for applications from eligible farmers, who are required to furnish information on which crops they cultivate, the amount of land devoted to each crop, and the amount and type of fertilizer required.

Subsidies for fertilizer used for tea, rubber, and coconut production are administered by the Tea Smallholdings Development Authority (TSHDA), the Rubber Development Board (RDB), and the Coconut Cultivation Board (CCB), respectively. Whereas the TSHDA relies on private Sri Lankan companies for the importation and supply of fertilizer, the RDB and CCB import fertilizer directly from international suppliers, which are selected through government procurement procedures. The Treasury issues funds to the NFS, which is subsequently responsible for distributing payments among the two state-owned companies, the TSHDA, the RDB, and the CCB.

The fertilizer requirements of other sectors—such as other field crops, bananas, and spices—are supplied by private companies. Large market shares are held by Chemical Industries (Colombo) PLC and A. Baur & Co. Ltd.

subsidy program (Wickramasinghe, Samarasinha, and Epasinghe 2009).

[10] The price levels for a 50-kg bag were set at Rs. 350 in 1994, Rs. 600 in 1996, Rs. 350 in 1997–2002, Rs. 800 in 2003, Rs. 600 in 2004, Rs. 550 in 2005, and Rs. 350 thereafter.

[11] These are the Ceylon Fertilizer Company and the Colombo Commercial Company.

[12] The ASCs were established mainly to regulate the Agrarian Service Act of 1979. Their main activities consist of publicizing programs for promotion of agrarian service activities; setting up demonstration plots, nurseries, and other amenities; providing storage; granting loans to eligible cultivators; making donations for common causes related to agrarian services; promoting agriculture; and taking legal action against unwanted activities such as bribery and corruption.

Box 2: Timeline of Policy Interventions

1962: A fertilizer subsidy program for paddy was introduced with a fixed subsidy rate.

1971: Importation of fertilizer became a monopoly of the Ceylon Fertilizer Corporation, and importation of fertilizer by the private sector was banned.

1975: The fertilizer subsidy program was expanded to cover all crops.

1977: Private sector companies were allowed to import fertilizer.

1978: A uniform subsidy rate was introduced (50 percent of the cost, insurance, and freight [CIF] price), and responsibility for administering the subsidy program was given to the National Fertilizer Secretariat.

1979: Subsidy rates were revised to 85 percent for urea and 75 percent for other fertilizers.

1988: Subsidy rates were reduced, and the subsidy for SA and RP was eliminated.

1990: The subsidy was completely removed.

1994: The subsidy for urea, SA, MOP, and TSP was reintroduced with a fixed fertilizer price.

1996: The subsidy for SA was eliminated.

1997: The subsidy was limited to urea.

2005: The subsidy was limited to the main fertilizers for paddy (nitrogen, phosphate, and phosphorus) in their straight form but not as mixtures.

2006: Tea, rubber, and coconut smallholder farmers (with less than five acres of land) became eligible for the fertilizer subsidy.

2009: The fertilizer subsidy policy was coupled with a paddy procurement policy, which required famers to supply a fixed portion of paddy to the government at a pre-specified price below the market price.

Sources: Ekanayake (2006), Wickramasinghe, Samarasinha, and Epasinghe (2009), and National Fertilizer Secretariat (various years).

Policy Objectives and Budgetary Outlays

The fertilizer subsection of the National Agricultural Policy formulated by the Ministry of Agricultural Development and Agrarian Services (2008) stipulated following main objectives:

1. promote the production and use of organic and biofertilizers, and gradually reduce the use of chemical fertilizers through integrated plant nutrition;
2. ensure timely availability of chemical fertilizers in sufficient quantities while providing soil- and plant-testing facilities for their rational use through site-specific fertilizer application;
3. promote the manufacturing of fertilizers using locally available raw materials; and
4. take appropriate actions to prevent the misuse of the fertilizer subsidy.

In keeping with a pledge made by President Mahinda Rajapaksha during his election campaign in 2005, the fertilizer subsidy was revised in October 2005. Subsequently the government began to issue all three main chemical fertilizers with variable subsidies and a fixed price of US$3.07 for a 50-kg bag. With this fixed price, the government incurs substantial costs for the subsidy program. Expenditures on the fertilizer subsidy rose from US$33.32 million in 1998 to US$68.12 million in 2005 and to US$233.96 million in 2009 (Central Bank of Sri Lanka 2007; Table 1). About 2.24 percent of total government expenditures were allocated to the fertilizer subsidy in 2009.

Table 1: Expenditures on the Fertilizer Subsidy and Total Government Expenditures, 1998–2009

Year	Expenditures on fertilizer subsidy		Total government expenditures		Expenditures on fertilizer subsidy as a % of total expenditures
	Rs. million	US$ million	Rs. million	US$ million	
1998	2,152	33.32	268,179	4,151.83	0.80
1999	1,390	19.75	279,159	3,965.77	0.50
2000	1,733	22.87	335,823	4,431.72	0.52
2001	3,650	40.84	386,518	4,325.27	0.94
2002	2,448	25.59	402,989	4,212.64	0.61
2003	2,191	22.70	417,671	4,327.26	0.52
2004	3,572	35.30	476,905	4,713.04	0.75
2005	6,846	68.12	584,783	5,818.79	1.17
2006	11,867	114.15	713,646	6,864.47	1.66
2007	11,000	99.44	841,604	7,607.84	1.31
2008	26,450	243.62	996,126	9,174.76	2.66
2009	26,935	233.96	1,201,927	10,440.07	2.24

Source: Central Bank of Sri Lanka (various years).

In 2008, as the world market price of fertilizer rose significantly, the money allocated to the subsidy program was exhausted within five months. The government then had to make available another US$276.93 million (Rs. 30 billion) through a supplementary budget.[13] In 2009, the government announced that tea smallholders were also eligible for the fertilizer subsidy because of the problems they faced as a result of the drop in tea prices on the world market. Under this subsidy program, the tea smallholders can obtain 50 kg of mixed fertilizer at a price of US$8.75 (Central Bank of Sri Lanka 2008, 2009).

Since 2009, to be eligible for the fertilizer subsidy, farmers have been required to sell 500 kg of paddy per hectare to the government at a guaranteed price. This policy has not been financially attractive to farmers because the market price is usually higher than the guaranteed price.

Assessments of the Impacts of the Subsidy Program

Economic issues. A number of ex post investigations have been carried out to assess the economic impacts of the fertilizer subsidy program in Sri Lanka. Chandrasiri and Karunagoda (2008) estimated production relationships between paddy yield and land, agrochemicals, machinery, and fertilizer. They concluded that there are regional differences in the technical efficiency of fertilizer use, with technical efficiency higher in the North Central province than in the North Western province.[14] Wijetunga, Thiruchelvam, and Balamurali (2008) conducted a field study of a major irrigation scheme[15] and attributed the increase in paddy yield to an increase in fertilizer use. A 32 percent increase in fertilizer use (because of changes in the subsidy scheme) resulted in a 17 percent yield

[13] The increase in the NPK price in 2007–08 was 213 percent compared with 41 percent in 2006–07 (FAO 2008).

[14] Based on 2008 paddy production statistics, these two provinces contributed about 23.15 percent and 10.53 percent of total production, respectively (Department of Census and Statistics 2008).

[15] The Minipe scheme was the first major irrigation scheme located in the North Central province.

increase from 2005 to 2008. A study by Ekanayake (2006) revealed that fertilizer demand elasticities with respect to price vary by type of fertilizer (urea, TSP, or MOP), but they are inelastic with respect to their own prices, output price, and policy changes. The author also argued that demand for fertilizer is more elastic in relation to paddy prices than fertilizer prices and hence changes to the fertilizer market could be brought about mainly by changing paddy prices. This finding is similar to observations made by Rajapaksa and Karunagoda (2008), who argue that paddy yield is more responsive to output price than to fertilizer price. Weerahewa (2004) also found that the elasticity of paddy supply with respect to paddy price, though inelastic, is quite a bit higher (0.609) than that of fertilizer price (-0.074).

According to Wickramasinghe, Samarasinha, and Epasinghe (2009), per hectare urea use at the national level increased from 4.36 kg/ha in 1965 to 284 kg/ha in 2005. The same study states that the fertilizer subsidy policy revisions introduced in 2005/06 brought about a number of benefits. Average yields increased in all water regimes by 4 percent and 11 percent in 2006 and 2007, respectively. The fertilizer input cost of paddy came down from about 15 percent to only 6 percent of the average cost of production. Benefits of the fertilizer subsidy were reaped mainly by smallholders, given that 70–95 percent of recipients are small farmers holding less than three acres of paddy land. Farmers' dependence on credit for purchasing fertilizer fell. Furthermore, the same study revealed that farmers who used less than the recommended amount of fertilizer before the new subsidy policy have been able to increase their productivity[16] because they can now afford to apply fertilizer according to the Department of Agriculture's recommendations.

It is also widely accepted that lower fertilizer prices have led more farmers to cultivate paddy in their fallow lands. The increased rice production helped the country cushion the shocks created by escalation of food prices during the crisis years of 2007 and 2008.

Social issues. The general public, including farmers, is of the view that the government is responsible for providing agricultural inputs, particularly fertilizer, at a low cost to farmers (despite that fact that a considerable number of relatively well-off public servants who cultivate paddy on a part-time basis also receive the subsidy). Interviews carried out with farmers reveal that the fertilizer subsidy is the only relief they have in terms of cutting the ever-increasing cost of production. They were unable to reap the benefits of the recent sharp increase in paddy prices because the costs of inputs, labor, and transport also went up. A sudden withdrawal of the subsidy would push paddy farmers into low-income brackets, further worsening the situation. Although the fertilizer subsidy is provided to paddy farmers to help cut their costs of production, some paddy farmers have reportedly bought fertilizer at the subsidized price and resold it to vegetable farmers at a higher price. Various stakeholders believe that about 20 percent of the fertilizer given to paddy farmers under the subsidy program leaks out in this manner.

Political issues. The fertilizer subsidy is a highly politicized policy intervention in Sri Lanka. The most common election promise made by the ruling and opposition parties in their election campaigns is that they will continue the existing subsidy program or modify it to make it more favorable to farmers. The majority of voters are connected with farming either directly or indirectly, so the fertilizer subsidy has the power to make new governments or break existing governments. The political importance of the subsidy is evident from a statement made by the then Minister of Agricultural Development and Agrarian Services at a press briefing on April 1, 2010, just before the general election on April 8, 2010, that the government has shouldered a burden of Rs. 26,065 per acre for the fertilizer subsidy since 2005.

Institutional issues. Anecdotal evidence suggests that the current subsidy policy has several drawbacks: First, some farmers cultivate paddy on government-owned reservations situated next to their own lands. Hence, they may cultivate more land than they legally own, a situation that may lead them to underuse fertilizer (in other words, they may actually use less fertilizer per acre than

[16] The increased yield due to the subsidy is calculated to be 198 kg of rice per acre, and the value of the increased yield is Rs. 6,565 per acre in Polonnaruwa district. A farmer spends Rs. 1,302 per acre for fertilizer.

recommended).[17] Second, informal sales of fertilizer between well-off and worse-off farmers may lead to overuse of fertilizer by well-off farmers and underuse of fertilizer by worse-off farmers. Third, prevailing inefficiencies in the current distribution system have created opportunities for some dishonest government officials to pilfer fertilizer and to engage in petty corruption during distribution.[18] In addition, it is evident that some farmers purchase fertilizer at the subsidized rate and resell it to vegetable farmers at higher prices.

A study by Wijetunga, Thiruchelvam, and Balamurali (2008) revealed that farmers are willing to pay about US$9.23–11.54 (Rs. 1,000–1,250) per 50-kg bag[19] if fertilizer can be made readily available in the local open market, compared with the current subsidized rate of US$3.23 (Rs. 350). One of the main reasons behind farmers' willingness to pay more is the high transaction cost incurred by farmers, who miss about three days of work to obtain the fertilizer and incur transportation costs as well. This study also showed that most farmers are aware of the higher world market price of fertilizer and are concerned about the inefficiencies associated with fertilizer distribution. Ekanayake (2006) revealed that some farmers prefer an output subsidy program over a fertilizer subsidy program despite the inefficiencies prevailing in the current government procurement system for paddy.

As already noted, in 2009 the government made it compulsory for farmers who receive the subsidy to sell 500 kg of paddy/ha back to the government through the ASCs. This policy might create more opportunities for dishonest officials to further abuse their power, leading to more inefficiency (see Kodithuwakku 1997). In some cases corrupt officials have reportedly rejected the harvests delivered by farmers who have not paid bribes, with officials erroneously stating that the paddy did not meet quality standards.

Environmental issues. Environmentalists and agronomists claim that agrochemical use in Sri Lanka is already pushing its upper limit. Mismanaged agrochemical use can have severe consequences and aggravate human health issues, as Sri Lanka has experienced recently. Certain eco-toxicologists, based on the preliminary findings of studies, argue that the application of inorganic fertilizer may cause pollution of waterways by heavy metals such as cadmium, which they believe has resulted in increased occurrence of chronic renal failure (Bandara 2009).

Stakeholder Groups

Potential stakeholder groups with an interest in fertilizer subsidy policy are the following:

- paddy, tea, rubber, and coconut farmers who receive the subsidy;
- farmers who cultivate vegetables and other field crops, who do not receive the subsidy;
- politicians who give varying election pledges on various aspects of the fertilizer subsidy policy, such as the rate of subsidy, quantity, eligibility requirements, and mode of distribution;
- the Agrarian Services Department, which is responsible for the distribution of fertilizer to eligible farmers through its ASCs;
- Sri Lankan–based fertilizer import companies that are interested in capturing a larger share of the fertilizer market;
- donor agencies and international organizations (World Bank, International Monetary Fund, World Trade Organization) that are concerned about resource allocation efficiency and effectiveness;
- pressure groups and watchdogs who are concerned about health hazards due to pollution of waterways by fertilizer;
- the Treasury, which is overburdened by the subsidy program[20] (see Table 1); and
- government and nongovernmental organizations that are concerned about achieving the Millennium Development Goals.

[17] The subsidy program provides the amount recommended by the Department of Agriculture.
[18] Some incidents of corruption have been reported during distribution of fertilizer (Anonymous 2010).
[19] This price is equivalent to one-fifth of the domestic market price.
[20] The government seeks billions of rupees outside the budget to pay for salaries, incentives, and development projects. This effort has placed an additional burden on the Treasury, which has also been asked to earmark Rs. 2.5 billion for fertilizer subsidies for farmers and tea smallholders (Kirinde 2009).

Policy Options

Generally, subsidy schemes in developing countries are criticized for not reaching the intended target group, for being subject to misuse and corruption in the process of distribution, for imposing government budget burdens, and for creating a dependency syndrome (Sidhu and Sidhu 1985; Gulati and Sharma 1995; FAO 2007; Minot and Benson 2009; Morris et al. 2007). Although Sri Lanka is not an exception to these criticisms, the fertilizer subsidy for paddy cultivation has continued for more than four decades. The following are some of the policy alternatives that the government could pursue:

- Continue the current policy framework because it is politically and socially acceptable, though not economically efficient.
- Completely eliminate the subsidy on fertilizer in order to improve the economic efficiency of the market. This option might lead to sociopolitical imbalances.
- Reform the current system to provide some support to intended target groups at a minimum cost using a parastatal such as the Agrarian Services Department. Combinations of the following options could be considered as elements of alternative policy packages:
    - Properly target the most deserving farmers to receive support.
    - Make it optional for those who receive fertilizer at a subsidized price to sell their harvest to the parastatal.
    - Establish a voucher system that restricts farmers' access to a lifeline amount (such as two bags) and requires them to purchase the balance commercially.
    - Replace the fertilizer subsidy program with an output price support program.
    - Provide varying subsidy rates for deserving crops.
    - Introduce a fertilizer voucher scheme to replace the lengthy and inconvenient procedures required in the current program.[21]
    - Gradually reduce the rate of subsidy.
    - Prioritize subsidies according to characteristics such as target group, region, season, and crop.

Assignment

Your assignment is to propose amendments to the prevailing fertilizer subsidy policy, assuming that the Sri Lankan government will have to make appropriate revisions to the current policy in order to more efficiently and effectively achieve several objectives: (1) support the livelihoods of paddy farmers; (2) achieve national self-sufficiency in rice; (3) reduce the burden on the Treasury; (4) curtail transaction costs and inefficiencies associated with distribution; and (5) minimize environmental pollution due to the over application of fertilizer.

Additional Readings

Kodithuwakku, S. S., and P. Rosa. 2002. The entrepreneurial process and economic success in a constrained environment. *Journal of Business Venturing* 17 (5): 431–65.

Minot, N., and T. Benson. 2009. *Fertilizer subsidies in Africa*. IFPRI Issue Brief 60. Washington, DC: International Food Policy Research Institute.

References

Anonymous. 2007. China, India eyeing Sri Lanka's phosphate deposit: Minister. *Lanka Business Online*, June 8. http://www.lankabusinessonline.com/fullstory.php?newsID=1851976907&no_view=1&SEARCH_TERM=17

[21] The implementation of the current program involves a high transaction cost because of transport costs and paperwork. Farmers have to spend about five days to complete the required paperwork.

Anonymous. 2010. Two arrested with stolen fertilizer. *Times Online,* May 14. http://sundaytimes.lk/cms/articleXYZ100000010.php?id=5773

Bandara, J. M. R. S. 2009. Agriculture development towards nutritional security. *Sunday Observer*, October 11.

Central Bank of Sri Lanka. Various years. *Annual report*. Colombo.

Chandrasiri, W. A. C. K., and K. S. Karunagoda. 2008. Technical efficiency of paddy production in the North and North Western Provinces of Sri Lanka. Paper presented at the Second Annual Research Forum of the Sri Lanka Agricultural Economics Association, October 3.

Department of Census and Statistics. Various years. *Statistical abstract*. Colombo.

Ekanayake, H. K. J. 2006. Impact of fertilizer subsidy in paddy cultivation in Sri Lanka. *Staff Studies* (Central Bank of Sri Lanka) 36 (1 and 2): 73–92.

Food and Agriculture Organization of the United Nations. 2007. *Fertilizer marketing*. FAO Marketing Guide No. 07. Rome.

———. 2008. Soaring food prices crisis: High prices and incentives. A note prepared by ES Department. Rome. http://www.fao.org/fileadmin/user_upload/ISFP/Incentives.pdf

Gulati, A., and A. Sharma. 1995. Subsidy syndrome in Indian agriculture. *Economic and Political Weekly* 30 (39): 93–102. http://www.jstor.org/pss/4403271

Kirinde, C. 2009. Govt. seeks billions outside budget ahead of polls. *Sunday Times,* July 12. http://sundaytimes.lk/090712/News/sundaytimesnews_04.html

Kodithuwakku, K. A. S. S. 1997. Entrepreneurial processes in an apparently uniform context: A study of rural farmers in Sri Lanka. Ph.D. thesis, University of Stirling, UK.

Kodithuwakku, S. S., and P. Rosa. 2002. The entrepreneurial process and economic success in a constrained environment. *Journal of Business Venturing* 17 (5): 431–65.

Minot, N., and T. Benson. 2009. *Fertilizer subsidies in Africa*. IFPRI Issue Brief 60. Washington, DC: International Food Policy Research Institute.

Morris, M., V. Kelly, R. Kopicki, and D. Byerlee. 2007. *Fertilizer use in African agriculture: Lessons learned and good practice guidelines*. Washington, DC: World Bank.

National Fertilizer Secretariat. Various years. *Annual reports*. Colombo.

Rajapaksa, R. D. D. P., and K. S. Karunagoda. 2008. Fertilizer demand for paddy cultivation in Sri Lanka: A profit function approach. Paper presented at the Second Annual Research Forum of the Sri Lanka Agricultural Economics Association, October 3.

Sidhu, J. S., and D. S. Sidhu. 1985. Price-support versus fertilizer subsidy: An evaluation. *Economics and Political Weekly* 20 (13): 17–22.

Weerahewa, J. 2004. *Impacts of trade liberalization and market reforms on the paddy/rice sector in Sri Lanka*. Markets, Trade, and Institutions Division Discussion Paper No. 70. Washington, DC: International Food Policy Research Institute. http://www.ifpri.org/divs/mtid/dp/papers/mtidp70.pdf

Wickramasinghe, W., G. Samarasinha, and S. Epasinghe. 2009. Fertilizer policy on paddy farming: Evaluation of subsidy program 2005. Hector Kobbekaduwa Agrarian Research and Training Institute, Colombo. Unpublished report.

Wijetunga, W. M. L. K., S. Thiruchelvam, and N. Balamurali. 2008. Impact of "KETHATA ARUNA" fertilizer subsidy on paddy production in Minipe Scheme. Paper presented at the Second Annual Research Forum of the Sri Lanka Agricultural Economics Association, October 3.