

Sri Lanka
State of the Economy Report 2015

Chapter 11
Policy Reforms for a Productive Agriculture
Sector

by
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11. Policy Reforms for a Productive Agriculture Sector

11.1 Introduction

Sri Lanka's agricultural sector is the sector that employs and sustains a majority of the population, and impinges on critical areas of poverty, food security and related social issues. It is a sector of production that clearly needs significant attention to achieve sustainable development outcomes. Agricultural development issues are time dependent and context dependent. The times and contexts, marked by different development paradigms, have determined the issues and influenced agricultural policy direction in Sri Lanka. The issues before liberalizing reforms in the late 1970s were reflective of the then political and economic environment based on self-sufficiency, centred around inward looking policies. The agriculture policy framework also suffered from the weakness of being sub-sector specific, concentrating on individual products or resources rather than on broader development needs or goals of the sector as a whole.

At the outset of agriculture policy formation, interest focused on the export-oriented plantation agriculture introduced during the colonial era. The major problem in the beginning was finding suitable lands to establish plantations; later on, it was to improve the profitability of plantations. The focus shifted towards food crops, mainly rice, partly as a result of world food shortages during regional/global conflicts of the time, and partly due to the emergence of nationalistic thinking on food self-sufficiency. This resulted in the development of a food crop production sector with heavy support from

the state. Following this evolution, Sri Lanka's agriculture sector today is dualistic in nature, comprising an export-oriented plantation sector and a domestic food crop production sector. The issues faced by the sector overall have grown and become more diverse in nature, compared to those of the plantation dominated era. This is largely because matters pertaining to the plantation sector are more technical and trade-oriented, whereas those relating to the food crop sector are a more complex mix, with technical, social and political dimensions.

Also, agriculture sector issues today are not sub-sector oriented, but are identified as integral parts of broader development objectives such as food security and poverty reduction. They are relatively more related to global economic phenomena such as 'foodflation' and 'regoverned markets' as well as globally shared technical challenges such as climate change, among others. However, this does not imply that the long standing sub-sectoral development issues are no longer valid. Rather, they appear in modified forms that are more consistent with current development paradigms. This transition is given due attention in identifying the issues and the policy reforms that should receive priority consideration in achieving the primary goal of enhanced productivity, and the broad objectives of food security and poverty reduction. Hence, identifying the existing policy framework, along with further changes or improvements that address sectoral issues, is the major focus of this chapter.

11.2 Agricultural Sector in Sri Lanka

Agriculture which consists of domestic and export sub-sectors remains a vital sector in the economy through the provision of income, employment, foreign exchange, food and raw materials. It also stimulates growth in the rest of the economy through its forward and backward linkages with other economic sectors.

11.2.1 Agriculture Contribution to Output and Employment

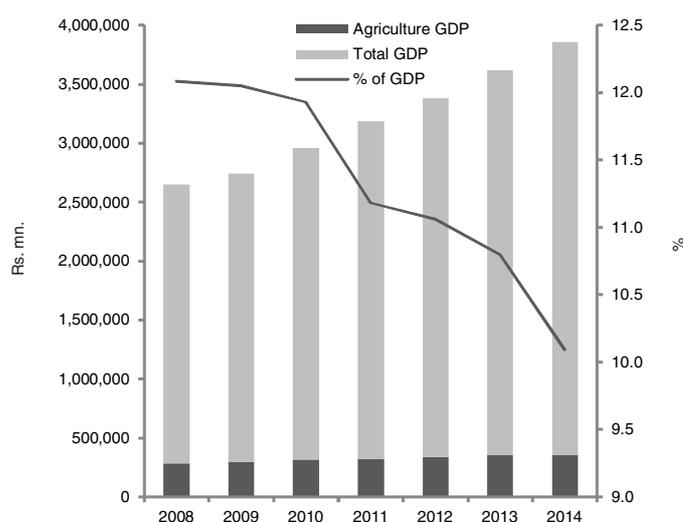
The relative contribution of agriculture to GDP was 10.1 per cent in 2014. The absolute contribution to total GDP has increased over time at a very slow pace. In absolute terms, agriculture's contribution to GDP has increased by 24 per cent from 2008-2014 as opposed to a 48 per cent increase in total GDP during the same period (Figure 11.1). However, its relative contribution to GDP has declined from

12.1 per cent in 2008 to 10.1 per cent in 2014 due to faster growth rates recorded by industry and services sectors.

Since 2008, the agriculture sector grew at a rate of little over 4 per cent on average. By contrast, industrial and services sectors have shown much higher growth rates of 8.6 per cent and 6.1 per cent, respectively, for the same period (Table 11.1). The decline in agriculture's contribution to GDP since the 1970s has continued to fuel a debate on the importance of agriculture to Sri Lanka's economic growth. However, empirical literature indicates that a transition from primary industries such as agriculture to secondary industries and services in the process of development is a global phenomenon experienced across countries.

The agricultural sector's contribution to Sri Lanka's employment is still quite significant. Despite a decline in the employment share with the expansion of the industrial and services sectors in recent years, the agricultural sector absorbs nearly 28.5 per cent

Figure 11.1
Agriculture Contribution to GDP (2008-2014)



Source: Central Bank of Sri Lanka, *Annual Report*, various years.

Agriculture sector issues today are not sub-sector oriented, but are identified as integral parts of broader development objectives such as food security and poverty reduction.

**Table 11.1
Growth Rates of GDP (2008-2014)**

Year	Agriculture	Industry	Services	GDP
2008	7.6	5.9	5.6	6.0
2009	3.2	4.2	3.3	3.5
2010	7.0	8.4	8.0	8.0
2011	1.4	10.3	8.6	8.2
2012	5.2	10.3	4.6	6.3
2013	4.7	9.9	6.4	7.2
2014	0.3	11.4	6.5	7.4
Average	4.2	8.6	6.1	6.7

Source: Central Bank of Sri Lanka, *Annual Report*, various years.

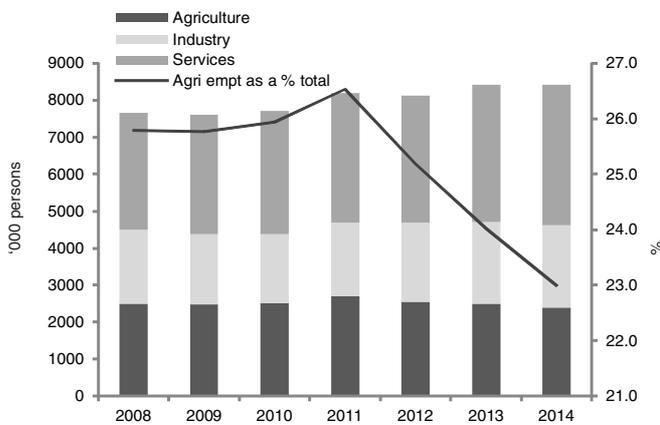
of the total labour force in 2014 (Figure 11.2). The most significant employment generation comes from rice and tea - the two dominant players of the non-plantation and plantation sectors, respectively. While utilizing 43 per cent of the total land area of the country, the sectors remain the mainstay of the rural economy in Sri Lanka.

11.2.2 Agricultural Exports and Food for People

Export earnings from agricultural products have been increasing in value terms, with the share of

agricultural exports in total exports hovering around 25 per cent. All the major agricultural exports, except rubber, have shown positive growth during 2008-2014. A steady growth in exports of minor agricultural products - and resultant increase in its share of total agricultural exports - can be considered as one of the major transformations in the agricultural sector over the same period (Figure 11.3). Exports of minor agricultural products have grown by 300 per cent from 2008-2014, while its share has risen from 2.5 per cent to 6 per cent of total agriculture exports.

**Figure 11.2
Agriculture Contribution to Employment (2008-2014)**



Source: Central Bank of Sri Lanka, *Annual Report*, various years.

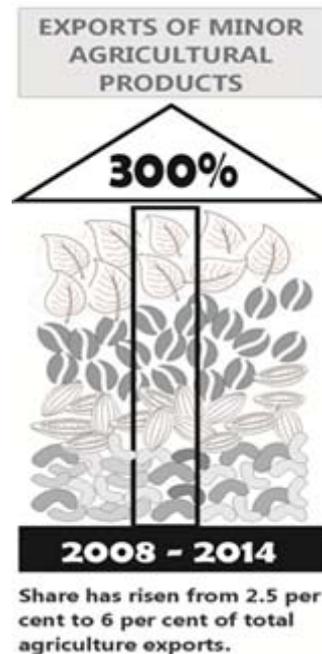
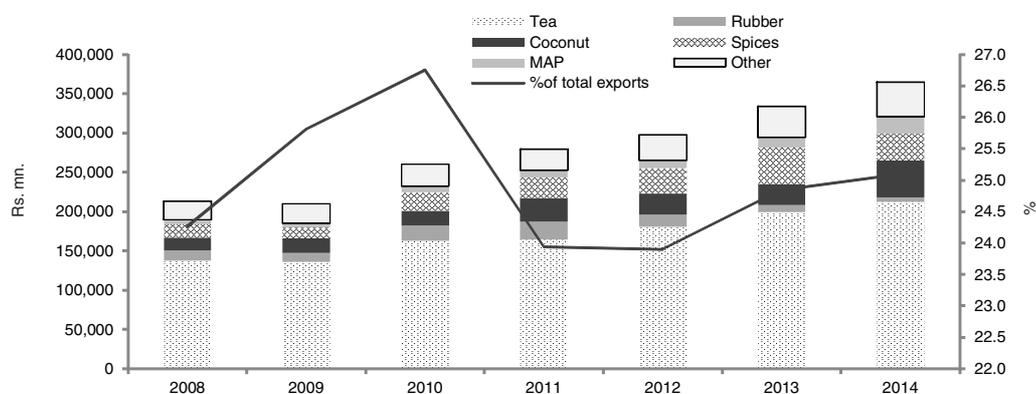


Figure 11.3
Composition of Agricultural Exports in Total Exports (2008-2014)



Source: Central Bank of Sri Lanka, *Annual Report*, various years.

Domestic agriculture still provides approximately 80 per cent of Sri Lanka's food requirement in value terms. Table 11.2 shows the availability of major food commodity groups categorized by domestic production, exports and imports in 2013. It is clear

that more than three fourths (79 per cent) of food commodities are produced domestically while only one-fourth is imported. The amount of food exports from total domestic food production is a mere 4 per cent. Even at individual commodity level, local

Table 11.2
Food Availability in Sri Lanka by Major Food Groups (2013)

Commodity Group	Gross Availability Qty (000Mt)	Production		Imports		Exports	
		Qty (000Mt)	%	Qty (000Mt)	%	Qty (000Mt)	%
Rice	3,094	3,082	99.6	23	0.7	11	0.4
Wheat & products	819	0	0.0	944	115.3	125	15.3
Other cereals	267	216	80.9	52	19.5	1	0.4
Starchy roots	574	435	75.8	154	26.8	15	2.6
Sugar crops	960	960	100.0	0	0.0	0	0.0
Sugar	622	35	5.6	592	95.2	5	0.8
Pulses	232	25	10.8	221	95.3	14	6.0
Tree nuts	37	45	121.6	2	5.4	10	27.0
Oil crops	2,376	2,560	107.7	6	0.3	190	8.0
Vegetable oils	267	69	25.8	206	77.2	8	3.0
Vegetables	1,108	910	82.1	217	19.6	19	1.7
Fruits	869	848	97.6	70	8.1	49	5.6
Spices	97	70	72.2	71	73.2	44	45.4
Meat	138	139	100.7	1	0.7	2	1.4
Animal fats	15	2	13.3	16	106.7	3	20.0
Eggs	110	111	100.9	0	0.0	1	0.9
Milk	868	325	37.4	546	62.9	3	0.3
Fish, seafood	602	435	72.3	192	31.9	25	4.2
Total	17,236	13,565	78.7	4,332	25.1	661	3.8

Source: FAO, FAOSTAT data, Food and Agriculture Organization, Rome.

production of all major food items except for wheat flour, sugar, pulses and milk which are imported in bulk quantities, exceeds 75 per cent of the total availability (Table 11.2).

Table 11.3 indicate that although food imports have been increasing in both volume and value in absolute terms, their share in total imports and total exports have been declining slightly or remained constant. The total value of food imports has increased by 73 per cent from 2008 to 2014, but food imports as a percentage of total imports increased only from 8.1 per cent in 2008 to 8.4 per cent in 2014, and even if we consider the impact of oil price volatility on Sri Lankan import bill, the increase still remains marginal. Similarly, food imports as a percentage of total exports increased from 14 per cent in 2008 to 14.7 per cent in 2014 (Table 11.3). While national level food availability seems less challenging overall due to larger shares of local production in most of the food crops, there are a few aspects to be considered such as the share of food imports trending upward over the last couple of years.

11.3 Agrarian Development Issues and Challenges

While the importance of the agricultural sector in providing food, employment and export income is

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quite clear, the problem at hand at present is how this sector can effectively contribute to sustained growth, while addressing existing constraints and imminent challenges through policy reforms. This section attempts to identify the major agricultural

Table 11.3
Food Import Value and its Share of Total Imports and Total Exports (2008-2014)

	Value (Rs. mn)				% of Share		
	Value of Food Imports	Total Imports	Total Imports w/o Oil	Total Exports	Total Imports	Total Imports w/o Oil	Total Exports
2008	123,203	1,525,705	1,158,865	878,499	8.1	10.6	14.0
2009	113,329	1,172,618	921,612	813,911	9.7	12.3	13.9
2010	149,568	1,519,737	1,175,928	974,387	9.8	12.7	15.3
2011	173,277	2,241,488	1,723,207	1,167,588	7.7	10.1	14.8
2012	166,003	2,441,879	1,817,063	1,245,531	6.8	9.1	13.3
2013	176,423	2,323,128	1,788,080	1,344,054	7.6	9.9	13.1
2014	213,308	2,535,163	1,955,752	1,453,176	8.4	10.9	14.7

Source: Central Bank of Sri Lanka, *Annual Report*, various years.

development issues and challenges that affect income, employment, food security, agrarian poverty and export earnings.

11.3.1 Stagnating Productivity

The macro availability of food has improved slightly since the 2000s. This, however, does not mean that Sri Lanka is completely food secure. Table 11.4 provides an insight into the domestic food production sector and some of its problems. The extents cultivated for major food crops have been constant since 2000 due to the present lack of new arable land to be brought under agriculture. The yield levels of domestically grown food crops, except for rice, have stagnated for more than a decade at unimpressive levels even by developing country standards. Therefore, domestic production will not be able to meet national requirements even under present levels of per capita food consumption. As the population is growing at approximately 1 per cent annually and real per capita income is rising at 7.5 per cent per year,¹ the national requirement will be rising constantly in the years to come. Due to the limited scope for further area expansion, a possible solution to the problem of meeting the growing food requirement from the domestic production front should come through yield improvement.

Imperfections in land policy and regulations are argued to generate some problems relating to agricultural development such as non-viable holdings, environmental degradation and low productivity.² The limited agricultural land market in Sri Lanka, resulting from state regulations and ill-defined property rights, is likely to prevent inter income group land transactions necessary for size adjustments, leading to continuation with small non-

viable holdings. A lack of policy focus on land resource management has resulted in environmental degradation such as soil erosion and downstream sedimentation due to improper land use for agricultural purposes, especially on hilly slopes in the up country.³ Similarly, a lack of secure property rights offers fewer incentives to the operators, making them economically unstable and unsustainable.⁴ This creates disinterest in farming activities leading to the sluggishness in the sector. Also, restrictions on land transfers, especially on ownership and mortgaging,⁵ prevent lands from being transferred to the most efficient uses and users who would be willing to invest in improving land quality. This too leads to land degradation in the long run and low productivity.

The yield levels of domestically grown food crops, except for rice, have stagnated for more than a decade at unimpressive levels even by developing country standards.

¹ Average percentage change in real per capita GDP during 2010-14.

² Samaratunga, P., and D. Marawila (2005), "Major Characteristics and their Determinants of the Rural Land Sector in Sri Lanka and Implications for Policy", Agricultural Policy Series No.7, Institute of Policy Studies of Sri Lanka, Colombo.

³ Samaratunga, P., (2011), "Achieving Economic Efficiency and Equitable Distribution of Land Use through Reforms and/or Market Discipline", in Kelegama, S. and D. Gunewardena, (eds.), *Economic and Social Development under a Market Economy Regime in Sri Lanka: Buddhadasa Hewavitharana Felicitation*, Vijitha Yapa Publications, Colombo.

⁴ Deininger, K. (2003), *Land Policies for Growth and Poverty Reduction*, World Bank and Oxford University Press, London.

⁵ FAO (2012), "FAO Country Programming Framework (2013-2017) for Sri Lanka", Food and Agricultural Organization, Rome.

Table 11.4
Production Performance of Major Food Crops in Sri Lanka

	1993-97	1998-02	2003-07	2008	2009	2010	2011	2012	2013
Rice, paddy									
Extent ('000ha)	791	811	855	1,053	942	1,060	1,091	990	1,188
Production (000mt)	2,473	2,793	3,084	3,875	3,652	4,301	3,895	3,846	4,621
Yield (Kg/ha)	3,125	3,444	3,608	3,680	3,875	4,056	3,570	3,885	3,889
Maize									
Extent ('000ha)	31	27	29	52	51	58	51	59	68
Production (000mt)	31	30	42	136	130	162	138	202	209
Yield (Kg/ha)	1,000	1,111	1,452	2,634	2,552	2,806	2,726	3,419	3,087
Pulses									
Extent ('000ha)	42	26	21	22	20	21	18	20	20
Production (000mt)	36	24	20	21	23	23	21	26	25
Yield (Kg/ha)	856	904	945	968	1,136	1,102	1,163	1,274	1,270
Roots and tubers									
Extent ('000ha)	48	41	36	36	34	33	34	34	35
Production (000mt)	425	343	345	368	387	381	399	406	435
Yield (Kg/ha)	8,868	8,472	9,528	10,352	11,374	11,494	11,586	11,924	12,494
Vegetables									
Extent ('000ha)	87	77	77	78	77	76	78	82	79
Production (000mt)	576	558	625	723	732	733	759	819	910
Yield (Kg/ha)	6,599	7,250	8,098	9,224	9,507	9,656	9,708	9,998	11,461
Fruits									
Extent ('000ha)	100	107	105	103	104	112	116	115	115
Production (000mt)	810	842	755	729	710	786	824	839	848
Yield (Kg/ha)	8,066	7,892	7,202	7,075	6,811	7,032	7,078	7,269	7,376

Source: DCS, Agriculture Data (<http://www.statistics.gov.lk/agriculture/index.htm>), Department of Census and Statistics, Colombo.

11.3.2 Lack of Agricultural Diversification

There has been diversification of Sri Lankan diets away from food grains to high value and high nutritious products over the years (Table 11.5). These changes are mainly driven by urbanization, increased female participation in the labour force, rising average per capita income, and increased advertising and availability of convenience food. Rice has traditionally been the staple food item and the major source of dietary energy for a majority of Sri Lankans. However, recent data suggest that the cereals that include rice are becoming less important

in providing not only calories but also proteins in the diet. On the other hand, the consumption of meat, fish, eggs and vegetables has increased in terms of quantity. Also the importance of animal products as a source of calorie and protein has increased substantially over the years. However, both the domestic and the export agricultural sectors that have been centred on a few crop products have shown little dynamism over the years. Hence, the agricultural sector has to meet the challenge of diversifying its product base to reflect changes occurring in consumption patterns and export demand.

Table 11.5
Changing Composition of Sri Lankan Diets

	Food Consumption	1964-1973	1974-1983	1984-1993	1994-1998	1999-2003	2004-2008	2009-2013
Quantity (kg/capita/year)	Rice	95.3	96.2	94.6	90.4	93.0	101.2	109.4
	Wheat	42.3	45.6	41.7	48.1	46.7	44.2	37.3
	Pulses	6.1	2.9	5.2	6.5	7.7	7.4	8.8
	Starchy roots	29.8	39.7	26.0	18.8	16.9	15.6	18.6
	Potatoes	2.9	2.3	3.3	5.8	6.3	6.1	7.7
	Vegetables	14.7	20.3	33.0	30.3	31.3	36.0	41.1
	Fruits	42.9	76.2	41.7	40.0	38.3	32.9	35.3
	Sugar & sweeteners	22.0	12.6	21.8	25.7	29.8	28.6	27.2
	Fish	15.9	12.1	15.5	19.4	21.6	19.8	24.6
	Meat	4.6	3.7	3.5	5.1	5.9	6.5	6.4
	Milk	20.0	24.0	29.1	31.0	32.8	33.0	36.8
	Eggs	1.5	1.4	2.3	2.3	2.3	2.1	3.1
Calories	Total (kcal/ capita/day)	2,258	2,241	2,219	2,264	2,343	2,380	2,491
	% from cereals	54.8	56.7	55.9	54.7	54.0	55.4	54.7
	% from animal	4.6	4.4	5.3	6.1	6.2	6.1	6.5
Protein supply	Total (g/capita/day)	46.5	45.3	47.5	50.8	53.4	54.5	58.1
	% from cereals	58.8	62.3	57.8	54.9	53.1	53.4	50.7
	% from animals	19.1	18.2	21.4	24.4	25.6	24.5	26.9

Source: FAO, FAOSTAT data (<http://faostat3.fao.org>), Food and Agriculture Organization, Rome.

11.3.3 Agrarian Poverty

The domestic agricultural sector in Sri Lanka is characterized by small scale farming. Many small holders do not earn a sufficient income from farming, and poverty is a predominant phenomenon among them. Agrarian poverty and vulnerability is widespread in rural areas where approximately 87 per cent of the identified poor is living.⁶ Also, almost a half of the poor rural population consists of small-scale farmers.⁷ Low productivity coupled with non-competitiveness both in the domestic and export markets are partly responsible for rural agrarian poverty. Thus, it is critical to enhance agricultural productivity, income diversification and economic growth in rural areas. The agriculture sector has to

make the largest contribution to poverty reduction efforts as a majority of the poor live in rural and plantation sectors where agriculture is the predominant economic activity; a majority of the rural poor and all estate workers rely on agriculture for their livelihood.

Because of this clear linkage between agriculture and poverty incidence, poverty reduction has become the top priority in agricultural development in recent times. Thus, increasing agricultural productivity and increasing rural income through rural agro enterprises are at the top of the agenda for rural poverty alleviation. Consequently, agrarian poverty stands out as a serious issue demanding prompt attention at policy level.

⁶ http://www.statistics.gov.lk/poverty/PovertyIndicators2012_13.pdf.

⁷ <http://www.ifad.org/operations/projects/regions/pi/factsheets/srilanka.pdf>.

Low productivity coupled with non-competitiveness both in the domestic and export markets are partly responsible for rural agrarian poverty.

Even though the causes of agrarian poverty and the means available to overcome it vary across regions, the poor basically suffer from a set of common issues such as low resource endowment, low skills, poor access to technology, inadequate institutional support and low productivity.

Since Sri Lanka's independence, there have been a number of short-term efforts by successive governments to alleviate agrarian poverty through price support and input subsidies.⁸ While these may not necessarily be sufficient for agricultural growth, the purpose of such short-term policies is to create the conditions for efficient allocation of productive resources while correcting economic imbalances. Ironically, these short-term support measures have been in existence in Sri Lanka for almost seven decades. Yet, their contribution to agrarian poverty alleviation has been minimal, and the opportunity

cost of such short run interventions is not known.⁹ Thus, a strong need exists for long run measures to empower farmers through effective coordination of existing policy measures with the new policy reforms.

11.3.4 Food Insecurity

The fight against hunger has been a key objective of development efforts. The depth of hunger for Sri Lanka in 2014 was 216 kcal/capita/day, indicating a medium level of food deficit among undernourished children.¹⁰ However, this is not much improved from the level of 230-240 kcal/capita/day that existed in the early 1990s. The greater the deficit, the greater the susceptibility to health risks related to undernourishment. As of 2012, the share of Sri Lanka's undernourished population is estimated at 24.6 per cent, a decline from 30.6 per cent in 2000. The share of underweight children less than 5 years of age is 26.3 per cent, stunted children is 14.7 per cent and wasted children 21.4 per cent in 2012.¹¹ However, it has been found that, improved health care alone cannot improve all health related outcomes as deep rooted socio-economic factors that include intake of an imbalanced diet, household high alcohol and tobacco consumption, and lack of education substantially contribute to child and maternal malnutrition, especially in the estate sector.¹²

One of the major reasons for an imbalanced diet is the dietary concentration of Sri Lanka's population, especially those who are in rural and estate sectors, on a staple commodity (rice) and wheat flour. Even though there is some recent diversification in the dietary pattern in general, the composition of the food basket on average has been more or less static

⁸ A guaranteed price scheme and a fertilizer subsidy scheme are the major support programmes that have been in existence since 1948 and 1970s, respectively.

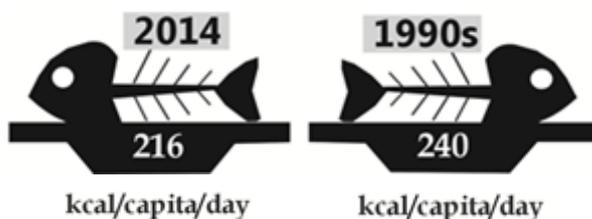
⁹ Samaratunga, P., *et al.*, (2012), "Agricultural Pricing and Public Procurement Policies in South Asia", Briefing Paper No. 10, GDN Agriculture Policy Series, Global Development Network, New Delhi.

¹⁰ Depth of hunger, which is the difference between the minimum and the average dietary energy intake of the undernourished population, indicates by how much food deprived people fall short of minimum food needs. The depth of food deprivation is medium when it is 200 to 300 (Global Hunger Index 2014).

¹¹ FAOSTAT available at <http://faostat3.fao.org/download/D/FS/E>.

¹² Jayawardena, P., (2014), "Can People in Sri Lanka's Estate Sector Break Away from Poor Nutrition: What Causes Malnutrition and How it Can be Tackled", Health Economic Series No. 1, Institute of Policy Studies of Sri Lanka, Colombo.

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over the years. The World Food Summit of 1996 defined food security as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". This definition provides the basis for the four components of food security widely adopted today; availability at national and global level, accessibility at regional or household level, affordability at household level, and household utilization of food in a nutritious way. The availability of sufficient food and the means to acquire enough food at the household level do not ensure proper utilization of food and good health. Hence, food insecurity is a major determinant of nutrition related disorders.

Sri Lanka's food security problem is found to be more severe at the micro (affordability and utilization) level than at the macro (or availability) level.¹³ Nevertheless, there are concerns about national level food security arising from the vulnerability of the country's exports, the escalation of oil prices, shortages in global food production and the escalation of international food prices. The gradual distancing of traditional food production bases from the people in favour of specialized foreign food producers further aggravates the problem. The role of domestic agriculture in addressing these heightened with the culmination of a global food crisis in 2008. However, the solutions must simultaneously address all aspects. In the long run, the vulnerability to hunger can be lowered by raising agricultural productivity for a diverse set of both competitive and sustainable crops, and promoting dietary diversification.

11.3.5 Inefficiency in Water Management

The Sri Lankan agricultural economy has historically been heavily dependent on irrigation, being a rice based country endowed with sophisticated irrigation infrastructure. Both irrigation infrastructure and water stored and delivered are treated as public goods supplied free of charge to the farmers. Being considered as a common property with no ownership, no one takes the responsibility for management and maintenance, except in certain cases where the government has sought the participation of farmers. Apart from the fiscal cost, free provision leads to overuse and wastage of water, giving rise to an unaccounted economic loss. The losses are accruing over time, creating a financially and economically unsustainable system in the long run. Currently, the irrigated agriculture sector of Sri Lanka faces two major problems; inefficiency of irrigation water utilization, and poor management of irrigation systems owing to a rising budgetary burden of providing irrigation water.

Inefficiency in relation to irrigation water use implies that a unit of irrigated land uses more water than the requirement for the crop. Consequently, the extent cultivated with the total volume of water available will be less than the maximum cultivable extent. This result is from: (a) a lack of technical know-how on water management and/or (b) a lack of an incentive to use water sparingly. At zero price of irrigation water, there is no incentive for farmers to limit their water use or to adopt water saving technologies. The global demand for water for agricultural and non-agricultural purposes is increasing steadily, and Sri Lanka is no exception to this general trend.

11.3.6 Climate Change and Agriculture

Agriculture in Sri Lanka has evolved in close harmony with the prevailing climatic conditions of respective agro climatic regions of the island.

¹³ Samaratunga, P., (2011), "Multiple Facets of Food (In) Security in Sri Lanka: An Input to Food Policy", in Mittal, S. and D. Sethi(eds.), *Policy Options to Achieve Food Security in South Asia*, Foundation Books, New Delhi.



However, Sri Lanka's climate has undergone changes to an extent that the right amount of rainfall does not come at the correct time of the growing season. Agricultural productivity is likely to suffer severe losses because of high temperature, severe drought, flood conditions, sea level rise and soil degradation. Thus, the future of agriculture in a changing global climate in the context of an increasing human population has to be a policy priority, and an issue of topical importance to the scientific community.

Increased occurrence of extreme rainfall events due to climate change, droughts and floods could lead to crops losses due to moisture stress and excess water. Besides the water stresses, these conditions obstruct the management of operations such as land preparation, transplanting, weed control, and fertilizer and agro-chemical application that could result in yield losses. Moreover, increased occurrence of rainfall irregularity is likely to cause severe damages to existing irrigation infrastructure, limiting the water availability for irrigated crop production. Crop injuries due to high temperatures are also inevitable, Sri Lanka being a tropical island. The same will lead to rapid drying up of tanks giving rise to scarcity of water for agriculture. Apart from the direct impact of increased variability of rainfall and rise of ambient temperature, indirect effects of increased rainfall intensities worsen land

degradation, especially in hilly areas where plantation crops are grown.

As an island, Sri Lanka is highly vulnerable to sea level rise and consequent sea water intrusion to low lying agricultural lands which could cause salinization of land available for agriculture. Being a small developing country, the most appropriate response to climate change is in general adaptation rather than mitigation. It has been revealed that with adaptation, the vulnerability of agriculture to climate change can largely be reduced.¹⁴ Many agricultural adaptation options have been suggested in the literature and they include a wide range of micro-level options such as crop diversification and altering the timing of operations; market responses such as income diversification and credit schemes; institutional changes, mainly government responses such as removal or preservation of subsidies; and improvement of agricultural markets and technological developments.

11.3.7 Regoverning Markets

Rapid and ongoing changes are occurring in domestic and export procurement systems, with the growing dominance of supermarkets, high quality retail, bulk procurement by domestic manufacturing firms, and increased quality awareness in the global trading system. This phenomenon has been further influenced by urbanization, income increases, increased migration of Sri Lankan citizens, increased female participation in the labour force, etc. In turn, new demand patterns emerge, shifting the focus towards continuous supply of high quality, value added products with improved processing, packaging and labelling. As in other developing countries, the food retail market in Sri Lanka has gradually evolved from fragmented local markets to centralized wholesale markets and eventually to the emergence of supermarkets.

¹⁴ Droogers, P., (2004), "Adaptation to Climate Change to Enhance Food Security and Preserve Environment Quality: Example for Southern Sri Lanka", *Agricultural Water Management*, 66, 15-33.

The most intractable issue arising from the global market is public concern regarding food safety in industrialized countries that has resulted in increased and tightened public standards over the past two decades.¹⁵ Moreover, significant institutional changes and intensified border control on food imports have been serious issues of concern for Sri Lanka. The country lacks sufficient administrative and technical capacities to comply, but the cost of compliance could also weaken its competitive position on agricultural exports. Any failure to comply can result in loss of market for agricultural products. On top of that, international trade agreements such as the WTO's Agreement on Agriculture (AOA), Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) agreements exhibit both facilitative as well as inhibitive effects on the Sri Lankan agriculture sector. Imports of genetically modified (GM) organisms, including food and planting materials, have become a serious issue of concern in the present day due to the health effects on human and plant varieties.

The inferior quality of most Sri Lankan farm gate products has been a serious issue in the present context of high quality consciousness. A large proportion of the produce leaving the farm gate are of a quality far below the expected level at the high end of the supply chain.¹⁶ This is mainly attributed to poor weather conditions, low cost processing technology, poor storage facilities, early harvesting habits and the small-scale nature of production. Poor quality leads to a direct loss of potential exports and foreign exchange earnings. Many producers do not have proper processing facilities and are unaware of the quality parameters. Thus, the impact of modern and restructured markets has had a number of repercussions on small-scale farmers who are unable to keep up with emerging marketing trends.

11.4 Policy Reforms for Raising Agricultural Growth

Dramatically increasing the food supply and export earnings is a daunting challenge on its own, and needs certain reforms in the current policy structure in order to bring about some innovative solutions. Sri Lanka, even after 67 years of independence, does not have a sustainable agricultural policy. There have been some policy papers which have been presented on agriculture at various stages and intervals, but nothing sustainable has been

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¹⁵ Product quality standards such as ISO 9000, ISO 14000 certification and process quality standards such as HACCP have become essential parameters in the food industry.

¹⁶ Samaratunga, P., (2007), "Sri Lanka: Innovative Practice in Integrating Small Farmers into Dynamic Supply Chains: A Case Study of Ma's Tropical Food Company", Regoverning Markets Innovative Practice Series, International Institute for Environment and Development, London.

implemented to date in a coherent manner. The major factors which need focus in any reform effort have special reference to the achievement of three strategic thrusts relevant to the sector - i.e., eradication of poverty, food security and sound ecosystem management. These are explained separately.

11.4.1 Land Policy

The major objectives of the present land policy which dates back to Land Development Ordinance of 1935 are to hold untitled land under government ownership and distribute such lands as small holdings for agricultural production purposes while preventing further subdivision of land holdings. The other major land related policy is the Paddy Lands Act of 1956 which consolidated the rights of the tenant paddy farmers and restricted the use of paddy lands for any other purpose; this was partially and conditionally relaxed under the Agrarian Services Act of 2000. Moreover, land use and land resource management have not been subject to policy attention except for the Soil Conservation Act of 1953 and its recent revision.

Hence, reforming current national land use policy to foster a shift from low value to high value agriculture, addressing the issues of low productivity and efficiency, is a timely requirement. These policy reforms should essentially cover strict enforcement measures of regulations on land use such as limiting agricultural land uses only to suitable land classes, amending regulations on soil conservation to prevent improper land uses, identifying activities leading to degradation of land and initiating conservation practices in susceptible areas, preventing land encroachment especially in environmentally sensitive areas. Rationalizing land ownership for efficient use of land resource by revising the dated regulations on the ownership and removing restrictions on transactions of such lands to increase access to land by efficient farmers have to be considered a top priority. There is a strong need to execute an integrated and consistent approach in

managing the land resource of the country by strengthening the organizational and institutional framework for land management by bringing all the scattered institutions with duplicating responsibilities under one umbrella body.

Even though securing land rights is an important issue, serious thought has to be given to avoid the possible equity implications for marginalized and vulnerable groups. Measures to mitigate the effects of imperfections in credit, input and output markets have to be undertaken simultaneously in order to prevent large farmers getting a competitive advantage over small family farms resulting in a large scale land sell-out by rural poor. These ill effects should not be deterrents, as there would not be great disadvantages in such reforms when considering the positive results, especially the significant enhancement on land productivity and production efficiency.

11.4.2 Irrigation Policy

With new developments, it is obvious that the approach to water management over the past cannot continue into the future with a policy thrust towards high productivity and sustainable water resources. Maintenance of all existing irrigation projects and the new water resource development activities are under the purview of the state institutions. Subsequent governments have identified the need for a comprehensive policy revision in the water sector and are attempting to develop a new set of policies.

The National Water Policy of 2000 aimed at transferring the management of irrigation works to farmer organizations. The introduction of irrigation charges has been proposed many times, and even attempted at a pilot scale in the past without success. A major factor behind this failure was the socio-political setting that strongly believes that water is treated as a free gift of nature, or as a public good in an economic sense. The inherent bureaucratic inefficiency of state institutions that collect and utilize

the irrigation charges was also partly instrumental in the failure of this initiative.¹⁷

Hence, future policy reforms should essentially deal with these two issues in order to ensure efficiency and long run sustainability. A Participatory Irrigation Management (PIM) in the form of farmers working together with government irrigation agencies taking the responsibility of irrigation systems management was adopted in Sri Lanka for this purpose. The main purpose of PIM is to improve the productivity of irrigated agriculture, making the system perform efficiently and reduce government expenditure. Nevertheless, the problem of irrigation service provision cost cannot be solved without some form of a charge. Hence, the long run solution to the problems of irrigation water use efficiency, equity and cost recovery seems to lie with a suitable combination of participatory management and land based irrigation charges.

Nevertheless, there are three major areas that need to be systematically looked into before launching such an attempt. These are administrative determination of water charges, determining the suitable institutional arrangement for implementation, and evaluating the consequences of such an initiative. This type of policy revision could be coupled with the introduction of water saving irrigation technologies for the marginalized people who would possibly be affected by such a major policy revision. These could include for example, the introduction of solar powered drip irrigation, promotion of agro-wells, rain water harvesting to increase water use efficiency and to enhance the income levels of farmers in the water scarce areas. These can also be considered as adaptation strategies to minimize the climate change impacts on the agricultural sector.

11.4.3 Policy on Technology Transformation

Productivity enhancement in agriculture requires the choice and use of appropriate technology - i.e., the technology which is appropriate and adaptable to local conditions with a majority of rural, relatively poor farmers. It also determines to what extent the poor will benefit or lose from integrating into the modern economy. A National Agricultural Research Policy (NARP) was formulated in the early 1980s to foster a public national agricultural system that ensures demand orientation, client orientation and high quality in its research and dissemination. However, the resulting agricultural research system is also essentially government-centred, and not successful in commercializing agriculture and promoting regional specialization and vertical diversification. Technology adopted in paddy farming has undergone significant changes over the years. However, most other agricultural products are grown under traditional farming methods and characterized by low productivity.

Enhancing agricultural research and technology by increasing budgetary and human resources allocation, with a focus on much broader aspects like livelihood improvement, rural development, food security and agro based industries is a necessary condition for policy reforms in technology generation. Technology generation does not simply mean the creation of technology only domestically, by investing on domestic research. The importation of technology also plays a pivotal role in the present context of globalization. As a result, adaptive research emerges as very important in buying or acquiring foreign technology before it can be transferred successfully to different locations in the country.

¹⁷ World Bank (2003), <http://documents.worldbank.org/curated/en/2003/02/2171985/sri-lanka-promoting-agricultural-rural-non-farm-sector-growth-main-report>.

The traditional supply driven process of technology generation has to change into demand driven technology development to cater to transformed markets and niche markets. Promoting research on the utilization of unexploited indigenous genetic potentials, especially fruits, aquatic plants and medicinal herbs; on controlled agriculture (green house and poly-tunnel technology); on water saving crop production techniques (solar power drip irrigation) and non-seasonal crop production; and small and medium scale agricultural machinery should be given emphasis, especially in the long run. However, there can be a problem that only rich farmers can afford such technology, especially in the case of embodied technology such as machinery and hybrid seeds, rather than disembodied technology such as agronomic practices. Consequently, the state has to play a role in ensuring inclusion of all farmers.

Both policy and institutional reforms are needed to bring R&D, technology and extension under one umbrella while strengthening the role of public private partnerships. Agricultural extension is under increasing pressure to become more effective, more responsive to clients and less costly to governments. Despite various attempts at reform for the effective dissemination of agricultural technology, the process of reform has remained incomplete. Technology dissemination process through extension has to be customized by strengthening existing extension approaches with adequate budgetary and human resource investments. Further, the present extension system which focuses on the production aspect has to be restructured towards process and value chain approaches in order to improve competitiveness, to strengthen business decision-making and to introduce diversification into processing and value addition. Establishing a demand driven fee-levying extension system in addition to the conventional system, encouraging public private partnerships in extension delivery, and developing IT technology infrastructure to enable easy and speedy access to information by all stakeholders have to be given careful consideration.

Creating a dynamic data ecosystem that act as a network of interactions - with government organizations, private sector and individuals who are producing and using development information - is a top priority in modern day agriculture. Time and time again, the increasing urgency for more data literacy is heard. Data literacy includes creating more data producers, strengthening their ability to create quality data, and enabling stakeholders to be better data users. This needs taking hard-to-comprehend information, and putting it into a format that people can understand. Drawing data from different organizations and institutions into a common repository, enforcing common definitions and standards, creating visual representations of data, and designing interactive websites and apps are just a few tools that can be used to make information more accessible and useful. With the highest level of resources, and ability to produce valuable tools to strengthen the economy, the private sector is also the least likely to make their data public. However, there may be several private sector companies who are willing to contribute in any such development attempts. Those avenues that create close relationships between public and private sectors have to be explored to strengthen data sharing, especially through frequent public-private policy dialogues.

11.4.4 Marketing Policy

The domestic agricultural sector in Sri Lanka is characterized by small scale farming. Many small holders do not earn a sufficient income from farming, and poverty has been a predominant phenomenon among them. Low productivity coupled with non-competitiveness both in the domestic and export market has partly been responsible for rural poverty. Added to these, the impact of modern and restructured markets has had a number of repercussions on small-scale farmers who are unable to keep up with emerging marketing trends. The state marketing policy has historically been limited to ad hoc procurement of a few products under a guaranteed price scheme. However, recent

developments in agricultural markets indicate that markets are not readily available to absorb the produce at the time of harvesting, and it was left to organized traders to purchase at relatively low prices. This scenario of over-emphasis on the importance of government intervention still continues without much change.

This situation has triggered the need for a new innovative practice working with small holders to improve their ability to face restructured market conditions by delivering knowledge, assisting in accessing capital and advising on food standards and enterprise planning. Even though there are certain innovations elsewhere that fulfill these consumer demands while effectively integrating the farmers in the supply chain (e.g., MAS Food, Cargills), lack of capacity to accommodate a large number of poor farmers has resulted in exclusion and marginalization. Hence, government policy should emphasize more on enhancing the value addition and agro based products among small holder farmers and linking them with dynamic value chains.

Development of marketing and allied infrastructure (trade facilitation) by international trade promotion and branding for primary and value-added products with export potential should be a top priority in agricultural marketing policy. Strengthening trader-farmer contracts (through Dedicated Economic Centres, contract grower systems) are a critical intervention. Private sector investment in agriculture should be encouraged and the linkages between producers and the modern value chain actors should be facilitated. Technical, scientific and financial assistance should be provided to modernize and upgrade facilities to international standards, especially in the area of post-harvest management, good agricultural practices and food safety. Ensuring a predictable and transparent trade policy instead of ad hoc policy changes is required to avoid market uncertainties and investor confidence. Need-based state intervention while maintaining market competition and rural infrastructure development is

suggested. Maintenance of buffer stocks of essential commodities is useful to stabilize prices, consumption and food security.

11.4.5 Climate Change Policy

Recent efforts initiated by the Ministry of Environment and Renewable Energy such as the adoption of a National Climate Change Policy in 2012 and National Climate Change Adaptation Strategy for 2011-16 have helped to fill some gaps in policy on climate change at the national level. However, climate change issues are yet to receive due attention of policy makers at sector level policies. This cannot be considered as a favourable situation for a vulnerable country like Sri Lanka. This significant policy gap on climate change issues in agriculture needs to be addressed through carefully designed policies with the participation of policy makers, researchers and academia from both the government and non-government sectors. Increased irregularity of rainfall over time and increased variance of rainfall and temperature within cultivation seasons have been reported as crucial climatic variables for Sri Lankan agriculture with adverse implications on food security.

In the context of an increasing population and vulnerability to food security, increased climatic variance and thereby, instability of agricultural production, policy priority should be given to areas of agricultural research and food production enhancement. However, it should be noted that some of the climatic issues in the agriculture sector can be readily addressed by irrigation and technology policy reforms. Different adaptation techniques can be used to minimize the vulnerability to climate change, such as improving stability and adaptability of crop varieties through genetic improvement and molecular breeding. Moreover, strategies are needed to strengthen farmers' abilities to manage risks such as by changing the cropping period to take advantages of weather, improved crop management through crop rotation, inter-cropping and integrated pest management.

Growing water scarcity in irrigated areas and worsening uncertainty of rainfall in rain fed agriculture are two major climate change consequences that can be tackled from improved water use management as suggested in irrigation policy reforms. State intervention to enhance both technical and institutional capacities for more efficient water management and conservation is therefore of vital importance. Improved moisture conservation, modern sustainable irrigation techniques such as solar drip irrigation, rainwater harvesting and recycling, efficient use of irrigation water and conservation agriculture are some avenues that need to be given careful consideration in policy reforms. Furthermore, redesigning credit and agricultural insurance instruments to properly transfer risk needs future policy focus.

11.5 Conclusion and Way Forward

Agriculture is one of the key sectors of the Sri Lankan economy with significant contribution to GDP, employment, and income of the people. While the importance of the agricultural sector is well recognized, the problem at present is deciding on policy reforms to effectively contribute to sustained growth, while mitigating existing constraints and future challenges. This chapter attempted to identify the major agricultural development issues and challenges that affect the role of agriculture in providing income, generating employment, promoting food security, alleviating agrarian poverty and improving export earnings.

Since independence, Sri Lanka's agriculture has transformed in many aspects. A focus on field crops other than rice is particularly noteworthy, while reducing the food deficit in many varieties of crop products. The declining percentage of the country's labour force employed in agriculture and agriculture's contribution to GDP over the years cannot be considered as problems due to the universal trend of slow rise in the demand for food as compared with other goods and services as

incomes rise. However, long unsolved problems remain in achieving the major objectives of the sector that are evident in a relatively high incidence of agrarian poverty and food insecurity. Dramatically increasing agricultural productivity to promote food supply and export earnings is a daunting challenge on its own and needs certain reforms in the current policy structure in order to bring about some innovative solutions.

Hence, within Sri Lanka's current liberal economic environment, agriculture policy should be directed towards transforming traditional subsistence agriculture to one which maximizes productivity. The government should also give priority to improving processing, marketing and downstreaming activities to increase value addition to agricultural products, providing more employment opportunities in rural areas, and thereby increasing food security and lowering agrarian poverty. High priority should be placed on achieving a broad based shift from traditional low value to modern high value agriculture, accompanied by sustained improvements in productivity and competitiveness through policy reforms, which will launch the agriculture sector into a significantly higher growth path.

While the reforms in factors of production such as land and labour should be undertaken with a view to enhancing agricultural productivity and efficiency, modernizing the systems of agricultural R&D, technology and extension - focusing on livelihood improvement, rural development, food security, improving agro-based industries, initiating commercial agriculture and preparing the sector to face global challenges - should be done with the participation of the private sector. Resources from agricultural subsidies that are argued to be fiscally unsustainable, economically inefficient and environmentally unsustainable such as fertilizer subsidy should be gradually released for more productive agricultural investments. Participation of farmer organizations and the private sector as partners in agriculture development is recognized

as essential for equity-based development. Enhanced youth involvement in agriculture should be sought through promoting agricultural entrepreneurship training, encouraging scientific farming and promoting agro-enterprises. Improved diversification, especially the restricted agriculture export base, is essential for transforming agriculture into a sustainable industry.

While there have been some isolated policy documents at various stages, Sri Lanka even today does not have a sustainable agricultural policy. A sustainable agricultural policy does not necessarily mean one that does not evolve over time. It can drop obsolete policy strategies and add some modern policy actions, avoiding ad hoc policy changes from time to time.