Role of Agriculture in Improving the Food and Nutrition Security in Sri Lanka

*S. M. P Senanayake**
*S. P. Premaratne**

Abstract

Food and nutrition security (FNS) is among the most basic of human needs and must be central to the post-2016 sustainable development agenda particularly in developing countries. Agriculture, which is the production and supply of food items, is central to ensure FNS. The current paper aims to examine the role of agriculture in improving the food and nutrition security in Sri Lanka. The paper highlights that even though Sri Lanka has made significant progress in providing universal free access to basic social services such as health and education resulting in an improvement of human development, reduction in income poverty and malnutrition has been remarkably slow, with rising inequality between regions as well as between urban and rural areas. The paper further finds that the natural disasters and simple climatic vagaries adversely affect FNS. The agriculture sector itself is not modernized in order to cope with such natural disasters. The major challenge in the agricultural sector is how to increase productivity and level of efficiency of production. The paper makes some policy recommendations for actions to deliver Food and Nutrition Security for all.

Key words: Food security; nutrition security; agricultural productivity; efficiency of production

* *Former Professor in Economics, and a visiting fellow, Faculty of Graduate Studies, University of Colombo, Sri Lanka.*

* *Senior Lecturer in Economics, University of Colombo, Sri Lanka.*

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Introduction

Although Sri Lanka is a lower middle-income country, its achievements in the area of social development are an exception for a developing country. Due to its long standing commitment to social welfare and an expensive social welfare package implemented continuously since political independence in 1948, the country gained substantial achievements in the areas such as universal primary enrolment, gender equity, and low infant and maternal mortality. In addition, housing conditions have substantially improved since 1980s particularly in respect of access to electricity, safe drinking water and sanitation facilities. Even though Sri Lanka has made significant progress in providing universal free access to basic social services such as health and education resulting in an improvement of human development, reduction in income, poverty and malnutrition has been remarkably slow, with rising inequality between regions as well as between urban and rural areas (Kalegama 2006).

Sri Lanka has achieved self- sufficiency in rice, the staple diet of the people, in the recent past. However the country still remains vulnerable to certain natural disasters including floods droughts, cyclones, and landslides, in which floods and droughts are the major natural hazards affecting Sri Lanka. Those natural disasters as well as some frequent and simple climatic vagaries adversely affect food security and nutrition since a large proportion of the population depend on rain-fed agriculture as the main source of income and the agriculture sector itself is not modernized in order to cope with such natural disasters.

The main purpose of the current paper is to examine the role of agriculture in improving food and nutrition security in Sri Lanka. Secondary data gathered from various sources including central bank reports (CBSL), household income and expenditure survey reports (DCS), and food balance sheets (DCS) were employed for this purpose.

Food security

Food security has been discussed in several levels of attainment; namely, global food security, regional food security, national food security, and most importantly household and individual food security. Food security at the national level does not necessarily ensure food security at the household or individual level. "A household is food secure when it has access to the food needed for a healthy

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

life for all its members (adequate in terms of quality, quantity and culturally acceptable), and when it is not at undue risk of losing such access" (ACC/SCN, 1991:P.3). More specifically, food security is an essential part of the broader concept of nutrition security. A household can be said to be nutritionally secure if it is able to ensure a healthy life for all its members at all times. Moreover, there is both a shout-term and long-term aspect of food security. The short-term problem, is also known as transitory food insecurity, may occur in any household as a result of crop failure, seasonal scarcities, temporary illness or unemployment among the productive members of the household or perhaps an emergency need for large cash expenditure. Those reasons may reduce a household's access to food to below the nutritionally adequate level. The long-term problem, which is also known as chronic food insecurity, occurs when a household is steadily unable to obtain the food requirements of its members over a long period of time marked by continuous, temporary blips of good and bad moments.

Food insecurity in a household can be noticed as a combination of two distinct problems: a problem of *acquirement* and a problem of *utilization*. Acquirement refers to the ability of a household and its members to acquire enough food through production, exchange or transfer. A household that has the capacity to *acquire* all the food it needs may not always have the ability to *utilize* that capacity to the fullest. For instance, busy housewives, particularly in medium income level, may not have time to prepare the best nutrition foods. In some cases, the reason would be adequate of basic infrastructure facilities. A household can be said to be food secure only if it is secure in terms of both the acquirement and the utilization of food. Food Security is an essential part of the broader concept of nutrition security. Accordingly, food security consists of four essential components: (i) availability, (ii) access, (iii) utilization, and (iv) stability.

Food security and nutrition security are quite different terms often used interchangeably in the literature. *Food security*, an important input for improved nutrition outcomes, is concerned with physical and economic *access to food* of sufficient quality and quantity in a socially and culturally acceptable manner. *Nutrition security* is an *outcome* of good health, a healthy environment, and good caring practices, in addition to household-level food security. For example, a mother may have reliable access to the components of a healthy diet, but because of poor health or improper care, ignorance, or personal preferences, she may be unable or may choose not to use the food in

Sri Lanka Journal of Agrarian Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

a nutritionally sound manner, thereby becoming nutritionally insecure. A household achieves nutrition security when secure access to food is coupled with a sanitary environment, adequate health services, and knowledgeable care to ensure a healthy life for all household members."A family (or country) may be food secure, yet have many individuals who are nutritionally insecure. Food security, therefore, is often a necessary but not sufficient condition for nutrition security" (World Bank: 2006).

Determinats of Food security

The identification of determinants is rather problematic. As discussed, the classification of food security can be identified within the two set of problems: acquirement and utilization. The basic question is how to improve and to maintain the level of acquirement and the level of utilization. Determinants can be examined as the ability to cope with shocks to acquirement and utilization. Hence, broadly, there are four classifications of determinants:

(1) Determinats of the level of food acquirement
(2) Determinats of the level of food utilization
(3) Determinats of ability to cope with shocks to acquirement
(4) Determinats of ability to cope with shocks to utilization

Figure 1: please refer to appendix 1 at the end

Determinants of the Level of Food Acquirement

The literature discusses different levels of determinants. Following the work of AmartyaSen (1981), the first two determinants of the level of acquirement can be identified as the *endowment set and entitlement mapping*. The endowment set and entitlement mapping together determine a household's ability to acquire food. The endowment set comprises all the resources a household owns or over which it has rights, whether legal, or conventional. The resources include both tangible resources as well as intangible resources. By using these resources, a household can acquire food either *directly* through production, or *indirectly* through exchange and transfer. The richer the endowment set, the better the access to food.

Entitlement mapping refers to the rate at which the resources of the endowment set can be converted into food. The literature

Sri Lanka Journal of Advanced Social Studies - Journal of Arts & Humanities - National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

identifies three main components of entitlement mapping: *a production component, an exchange component, and a transfer component.*

Determinants of the Level of Food Utilization

As noted a household's food security level would depend on both acquirement as well as utilization. The utilization of food encompasses both preparation and storage. Differences in the quality of preparation or storage will yield different levels of food security given the same level of acquirement.

It is strongly believed that the most important determinant of food utilization is women's time constraints since often women prepare food. Middle class women particularly are severely pressed for time. With the engagement of income generating activities, women in poor families face the similar trend. In the Samurdhi beneficiary families, it was found that, counting the time devoted to production-related work, market transactions and domestic chores, wives worked for more than 16 hours a day, compared with their husbands' 8-9 hours (Premaratne & Liyanaarachchi, 2004). Moreover, the difference is not explained entirely by the addition of domestic work, as women seem to spend more time on productive activities also. The extreme demand placed on women's time may not only ruin their health, but it may also have an adverse effect on family welfare and food security.

For these reasons, anything that eases women's time constraints has the potential to improve the food security of households, especially that of young children, quite apart from improving the quality of life of the women themselves. Thus, measures to improve access to electricity and water shorten the process of food preparation. Providing alternative child-care facilities, as well as the care facilities of the old and the sick persons in the household should all be seen as contributing towards household food security.

The other determinant of utilization level concerns the facilities for food storage within the household. Most rural households, in most cases, however, the storage facilities are woefully inadequate, resulting in substantial losses both in the quality and the quantity of food. Improved facilities for food storage would raise the level of a household's food security given any level of acquirement.

Sri Lanka Journal of Advanced Social Studies (Formerly National Journal of Advanced Studies in Humanities and Social Sciences) (NJAS)

Determinants of Ability to Cope with Shocks to Acquirement

Shocks to acquirement can come from several sources, including crop failure, unemployment, higher cost of food, and so on. Some households are better able to cope with these shocks than others. The determinants of coping ability can be classified as follows: determinants that reduce fluctuations in income and determinants that reduce fluctuations in consumption given the fluctuation in income.

The most important determinant within the first category is the **degree of diversification** of a household's livelihood strategy. The degree of diversification differs from one household to another depending on household resource constraints and the constraints and opportunities presented by the external environment. In general, when the degree of diversification is greater, there is a greater ability to cope with temporary shocks to acquirement. Therefore when analyzing poverty and food security at household level, it is essential to understand the degree of diversification of a household's income earning strategy.

The second category, namely, the **consumption-smoothing**, refers to *the ability of a household to maintain the normal level of food consumption in the face of an income shock*. An essential element in this category is the household's asset base. A household with several assets can more effectively maintain its consumption level by disposing of some of these assets. The value and liquidity of assets are important determinants of a household's ability to cope with shocks to acquirement.

Further, the nature of the credit market is an equally important factor. Since poor households do not have access to the formal banking sector, they rely on the micro-credit market, which includes moneylenders, friends, relatives, neighbors and NGOs.

Determinants of the Ability to Cope with Shocks to Utilization

Since women play a crucial role in ensuring the proper utilization of food, shocks such as a wife's sudden illness to the ability of women to play this role are some of the determinants. The ability to cope with these shocks depends on two sets of factors: (1) the availability and the quality of women's health-care facilities, and (2) the existence of a support network that can provide help to women in the performance of domestic responsibilities.

Sri Lanka Journal of Advanced Social Studies
National Council for Advanced Arts & Social Studies (NCAS)

Table 1: Determinants of Food Security

1. Tangible resources	- Land, animals, machinery, water resources, trees, forests, and common property resources,
2. Intangible resources	- Household's labor power and the rights attached to membership in a community
3. Production components	- Technology of food production - Quality of lands
4. Exchange components	- Wage rate
5. Transfer components	- Social security benefits
6. Degree of diversification	- Secondary (other) sources of income
7. Scope for consumption smoothing	- Household asset base - Access to capital - social capital/ networks
8. Women's time constraints	- Reproductive responsibility - Access to basic infrastructure facility (water, electricity etc)
9. Storage facility	- Refrigerator
10. External phenomenon	- External health facilities - health care facility (eg: child, old and, sick-care center)
11. Internal phenomenon	- Women status within the household
12 Household structure	- Number of female members in the household

Source: Author's

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Income Inequalities, Poverty and Under-Nutrition in Sri Lanka

Poverty is a key factor affecting all underlying determinants of under nutrition (Sen. 1981). A person is considered to be in absolute poverty when s/he is unable to adequately satisfy his or her basic needs such as food, health, water, shelter, primary education, and community participation. Poor households are unable to achieve food security, have inadequate resources for care, and are not able to use or contribute to the creation of resources for health on a sustainable basis (Smith & Haddad, 2000).

Insufficient resources available at the country or community level, and the political, social, and economic conditions that govern how these resources are distributed are identified as the *basic* causes of under nutrition in this framework. For instance, the lack of food security at the household level, an underlying cause of under nutrition, is associated with household income poverty. Similarly, a basic cause would be insufficient political commitment to protect the welfare of the poor, which often lead to inequalities in income. Basic causes influence the distribution of food and economic resources as well as the formal institutions providing public sector services such as health and education. It also influences the informal institutions determining the social and cultural norms regarding the rights of women and vulnerable groups in the population.

Malnutrition rates in Sri Lanka are high while malnutrition disparity among regions and provinces is reported, recording highest rates in the Northern and Eastern provinces, in some Southern districts as well as in the estate sector. Low weight babies are now common in Sri Lanka. While access to sanitation is poor in the country, nutritional knowledge is still seen as one of the key underlying causes for high prevalence of under nutrition (WFP, 2007).

Household income status is clearly an important determinant of stunting and underweight in Sri Lanka. Low birth weight, the most important predictor of both these types of under nutrition, is also highly influenced by household income. The impact of household income on nutrition is mediated by the three underlying determinants of under nutrition: food security, caring practices and health and environment. While Sri Lanka has experienced fairly high economic growth in recent years, any gains in improved household income, and thus food security and living conditions, have accrued to better-off households living in urban areas and in the Western province. A 2007 World Bank poverty assessment for Sri Lanka found that economic growth has been slower and income per capita substantially lower in regions outside the Western Province. Inequality has risen sharply as a consequence. The World Bank report attributes the growing rural-urban gap to concentrated economic growth in the Western province. The urban population living there is the same group that experienced the largest reduction in child underweight and stunting rates between 1993 and 2014. This trend has been exacerbated by the unequal income growth rates in the urban sector and in the rural and Estate sectors. The World Bank's growth incidence analysis of rural incomes shows that there has been limited improvement in

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

rural incomes, especially among agriculture-dependent households (World Bank 2007a). The poorest 7 percent of rural and 10 percent of agricultural households experienced a decline in income in real terms between 1995-96 and 2001-02 (World Bank, 2007b).

Food sector of Sri Lanka, Exports imports and production

The total food supply in Sri Lanka originates from two sources as local production and food imports. The local food supplies originate from domestic agriculture and plantation (modern) agriculture. The former, consisting of main traditional sources of food supply and related activities, has evolved within the country itself for centuries while the latter, consisting of tea as a beverage crop and rubber as an industrial raw material, were introduced to the island in the nineteenth and twentieth century's by the British colonial administration. The coconut cultivation, the third component of the modern agricultural sector, had been in the domestic agriculture for centuries in a small scale, mainly as one of the main sources of food supply before being incorporated into the plantation agriculture as large and medium scale cultivation units for export purposes during the British administration while the traditional small coconut gardens remained intact. In addition to that, sugar, cashew, and oil palm have been added to the plantation sector, especially after post independent period even though in fairly small terms. Plantation crops were mainly destined for exports and those export earnings were largely utilized to import the basic food items such as rice and wheat. In doing this the country was able to be self reliant in food to a great extent.

Agriculture of Sri Lanka as a whole, except rubber and tobacco sub sectors, consist of food and beverage items. The domestic (traditional) agriculture plays an important role in food supply for the local market and for export in small quantities. Tea production, as a beverage in the modern sector, mainly targets the global food and beverage market. Even though country has imported food items since long, the performance of the agricultural sector is critically important in deciding the food availability of the country directly or indirectly.

Availability of food items in sufficient quantities in acceptable quality is an important factor in maintaining nutritious levels and better living standards of a country. In a modern market economy the consumer heavily depends on the market for food. Sri Lanka as many countries in the world is an exporter as well as an importer of

Sri Lanka Journal of Advanced Social Studies (National Centre for Advanced Social Studies - Humanities and Social Sciences (NCAS))

food items. In the recent years the country has gained the virtual self- sufficiency in rice, the staple diet of the people, although intermittent imports and exports are visible to adjust the fluctuations of the production due to seasonal factors or natural disasters. The country entirely depends on imported wheat, the major substitute for the staple diet, the rice, especially in urban and estate sectors of the country. In addition to that commodities such as milk products, sugar, lentils, potato, fish products, condiments, and certain types of fruits are imported regularly in large quantities. At the same time country exports food and beverages items such as vegetables, fruits, fish, coconut and tea. Sri Lanka is a net food importer, if tea values are removed.

The income generation in rural sector of Sri Lanka is dominated by the food production consisting of rice in irrigated and marshy lands and other food stuffs in higher lands. In the wet zone, high lands mainly consist of small mixed gardens where coconut, fruits and vegetable are mainly cultivated and on some occasions a few cattle and birds are also kept. Shifting cultivation practices are still visible in some dry parts in addition to mixed crops gardens in those areas.

Over the past sixty years or so, the per capita income of Sri Lanka has increased from US$ 114 in 1950 to US$ 3280 in 2013. Both rising population and growing income have created a gradually rising demand for food items in the island.

The production of rice, the staple diet of the people, has been hovering around the self sufficiency level after the concerted efforts made during the past sixty years or so. Still the occasional surpluses recorded in this sector are not sufficient to accumulate a sufficient buffer stock to meet the frequent food deficits year after year, especially due to changing climatic conditions.

The balanced diet is the norm of the modern day rather than having a sufficient quantity of food to satisfy the hunger. Vegetable and fruits are considered as important components of a balanced diet. The World Health Organization (WHO) maintains that the minimum per capita consumption of vegetable and fruits to meet this requirement is 280 and 112 grams respectively (WHO, 2011). The availability and the per capita consumption of those two items are well below the accepted minimum due to the high wastage rates in the vegetable and fruit sectors in the country. Two main types of vegetables are grown and consumed in Sri Lanka based on agro-

Sri Lanka Journal of Advanced Social Studies, National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

ecological adaptability. European varieties of vegetables such as leeks, carrot, cabbages, and beetroots are cultivated in high elevated areas where temperature is low while more tropical varieties such as Brinjals, pumpkin, bitter gourd, snake gourd, and cucumber etc. are cultivated in low elevated areas where temperature is high. Fruits such as banana, papaya, mango, pineapple, and jackfruit are widely cultivated in mixed gardens in many parts of the country although there are some regional variations. Poultry faming and cattle keeping, inland water and marine fishing are common practices in the food sector of the country even though average per capita production is comparatively low compared to its factor endowment.

Sri Lanka is an exporter as well as an importer of food items. The prices and quantity supplied of the locally produced food items fluctuate according to the season and off season, if other contributory factors for production and distribution are not changed. The prices and the availability of imported food items remain mostly stable. Statistics suggest that now the economy is gradually picking up after thirty years of the civil war and the demand for food is also growing along with the growing income. It is obvious that the food sector has a distinctive role to play in the possible economic transformation of the country.

Now the country is virtually self sufficient in rice after devoting excessive resources and attention to the sector over the past sixty years or so. Still the rice sector is not strong enough to take the full responsibility of feeding the nation. The annual production fluctuates regularly and there is no sufficient surplus to maintain a buffer stock for the local requirement or to export in sufficient quantities other than during the last two years or so. The quality of local rice is still below the international standards and the cost of production is also comparatively high, so that becoming a competitive supplier to the world market is still a question.

Factor endowment of the country suggests that most of the food items other than potato can easily be produced locally over and above the domestic needs. Per capita consumption of certain items such as milk and milk products, and pulses can also be raised, if production is brought to its potential level and market prices reflect the potential prices. This will be helpful to raise the general nutritious level of the people in addition to the raising of income in the producing areas. It will also be helpful to reduce the poverty level in food producing rural areas where poverty is above the national average.

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Policy designing and implementation of food related activities such as cultivation, harvesting, and packaging, transporting, storage, and marketing, research work, extension services are engulfed with chronic and complicated problems in the country. A number of public agencies are working side by side at national and regional levels in the country to promote food sector. Still this sector has failed to meet the aspirations of producers as well as consumers although much emphasis was placed for the interests of producers as well as consumers, especially after the political independence in 1948.

Domestic Supply of Food

There are no reliable data on food requirements (demand) in the country. Traditionally, what is being done to estimate the food requirements is multiplying the average per capita consumption by the mid- year population which is also an estimate (Sandaratne, 2005). This method does not provide satisfactory estimates of food demand and hence requirements because of the fact that the elasticity's of demand are not taken into consideration. This is because the demand elasticity's, particularly income elasticity's of demand have not been calculated in Sri Lanka after the late 1970's. However, an estimate made by the Hector Kobbekaduwa Agrarian Research & Training Institute (HARTI) on the annual total requirement of a few selected food commodities in Sri Lanka is presented in table 2 here, for information. It is worth noting that the data provided in this table too are limited to cereal crops and condiments. Forecasts of the food requirements are also unavailable.

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Table 2: Annual Consumption Requirement of selected Crops – 2014

Crop	Per Capita Consumption 2012/13 (Kg)	Population in 2014 ('000)	Consumption Requirement (Mt)
Rice	107.87	20,771	2,240,576
Maize	0.17	20,771	3,465
Kurakkan Flour	0.26	20,771	5,322
Red Onion	2.40	20,771	49,808
Big Onion	7.29	20,771	151,423
Dried Chillies	0.59	20,771	12,173
Chillie Powder	1.29	20,771	26,717
Soya Bean	0.11	20,771	2,281
Black gram Flour	0.09	20,771	1,882
Green gram	0.45	20,771	9,297
Cowpea	0.27	20,771	5,601

Sources: 1. *DCS, Household Income & Expenditure Survey Department of Census & Statistics (DCS)*
2. *Central Bank - Annual Report Various Issues*
3. *HARTI, Consumption Requirement is calculated by Data Bank of HARTI*

What are available at present are the estimates of available supply. The available total supply and the net food supply are given in the summary of the food balance sheet prepared by the Department of Census and Statistics of the government of Sri Lanka. Accordingly, net availability of food commodities has been more or less stable during the recent past.

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

As mentioned earlier Sri Lanka is not self sufficient in food. In this section the levels of production of food commodities in Sri Lanka have been examined in greater detail.

Table 3: Production of Selected Food Commodities

Year	Paddy (M Tons)	Rice (M Tons)	Sugar (M Tons)	Fish (M Tons)
2000	2,860,000	1,944,800	26,289	296,380
2001	2,609,000	1,774,120	57,165	284,760
2002	2,859,000	1,944,120	38,000	302,890
2003	3,071,000	2,088,280	57,000	284,960
2004	2,609,000	1,774,120	58,000	286,370
2005	3,250,000	2,210,000	54,000	163,230
2006	3,342,000	2,272,560	56,000	251,000
2007	3,131,000	2,129,080	29,000	291,050
2008	3,875,000	2,635,000	39,000	319,120
2009	3,652,000	2,483,360	32,000	339,730
2010	4,301,000	2,924,680	31,000	384,670
2011	3,875,000	2,635,000	35,000	444,830
2012	3,846,000	2,602,519	36,000	486,170
2013	4,621,000	3,126,948	53,000	512,840
2104 (a)	3,381,000	2,287,862	52,000	535,050

(a) *Provisional*

Source: Central Bank - Annual Report & Economic & Social Statistics

As revealed by HIES 2009/2010 the national monthly quantity of rice consumed by a household is 36.2 Kg. in that year. However there are wide variations both sector wise as well as district wise. Going by sector, the estate sector households consume the highest quantity of rice per month which comes to 40.8 Kg. This is followed by the rural sector households which consume 37.4 Kg. of rice per month. Both these figures are higher than the national average quantity. In the urban sector however, the quantity consumed per month is 27.5 Kg. When the district wise variation of the monthly household consumption of rice is concerned there are 13 districts which consume a higher quantity of rice per month when compared with the national average. In 9 districts out of 25,monthly household

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

consumption of rice is less than the national average. Households in Monaragala consume the highest quantity of rice per month which stands at 49.5 Kg. The lowest quantity is reported from Jaffna district households which consume about half (25 Kg.) of what is consumed by Monaragala households. The districts in which the households consume more than 40 Kg of rice per month include Monaragala, Hambantota, Ratnapura, Ampara, Polonnaruwa and Badulla. Households in Jaffna, Colombo and Vavuniya consume less than 30 Kg. of rice per month.

Table 4: Per capita availability of calories, protein and fat from vegetable and animal sources 2005 – 2013

Year	Calories per day			Protein (grams/day)			Fat (grams/day)		
	Total	Vegetable	Animal	Total	Vegetable	Animal	Total	Vegetable	Animal
2005	2430.1	2293.7	136.4	60.1	44.8	15.3	42.1	35.8	6.3
2006	2419.3	2263.3	156.0	60.4	42.9	17.5	43.3	36.2	7.1
2007	2368.6	2211.7	156.9	59.6	41.2	18.4	48.8	41.9	6.9
2008	2539.5	2384.2	155.3	61.3	43.1	18.2	43.8	36.9	6.9
2009	2437.1	2280.1	157.0	61.1	42.9	18.2	46.2	39.2	7.0
2010	2688.4	2517.4	171.0	67.1	47.6	19.5	46.0	38.5	7.5
2011	2573.4	2387.8	185.7	66.0	44.3	21.7	46.4	38.3	8.1
2012	2691.1	2483.1	207.9	69.4	45.5	23.9	51.6	42.5	9.1
2013	2863.4	2643.6	219.8	75.5	50.7	24.9	48.8	39.1	9.7
Annual average	**2556.8**	**2385.0**	**171.8**	**64.5**	**44.8**	**19.7**	**46.3**	**38.7**	**7.6**

Source: DCS, Food Balance Sheet, 2005-2013

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Table 4 shows the per capita availability of calories, protein and fat from vegetable and animal sources as revealed by the food balance sheets of the DCS from 2005 to 2013. Accordingly the average total per capita availability of calories per day during the last nine years works out 2556.8 out of which 2385.0 comes from vegetables and the balance 171.8 from animal sources. Table 4 shows low levels of protein energy and fat intake. It can be seen from the table that there has been no significant increase of per capita total calorie availability per day during the last five years. The same thing can be said with regard to the availability of calories from vegetable sources. However, there has been a slight improvement of the calorie availability from animal sources. Per capita daily availability of calories from animal sources has increased from 136.4 in 2005 to 219.8 in 2013. Per capita availability of total protein (grams/day) also has not shown much improvement. It has just increased from 60.1 grams per capita per day in 2005 to only 61.1 grams in 2009, but goes up to 75.5 by 2013. In fact there has been a slight decrease in the per capita availability of vegetable proteins (grams/ day) from 44.8 in 2005 to 42.9 in 2009. But the per capita daily availability of animal protein has slightly increased from 15.3 grams in 2005 to 18.2 grams in 2009 and reached its highest in 2013 (50.7 grams).

In contrast per capita daily availability of fat has increased during the period from 2005 to 2013. The per capita availability of total fat per day was increased from 42.1 grams in 2005 to 48.84 grams in 2013. The fats from vegetable sources increased from 35.8 grams in 2005 to 39.2 grams in 2013. Likewise fats from animal sources also were increased from 6.3 grams/ day to 9.7 grams / day during the same period

For all households the national level average energy consumption in 2009/10 stood at 2094 kilocalories. The figure for non poor households is 2155 kilocalories while it was only 1472 kilocalories for poor households. The estate sector records the highest average energy consumption of 2377 kilocalories per person per day for all households, whereas it is 2477 for non poor households and 1596 kilocalories for poor households. The respective figures for the urban sector are 1881, 1922 and 1139 kilocalories per person per day. The rural sector stands in the middle of estate and urban sectors. In respect of poor households the highest average energy consumption of 1821 kilocalories per person per day is reported from the Monaragala district and the lowest of 1054 is reported from the Colombo district.

Sri Lanka Journal of Advanced Social Studies (National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Table 5: Global and regional per capita food consumption (kcal per capita per day)

Region	1964-1966	1974-1976	1984-1986	1997-1999	2015	2030
World	2358	2435	2655	2803	2940	3050
Developing countries	2054	2152	2450	2681	2850	2980
Near East and North Africa	2290	2591	2953	3006	3090	3170
Sub-Saharan Africa	2058	2079	2057	2195	2360	2540
Latin America and the Caribbean	2393	2546	2689	2824	2980	3140
East Asia	1957	2105	2559	2921	3060	3190
South Asia	2017	1986	2205	2403	2700	2900
Industrialized countries	2947	3065	3206	3380	3440	3500
Transition countries	3222	3385	3379	2906	3060	3180

Source: WHO

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Government Nutrition Policy and Food Security

The National Nutrition policy enacted by the government in 2010, aims to ensure food and nutrition security for all citizens. Food and nutrition security is a major factor in achieving nutritional wellbeing at individual and household level. Thus, the National Nutrition Policy aims to:

a) Ensure access to adequate, nutritious, safe and quality food at affordable price throughout the year.(Food Based Approaches)

b) Promote consumption of a wide variety of foods ensuring intake of all macro and micronutrients to prevent deficiency disorders and diet related chronic diseases. (Dietary Diversification)

c) Promote and facilitate improvement of quality of commonly consumed food items (eg. food fortification) to ensure micronutrient supplementation for vulnerable groups.(Nutrient Enhancement)

d) Enact and implement of appropriate legislations and other regulatory mechanisms to ensure provision of safe nutrition to all citizens of Sri Lanka. (Food Safety)

The achievement of FNS is not dependent only on agriculture and food policy, but better macroeconomic management and social policies. Since most of the households in the country suffers from both transitory (which is only a temporary phenomenon resulting from natural disasters) and chronic (which is a longer-tem phenomenon and is an outcome of income poverty) food insecurity, two types of policies are necessary for improving the FS. In the short run.safety net should be in place particularly for the poor to prevent them from falling into the trap of transitory food insecurity. In the long run, broad policies that include poverty reduction, increasing the productivity of agricultural crops, and price stabilization (including trade policies) need to be implemented.

Putting in place long-term FS program requires responses and actions by various groups including governments, donors, I/ NGOs, and the community itself. However, for a FS program to be effective there is a need of a policy framework in a coordinated manner. In framing and implementing policies it is essential to take following common issues into consideration:

(a) Identifying and prioritization of poverty reduction strategies
(b) Preparing and targeting of poverty reduction goal
(c) Introducing and maintaining a proper delivery mechanism
(d) Inflation and food price related issues
(e) Developing a proper implementing mechanism
(f) Management and administration capacity development
(g) Budgetary management
(h) Formulating a transparent mechanism with the cooperation of all stakeholders

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Agricultural development: Agricultural productivity

One of the main focuses of FS should be the level of productivity in the agriculture sector. Increased productivity in agriculture particularly that of food production increases the availability as well as access to food. The development of domestic agriculture could help improve the FS of a significant proportion of, particularly, rural households (Sandaratne2014, 2005). Agricultural development contributes to a number of benefits relating to increased rural incomes and employment and poverty reduction; realization of household food security and nutrition needs, providing of employment opportunities, increasing rural income levels (as a result of increased output and prices) and reducing rural deprivation. Increased rural incomes in the agricultural sector can indirectly ease urbanization and its dire effects.

Although agriculture's contribution to the country's total GDP has declined over the years, the role of the agriculture sector remains important to poverty reduction in rural areas because, agriculture remains the main economic activity in rural Sri Lanka. Even though there seems to be a macro level self sufficiency in food there is a lack of food security at the household level. Low agricultural profitability due to high input prices and low output prices is the main cause for rural poverty. Lack of income also reduces the accessibility to food and creates food insecurity.

Some of the major issues in the agricultural Sector in Sri Lanka

1. Low productivity- agricultural sector productivity levels have been relatively low compared to industry and services sectors. Especially, this sector suffers from low productivity of labor. Evidently 32% of the labour employed in agriculture only produces a GDP share less than 13%(2013 data). Therefore, it is important to find ways and means of absorbing excess labour in agriculture to other productive economic sectors and increase nonfarm based activity in rural Sri Lanka.

2. Lack of diversification in production- agricultural diversification takes place when farmers are risk takers. Diversification of agricultural production can reduce the dependency on traditional agricultural exports and add new export income earning products. Diversification will also increase farmer income and while substituting for agricultural imports.

Sri Lanka Journal of Advanced Social Studies (SLJASS)
National Centre for Advanced Studies in Humanities and Social Sciences

3. Land fragmentation and conflict of ownership claims-land fragmentation reduces agricultural productivity and reduces the technology utilization.

4. Apart from a few agricultural crops many other agricultural items are sold in disorganized and ineffective markets.

5. Post-harvest losses of fruits and vegetables due to improper handling and packing have been significant in the Sri Lankan context (Kalegama, 2006).

6. Environment degradation and soil erosion reduces output.

7. Poor adaptation into value chain. Like many other sectors in Sri Lanka, agricultural productions are not fully occupied in the value chain.

Rice production has been the major focus of food production expansion, and at the national level the dividends of these policies are apparent where the average national level calorie intake exceeds the recommended levels. Since the main food in Sri Lanka is rice, food availability depends predominantly on rice production and marketing. Though Sri Lanka has implemented various programs to increase rice production, the country's rice production is insufficient to meet household demand. Geographical disparities in rice production exist among districts, with the main production areas located in the previously conflict-affected districts. Good quality rice production remains one of the key issues. Rice marketing contains significant barriers such as lack of market information, quality products, and limiting access to wider markets. Low productivity and high transport costs are two major constraints to assured food supplies.

However, growth in domestic production of the other major food items is sluggish at best and is declining in some of the sectors. National level protein intakes, for instance, are just adequate for meeting dietary guidelines and could be improved by domestic milk and fish production which seem to be far below their potential. Although the meat production has shown a significant increase since 1990s, the egg production has not shown a remarkable increase during the said period.

Sri Lanka Journal of Advanced Social Studies (SLJASS) Published by National Centre for Advanced Social Sciences (NCAS)

The absence of an explicit long-term strategy for agriculture, consistent with overall and rural development goals, also contributes to the multiplicity and relatively weak performance of various government programs. The changing character and composition of the agricultural sector and the overall economy and the multitude of challenges and opportunities arising from increased globalization and international competition will require new and innovative approaches to achieving sustainable and poverty-reducing agricultural growth and rural development. The critical challenge in formulating an integrated, holistic strategy is the multiplicity of agencies involved in agriculture. There are a large number of central government ministries directly or indirectly involved in the agricultural sector in addition to provincial councils to whom many responsibilities have been devolved. For example, while the agriculture research system is the responsibility of the Central Government, the agricultural extension system falls under the purview of Provincial Councils, an arrangement that severely weakens the linkage between the research and extension systems, making both almost dysfunctional. The coordination among these institutes and agencies is also sluggish.

There should be more constructive private sector-public sector collaboration. The standard policy package aimed in this direction include, mainly the support prices, input subsidies (fertilizer) and irrigation facilities and marketing and extension services. These policies have promoted output growth and technological development, mainly in crop agriculture, particularly that of rice. However, the Sri Lankan agriculture has failed so far to expand employment opportunities at a sufficiently higher rate to make a significant dent on the unemployment problem. The slow rates of adoption of multiple-cropping as well as crop-livestock integration have partly contributed to the current low levels of labor use in agriculture. At the same time, the kind of mechanical technology adopted by more commercial farmers is of the labor-saving category. Even the more radical measures like land reforms did not sufficiently enhance the employment opportunities in agriculture due to various deficiencies encountered in the implementation stage.

Increased employment and increased incomes in both the tea and rubber cultivation could result from re-planting with higher yielding cloves and from improved cultural practices. By raising bush density and using currently underutilized land for livestock and vegetables more employment could be created on tea estates. The potential for exploiting unutilized land may be more limited on rubber

Sri Lanka Journal of Advanced Social Studies (Formerly known as National Centre for Advanced Studies in Humanities and Social Sciences (NCAS))

estates but, intensive intercropping and livestock development offer the greatest potential for increasing rural employment and income on coconut estates.

Increased employment in the domestic food crop sector could result from [e.g. promotion of green revolution technology, introduction of the System of Rice Intensification (SRI)] and diversified paddy cultivation via improved technology, price incentives, input subsidies, credit, marketing, institutions and organizations.

The major challenge in the sector is how to increase agricultural productivity and level of efficiency of production. Increasing agricultural productivity, and level of efficiency of agricultural production lead to increase in both income and food availability of households. Increasing agricultural production could be conceived as an effective strategy for poverty alleviation, and reduction in unemployment. As Sandaratne (2011) has pointed out, agriculture has a significant role to play in Sri Lanka's future growth and is unquestionable. If agriculture is to contribute more handsomely to economic growth, and to reduce poverty levels and improve household food security, steps have to be taken to increase productivity through policy reforms, improved research, infrastructure development, and better extension and marketing facilities. Similarly the problems of marketing of agricultural produce have to be on the basis of economic returns. Concerted efforts therefore need to be made to improving production efficiency, improve level of education of farmers, remove financial constraints and reorganizing agricultural insurance programmes, maintaining remunerative prices for agricultural produce, formulation and support through pro-poor, pro-farmer and pro-women policies in areas such as (i) integrated national policy on farmers and farmer's welfare, and(ii) investment and budgetary allocation for agriculture,, irrigation, and food processing, and capacity building in identified areas such as (i) marketing network, (ii) research and technology, and (iii) financing.

In addition to the issues and challenges listed above, some of the areas that can be improve dare the living conditions of women including (i) developing women friendly community and social infrastructure to facilitate their domestic responsibility, (ii) targeting livelihood improvement for women headed households, and (iii) development of women entrepreneurial skills.

Sri Lanka Journal of Advanced Social Studies (SLJASS)
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Conclusions

Although Sri Lanka has made significant progress in providing access to basic social services such as health and education resulting in an improvement of human development, reduction in income poverty and malnutrition have been remarkably slow, with rising inequality between regions as well as between urban and rural areas.

As far as the domestic supply situation of food is concerned, the staple food crop rice (paddy) has shown an increase in the extent cultivated, average yield and therefore the total production per year. But, the performance of the other cereals and root crops which could be considered as inferior substitutes of the staple food, rice, has been poor and the total production has declined during the period under review, thus necessitating the imports of wheat and wheat flour, lentils and other cereals in greater volumes. As a whole the extent of vegetable cultivations more or less stable with minor variations from year to year due to the changes in the weather and the relative prices of the vegetables concerned. There has been an increase in production and yields in more recent years, particularly from 2003 onwards. However, it can be said that Sri Lanka is achieving a near self- sufficiency in vegetables. Gluts in certain seasons are also unavoidable. Thus, the Sri Lankan government in recent years has been trying to promote the cultivation of high value vegetables with a view to increase the volume of vegetables exported.

The extents and production of fruits during the last two decades have increased but yields have been either stagnating or declining. Sri Lanka does not produce enough fruits to satisfy the growing demand of the consumers thus making it necessary to import either fresh or canned fruits. Main varieties of fresh fruits imported are apples, grapes, oranges and mandarins.

Only a small percentage of the requirements of the milk in the country are produced locally while the balance is imported mainly in the powdered form. To increase the milk production in the country the government in recent years has intensified its extension efforts in the livestock sector, expanded veterinary services, providing improved breeds of cows to the farmers and offering price incentives.

Since 2005 the fish production has increased continuously, but since the demand outweighs supply the country has to import fish mainly in the forms of canned fish and dried and salted fish.

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Social Studies in Humanities and Social Sciences (NCAS)

Although the development prospects for the fisheries sector in Sri Lanka are good thus far, fishery resources are exploited by a small portion of the population. During the last few decades, the traditional fishing industry has been radically transformed by mechanization, the introduction of new technology and the development of export markets. However, the small scale fisheries sector has not expanded to its full capacity. In order for the fishing industry to absorb more labor, it will have to become less self-contained. The available fish supply could be better exploited by expanding to the larger 200 mile off shore radius. The capital intensive, sophisticated technology and larger ships are required for expanding the said radius. In contrast, the inland fisheries and aquaculture, where breeding and harvesting could be scientifically managed, provide a supplementary source of employment in the fisheries sector. Concurrently, consumer preferences for inland water fish need to be cultivated.

Sri Lanka is not self–sufficient in meat products and therefore, it has become necessary to import meat from other countries to meet the demand.

Sri Lankans are not only energy deficient but also consume relatively undiversified diets. Up to one-third of monthly per capita spending on food is allocated to rice, wheat, and other cereals. Inadequate dietary intake, one of the two immediate causes of under nutrition, implies food energy deficiency as well as a lack of dietary diversity. A diet that is composed largely of cereals and inadequate quantities of protein and mineral-rich foods can exacerbate under nutrition.

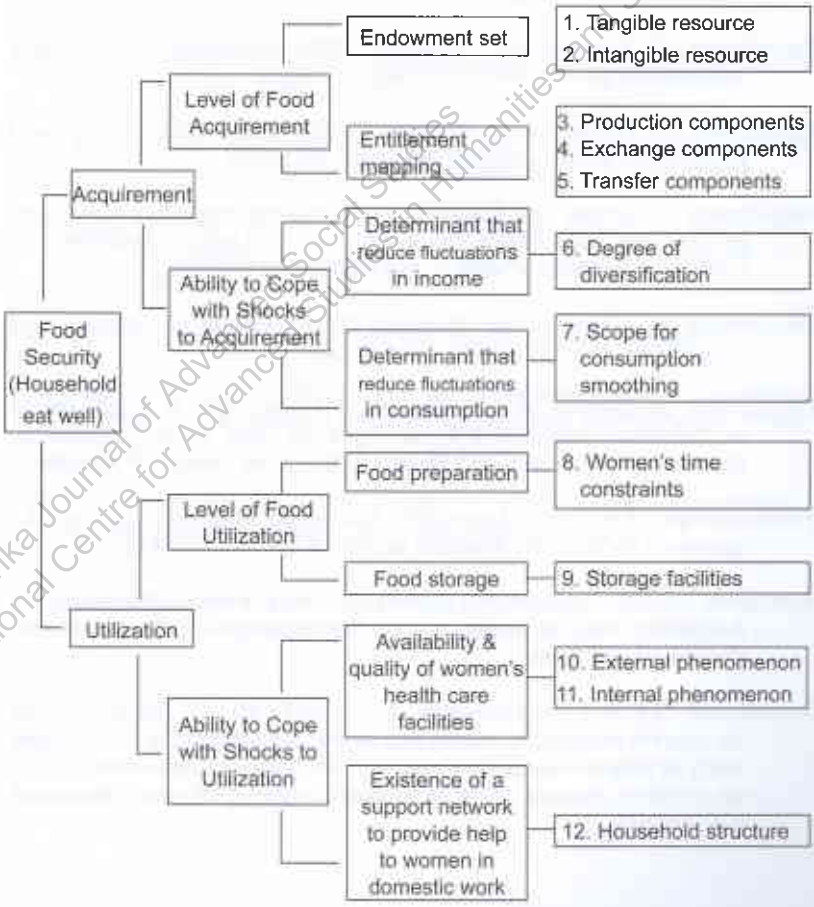
However, dietary diversity varies considerably across sectors and income groups. Rural and Estate populations spend a far lower proportion of their food budget on meat, fish and dairy products than the urban populations. Likewise, the poorest 20 percent of households spend significantly less on meat, fish and dairy than richer households. It can be said that a large proportion of the Sri Lankan adult population is energy deficient and consumes a relatively undiversified diet. Food energy availability is also critically low and dietary diversity is inadequate among the most deprived groups in the population—the poor and the rural and estate populations. These groups have the highest prevalence of underweight and stunting, which have improved a little in recent years. This suggests that food insecurity may have an important role in causing under nutrition among these marginalized groups.

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

One of the key issues in FS would be level of productivity in the agriculture sector. The major challenge in the sector is how to increase agricultural productivity and level of efficiency of production. Price instability with respect to consumer and producer items is another area to be considered in the FNS analysis.

Agriculture trade is one of the key areas in FNS. Subsidies, tariff, and trade barriers distort FS. Some of the key areas concerned include improving regional trade, reduction of trade barriers in agricultural trade, and linkage between regional (SAARC) and national programs in FNS. Government may even give an essential food basket to everyone free of charge while collecting necessary revenues from taxing luxury items.

Appendix 1: Determinants of Food Security



Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

References

ACC/SCN.(1991). *'Brief on policies to alleviate under consumption and malnutrition in deprived areas'*. Mimeo (12 February).United Nations Administrative Committee on Coordination/ Subcommittee on Nutrition. WHO. Geneva.

Central Bank of Sri Lanka.(2005).*The consumer finances and socio economic survey report 2003/04.* CBSL. Colombo. Sri Lanka:

Central Bank of Sri Lanka.(2012). *Annual report 2011.* Colombo. Sri Lanka.

Central Bank of Sri Lanka, Various Publications. Colombo. Sri Lanka.

Department of Census and Statistics.(2010). *Food balance sheets 2005-2009.* Colombo. Sri Lanka.

Department of Census and Statistics.(2006).*Household income and expenditure survey 2005.* Colombo. Sri Lanka.

Department of Census and Statistics.(2008). *Household income and expenditure survey 2006/07.* Colombo. Sri Lanka.

Department of Census and Statistics.(2008).*Poverty indicators* household income and expenditure survey-2006/07.Sri Lanka: Department of Census and Statistics Ministry of Finance and Planning.

Department of Census and Statistics.(2012).*Household income and expenditure survey 2009/10.* Final Report . DCS.

Department of Census and Statistics.(2011).Revision of base period of Colombo Consumer's Price Index to 2006 / 2007. Colombo: Department of Census and Statistics, Sri Lanka. Various Publications

Frankenberger, T.R. (1996).Measuring household livelihood security: An approach for reducing Absolute poverty. *Food Forum.34* (2) 1-5.

Kalegama, S.(2006).Food security issues in Sri Lanka, in *Hector Kobbekaduwa Felicitation Volume*, edited by S.G.Samarasinghe. Colombo: Hector Kobbekaduwa Trust.

Premaratne, S.P.,and Liyanaarchchi. T.S. (2004, 20 -23 March).Gender variation in household income and saving behavior of the poor: A case study of poor household in Sri Lanka, *9th National Convention on women's Studies, 2004.*Sri Lanka: Centre for Women's Research (CENWOR).

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)

Sandaratne, N. (2005).Domestic agriculture and food security in Indraratne.A.D.V.de.S.& Ranasinghe, A (Eds.). *Public-Private Sector Partnership in Economic Development: A case for Sri Lanka*. Sri Lanka Economic Association.

Sandaratne, N. (2011). Future role for agriculture in Sri Lanka's economic development in W. Wimalaratana (Eds.) *Agriculture and Rural Development in Sri Lanka, A Felicitation Volume in Honour of Dr. S.M.P.Senanayake*. Department of Economics, University of Colombo.

Sandaratne, N.,and de Alwis, S. (2014). National & household food security in Sri Lanka, Study Series 8.: *Center for Poverty Studies (CEPA)*. Colombo.

Sen, A. K. (1981). Poverty and famines: An essay on entitlement and deprivation. Oxford: Clarendon Press.

Smith L.C.,and Haddad.L.T. (2000).Explaining child malnutrition in developing countries. IFPRI: Washington D.C.

World Bank.(2006). Repositioning nutrition as central to development: A strategy for large-scale action. Washington DC: The World Bank.

World Bank.(2007a). Malnutrition in Sri Lanka: Scale, scope, causes, and potential response to human development unit South Asia Region. The World Bank

World Bank.(2007b). Poverty assessment report. The World Bank.

World Food Programme (WFP).(2007). *Sri Lanka food security assessment* (Based on the Integrated Food Security and Humanitarian Phase Classification Approach).WFP Final Report.

World Health Organization (WHO).(2011). World Health Organization. accessed on 10th January 2011, http://www.who.int/

Sri Lanka Journal of Advanced Social Studies
National Centre for Advanced Studies in Humanities and Social Sciences (NCAS)