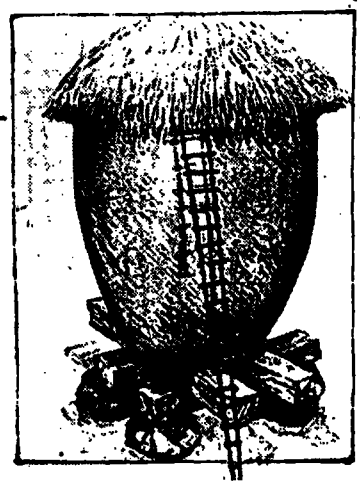
SPECIAL FEATURE

Food Security



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Food is a basic need of all living organisms including humans. Food may be defined as any substance which, when taken into the body, enables an organism to grow and maintain health. Food performs the following three functions;

i. Supply material for the production of energy,
ii. Supply material for building up of new tissue and for repair of existing tissue and
iii. Supply substances which enable and even stimulate the body to produce energy and to grow (Wikramanayake 1997).

Therefore, food is essential for both good physical and mental development. Inadequate intake of food can lead to poor physical and mental growth, malnutrition and even death. Hence, an intake of required level of food for good nutrition and health is a human right.

Ensuring food security has been a problem throughout human history. The availability of food and its access to various social groups have varied over the centuries. The hunter-gatherers relied on what they found in the forest–both animal and plant origin. They accumulated knowledge on foods that were not toxic, their seasonality and availability. Gradually they also accumulated knowledge of the methods of food storage for off-season consumption.

In an agriculture-based society, food security mainly depends on what the people produced. Various farming systems were adopted in order to cultivate different food plant varieties in different agro-climatic zones. Forests foods and animal flesh supplemented the diet. People used traditional methods of food preservation and storage systems in order to make available food for off-season.

Food security was threatened in those societies by various natural causes such as natural climates, drought, floods, crop failures due to pest and diseases and unstable political situations like civil wars.

Incidence of the first drought in Sri Lankan history is recorded in the Mahawamsa as having occurred during 161-137 BC. That drought was called *Bulukesaya* since even fruits of bulu plants were used for food during that period (Siriweera, 1993).

According to the *Saddharmalankara* and *Sammoha vinodani* during the reign of Wattagamini a severe drought prevailed in Sri Lanka called *Baminitiya saya*. Some 24000 Buddhist monks died due to drought and most of the monks left the country. It is recorded that some people even ate human flesh to survive. The Mahawamsa reports that the during the period of *Kuncha naga* there prevailed a drought called *Eknalisaya*.

Crop failures also lead to food insecurity situations. For instance in 1840s potato blight ravaged potato cultivation in Ireland. Famine conditions continued for five years and the disease affected potato cultivation. Around two million people died and as many migrated to North America. A recent example of crop failure is corn leaf blight in the USA in 1961. Americans had lost fifteen per cent of their most important crop and the loss was more than a billion bushels. (Flower et al., 1990).

Recent trends and UN World Food Conference

Widespread fear was expressed in the early 70s that the world had entered a new era in which the growth of production of food would not be adequate to cope with the growth in demand at constant prices, which proved to be unfounded. Per capita food supplies for human consumption in the world has marginally increased by 110 kcal/day compared with that of early 60s, but it has not improved significantly in Sub-Saharan Africa and in South Asia. Population that received less than 2100 cal/day has increased from 1605 millions to 1747 millions during the decade. 917 million people were undernourished. Total percentage of undernourished was 35%, and that in South Asia was 41%.

During the 1972/74 world food crisis, the world seemed to be losing its capacity to feed its rapidly growing population, and controlling year to year variations in food supplies. The term 'food security' was first coined at the UN World Food Conference held in Rome in November 1974 to stress the need for ensuring that countries experiencing difficulties in producing an adequate volume of food should have access to surpluses available elsewhere in the world.

In the years following the World Food Conference, much emphasis was placed on measures designed to ensure the physical availability of food supplies, particularly in the event of widespread crop failure. The FAO, under its Food Security Assistance Scheme, adopted in early 1976, provided technical, financial and food assistance to develop and implement appropriate national food stock policies, covering also processing, storage and transport facilities. In pursuance of this initial concept which focussed on the short-term, immediate problem of strengthening stock policies and food supply operations (and less on the long-term fundamental issues of production and nutrition) the FAO supported food security activities in Laos associated with the Ministry of Commerce.

However, experience showed that the concept of stock holding and supply stabilization was too narrow a basis

Theoretically, two types of food insecurity–chronic and transitory–can be distinguished. Chronic food insecurity indicates persistent inadequate diet caused by continued inability to acquire food. Transitory food insecurity is a temporary decline in household access to needed food due to instability of food production and prices or household income.

upon which national food security could be built. Although the fundamental importance of increasing crop production, in particular food crop production, was more and more emphasized, it was also recognized that, while a satisfactory rate of growth of production is a necessary condition for achieving food security, it will not, by itself, suffice to ensure that food is available in sufficient quantities to those who need it. *There was growing evidence that many emergencies had been caused. not exclusively or even primarily by a catastrophic fall in food production, but rather by a sudden drop in the purchasing power of specific social groups.* It was recognized that degrees of food security many vary widely between different areas of a single country, and that temporary or chronic malnutrition may exist on a considerable scale even if total food supplies at national level appear satisfactory.

Nutritionists all over the world emphasise that ensuring the food security at household level in of utmost importance since low income groups particularly in the developing world are suffering from malnutrition and hunger due to poor access to resources.

Conceptual framework for food security

The term food security signifies that all people at all times should have both physical and economic access to the basic food they need to lead an active and healthy life. *Theoretically, two types of food insecurity–chronic and transitory–can be distinguished. Chronic food insecurity indicates persistent inadequate diet caused by continued inability to acquire food. Transitory food insecurity is a temporary decline in household access to needed food due to instability of food production and prices or household income.* This situation is commonly seen among rural population during off-seasons.

In reality, however, chronic and transitory food insecurity is closely intertwined. Typically, the poorest people, who are chronically food insecure, are hit hardest by transitory food insecurity problems.

The generally available indicator for monitoring developments in world food security is per capita food consumption, measured at the national level by the average dietary energy supply (DES) in calories on the basis of national food balance sheets (FBS) and population data.

Daily energy allowance for moderate activity which is considered as national average energy requirement for different developing countries is in the range of 2000 to 2310 calories per person per day. For Sri Lanka, it is estimated at 2200 calories per day, while those who receive below 1800 calories (energy allowance for light activity) are considered nutritionally "poor". As shown in tables 1 and 3, per capita availability of energy in the world and Sri Lanka is above the required level. In Sri Lanka the situation has not improved significantly in the past fifteen years. Availability of protein, has gradually improved, particularly animal protein has increased from 7.49 g in 1977 to 16.7 g in 1993.

In order to measure food security at household level various methods are used and dietary intake surveys are most common. In the latter method, either intake of food over a period of time is measured or 24 hours recall method of food consumption for individual members of household is administered. Anthropometric surveys are used to measure nutritional status of individuals.

The following three conditions should be fulfilled to have real food security.

1. Ensure the availability of adequate food supplies,
2. Maintain the stability of food flow and
3. Ensure the access (physical and economic) to available food supplies.

Availability

Food availability is determined by domestic food production, imports and stock holding. Various strategies have been employed by governments to ensure food availability. In many cases, high priority is given in development programme to increase the domestic food production and to allocate resources to this sector. Adequate facilities are given to food producers to encourage them to achieve greater success. Credits, subsidies, marketing facilities and stabilization of prices for agricultural commodities are normally given to farmers in many countries.

Research and development have played an important role in increasing crop production. Introduction of high

Table 1

Per Capita Food Supplies for Direct Human Consumption, Historical and Projected

	1961-63	*1969-71*	*1979-81*	*1990-92*	*2010*
	(Calories / day)				
Developing Countries	1960	2130	2320	2520	2770
Sub-Saharan Africa	2100	2140	2080	2040	2280
Near East and North Africa	2220	2380	2840	2960	3010
East Asia	1750	2050	2360	2670	3030
South Asia	2030	2060	2070	2290	2520
Latin America and the Caribbean	2360	2510	2720	2740	3090
Developed countries	3020	3190	3280	3350	3390
Former CPEs	3130	3330	3400	3230	3380
Others	2980	3120	3220	3410	3400
World	2300	2440	2580	2720	2900

(Food and Agriculture Organization, 1996).

Table 2

Population living in developing countries with given per caput food supplies, 1961 - 1963 to 1990 - 1992

	Per caput food supplies (Calories/day)				Population (Million)			
	1961-63	1969-71	1979-81	1990-92	1961-63	1969-71	1979-81	1990-92
Developing Countries								
Under 2 100	1835	2000	2025	1910	1605	1747	1024	411
2100 - 2300	2200	2180	2180	2185	275	370	405	460
2300 - 2500	2380	2415	2355	2335	149	274	1255	1077
2500 - 2700	2565	2580	2670	2650	53	76	214	338
2700 - 3000	2820	2835	2800	2730	32	121	124	1486
Over 3000	3080	3275	3170	3255	21	24	243	335
Total	1965	2135	2330	2520	2139	2612	3265	4107
Developed Countries	3025	3180	3270	3330	989	1075	1169	1260
World	2300	2440	2575	2710	3128	3687	4434	5368

(Food and Agriculture Organization, 1996).

Table 3

Availability of Energy and Protein in Sri Lanka (1977-1993)

Year	*Calories per day*	*Protein (G/day)*	*Fats (G/day)*
1977	2343.1	49.2	4.1
1978	2325.4	51.1	5.1
1979	2316.6	48.6	5.2
1980	2169.4	46.6	5.5
1981	2200.1	46.5	5.3
1982	2188.7	47.9	5.3
1983	2361.4	53.1	6.0
1984	2385.1	55.3	5.9
1985	2517.5	55.0	6.3
1986	2376.8	52.1	5.5
1987	2267.4	51.4	6.8
1988	2326.1	52.6	5.7
1989	2248.4	52.2	6.8
1990	2292.0	54.3	6.8
1991	2338.9	56.6	6.6
1992	2282.8	55.6	6.6
1993	2305.2	58.0	6.7

(Department of Census and Statistics).

yielding improved varieties and application of modern technology in cultivation and storage help to reach higher levels. Credit schemes, fertilizer subsidy and guaranteed price for rice were other encouraging steps taken in this regard.

In the case of Sri Lanka, successive governments in pre-and post-independence periods have attempted to increase the food production. Self-sufficiency in rice, the staple food of Sri Lankans, has been the motto of all post-independence governments. At present, Sri Lanka is able to produce about 90% of its rice requirement.

Priority in resource allocation has been given in Sri Lanka to rice cultivation. *Promotion of rice cultivation has a negative impact on other minor cereals, roots and tubers and other starchy crops, which have played a vital role in Sri Lankan food systems, particularly among rural poor.*

Therefore, it is very important to investigate whether we have really improved the availability of nutrients, while promoting rice production. From the nutritional point of view, it is important to have sufficiency in nutrients, (eg. sufficiency in carbohydrates, protein etc). rather than sufficiency in rice or other food items. Considering the availability of fruits and vegetables throughout the year, the Ministry of Agriculture, Lands and Forestry has identified 21 vegetables and 12 varieties of fruits, the cultivation in of which should be undertaken urgently.

Increaseing the production of food varieties of animal origin is also extremly essential, since they are good sources of protein, calcium, iron and other minerals and vitamins. According to FBS, foods of animal origin countribute 5.8%, 25.5% and 12.1% of calories, protein and fat availability in Sri Lanka respectively.

Prevention of post-harvest losses is also important since it saves a significant percentage of food domestically produced. This situation is worse in the developing countries, because post-harvest handling, storage and processing of agricultural products have been relatively neglected areas. It is estimated that around 20-45 per cent of the food crops produced in Sri Lanka is lost due to poor pre-harvest and post-harvest practices. These losses are high in perishables and relatively low in cereals

Many developing countries have stressed the importance of increasing domestic food production to achieve food self-sufficiency. But so far only a very few countries have been able to reach food self-sufficiency. Many countries may be better off if they rely on imports for some part of their food supplies rather than depend on domestic production, provided they have the capacity to finance such imports. It is noted that a country's ability to import food commodities depends on world food prices and its own foreign exchange availability.

The Sri Lankan government imports essential food items in order to ensure adequate supplies to the people. Accordingly 655,090 mt of wheat flour, 491,750 of sugar, 50,210 mt of onion, 84,820 mt of maize, 34,020 mt of rice, 61,400 mt of fish and 36,780 mt of milk have been imported in 1996. The export sector, covering both industrial and agricultural exports, plays an important role. It is necessary to strike an optimum balance between producing food for domestic consumption and producing agricultural and industrial commodities for exports. The prevailing price policy appears to be the most important factor which influences the level and commodity composition of production and thus determines the balance between domestic food self sufficiency and production for exports. An appropriate support system for ag-

riculture has to be in place to ensure that farmers receive prices which are remunerative, whether obtained through direct government procurement or in the open market.

Stability

As mentioned earlier, regional or local availability of food is determined primarily by food production, stockholding and trade at any of the levels. Variation in any of these can contribute to food insecurity. Second, variation in production and seasonally high food prices are often major factors that contribute to the transitory food insecurity in poor households-Sudden changes in income, prices and availability of food can influence household's ability to obtain required level of food. Further, the ability to effectively demand adequate food is affected by some events, such as civil wars, price changes, trade policy and natural disasters such as drought and floods.

As mentioned above, the problem of food crises in many countries arises due to lack of marketing, distribution, storage and weak infrastructure facilities. Therefore, with improvements in marketing systems and infrastructure, the fluctuations can be reduced. In addition an early warning system should be adopted when forecasting the next harvest, irrigation systems should be expanded and improved and varieties tolerant to both conditions introduced.

Access

Physical access to food and financial resources play a vital role in ensuring the promotion of food security. Unstable political situations such as civil wars and ethnic conflicts, disturb production and distribution of food, which makes it physically not accessible to the people living in conflict areas. On the other hand, financial constraints of a country, a social group, a household or an individual lead to food insecurity due to poor access. At the country level, access to food from the foreign market is a function of world food prices and foreign exchange availability. But for many developing countries access to food is limited by inadequate food production arising from stagnant agriculture and limited foreign currency. Supply by donors is influenced by prices and level of production in their countries. In the case of social groups, households and individuals, poverty is the main cause of food insecurity. Poverty is associated with many other factors such as unemployment, underemployment, landlessness and poor access to resources.

Table 4

Estimates of Food Energy Deficiency in Developing Regions (1990 - 1992)

Region	*% of population*	*Number of persons (million)*
Sub-Saharan Africa	43	215
Near East and North Africa	12	37
East Asia and Southeast Asia	16	269
South Asia	22	255
Latin America and the Caribbean	15	64
Economic group Low-income	23	696
Middle-to high-income	13	144
Developing regions (total)	20	841

Source : FAO 1996.

Table 5

Estimates of the Number of Wasted, Stunted and Underweight Children Under Five Years of Age in Developing Countries, 1990

Region	*Wasted*		*Stunted*		*Underweight*	
	(%)	*(million)*	*(%)*	*(million)*	*(%)*	*(million)*
Sub-Saharan Africa	7.0	6.1	38.8	33.7	30.2	26.2
Near East and North Africa	8.8	4.4	32.4	16.0	25.3	12.5
South Asia	17.1	26.6	59.5	92.7	58.3	90.7
East and Southeast Asia	5.2	9.4	33.3	59.8	23.6	42.5
Latin America	2.6	1.5	22.7	12.7	12.0	6.7
Economic Class						
Low-income countries	10.3	40.0	45.2	174.4	38.2	147.6
Middle to high income countries	5.6	8.0	28.7	40.8	22.0	31.2
Total	9.1	47.9	40.7	215.2	33.9	178.8

Source: FAO, 1996.

Various studies done on dietary intake and nutritional status, especially anthropometric surveys, show that dietary intake of some social and ethnic groups is below the required level. Table 4 indicates that malnutrition is still high in many regions in the world.

Nearly 179 million children are reported to be underweight, 215 million children are stunted and 48 million children are wasted. (Table 5). Each year, about 20 million infants are born with low birth weight (LBW). Nutritional problems resulting in underweight are also prevalent among adults and adolescents in developing countries.

In the case of Sri Lanka, child malnutrition is still high (Table 6). There are noticeable provincial differences, stunting being highest in the Central Province and lowest in the Western Province. Underweight is also highest in the Central Province and the lowest in the Western Province. Wasting is

Table 6

Nutrition and Mortality Situation in Figures:

Moderate and severe malnutrition - 1993 : Children 3-59 months and mothers (percentage)	
Stunting	24
Wasting	16
Underweight	38
Low Birth Weight	19***
Maternal Malnutrition	30 (< 148 cm)*
Pregnant Mothers	39 (Iron deficiency anaemia)
Average weight gain during pregnancy 7.5 kg**	

Source: Sri Lanka demographic and Health Survey 1993, Dept; of Census and Statistics
* Health and Nutrition Status Survey 1993, MPPI
** MOH, reference fact Book on Nutrition
*** MOH (data from MCH clinics)

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recorded as highest in the Sabaragamuwa Province and lowest in the Uva-Province.

Besides vitamin A deficiency disorders, anaemia and iodine deficiency are common among Sri Lankans. Therefore, it is very important that necessary action should be taken to eradicate poverty. Productivity of the small farmer has to be increased providing technical and financial inputs. The poor should be helped with income generating activities. Promotion of household food production programs such as home gardening and animal rearing can help improve access to food of low income households. Both long and short term programs have to be launched to alleviate poverty. Short term programs such as subsides, food stamps and target feeding have to be introduced in order to increase access to food. Long term macro economic policies and strategies have to be evolved and implemented in order to alleviate poverty.

The dimensions of food insecurity vary from country to country, region to region and social group to social group within a country. Therefore, it is not easy to suggest a universal program to eradicate food insecurity. Hence, it is very necessary to identify the optimal combination of programs suitable for a specific country. Recognizing the need for short, medium and long-term intervention, the common programs and policies adopted by most countries can be divided as follows:

1. Production - oriented policies and programs to increase the local food production (Both national and household food production programs),
2. Trade-oriented policies and programs to stabilize the food situation in a country,
3. Emergency relief programs to respond to crises affecting food security such as famine,
4. Poverty alleviation programs.
5. Programs to address the problems of food insecurity of target groups,
6. Target feeding programs, school midday meal programs, food stamps, foods subsidies and triposha program and
7. Macro-economic policy and development strategy