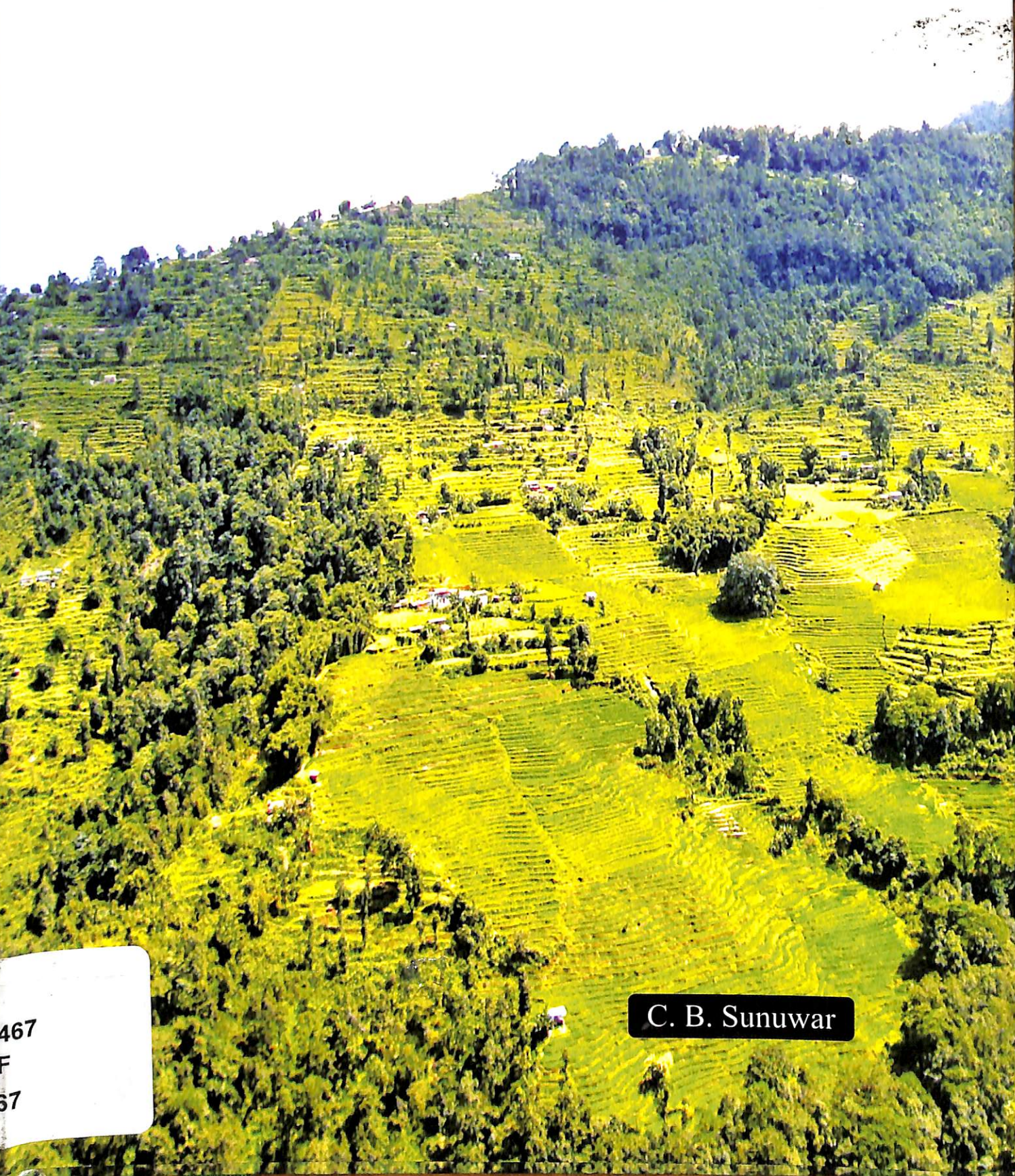


Food Security & Human Care



467
F
67

C. B. Sunuwar

Food Security & Human Care

By

C. B. Sunuwar



Department of Information & Public Relation
Government of Sikkim
Gangtok -737101
Sikkim

Call No. 33.10.167
कॉल नंख्या
Accession No. 4B-467
परिग्रहण संख्या

Food Security & Human Care
by C. B. Sunuwar

Published by
Department of Information & Public Relation
Government of Sikkim, Gangtok -737101

All rights reserved. No part of this book may be reproduced in any manner without permission of the Department of Information & Public Relation, Government of Sikkim.

Printed by:
Youksom Enterprises, Arithang, Gangtok
gurunranjit04@gmail.com



PREFACE

There is no consensual definition of the term “ food security”. In fact with the passing years more meanings have been appended, and the term “food security” now includes many more terms like food availability, access to food, entitlements, adequacy of food, nutrition sufficiency, sustainability etc. in its ambit. At present it goes to the extent of incorporating the phrase “age-wise availability of and access to balanced diet for all” and of even replacing the term with “nutrition security”. Maxwell and Frankenberger have summarized the conceptual literature on food security as follows:

First “enough” food is defined mostly ... with emphasis on calories, and on requirements ... for an active, healthy life rather than simple survival – although this assessment may in the end be subjective.

Second, access to food is determined by food entitlements [Sen 1981], which are derived from human and physical capital, assets and stores, access to common property resources and a variety of social contracts at household, community and state levels.

Third, risk of entitlement failure determines the level of vulnerability and hence the level of food insecurity, with risk being greater, the higher the share of resources...devoted to food acquisition.

Finally, food insecurity can exist on a permanent basis (chronic) or in cycles.

Vis-a-vis this burgeoning concept on “food security” there are views which are constantly evolving to make the methodology for its measurement overarching and perfect. The simplest of the methods in measuring food security is to calculate adequacy of food reserve by using total food production and the number of mouths to feed. This method completely overlooks the food security state of individuals and hence is by no means anywhere near to giving an accurate picture. Unless individual household is used as a basis of measurement one would not get a true picture of food security in a locality, region, state or a country. However household composition may not be constant and the “household” itself is subject to varying interpretations. To overcome this difficulty “disappearance method” and “24 hour recalls” methods are used. These also have their limitations. Numerous authors note that food security is but

one element of livelihood security, and argue that indicators of the former should not be interpreted independently of the latter.

Other indicators have been used to monitor food security, including food balance sheets, rainfall and marketing data, asset ownership, household size, dependency ratio and even anthropometric measurement. “Coping Strategies” and “Adaptive Strategies” have also been used to measure household or individual food security but these also have drawbacks. Many have used short-term coping strategies presenting them in the order of increased severity to measure food insecurity.

Amidst this plethora of methods, each with its own advantage and drawback, the methods chosen to depict food security in case of Sikkim in this volume has been almost a combination of several of the above. Simple strategy like total food production and total requirement have been presented first followed by various other indirect means of strengthening access to food such as distribution system, income generation, health and sanitation, water works etc. Anthropometric measurement and nutrition status have been finally used to actually assess the impact of the measures taken by the Government and determine the success and failure of the strategies adopted. Obviously further data and methods would be desirable but it is felt that the depiction of food security in this volume is enough to give a fairly clear of picture of the progress made in the process by Sikkim.

Data used are mainly from secondary and tertiary sources: various Departments in the Government of Sikkim such as Food and Civil Supplies, Bureau of Economics and Statistics, Department of Agriculture, Water Works Department, HRRD, Department of Health have been the primary suppliers of information. Attempts have been made all along to present facts and figures period-wise beginning as far as possible from the year of Sikkim’s merger with the Indian Union. Comparative presentation in terms of achievement and failure with other North-Eastern States and also on All-India basis has been consistently maintained wherever data were available.

K. S. Topgay
Secretary
Department of Information & Public Relation

ACKNOWLEDGEMENT

Every word and suggestion of the following persons whose names figure in bold fonts have mattered. I am grateful to have received

- The guidance, references, information on food security: from Sri Kuber Sharma, Additional Secretary, Department of Food & Civil Supplies and Consumer Affairs, Government of Sikkim.
- The information on Water Supply Management and Health: from Sri Bikram Mukhia, PGT, Human Resource Development, Government of Sikkim.
- The photographs of localities related to Food Distribution in Sikkim: from Sri Rupendra Mukhia, my nephew, State Bank of India, Rumtek, who would travel with me to different food centres for an opportunity to catch any event related to this work in his camera.
- The gift of the photographs of potatoes with solanine effect: from Dr. Santosh Rai, Associate Fellow, Sikkim University.
- The maps of Sikkim: from Sri Ajay Chettri, Lecturer, Sikkim Government College, Tadong.
- The photographs of alu-dum: by Km. Sushma Thapa, my niece, Asstt. Teacher, Jubilee Sr. Secondary School, Kalimpong.
- Rendering of the chapter on Notifications on Food Safety: by Sri N. R, Gurung, Public Analyst, Food Testing Laboratory, Health Care, H.S. & F.W. Department, Government of Sikkim
- The information and data on Food Supply: from Department of Food & Civil Supplies and Consumer Affairs, Government of Sikkim.
- The information and data on Tuberculosis: from National Tuberculosis Control Programme, Department of Health Care, H.S. and F.W., Government of Sikkim.

Contents

Introduction (<i>Chapter I</i>)	1
Food Security Status (<i>Chapter II</i>)	8
Concept and Interpretation.	
Food Security Status in North Eastern Region and Sikkim	
PDS and TPDS: Infrastructure (<i>Chapter III</i>)	26
Distribution Strategy. Maintenance of Transparency.	
Household and Individual Food Security – Purchasing Power.	42
Health and Nutritional Status (<i>Chapter IV</i>)	62
Alma Ata Declaration. Nutritional Standard. Nutritional Status.	
Preventive Health Status. Prevalent Health Status. Curative Health Status.	
Water Quality and Health (<i>Chapter V</i>)	
Water quality & safety. Sources and characteristics of water.	
Water Demand and Usage. Water Quality standards. Water Supply System and Technological Options. Maintenance and Surveillance.	88
Implementation and Performance (North Eastern States). Urban Water supply System.	
Notifications on Food Safety (<i>Chapter VI</i>)	
Food Adulterants. Food Safety Norms. Essential Commodities Act, 1964 . The Standards of Weights and Measures Act, 1976, and Standards of Weights and Measures (Packaged Commodities) Rules 1977. Monopolies and Restrictive Trade Practices Act, 1969. AGMARK. BIS, 1952.	1064
Prevention of Food Adulteration Act (PFA), 1954, and Rules, 1955. PFA Act and State of Sikkim.	116
The Tit Bits (<i>Chapter VII</i>)	
Food Security in the Light Maize Production in Sikkim. Food Security in the Light of Rice Production in Sikkim. Food Security and Under-utilized Crops. Naturally available Functional Foods. Food Security and the World.	
Food Security : Conclusion (<i>Chapter VIII</i>)	

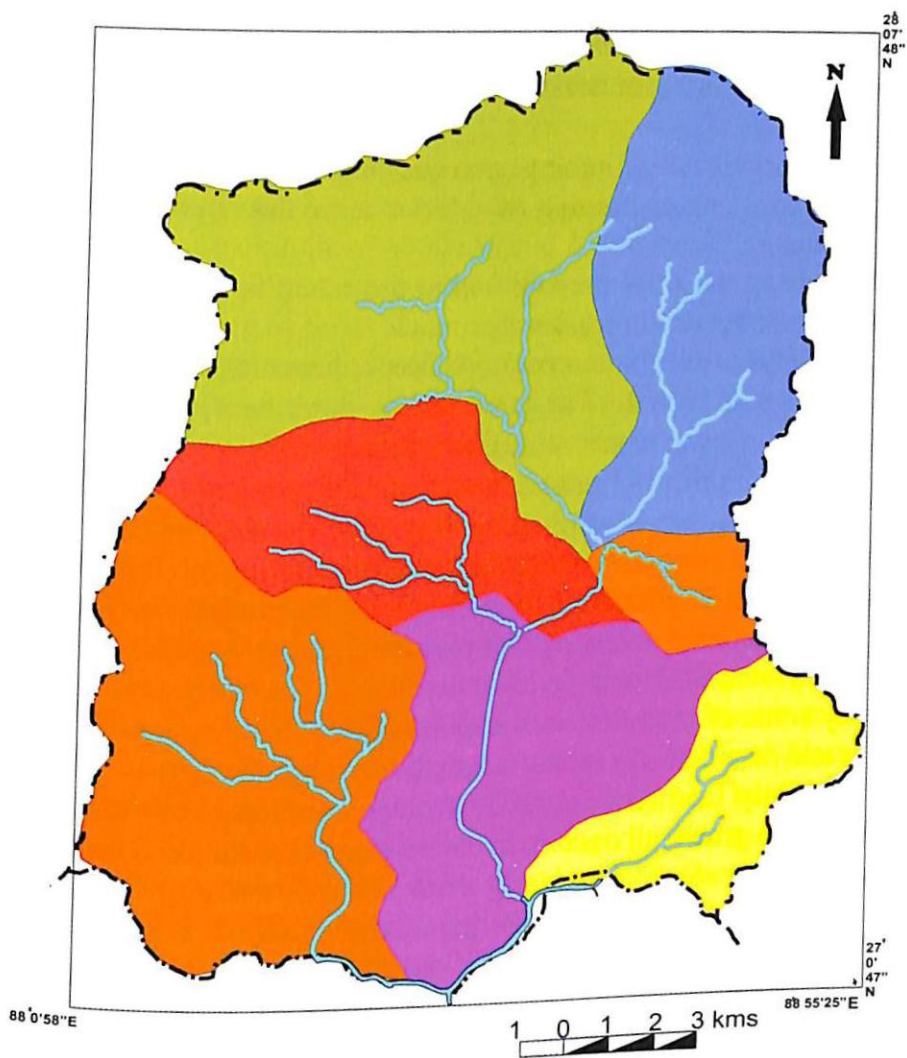
Introduction

The entire land locked state of Sikkim lies along the main Himalayan range to the north and the lesser Himalayan range to the south. Sikkim is like a bowl with some of the world's highest ranges circumscribing it to the west, north, east and south-east. To the west its border abuts Nepal along the nearly North-South ridges of the Kanchenjunga range, 8386 meters (28,168 ft) at the highest and 3407 meters (11,778 ft) at the lowest. To the north it abuts Tibet (China), the dividing line at all points along the water-shed of the main Himalayan range. To the east, the water-shed on the western shoulder of Chumbi valley rises to the height of 7128 meters (23,385 ft) with the lowest point at 3738 meters (12,265 ft) along which one time famous passes for trade routes to Tibet, Nathula and Jeleppla lie. The southern and south-eastern boundary lies along West Bengal and for a short distance along Bhutan. It runs along river Rangeet which drains from north a good part of West Sikkim and to its south, a part of Darjeeling district.

A relief map of Sikkim showing major catchment areas for tributaries of Teesta, a fairly major river flowing through the state, is depicted. One can see that the state is more or less a confederation of seven major catchments zones which have been marked by the Roman numerals on the map. Each catchment consists of several spurs alternately placed from either side of the valley down the bottom of which along the toes of the spurs a river or a khola (tributary to the river Teesta) meanders. The maximum altitude and the minimum altitude of each catchment is recorded on the map. The whole region is thus composed of slopes which may have inclination ranging from 20 to as steep as a sheer 90. Every human activity be it habitation, cultivation or the state-of-the-art modernization is sustained on these slopes. The roads connecting this mountainous state with other parts of the country run along the river banks and converge on a place at Rangpoo, a river basin from where the road enters southward into the state of West Bengal. A few important towns like Rangpoo, Singtam, Ranipool, Jorethang are situated on the banks of these rivers running at the lowest altitude

SIKKIM

Water Sheds with Slopes & Water Courses



Legend

Colour Code	Zones	Area in Hectares	Highest point in Catchment (M)	Lowest point in Catchment (M)
I	I	1,87,920	8,600	1,525
II	II	94,870	7,230	1,525
III	III	27,216	5,300	760
IV	IV	96,940	5,281	610
V	V	70,243	5,057	610
VI	VI	1,49,208	7,340	610
VII	VII	83,203	8,590	914

[Map - I] Courtesy: Brig. H.C., Director Designs (1975), New Delhi

of the catchments. Main areas of human activity are located on slopes upward of these roads and towns.

This little coverage on geography of Sikkim is to impress upon the reader the ruggedness of the mountainous terrain of the state. The entire territory of Sikkim is mountainous and there is not a substantial piece of land that is flat and plain. For anyone who happens to be in Sikkim it is impossible not to miss these experiences:

1. any movement here is mostly climbing up or climbing down
2. every climb upward entails burning of calories more than in any normal walk
3. driving up or down the slope uses up fuel to the extent far exceeding the amount normally required in driving on level ground.
4. as one climbs up the hill the temperature drops; hence one experiences climatic variations [“micro climates” as some love to describe it] on the same slope while moving from lower reaches to upper reaches or vice versa.

Food security deals with the minimum amount of food required to provide a threshold energy of 2100 Kcal per adult every day. One wonders whether this benchmark for the people living in the hills/Sikkim is relevant.

Sikkim has been a land of agriculture. Settled agricultural practice in this land must have been in vogue from a very distant past though the terracing system was introduced much later. Sikkim in fact was heralded as “land of paddy” in its early discovery by some of the rulers in the distant past. However majority of marginal farmers and rural folks in reality subsisted on maize more than on rice some decades ago. Only land lying at lower altitude is amenable to growing paddy whereas maize is grown all over up to the height of 7000-8000 ft. (as also millet). Thus maize being more abundantly available it is not surprising that people took to maize rather than rice as their staple most of the time. The “boiled” or “processed” rice coming from the plains was scarce as well as not popular those days and rural folks used this rice for some other purpose calling it “food without power”. Rate of growth of population soon overtook the rate of agricultural production and people became dependent on imported food grains. Food habit changed and at present rice is the staple food for everyone. The “maize food” and “millet food” of the lore find a place only in a showcase or “honorable mention” in certain festivals as “heritage food” these days.

The people of Sikkim or other hills have taken to agriculture for ages with a multifaceted approach attempting at self-sufficiency by growing cereal to vegetables, keeping poultry, dairy, etc. in their farm land. When one looks at the varied terrain of Sikkim with its slopes dissected in innumerable places, non-uniform pattern of soil formation, altitudinal variation in climate, it is difficult to

imagine how agriculture in the present day form has at all survived here. Mountains in this respect may not perhaps offer themselves as ideal haven to the agriculturists. The slopes offer a restricted opportunity for application of technology for mass production. The altitudinal variation not only limits the growth of a particular crop to certain zones but also differentiates a particular crop growing at all altitudes from zone to zone in terms of the gestation period. For example maize has a gestation period of 3 months only at the lowest altitude whereas the same crop needs at least a gestation period of 7 to 8 months to reach maturity at an altitude of 6000 to 7000 ft. Besides there are slopes which do not get adequate sunlight on account of their specific orientation. As a consequence the productivity of these areas is immensely affected. Such peculiarities of the mountains in general and Sikkim in particular lead us to conclude that mountain economy perhaps needs to be viewed in a different perspective and its problems grappled with a different approach. The per hectare productivity of a crop cited in a literature may at best depict an average of the sum of all such peculiarities if the entire region of such production has been taken into account or may immensely misinterpret the actual situation if one particular zone only is taken for the purpose of calculation. Even a hectare of cultivated area may not be exactly a hectare because the cultivation is all on terraced land.

In the present context it is unfair to assume that a mountainous state like Sikkim will produce sufficient food through agriculture to meet the requirement of its citizens. Sikkim and its sister states in the North-East are chronic food deficit areas (with the exception of Assam perhaps). There is a widespread deficit of locally grown food grain in free market giving rise to what the economists like to term "the problem of affordable market price". The states in these regions have intervened to tackle the problems of food insecurity and poverty by importing food and ensuring their availability to the public through PDS. Empowering the individual with different entitlement, the state has taken selective public action such as public distribution system, unemployment benefit scheme, old age pension and subsidization of market price of food so that under privileged can have safety net against food insecurity.

Food distribution through PDS or the Public Distribution System in India was started as early as fifties, after the independence, in order to protect the poor against scarcity and also to maintain stability of food prices. PDS began to meet the needs of the growing population with the complementary role of PL 480 at a time when food production in the country was much below the requirement. PDS stood through the period even when we had food surplus (1976-77 till 2005-06, 'surplus' in the sense that there was little evidence of food grain imports during

this period) because the proportion of the poor people has not diminished in any significant extent both in urban and rural areas in spite of the surplus production.. Till 1988 the PDS was mainly urban based to act as agricultural price stabilization instrument. The welfare and social safety network of PDS started from then and the rural areas have been brought under the scheme. In the '90's the scheme has been restructured and the targeted PDS has emerged as the focal programme for poverty eradication. The objective of welfare has been clubbed with the objective of price stabilization of the agricultural products. This twin role of PDS has by and large worked well at a limited scale during the scarcity of food.

Food distribution system has been under considerable criticisms from writers of various disciplines with regard to its correct implementation. It is stated that there has been gradual slump in the PDS for the whole of India on account of (1) lack of commitment from Governments of most States (2) leakages in the distribution process (3) negligible welfare gains received as the effectiveness of reaching the poorest households was very small (4) mismanagement of the public delivery system (5) severe strain on the Government as PDS is highly subsidized. To relieve the government of this strain and to make the PDS more targeted the TDPS was introduced in 1997, a mechanism which has again received more lashing from the critics. Nevertheless, the establishment of the PDS has provided some safeguards against worsening of inequalities of consumption across states and for some state like Kerala a god-send indeed. Over the last 30 years, although cereal consumption per capita has declined, inter-state variations in cereal consumption and calorie intake have declined. It is believed that the PDS has most likely played a role in the moderation of inequalities in cereal consumption across States particularly in the north-eastern region.

An assessment of the functioning of the PDS in the North Eastern States specifically has been made by some authors. Several problems have been identified for poor performance of PDS in the rural North East India. Leakages in the delivery system have been detected. People of the North East being more submissive and less demanding are least aware of the system. Lack of awareness among the people has further added to the problem. There is a severe lack of infrastructure facilities such as warehouses, transportation and communication which not only adds to the cost but also causes the food grains to deteriorate in quality. Identification of beneficiaries through Panchayats and Gram Sabhas has posed problems.

The economists are of the view that for ending food insecurity in the long run

planning for development on regional basis is the most important step. Preservation and optimal utilization of natural resources for production of agricultural and industrial products is the ultimate way out from scarcity and food insecurity. Thus for poverty eradication programmes specific action plan on the following line has been visualized:

- (a) setting up of food (grain) bank for food items specific in the region
- (b) TDPS for BPL category only and abolishing rationing for APL
- (c) distribution of food grain through the Panchayat
- (d) keeping procurement price at reasonable level so that poor can afford it.
- (e) extensive implementation of food for work.
- (F) corruption and discrimination on the basis of caste and religion to be strongly dealt with.
- (g) fixing up programme of production on the basis of resources available at the regional level
- (h) diversification of production in agriculture according to the market response so the farmers get the market price of their produce.
- (I) economic access through multiple income generating opportunities, political empowerment and social security.
- (j) identification of poor households
- (k) non-farm employment from the rural sector (in the small scale and cottage industry sector, for example, as extension of electricity and education progresses in the rural sector)

This volume on Food Security in Sikkim deals with the short and long term measures taken up by the government. Sikkim joined the union of India late in the year 1975 when the system of distributing food grain was already on in other States of India. Implementation of policies during the early years after the merger was prioritized and took some time to take roots. One need not however measure food security in terms of total production of essential food crop. Farmers may not always go for production of food item like rice but may adopt a different cropping pattern because it fetches better income. Thus they earn more entitlement and have better access to food.

Normally for a region to have food security its people must have (i) economic access to food and (ii) physical access to food. A region ensures economic access to food if there is decrease in proportion of per capita income required to buy food. Thus if 'i' represents total per capita income and 'h' is the part of that income used in buying food the ratios h/i will measure the proportion of per capita income in purchase of food. Decrease in h/i will mean the economic access to food is increasing. Another parameter to measure economic access to food is

$(i - p)/i$ where i is the per capita income at current prices and p is the prices of items in the food basket. If there is an increase in $(i - p)/i$ then there is an increase in economic access to food. Physical access to food is measured by decrease in import of food as a proportion of domestic production and increase in per capita availability of food.

It is difficult to assess how food security and nutritional security stood in the early years of its new life with the union of India due to lack of data. Hence select years have been chosen to depict the status of food security in the beginning and gradually as more data have become available more frequent assessments have been worked out. The write up is a laymen's view of the situation laid bare in a kind of chronological perspective and by no means an economist's analysis. Moot points covered are the efforts put in by the government to meet the minimum food requirement of its people, the infrastructure development to reach out to people living in the remotest area, means and methods adopted to maintain transparency and management strategy adopted to minimize leakages in the delivery system. The author is of the belief that these pointers will sufficiently assess as to what extent the government has upheld its political will, commitment and dedication to ensure food security to its people and bring to light its success or failure in eradication of poverty in the state.

References :

1. Banerjee, A., 2004, "Food Security and Public Distribution System Today: Failures and Successes", Kanishka Publishers, Distributors, New Delhi.
2. Brig. Harish Chandra, 1975, "Landslides in Teesta Valley", Seminar Paper, Indian Society of Engineering Geology.
3. Chandrasekhar, C.P. and Ghosh, J., 1997, "Targetted Public Distribution System: Is it Getting More Food to the Poor?", Business Line, July 22.
4. Kannan, K.P., 1995, "Declining Incidence of Rural Poverty in Kerala", Economic and Political Weekly, 30, 41 & 42, October 14-21, pp. 2651-2662.
5. Lepcha, Sonam Tshering (Padma Shree), Kalimpong, West Bengal.
6. Swaminathan M., 2004, The Public Distribution System Today: Failure and Successes, Social Sciences Division, Indian Statistical Institute, Kolkatta,

Chapter II

Food Security Status

Concept and interpretation: The World Bank (1986) had formulated the basic concept of food security as “access by all people at all times to enough food for an active, healthy life. Its essential elements are the availability of food and the ability to acquire it”. It has also made a distinction between chronic and transitory food insecurities. Chronic food insecurity reflects a state of continuous “inadequacy in diet caused by the inability to acquire food. It refers to households that persistently lack the ability to either buy or to produce their own food.” The transitory food insecurity is defined as “a temporary decline in the household’s access to enough food. It results from instability in food prices, food production and household income and in its worst form, it produces famine.” According to Food and Agricultural Organization, UN, food security means “all people at all times have both physical and economic access to basic food they need” (FAO, 1983, pp.33). This refers to a condition where food is available at all times, all persons have means of access to it, and it is nutritionally adequate in terms of quality, variety and is acceptable in a given culture. Thus the concept of food security is multi-dimensional. It includes aspects of food-grain production, its efficient distribution, access capabilities of the masses over the food-grains and the nutritional derivatives acquired from its consumption. Each of these is an inseparable part of any food security system.

Various scholars have presented their interpretations of food security by conceptualizing them within the parameters stated in the paragraph above. Shlomo Reutlinger has compared the conditions of food security and food insecurity in order to understand the causes of hunger, starvation and deprivation. Pitting the concept of food security as defined above against the meaning of food insecurity, both transitory and chronic, he has sought to find a

solution for the latter. According to him food security against chronic food insecurity can be achieved by an appropriate mix of policies related with (i) income transfer i.e. transfer payment in cash or kind to the poor, who are at high risk of food insecurity, (ii) subsidized food prices i.e. to reduce prices of selected food to all consumers without reducing the price paid to producers, and (iii) efficient food supply policies i.e. by identifying and supplying them with traded and non-trade food items either through increase production or through proper distribution (including imports where necessary). The chronic malady of inadequate diet resulting from lack of resources to produce or to acquire food could thus be overcome.

According to Bapna a paradoxical situation of food insecurity exists amidst plenty. The world has more food than is required to meet the nutritional needs of its entire population yet a large proportion of the population particularly in Asia and Africa suffers from under-nutrition and food insecurity. A view prevalent until the beginning of the 70's linked food insecurity with the slow growth of agriculture. It was thought the rapid rise in agricultural production during such developments as Green Revolution would enable the poor to have sufficient food. Unfortunately the benefits of the rise in food grain production did not percolate to the poor. This happened because the poor did not have the adequate money to buy the surplus food present in the market. Thus, according to Bapna, in order to achieve food security the raising of the income of the poor or increasing their purchasing power should go hand in hand with a steady supply of subsidized food-grain till such time as the paradox persists.

According to Sen and Dréze "hunger is a many-headed monster. The under-nutrition that haunts a large part of humanity relates to a wide range of deprivations. The connections between different types of deprivations are not only biological (between illness and under-nutrition) but also economic and social (e.g. between unemployment and illness). The idea of social security is that of using social means to prevent deprivation and vulnerability". They elaborate further that market exchange are seldom the proper means of providing food security as "market demands are not reflections of biological needs or physical desires, but choices based on exchange entitlement relations. If one doesn't have much to exchange, one can't demand very much and may thus lose out in competition with others whose needs may be good deal less acute, but whose entitlements are stronger". In these circumstances food security happens to be the only way out for the entitlement deficient and deprived sections of the society. Sen and Dréze explain how famines have occurred in various countries (including Bengal Famines, 1943) without a fall in the per capita availability of

food-grain but due to lack of proper food security system thousands perished as their exchange entitlements reduced. The two scholars have used their conceptual tools of entitlement, endowment and deprivation to analyze the inter-related issues of social and food security.

Structural Adjustment Policies (SAP) introduced in India during the 1990's or similar policies in other developing countries have had detrimental effects on a large section of population both urban and rural. SAP involves reduction in food subsidies such as inherent in the PDS, attempts at reduction in the growth of fiscal expenditure and advocates export oriented agriculture. Swaminathan points out the adverse effect of these policies on the poor and lower middle-classes of population in malnourished and undernourished developing countries around the world where SAP is being implemented. The revamped and targeted system of PDS has not gone well with the majority of poor whereas the reduction in fiscal expenditure has resulted in income-deflation among them. The rising export orientation of the Indian agriculture has diverted the resources from the food grain to export crops causing a fall in the per head cereal production in the country. She suggests that countries under SAP should adopt a more vigorous and near universal food security net to meet the calorie and nutritional requirement of the poor instead of reducing food security.

According to Prof. Dandekar the per capita consumption of food-grain in India hovers around 185 Kg a year when the per capita production is 200 Kg a year, through which he goes to claim that India is not actually self-sufficient yet. Because of inequality in the income distribution those who are hungry do not have the purchasing power to increase their food-grain consumption. Mere increase in the supply of food-grain does not help and to save the poor from hunger their purchasing power must be increased. Under the present circumstances market forces are unable to meet the food requirements of the poor. Only food security measures will be able to provide the poor with their requirements.

Sharma gives an all encompassing view of food security systems. Technological changes in food crops to increase production and availability of food-grains, provision of effective price and market support to the farmers and deployment of wide range of measures to generate employment and income for rural poor are to be made an integral part of economic development for providing food security. According to him the productivity and accessibility to food should go together.

Rao links food security with long term food policy that should be an integral part of the economic policies of the State. Long term food policy should be

viewed as something which will not only lead to increased production but also will ensure access to food-grain by every family. This implies that increased production of food-grain should be associated with generation of income and employment of the poor. According to Rao the generation of income and employment must not be mere averages based on total population of the State or the country but in real sense of the term, that is, the employment and income of the weaker sections of the society should really increase. This alone can ensure long term food security to the poor.

The concept of food security thus is not merely confined to sufficiency in food levels and steady supply of food-grains. It must also provide people for whom food is being produced with means to acquire it. Timmer states that policies concerning food security has to be viewed in their totality. The policy interventions should touch the food system along its entire dimension from agricultural inputs to nutritional supplementation. So any food policy aimed at ensuring food security to the people must take account of production, consumption, marketing as well as growth in employment, income and community services.

In order to ascertain food situation and the food security different scholars use different parameters. Of such parameters probably the most accurate index lies in the nutritional level of the population both in terms of quality of food consumed and in terms of calories generated (Chakraborty). Here not only the quantity of consumption but also the quality of food consumed is taken into consideration. The average calories requirement in the diet of a standard normal person per day is 2300 calories as fixed by FAO. The ideal requirement from cereals alone is taken as 1380 calories and the recommended intake of cereals by the ICMR is 460 g/CU per day and the recommended doses of pulses are 40 g per day per individual. The benchmark for hunger is consistently based on an average intake of 2100 Kcals. Where groups of people are coping below this threshold they are food insecure and will experience the symptoms of malnutrition. Malnutrition results in impaired ability to learn or to work, and reduced resistance to disease. Hence this becomes a cause as well as consequence of poverty. About 800 million in the world still do not have access to food in spite of surplus. It is estimated that the annual loss of productivity to the Indian nation on account of malnutrition is of the order of more that Rs. 33,000 crores. Consumption of adequate and appropriate food (diet) to bring about quality of life for everybody in all parts of the world is important.

Three fourth of India's population are dependent on agriculture which contribute 19% of the GDP. During the last 53 years India has changed herself

from a perennially food deficit country to a food surplus one. Food production increased from 50.8 million tons (1951) to 213.5 million tons in 2003-04 (see chart below).

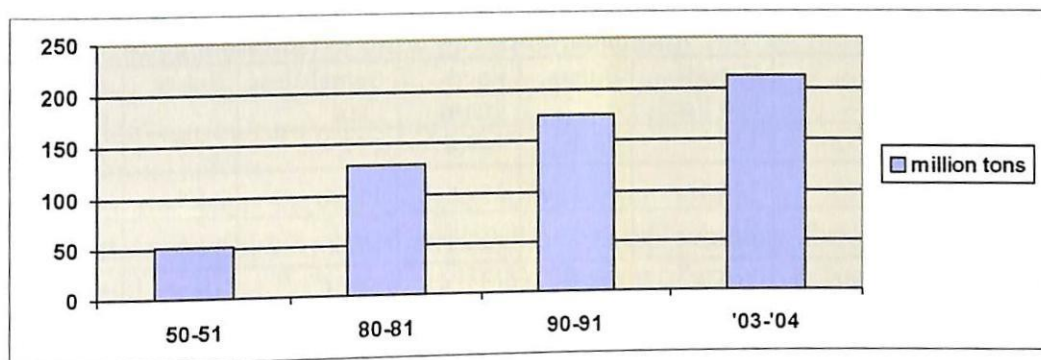


Fig. II(1)

However quantum of food production and food security of a country may not always be correlated (Bapna & Prof. Dandekar). A country may experience food insecurity in spite of a surplus production due to inefficient distribution and lack of effective demand. Conversely, there may be food security in a country if there is proper distribution (of food grain) system where food is imported from other countries (as true of highly industrialized countries). In case of India, in spite of the spectacular achievement in food sector there is approximately 40% people still living below poverty line (1998 –SSC). Many authors (Chakraborty et al) opine that due to economic reforms (Structural Adjustment Policies) implemented in the 90's the nation's efforts to usher in self-reliant and food secured country have been thwarted. Investment in agriculture (public and private) has declined from 17.09% in 1980-81 to 9.90% in 1993-94. Gradual withdrawal of subsidies and the WTO compulsion seems to have adversely affected agricultural growth. Also due to rising export orientation of Indian agriculture to meet the global demand there has been a perceptible shift in the cropping pattern resulting in the diversion of resources from the food-grain to the export crop. Although food-grain yield has increased it has not risen enough to compensate for the declining area, and therefore, the rate of growth of food-grain output has fallen to 1.66% in the 90's from 2.6% during the period 1970 to 1990. This is a significant decline, bringing it below the population growth rate of 1.8 to 1.9% per annum. In other words though there has been an increase in net output the per head cereal production is falling [Table II(1) below]:

Table II (1)
Adjusted Net Output Per Capita of Cereals and Food-grain
(Annual average for Three-Year Period)

Years	Net Output (in million tones)			Annual Per Capita Availability (Kg)		
	Cereals less Feed	Pulses	Food- grains	Cereals less Feed	Pulses	Food- grains
1989-90 to 1991-92	136.0	13.4	149.4	159.9	15.7	175.6
1992-93 to 1994-95	146.1	13.4	159.5	162.4	14.9	177.3
1995-96 to 1997-98	149.9	13.2	163.1	157.6	13.9	171.5
1998-99 to 2000-01	159.2	13.5	172.7	158.5	13.4	171.9

Source: Patnaik (2001)

Thus, food security appears to be under threat during the decade of Structural Adjustment Policies. A paradoxical situation seems to have evolved in the process where thousands of Indians exist without food while stocks pile up in FCI go-downs which adds to cost and subsidies. Until these stocks are cleared through a proper food security programme, the food security situation in India may remain grim.

Food Security in North-East :No author analyzing food situation in North-East region has found any of its states sufficient in food grains. While dealing with the entire regions they have compared the per cent production of the regions against the per cent population vis-à-vis India. In 1991 NE regions produced 2.8% of the country's total food-grain whereas 3.7 % of all-India population resided here. The growing gap between the food-grain requirement and actual production is evident from this. Over the period from 1985-86 to 1997-98 NE's contribution to all-India food production has stagnated around 2.73 to 2.82 per cent mark which has always been lower than the rate of population growth in the region. Thus North-Eastern Region remains a food deficit area and is dependent upon food supply from other states of India.

Sikkim is a part of the NE region and is also a food deficit state. Various scholars see the urgency of making these regions self-sufficient through multifaceted development processes while continuing with the ongoing programme of meeting its deficiency through PDS. It would be appropriate at this juncture to first go into the various aspects of agriculture and related issues of this region before dealing with the details of food security. Like its sister states Sikkim is predominantly agrarian, almost 89% of its population living in rural area (2001 census).

More or less three categories of agriculture are identified in Sikkim. There is the traditional or subsistence agriculture where size and volume of inputs are small. Only family members are involved in this type of agriculture which is its means of livelihood. Another category of agriculture is a semi-subsistence agriculture where the surplus is marketed. A farmer may grow a crop producing surplus (which is sold) or grow more than one crop: one for his subsistence and the other for market. The third category of agriculture is the “modern” or “advance” agriculture where the produce is only for the market. Farming here is a commercial activity.

From the year Sikkim merged with Indian Union to 2000-01 the food production in Sikkim has increased by 224% whereas the population has increased by 105.4 % (base year: 1975). The rate of growth in food production is higher than the rate of growth in population in the State.

Table II(2)
Food-grain Production in Sikkim (in lakhs tonnes)

Year	1975-	1980-	1985-	1990-	1995-	1997-	2000-	2006-
	76	81	86	91	96	98	01	07
Amount	0.32	0.59	0.89	1.05	1.08	1.05	1.03	1.04

Source: Directorate of economics, Statistics , Monitoring & Evaluation, Government of Sikkim

A look at the off-take/allocation pattern of food-grains during this period shows the amount of off-take has increased substantially and gradually as also the allocation of food-grain from the Union Government. This could only mean that Sikkim is food deficient and the total food-grain produced is not sufficient to meet the requirement of the people. The apparent surplus production during some years may be due to miscalculation (M.P. Lama, Sikkim Human Development Report, 2001) along with the contribution from the “yet unforeseen effect” of skewed pattern of landholding. The surplus has somehow not reached the poor who is hence compelled to depend heavily on PDS. Though some of the states in India are food sufficient there are others which are not, possible reason being inefficient management of agricultural land. However the case of North Eastern states need to be viewed from an entirely different perspective. The very geographical structure is a constraint on normal agricultural practice in these states acting as a deterrent to achieving self-

sufficiency in food production. At the moment all North Eastern states with perhaps the exception of Assam are food deficient. With rugged and undulated topography and vast area under forest cover very little portion of the total geographical area is under cultivation. In fact the total cultivated area (TCA) comprises only 23.53 % of the total geographical area (TGA) of the entire North Eastern region (1997). Excepting Assam and Tripura all other states in the North Eastern region have less than 15% land of TGA(total geographical area) for cultivation. Sikkim's share is 15.69% and the net sown area (NSA) is 89.1% (1990-91).

Practically in every state of India there is some amount of land left unutilized in spite of the fact that the amount of land available is insufficient for demand. Thus 1997 data show net sown area for India to be only 70-78%. This is true of each and every state in North Eastern region too and over the period of three decades the change in TCA/TGA ratio is hardly 7.45 % as seen from the Table above. Over and above this the percentage of Net Sown Area over Total Cultivated Area is nowhere near 100 % for any of the NE states. For Sikkim the NSA/TCA percentage is as low as 56.83 in 1997 which has almost remained stagnant over the period up to 2000-01 (56.98%). The underutilization may be due to socio-economic and land-ownership pattern rather than lack of effort to increase yield. Besides, the application of modern amenities like irrigation on these areas is almost unviable because of fragile ecology. Hence, farmers mostly depend on rainwater for irrigation of their land. Consequently they are compelled to time their cropping schedule with the monsoon which allows them only a limited scope for intensive cropping.

Table II(3)

State	TGA in '000 Hectares	TCA/TGA % (1997)	NSA/TCA%	
			1970	1997
Arunachal Pradesh	5499	4.69	100	58.14
Assam	7852	48.61	80.25	70.85
Manipur	2211	9.00	95.21	70.34
Meghalaya	2241	10.66	84.02	84.10
Mizoram	2104	5.09	97.50	60.75
Nagaland	1537	14.12	95.92	97.10
Tripura	1049	43.85	70.45	60.23

Sikkim(1990-91)	710	15.69	82.12	56.83
N.E. Region	231101	23.55	81.02	70.38

(Source: Statistical Abstracts & Estimates of Area & Production of Principal Crops in India – various issues)

Given the limit in the availability of Total Cultivable Area and the geographical constraint for production of staple cereal like rice it may not be possible for the North Eastern region (except may be for Assam) to achieve self-sufficiency in food-grains. “But it need not be the crucial objective of agricultural policy of the north-eastern states (Ganguly, 2006). Development of horticulture holds great promise for this region. And horticultural products in areas suitable for raising such crops may yield higher returns per unit of land than that of food-grains. With higher income the horticultural farmers should not face problem of procuring food-grains and other necessities.” Against this backdrop Sikkim’s steady improvement in the production of horticultural crops is significant [Table II (4)].

Table II (4)
Horticultural Production in Sikkim
(in tonnes)

Crops	1975- 76	1980- 81	1985- 86	1990- 91	1995- 96	2000- 01	2005- 06
Fruits	4700	6350	8200	10500	12000	8800	13190
Vegetables	2000	3400	13900	15000	28000	24750	45590
Potato	5000	6646	16400	18000	24000	16560	29980
L. Cardamom	2300	3500	3900	2600	3600	3000	2740
Other tubers	100	200	400	600	1000	1800	2270
Turmeric				90	100	1500	2070
Ginger	2000	3200	10900	16000	24000	15000	35980
Flowers	-	-	-				
Total	16100	23296	53700	62790	92700	71410	131820

Source : Directorate of Economics, Statistics, Monitoring & Evaluation, Govt. of Sikkim

Barring a few years in the 9th Plan period (1998-2002) the total production in Horticulture has made an 8 fold jump in 2005-06 (with 1975-76 base). It must however be admitted that the increase has not been steady but rather wobbled taking a plunge some years. However a comfortable picture appears in the performance during the 10th Plan period. The recently constituted Sikkim Agriculture Growers' Association (SAGA) has actively started providing market to the farmers through procurement and distribution of these products along with the SIMFED. An outlet each has been installed already in New Delhi, Siliguri and Gangtok by the SAGA with an ambitious plan of opening further outlets to cover cities like Kolkotta, Chennai, Mumbai etc. in the immediate future taking assistance from the government. With steadfastness, grit and determination it is hoped that the venture will see itself through successfully before long and this organization will be able to stand as a pioneer and guide to many other future entrepreneurs for marketing the horticultural products (items) whose production seemingly is increasing very rapidly.

PDS: Public Distribution System comprises of a mechanism whereby selected commodities are supplied through fair price shops at subsidized rates to consumers holding ration cards. The commodities and their entitlements however are not all uniform throughout India and there are variations across different States. Six essential commodities nationally supplied through PDS are rice, wheat, sugar, edible oils, kerosene and coal. Additional commodities such as pulses, salt, tea are also supplied selectively. During 1998 there were 4.5 lakh fair price shops in India, of which 3.1 lakhs were in rural area. Up to 1995, there were a total of 182.8 million families with ration cards in the country and on average, there were 406 ration cards assigned to each fair price shop (Swaminathan et al).

Public Distribution System and its growth over the years can be broadly divided into four distinct phases [Bapna (1990) and Swaminathan (2000)]. PDS originated in India during the Second World War (1939) when rationing of food-grain was introduced by the British government to meet severe scarcities. It has been urban oriented and from 7 important cities it spread to 13 cities during 1943, 103 in 1944 to 771 cities and towns during 1946. This system of rationing came to be abolished during 1947 as per the recommendation of the Second Food-grain Policy committee but has been reintroduced as a welfare measure during 1950. The period from 1939 to 1960 has been regarded as the first phase where distribution of food-grain through PDS exceeded the amount procured signifying that substantial part of food-grain distributed through PDS depended

on imports.

The second phase covered the period between 1960 to 1978 when there has been wide fluctuation in terms of availability of food-grain through PDS and with regard to imports and procurement. During 1965-66, PDS depended heavily on imports but with rise in food production, imports fell. With increase in production, purchase from PDS fell with occasional peaks during the years of drought and crop failures. It is during this phase that PDS became permanent and universal in nature.

The third phase comprised of the period between 1978-1991 where there has been considerable expansion of PDS on one hand and on the other there were comfortable buffer stocks. During this period various employment and income generating schemes were initiated along with the expansion of PDS network. In 1991, maximum amount of food-grain distributed through PDS grew to 20.8 million tonnes which is the highest level of distribution till today. The fourth phase comprises of the period after 1991 i.e. the period when India introduced the Structural Adjustment Policies. From a peak of 20.8 million tonnes in 1991, the food-grain distributed through PDS fell during the last decade. Rise in stocks and excessive holding has become an important feature of this system. The structure of PDS has also undergone major changes as the government now pursued a policy to targeted coverage from 1997 onwards. As a whole, there has been a fall in purchase from the fair price shops during these years.

When the PDS was launched by the Govt. of India in July 1979 (third phase of the PDS) for mass distribution of essential commodities to the public (consumers) it was expected to play certain roles:

(i) Anti-inflationary measure: PDS was regarded as an effective means of price stabilization. Through establishment of fair price shops it was sought to protect the consumers from the effect of erratic price rise (during the war years) of commodities by private trade. The PDS by ensuring the physical availability of substantial proportion of essential commodities (consumption) at a stable 'fair' affordable price, was to protect the poor and vulnerable against inflation.

(ii) Anti-poverty measure: PDS is an instrument in the hands of the poor to protect their purchasing power and thus help them to retain the real value of their income. PDS also enable the poor to save. This enhances their levels of living.

(iii) An agent of development: This role of PDS was realized as far back as the First Five Year Plan. The process of capital formation provided money incomes. However, a time lag exists for consumer good to start flowing. The supply of food items through PDS helps bridge this gap. Moreover the industrial cost is

kept low through the mechanism of demand and supply: major portion of consumption of workers is food items, which are made available at lower prices by the PDS. This in turn helps to supply goods at lower than the market prices. Because of the multifarious role the PDS can play and because of the food and poverty situation of the country, PDS has become the most far reaching of all safety nets that are currently in operation in terms of coverage as well as public expenditure.

For meeting the food requirements of the poorest of the poor and vulnerable section of society Government of India in June 1997, launched Targeted Public Distribution system (TPDS). Two tier system of delivery of food grains to household is adopted under this system – one Below Poverty Line (BPL) and the other Above Poverty Line (APL). BPL families receive food grains at heavily subsidized prices. As per Indian Economic Survey (1997-98) the issued prices of rice and wheat are:

i) BPL - Rice: fine = Rs.3.50; common = Rs. 3.50 and wheat = Rs. 2.50

ii) APL – Rice: superfine = Rs.7.50; fine = Rs.6.50 and wheat = Rs.4.50

The Central Government is responsible for procurement, storage and transportation of essential commodities and make them available to the State Governments/Union Territories Administration for further distribution to their respective areas. In Sikkim for the welfare of the people of the state Food and Civil Supplies & Consumers Affairs (FCSCA) Department looks after the important task of PDS and makes the essential commodities available to the common man at reasonable prices. Mainly rice and wheat are supplied. Besides these the FCSCA also arranges distribution of sugar and kerosene at controlled rate. Functioning of PDS in Sikkim may be assessed under the following headings:

(i) production of food grains

(ii) allocation and off-take from FCI

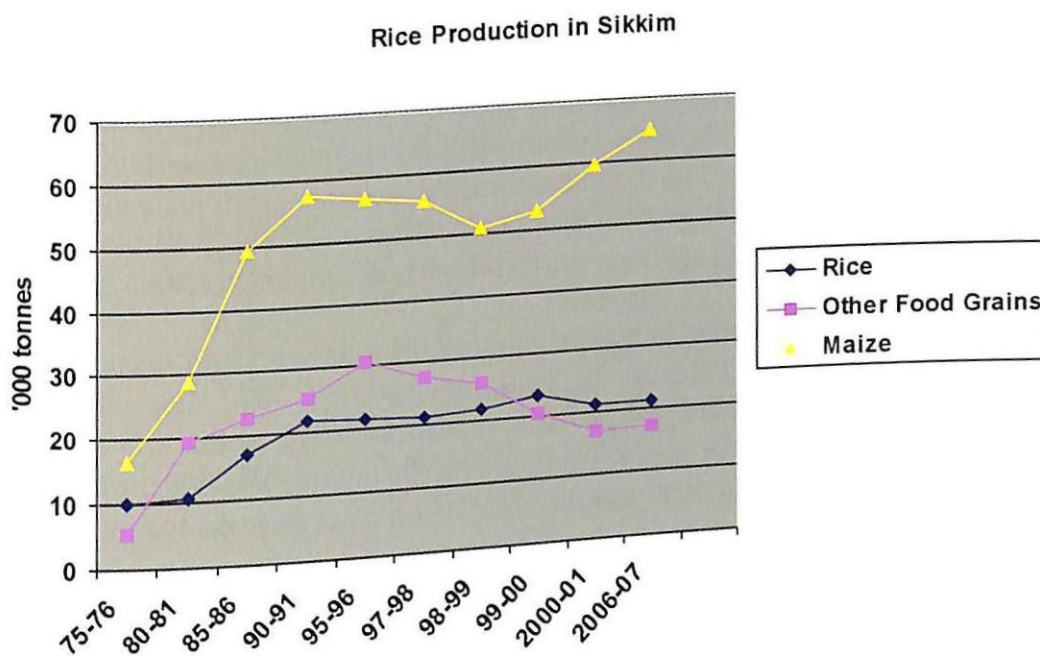
Production of food grains: For the consumers in Sikkim the staple food is rice, wheat being used mostly by people who hail from the plains and hence its consumption though regular is quite low. Table II (5) below depicts the trend in quantities of rice produced in Sikkim over a period of several years. The data when presented graphically give a clear picture of production of rice over the years. The curve after a sharp rise in 1985-86 and 1990-91 ends in a plateau with the total amount of rice production averaging between 21 and 23 thousand tons per year. Curves recording production of maize and other food-grains have also been presented. The production curve for maize, one of the coarse food-grains,

after paralleling the plateau for rice is seen to rise continuously upwards towards the end whereas the production of other food-grains stays in range between 23 and 17 thousand tons per year.

Table II (5)
Rice Production in Sikkim
(in '000 tonnes)

Year	Rice	Year	Rice
1975-75	10.00	1997-98	21.45
1980-81	10.63	1998-99	21.96
1985-86	17.05	1999-'00	23.44
1990-91	22.04	2000-01	21.36
1995-96	21.68	2006-07	21.45

Source : Directorate of Economics, Statistics, Monitoring & Evaluation, Govt. of Sikkim



year fig. II(2)

Obviously production of maize is the highest among the food-grains, which has inched towards the maximum of 64.89 thousand tons a year in 2005-06. The amount of rice produced is far short of the requirement and appears to have

reached a saturation point. Severe geographical, climatic and logistic constraints are no doubt the immediate cause and Sikkim has to depend on imports for its requirement of rice and wheat. Sikkim's requirement for cereal (rice) has been worked out for select few years to indicate its position against rice production in the state. It is known that calorie requirement and its corresponding intake vary from person to person in a given population. The chart below presents calorie requirement obtained from cereals alone for various age-groups according to ICMR (1984), Nutritive Value of Indian Foods:

Table II (6)

Age	Amount of calories to be Consumed per day (gms)	Calorie of cereals (in Kilo calories)
3 – 6	200	690.00
7 – 9	250	862.00
10-12	320	1104.00
Boys		
13-15	430	1483.50
16-18	450	1552.50
Girls		
13-18	350	1207.50
Adult (Male)		
Sedentary Worker	400	1380.00
Heavy Worker	650	2242.50
Adult (Female)		
Sedentary	300	1035.00
Moderate Worker	350	1207.50
Heavy Worker	475	1638.70
During Pregnancy	475	1638.70
During Lactation	500	1725.00

If we consider average requirement per person per day from the Table above it works out to 1367 calories. The International recommendation according to FAO (Food and Agricultural Organization) is 2,300 calories as an overall requirement in the diet of a standard normal person per day. Out of this total

1,380 calories is an ideal requirement from cereals alone. Since bulk of the population in Sikkim takes rice as the staple food and only a meager percentage depends on other cereals such as wheat one may assume the overall cereal content in the diet of the population of this region to consist of rice only. Thus 1,380 calories of energy derivable from 400 g of rice is required to fulfill the calorie need per day of the people of Sikkim. The amount of rice demanded by each person in a year will amount to 400 g multiplied by 365 days (the number of days in a year). From this the rice required by the total population for some years as samples is calculated and presented in the Table II (7).

Table II (7)

Year	Population	Annual Demand for rice in '000 tonnes
1990-91	406,457	59.34
1995-96	485,000*	70.81
2000-01	540,851	78.96
2006-07	654,000*	95.48

**extrapolated figures*

Assuming no other cereals (such as maize, wheat etc which are consumed in negligible quantities) besides rice are consumed, on comparison of Table II(5) with Table II(7) one can see that Sikkim is short of rice by as much as 71.03 thousand tonnes in 2006-07 and has faced this shortage in rice over the years.

Allocation and Off-take: Sikkim meets its rice, wheat, sugar and kerosene deficit through PDS. Food-grains allocated by the Union Government are distributed primarily in the rural areas where accessibility is still a major hurdle. The data are depicted graphically in Fig. II (1) below, which were obtained from Department of Economics, Statistics, Monitoring & Evaluation and Department of Food & Civil Supplies & Consumer Affairs, Government of Sikkim. The data on off-take that were not available for some of the years can be easily deduced from data available on other years where the off-take hovers between 90% and 100%. The allocation and off-take of food grains show gradual increase over the years as per expectation in accordance with the growth of population. The high percentage of the off-take indicates the full utilization of the allocated grains by the state.

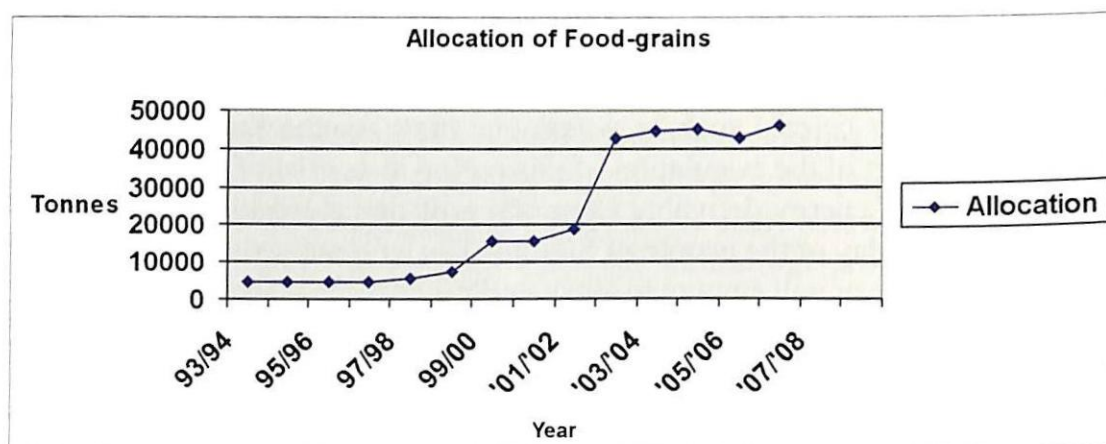


Fig. II(3)

The more focused version of the public distribution system, the Targeted Public Distribution System (TPDS), was adopted in Sikkim after 1997. Under TPDS the BPL (below poverty line) group of people is provided with rice at highly subsidized rate whereas the APL (above poverty line) group is provided quota at a normal procurement rate. Sikkim had 40% of its population falling under BPL when the new scheme was launched, which in real number is 43450. The subsidized allocation has been revised from time to time, the cost for each Kg being fixed at Rs.4.0:

Table II (8)

1997 – June, 2001	20 Kg per month
July, 2001 – March, 2002	25 Kg per month
April, 2002 – till date	35 Kg per month

In addition to TPDS a number of other measures have been implemented in order to bring about speedy improvement in food security among the poorest of the poor, disabled and neglected indigenous tribes. The following table [Table II (9)] lists these programmes briefly some of which are state's own innovation:

Table II (9)

Name of the Scheme	Target group	Allocation	No of beneficiary	Remark
Mukhya Mantri Khadya Suraksha Abhiyan	Economically marginal families and indigenous tribes	Rice @ Rs.4 per Kg – 35 Kg per family per month	26,000	This scheme is of the state government
Mukhya Mantri Antodaya Annadan Yojana	The poorest of the poor under BPL	35 Kg of rice per family per month free of cost	9914	The scheme is a modification of the Antodaya Annadan Yojana by the state
Antodaya Annadan Yojana	The poorest of the poor under BPL	35 Kg of rice per family per month @ Rs.3 per Kg	6600	The beneficiaries were identified in the 2 nd and 3 rd expansion of AAY scheme
Annapurna Scheme	Senior citizens above 65 entitled to National Old Age Pension but not receiving it	10 Kg of rice per person free of cost every month	2411	They have been provided with special ration cards and rice is distributed straight from the government godowns.
Nariniketan/ Welfare institutions	Inmates and residents of Orphanages, Welfare institutions, monasteries	Free meals @ 5 Kg of rice per inmate/resident per month @ Rs.4 /Kg in non-tribal areas and @ 15 Kg in tribal areas	42 institutions (2457 inmates/residents)	Central Government's scheme

Source: Annual Report, 2006-07 and Achievements at a glance, 2005, Food & Civil Supplies & Consumer Affairs Department, Government of Sikkim.

References:

1. *Annual Report, 2006-07 and Achievements At a Glance, 2005, Food & Civil Supplies & Consumer Affairs Department, Government of Sikkim.*
2. Bapna, S.L., "Food Security Through the Public Distribution System: The Indian Experience" in Tyagi, D.S. and Vyas, V.S. (eds.) *Increasing Access to Food : The Asian Experience* (Sage Publications, 1990).
3. F A O (1983), "Report on Eight Session of the Committee on World Food Security", Rome.
4. Patnaik, Utsa (Sept 30, 2001), "Falling Per Capita Availability of Food Grains", *People's Democracy*.
5. PDS from 1939 to 1991 adopted from Bapna (1990) and the post 1991 phase from Swaminathan (2000)
6. Prof. Dandekar as quoted in Eswaran, Mukesh and Kotwal, Ashok, *Why Poverty Persist in India: An analytical Framework for Understanding the Indian Economy* (Delhi: Oxford University press, 1998)
7. Rao, V.K.R.V., *Food, Nutrition and Poverty in India* (New Delhi: Vikas Publishing House, 1982)
8. Rutinger, Sholmo. "Food Security and Poverty in Developing Countries", *Role of Food Security in New Economics Policy Climate* (Mussoorie: L.B.S. National Academy of Administration, 1994)
9. Sen, Amartya & Dréze, Jean, *Hunger and Public Action* (Delhi: Oxford University Press, 1989).
10. Sharma, Devinder, "The Future Shock" in *The Great Grain Drain* (Bangalore: Action Aid, 1998).
11. Swaminathan, Madhura, *Weakening Welfare : The Public Distribution of Food in India* (New Delhi: Leftword, 2000)
12. Timmer, L.P., et al., *Food Policy Analysis* (Baltimore: John Hopkins University Press, 1983)
13. World Bank (1986), "Poverty and Hunger: Issues and Options for Food Security", Washington D.C., USA.

Chapter III

PDS and TDPS: Infrastructure

Strategy: Procurement and production of food-grains in adequate amount to match the requirement of the consumers is an important step in the food security system. However an equally if not more important aspect of the food security system is the physical accessibility of the food-grains by the consumers. This calls for an arrangement that sets up an efficient distribution system. The food must be made available at the locality where the poor reside. Sufficient number of outlets for selling food-grains at subsidized rates must be located at different places as close and centrally placed as possible to the rural households. Roads and communication in the rural areas are the backbone of distribution system and must be well developed. Of course the consumers should have money to buy the food-grains brought within their reach. Hence money generation schemes, employment schemes, etc must be adopted in order to enhance the purchasing power of the poor.

Sikkim is flanked on its three sides by three neighboring countries and its only link with the mainland India is through its southern border adjoining Darjeeling, a district of West Bengal. Since Darjeeling is also a mountainous region it is as prone to road blockades through natural calamities as Sikkim is during the rainy season. The national highway NH31A, the arterial route of Sikkim connecting it with other parts of the country, runs through the Teesta valley of Darjeeling which is described by some scholar as “a veritable museum of slides in diverse manifestations”. This route gets blocked many times during the monsoon compelling traffic to be diverted to long, tortuous routes which cost so much more in terms of time as well as precious motor fuel. At times, even the alternative route gets closed on account of landslides, bringing all movement of men and material to a complete halt. Add to this Sikkim’s own woes of blockades along the routes to its villages and towns due to slides during the season and the picture is complete with Sikkim held at ransom by Mother Nature.



Department of Information & Public Relation
Government of Sikkim
Gangtok -737101
Sikkim