FOOD SECURITY IN A REGIONAL PERSPECTIVE: A STUDY OF PUBLIC DISTRIBUTION SYSTEM IN ORISSA, INDIA.

FOOD SECURITY IN A REGIONAL PERSPECTIVE: A STUDY OF PUBLIC DISTRIBUTION SYSTEM IN ORISSA, INDIA.

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I hereby affirm that the work for this dissertation,"Food Security in a regional perspective: A study of Public Distribution System in Orissa, India", being submitted as part of the requirements of the M.Phil Programme in Applied Economics of the Jawaharlal Nehru University, was carried out entirely by myself and has not formed part of any other Programme and not submitted to any other institution/University for the award of any Degree or Progrmme of Studies.

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Certified that this study is the bona fide work of Rathi Kanta Kumbhar, carried out under our supervision at the Centre for Development Studies.

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to food insecure households

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ABSTRACT OF THE DISSERTATION

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The present study examines and analyses the problem of food insecurity in Orissa. Orissa is one of the classic case among major Indian states, where the per capita net availability of food grains has remained at a higher level than that of all India for most of the years during 1961 to 1999 (based on food balance sheet approach). But, still there is highest percentage of poverty, malnutrition and infant mortality in the state. Hence, due to this paradoxical situation of higher food production and higher food deprivation in Orissa, it seems to be relevant to look in to the same problem. And the Public Distribution System (PDS) is one of the popularistic welfare public policy adopted by the government of India since 1950. At the micro level we have examined its functioning with respects to achieve the objectives of consumption and economic redistribution. In this regard, the causes of inefficient income transfer, amount of assistance provided to the BPL households and the area bias of nature of the PDS have been examined. At the macro level, whether food security is a demand side or supply side problem has examined and why PDS in Kerala is more efficient than Orissa was also addressed. Lastly, the negative impact of price hike of the PDS commodities (2000 budget) on consumers in general and poor, residing in the less developed area in particular are examined.

This study is based on both primary and secondary data. For primary data, two villages have been selected purposively and by following the probability proportional to size (PPS) method, 120 households was selected randomly.

The major findings of the study are, first, at the aggregated level there is no supply side problem of food security in the state. However, at the disaggregated level (district wise), around 8 districts are producing less than 300 grams of food grains per person per day in 1994-95, where as 17 districts were producing less than the state average production of 529 grams. Hence, we looked in to the supply side constraint of food insecurity based on certain indicators such as land utilisation pattern, yield rate, fertiliser consumption, level of irrigation and level of infrastructure (transport). All these indicators in Orissa show the lower performance than all India. Within the state, it was highly concentrated within certain region. Secondly, we have examined the demand side position for food security in terms of distribution of land holding which is found to be highly skewed. Work participation rate and wage earning of rural labour were analysed for Orissa and it is found that wage earnings in the state is lower than all India average. The level of education of the workers also examined

where it is concentrated, in the illiterate categories for most of the workers. Then we look into the consumer expenditure, which shows that between the 52nd and 53rd rounds of NSSO's data, the food expenditure has marginally increased and non-food expenditure has marginally decreased. Thirdly, a consequence of supply and demand deficiency, it is observed, the poverty rate have not reduces during the last five years. Fourthly, the performance of PDS has addressed, where it is found that the failure of PDS in Orissa is mainly due to lack of purchasing power of the people. It was also observed that the market price of rice is lower than the price charged per kilogram of rice in PDS. At the disaggregated level, it is found that the per capita allotment of rice is highly varied and concentrated across the districts and biased to a particular region. Fifthly, from the micro level study we found that the market price of food grains is quite lower than the PDS price of food grains for the APL households and marginally higher than the PDS price of food grains for the BPL households. The inefficient income transfer at the micro level is also caused by the 46.6 per cent of the Type I errors and 37.5 per cent of the Type II errors. The negative impacts of current price hike are more on other aspect of life such as on education and health. Sixthly, from the secondary data, it is found that a huge difference in the annual wage earnings of rural labourers of Orissa, Kerala and all India. For Orissa it remained lowest, which it self is one of the explanations that why largest percentages of people of Orissa do not have access to PDS? Moreover, the consumer price index of the agricultural worker for Kerala, Orissa and all India remained away from each other. Although there is such disparities in wage earnings and price levels, still in India there is a uniform issue price, which may increase inequality in the country. It required further research to bring reforms in PDS in this respect. Lastly, since PDS provides nutritional support to the poor and nutritional support linked with the working capacity of individuals and longer working hours by individuals, may contribute to country's economic growth. Hence, a well-designed PDS can be used to lead the economic growth of nations.

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1.1 Introduction

Food is the basic need among all other basic necessities that required sustaining human life. It is also an economic good, except in certain exceptional cases. It has the supply side constraints and hence the price of food grains remains at a higher level when demand for the same rises. As the economic theory tells, in a free market, no matter demand is influenced by few/large proportion of consumers, or supply is influenced by few/large proportion of producers, the equilibrium price is always determined by the interaction point of supply and demand. But the problem among the consumers arises when a certain group of consumers are not able to afford to the equilibrium prices that are set in the free market, to purchase adequate food grains for themselves to maintain a healthy life. Even in the dual food grains market[1] this problem persists when the prices set by the government are high enough to afford by a certain groups of consumers. Therefore the problem of food insecurity arises. As it is cited in Foster and Leathers (1999),

$$\left\{\begin{array}{l}\text{HH food consumption} \\ \text{requirements}\end{array} - \begin{array}{l}\text{HH food} \\ \text{production}\end{array}\right\} \text{X (Price of food)} = \begin{array}{l}\text{Income and liquid assets} \\ \text{available to purchase food.}\end{array}$$

For any given family, the extent of food insecurity is more when the income and liquid assets available to purchase food (the right hand side in the above equation) is less than the value required for household's food consumption requirements (the left hand side). Hence the risk of food insecurity is the probability that the left-hand side is larger than the right hand side in the above equation. Though there are many households for whom the value of the left-hand side (as shown in the above equation) is less than that of right hand side, for such households the food security is highly required. And as the problem of supply constraint is concerned, the food security is even required to the household for whom the right hand side in the above equation is more than that of left-hand side.

Therefore, food security is essential for human life in general and for the vulnerable sections of the society in particular. As evidence shows, even where there is enough food to prevent death by starvation, individuals may not be able to consume sufficient food to enable them to lead a full life or achieve their maximum productivity (Sen, 1981; Chowdhury, 2000; Keith and McKinley, 1992). In this sense, they may be undernourished.

World food production has increased more than its population growth. The overall growth of many developing and developed countries has increased over a period of time, but still there is abundant evidence that growth alone does not necessarily results to achieve food security of all citizens of a nation (Jakhar and Marimuthu, 1998). As in developed countries, there is in developing countries many a slip between the cup and lip, between a rise in aggregate average incomes and ameliorating food insecurity to achieve wellbeing of the individuals. India is one of them, even though ample amount of food grains are produced in the country still 27 per cent of the population are living without adequate food, and they are living below poverty line.

Hence, it may be useful to look into the different sources, which can contribute to reducing the extent of food insecurity in India. As the literature shows, improvement in nutrition does indeed occur in the form of a higher weight-for-height ratio, where there is higher productivity of labour and higher wages (Keith and McKinley, 1992). On the other side, the Noble Prize-winning economist Fogel (1994) has found that under nutrition can reduce labour productivity and hence affects economic growth. Therefore, providing food security to all or to maximum number of persons in a country not only contribute to the over all wellbeing of the individuals of the country, in which all the human development indicators are included, but also it may help stimulate the country's economic growth. Thus, providing food security may be important because it can contribute to achieve the wellbeing of the population by achieving both human development as well as economic growth. Before going to discuss the various government schemes that provides food security to the food insecure people, the following paragraphs discussed various sources that can provide food to the concerned households.

The household food security can be availed from three sources. First, the non-market mechanism in which, government takes initiative and tries to provide food grains to households through various ways or schemes. Second is the operation of market mechanism where all the four types of market, the land, labour, capital and commodity markets play a significant role to provide food security to the household or to the individuals. As wage earning is concerned, the labour market plays a dominant role. And the last source is the use of natural resources or the common property resources. This study is concerned mainly with the first aspect.

Non-Market Mechanism and Food Security

Non-market mechanism is that where the market is regulated by some external agents, rather than the free operations of demand and supply forces like in the free market. In this system government policy plays an important role in providing food security of the households or concerned individuals. In India, the Public Distribution System has been functioning since 1939. This system becomes universal in 1960 and tried to provide food to the concerned people at a reasonable price. Chapter 3 of this study deals with the evolution and development and performance of this scheme.

Free Market Mechanism and Food Security

Among the four types of markets: land, labour, credit and commodity markets, the labour market plays an important role to provide a means to the food insecure household to have enough food for a healthy life. But the structure of the Indian labour market is deeply embedded in segmentation and the most important segmentation is due to caste and gender (Kannan, 1990). There are certain groups of people who have been engaged with a specific pattern of work, where the wage rate is less. And this is true for females also. This may be due to lack of improvement of their human capital, which does not permit them to shift to a higher earning work.

Hence, in the free market system, the food security of the landless and marginal farmers and the females belonging to these categories in particular are more dependent on, the wage rate of the segmented labour market. The wage rate in turn is strongly linked with improved human capital. Even though it is not the objective of this study to examine the role of free market to reducing food insecurity, we had looked into the functioning of Targeted Public Distribution System (TPDS) and the working of labour market and its role to providing means for food security.

Natural Resources and Food Security

Natural resources like water; forest and land can play a significant role in providing livelihood to the people, when these resources are exploited properly. The role of the natural resources to provide food security is quite intensive. It is beyond the scope of this study. However, this

study addresses certain unexplored natural resources of the study villages, which could have helpful to provide food security to the villagers if it would have exploited.

From the above-mentioned three sources, this study mainly deals with the first source of providing food security. And again, from several types of schemes through which food grains are provided to the insecure people, this study concentrates only on the functioning of TPDS both at the regional level (Orissa) and at the village level. These are discussed in the subsequent chapters.

This chapter tries to clarify the meaning, concept and the perspectives of food security, and describes the theoretical framework that has been used in this study. Section one extracts the meaning and perspectives of food security from the macro level literature, mainly based on the perspective of food security at the global level. In the second section, the historical background regarding the problem of food security in India, as well as some of the recent statistics and national policies on food security are presented. And at the end of this section, literature related to issues in food security especially the functioning of the PDS is reviewed. In the third section, food security in the context of Orissa has been discussed by focussing on the demand and supply side of the problem. In this section an attempt has been made to articulate the problems and objectives followed by methodology, outline and limitations of the study.

Section I

The perspectives on food security have been changing over a period of time (Mellor, Cited in Narayana and Sen 1995; Maxwell, 1996). Since the inception of food security literature at the global level, the time period can be divided into three phases; the colonial period (from 18th century to II nd world war), the post colonial period (1950s to early 1970s) and the present period (1974 on wards). The brief historical descriptions are given below.

1.1.1 Perspective on Food Security in Colonial Period

During the early part of the 18th century, due to agricultural and industrial revolution, the material wellbeing of the nations pushed up sufficiently, which resulted increase in the wealth of the people of those nations and ensured a healthy life. It also made possible for them to participate in the consumption and production process, which provided the economic margin

for food insecurity. But during that period the World food insecurity has arise mainly due to constraint in supply of food grains. In spite of this, many developed countries have achieved food security for their entire population by the mid of 18th century, but the destruction of economies had been done by man-made war and famine. At the end of 18th century, most of the countries realised that food security, as the necessary condition for a fair and just society but it has not been achieved by many countries. In the first half of the 19th century, emphasis has been laid for lifting the income levels of great mass of population in the developing countries and made them to participate in country's growth process, which is a necessary and sufficient condition to food security. And the situation was better off in the last part of the century. In the first half of the 20th century, the bulk of humanity of Africa and Asia excluding Japan were living in a colonial regime and the main colonial power was the British. In this period, the gross food insecurity and periodic famines were endemic. The intricate bureaucratic procedure of the British colonial administration failed to ameliorate the effects of famine. As a consequence, famine was inevitable given the low incomes and lack of participation in production and consumption.

However, II World War brought the beginning of the end of colonialism and coincidentally the most virulent manifestation of food insecurity declined greatly. But the inclement weather brought uncertainty among large number of people. They obtained barely sufficient food in normal weather but find a lethal insufficiency when sequences of bad years occur. And this decline in food production initiated decline in income as well as income distribution, which left the poor hungry or even starving.

1.1.2 Perspectives on Food Security in Post-colonial Period

The severity of famine was less in the post-colonial period as compared to colonial period. But in this period famines have been caused, in general, not by the weather but by civil strife, which caused massive, chronic and transitory food insecurity throughout good and bad years. The massive famine in China of the late 1950s was somewhat different to other modern time famines. The strict central control of the economy and allocation of labour caused massive dislocation of food production and its distribution and control of communication hid the size of the famine from the outside world (Narayana and Sen, 1995). At the same time, the modern communication, transportation and mobilisation of assistance from the high-income

developed countries have virtually eliminated famine from many countries and ameliorate their food insecurity.

In this period, the food security had been seen by virtually all development oriented organisations as a major affliction. In 1948 United Nations declared food as a basic human right in the universal announcement of Human Rights (Asian Population and Development Association, 1998). Since then several efforts have been made, to providing freedom from hunger and clinching food security in terms of nutritive food for the world population. Multifarious issues of food security were pointed out and discussed and yet it has been persisting. In the following section we have discussed the meaning and concept of food security from the modern point of view.

1.1.3 Definitions and Concepts

Food security is different from food self-sufficiency. The latter can be accomplished, if on an average the production of food grains become adequate to nourish all the citizens and may not be obligatory for each and every individual to obtain adequate food but the amount produced is adequate on the whole. Then we can conclude that, the World or Nation or Region has achieved food self-sufficiency. But the interpretation of food security is different. It basically examines whether all the citizens are able to obtain adequate food to survive, or not. Hence food self-sufficiency does not always insinuate food security. In the years since the World Food Conference of 1974, the concept of "food security" has evolved, developed, multiplied and diversified. Since then in the literature the definitions of food security abound but essentially, food security is viewed as access by all at all times to the food required for a healthy life (Von Braun et al, 1992)[2]. However, according to the post-modern framework that (see Maxwell, 1996), understanding food security requires explicit recognition of complexity and diversity and that necessarily privileges the subjective perceptions of the food insecure persons themselves. The cornucopia of food security since the World Food Conference can be conceptualised as consisting of three important and overlapping paradigms shifts, which are also reflected in their respective definitional changes over time. These shifts are, (a) from the global and the national to the household and the individual (1975-1985), (b) from a food first perspective to livelihood perspective (1985) and (c) from objective indicators to subjective perception (1988 and onwards).

(a) From the Global and the National to the Household and the Individual[3]

The World Food Conference of 1974 was born largely out of shock at the sharp rise in world food prices in the preceding two years and fear that the world food system was running out of control. Hence the emphasis in the final report was on world's food supply, prices, and on the need to secure the system against risks, like those posed by the failure of the harvest in USSR in 1972 (UN, 1975). So in those days the definitions of food security are inexorably supply (availability) concerns. For instance, food security was defined as the " availability at all times of adequate world supplies of basic food-stuffs...to sustain a steady expansion of food consumption...and to offset fluctuations in production and prices (UN, 1975).

Indeed, these matters were the main initial concerns of new institutions set up by the World Food Conference, like the World Food Council and the FAO (Food and Agricultural Organisation) Committee. But those early concerns live on in the preoccupations of many governments. Yet, it was clear from the outset that widespread hunger could and did co-exist with the presence of adequate food supply at the national and international level. Amartya Sen (1981) has been credited with initiating the paradigm shift that moved this issue of access to food to Centre-stage.[4] However, the idea was commonplace in nutrition planning and had been amply demonstrated in field studies.[5] Sen's contribution then, was to codify and theorise the access question, give it a new name, "food entitlement", and demonstrate its relevance even in famine situations. As Sen points out, the poor do not have adequate means or "entitlement" to secure their access to food, even when food is available in the local or regional markets. Hence a very important dimension in food security is the capability of people to access it. Therefore it is not always the unavailability of food that leads to starvation and hunger, but in India the vital cause of starvation or hunger is faster growth rate of inequitable distribution of wealth and political and social power within the regional and national level (Chowdhury, 1998). The shift from macro to micro has been reflected in policy initiatives, especially at international level: from the wider concept of food security adopted by FAO in 1983 (Huddleston, 1990; Ballagio and Cairo Declarations of 1989 cited in Maxwell 1996, and the international conference on Nutrition in 1992, FAO/WHO, 1992): all these emphasise access to food as the defining characteristic of food security. Again the ambiguities remain, whether the unit of analysis should be the individual or the household? While one school of thought has focused on the household as the unit of analysis of food

security (Sahn, 1989; Swift, 1989; Eide, 1990; Frakenberger and Goldstein, 1990; Jonsson and Toole, 1991), another has placed intra-household power and resource-allocation issues in the front of analysis and focused instead on individual food security (Reutlinger, 1985; Gittinger et al, 1990).[6] Recent research favours the view that access to food by individuals in a household is pervasively linked to the control they have over household resources and the access they have to household income (Hart, 1986; Evans, 1991; Kabeer, 1991). The implications of food security for household welfare can be substantial: in urban Brazil, for example, unearned income has twenty time the effect on the child survival if it is controlled by mothers (Thomas, 1991). Following this logic, most current definitions of food security being with individual entitlement, though recognising the complex inter-linkages between the individual, the household, the community, the nation and the international economy.[7] Thus, the most-cited definitions of food security are taken from a World Bank policy study, published in 1986:

'Food security is access by all people at all times to enough food for an active, healthy life ' (World Bank, 1986, p.).

The above definition entails an adequate food supplies through domestic production or imports and ensuring that people who suffer from under nutrition can acquire food by providing it themselves or by buying it. Hence, the definition stresses on the individual access, in all seasons and all years, and for enough food not just for survival, but for active participation in society i.e. adequate amount of nutritious food would be access by all at all time.

(b) From a Food First Perspective to a Livelihood Perspective

The second paradigm shift is from a food first perspective to a livelihood perspective and beyond that to a preoccupation with the long-term resilience of livelihoods. Because it has been recognised that food, especially short-term nutritional intake, is only one of the objectives people pursue. As de Waal (1989, cited Maxwell, 1996) found in the 1984/85 famine in Darfur, Sudan, that people chose to go hungry to preserve assets and future livelihood: "people are quite prepared to put up with considerable degrees of hunger, in order to preserve seed for planting, cultivate their own fields or avoid having to sell an animal" (de Waal 1991, p.68). Others have similar findings, particularly in the context of analysing the sequence of coping or adaptive strategies people follow in times of drought (Corbett, 1988;

Frankenberger and Goldstein, 1990; Davies, 1996; cited in Maxwell, 1996). Time preference remains important, nevertheless: not just livelihood, but secure and sustainable livelihood (Chambers, 1988). In this connection Oshaug has argued that: -

"A society which can be said to enjoy food security is not only one which has reached (a) food norm....but which has also developed the internal structures that will enable it to sustain the norm in the face of crises threaten to lower the achieved level of food consumption" (Oshaug,1985, pp. 5-13, cited Maxwell, 1996).

Oshaug identified three kinds of households, **"enduring household"** which maintain household food security on a continuous basis, **"resilient household"**, which suffer shocks but recover quickly and **"fragile household"**, which become increasingly insecure in response to shocks. Recently it has been extended with the addition of **"sensitivity"**, a measure of the extent of change following a shock (Blaikie and Brookfield, 1987; Bayliss-Smith, 1991): the interaction between resilience and sensitivity provides a strong framework for the analysis of food insecurity over time. The most food insecure households are characterised by high sensitivity and low resilience (Swift, 1989; Davis, ibid.). The upshot of these ideas is a view of food security which identifies livelihood security as a necessary and often sufficient condition for food security (Maxwell, 1988,1991) and which focuses on the long-term viability of the household as a productive and reproductive unit (Frankenberger and Goldstein, 1990)

(c) From Objective Indicators to Subjective Perception (3rd Shift)

In the poverty literature, there has been a long-standing distinction between "the conditions of deprivation", referring to objective analysis, and "feelings of deprivation", related to the subjective (Townsend, 1974), and this has been picked up in the literature on rural poverty. Kabeer (1988), for example, identifies lack of self-esteem as an element of poverty, and Chambers (1989) talks similarly of self-respect. In the food security discussion, the paradigm shift is more recent.[8]

Conventional approaches to food security have relied on objective measurement: "target" levels of consumption (Siamwalla and Valdes, 1980); consumption of less than 80 per cent of WHO average required daily calorie intake (Reardon and Matlon, 1989); or, more generally, a

timely, reliable and nutritionally adequate supply of food (Staatz, 1990). But two problems are found in this definition.

First, the notion of nutritional adequacy is itself problematic. For any individual, nutritional requirement is a function of age, health, size, workload, environment and behaviour (Payne and Lipton, 1994). Estimating precise calorie needs for different groups in the population is difficult, but an average calorie needs for different groups of population are possible. Putting more stress on the precise requirements of calorie, Pacey and Payne have concluded that all estimates of nutritional requirements have to be treated as value judgements. Now if this is true, then who is to make the value judgements for individuals, households and communities or nations?

A second problem arises because qualitative aspects are omitted from the kind of quantitative measures listed earlier. The issues include technical food quality (Bryceson, 1990), but also consistency with local food habits (Oomen, 1988), cultural acceptability and human dignity (Oshaug, 1985; Eide et al, 1985, 1986), even autonomy and self-determination (Barraclough and Utting, 1987, Barraclough, 1991). Hence nutritional adequacy is a necessary but not sufficient condition for food security. Now again problem is that how to measure the quality in "quality entitlement". Thus, Maxwell defines food security as follows:

"A country and people are food secure when their food system operates in such a way as to remove the fear that there will not be enough to eat. In particular, food security will be achieved, when the poor and vulnerable, particularly women and children and those living in marginal areas, have secure access to the food they want" (Maxwell, 1988, p. 10,).

However, questions about perceptions of food problems have been asked in the Indian National Sample Survey, and research in the US has attempted to develop indicators for subjective aspect of food insecurity, including lack of choice, feelings of deprivation and food acquisition in socially unacceptable ways (Radimer et al., 1992). It is notable that the latter draws attention specifically to the diversity of coping strategies, which "may be so great that it is questionable whether or not the universe of the tactics could be included in a questionnaire" (ibid. pp. 42-43s).

In the Indian case pure value judgement (that too assessment by Individual himself) is too difficult and may not be suitable to measure food security, because it might happen that he/she

might realises food security with deficit nutrition, which may be beyond his/her knowledge. On the other hand, the objective indicator also neglects some aspects. Hence, this study includes the selective indicators of both subjective and objective approach of food security. And here, the food security issue is regarded as two indispensable and composite determinants of food security; availability of food and access to food. Availability of food does not guarantee access to food, but access to food is contingent on the food availability. In brief food security can be narrated by the following points-

(i) There must be physical availability of food (both in quality as well as quantity to meet nutritional requirements) to the entire population in a nation or region or household.

(ii) People must have enough purchasing power so that they can acquire the food they need.

(iii) On a long-term basis, the concept of food security implies that a nation has to ensure the rate of growth in food supply to take care of the rate of growth of population, also the increase in demand resulting from increase in the income of the people.

But measurement of food insecurity is a complex process. There are several procedures to examine it and some of these are mentioned below.

- ***Indicators to Judge the Magnitude of Food Insecurity***

Food insecurity, hunger, malnutrition, under nutrition and poverty are closely intertwined. Food insecurity is a condition brought about by inability to secure enough food and adequate dietary intake. Hunger is a condition brought about when there is not enough to eat. Undernourished implies if a person's intakes of all the essential nutrients fall short of the normative minimum. Malnourished implies if the consumption bundle involves inefficient allocation of nutrients due to wrong choice in diet or inefficient processing and use of food due to illness or poor hygiene.

Again the malnutrition has subdivided into four types (Foster and Leathers, 1999)

(i) Over nutrition, which occurred when a person consumes too many calories.

(ii) Secondary malnutrition, which occurred, when a person has a condition or illness that prevents proper digestion or absorption of food.

(iii) Dietary deficiency or micro nutrient malnutrition, which occurred when a person's diet is lack of sufficient amounts of one or more essential micronutrients such as vitamin or a mineral.

(iv) The protein-calorie-malnutrition (PCM) or the protein-energy malnutrition (PEM) occurred when there is under consumption of calories or protein.

The PCM is a major source of nutrition-related disease. And because reducing PCM requires increasing food consumption, it may be suitable to see the food insecurity in terms of PCM. Again calories and protein are both derived from food and both are necessary for growth, health, activity and survival, hence it may be suitable to see the magnitude of food insecurity in terms of PCM.

It is difficult to ascertain whether protein or calorie deficiency is the larger issue. Until the 1970s, nutritionists believed that protein was the central concern, but as evidence shows (Foster and Leather, 1999) in the post 1970s, the calorie deficiency is likely to be a larger problem in general and for the developing countries in particular (FAO's Sixth World Food Survey for 1990-1992).

This study has emphasised more on the calorie aspects to reduce food insecurity. In the following section, the role of distribution to provide food security is highlighted.

1.1.4 The conceptual Framework and the Role of Distribution for Ameliorating Food Insecurity

Due to human disability and misfortune, it has not been possible to achieve the ultimate objective of achieving universal food security entirely by market process. Hence, "solution to the massive problem of food insecurity requires a combination of market oriented development and activities, a public safety net involving distribution of income and complex mix of public and individual action" (Mellor, in Narayana and Sen 1995). Therefore some specific programmes will continue to be necessary.

We have found two important conceptual frameworks in the literature to increase the food security in a given situation. One indicates the various influencing factors of the households' food insecurity (Foster and Leathers, 1999) and the other was Mellor's food security pyramid, depicted in figure 1 (see Page 37). The second one is more useful to us to look at the role of distribution to provide food security.

The aspirations of food secure people are represented by lateral and vertical contraction of the pyramid to the top point, where the food insecurity will be eliminated. The vertical dimension of the pyramid comprises with the segments of chronic and transitory food insecurity. Again each of those segments divided into certain components, which can accelerate growth through the operation of private enterprises and free markets in co-operation with complementary public activities and direct public action to provide a safety net of income transfers. The side faces of the pyramid designate the various actions to be taken to achieve food security.

(a) Ameliorating Chronic Food Insecurity

(i) The role of Distribution system

An effective distribution system is needed to bring about food security to the poor. The primary role that government can play in the food distribution system is to ensure competition in the private sector. Improved physical infrastructure, education, and technology will make private sector more competitive. But the role of public sector in dealing with the problems of market failure is more important. When there is poor weather, the supply reduces and prices go up. As Mellor (1978) found, with a decrease in national food supply, the lower 20 per cent of the population in the income distribution reduced their food consumption by ten times as much as do the top 5 per cent of the income distribution. In such circumstances, where market does not meet societal objectives, there must be interference to provide food security to the concerned section of the population. And that interference may involve, taking supplies from public stock and putting them on the market to reduce price increases, or using foreign exchange to purchase internationally traded commodities to have the same effect.

(ii) Role of Other Factors

Apart from food distribution, the development strategy that accelerates agricultural growth is key to radical reduction in poverty and hence the food insecurity (see Dev, 1988, Mellor, 1991). As the food security pyramid shows, apart from food distribution and agricultural growth, there are some other important activities to be monitored from the point of food security. For example the all weather roads and better level of education will lead to better allocation of resources and which help the poor both directly and indirectly to achieve their food security. Has the agricultural technology improved enough to generating sufficient

income and improving the consumption of the poor? Some empirical evidence of these aspects of the food security is presented in the following chapters of the study.

(b) Ameliorating Transitory Food Insecurity

The safety net or the distributions (income transfer) aspect can be a clear strategy to ameliorate transitory food insecurity. For example, the food for work or the free food to the poor and destitute or education programmes that include school lunch programmes which can help to bring the children to school can relieve food insecurity directly. And road-building programmes can provide either income or food to the food insecure persons, etc. Apart from this, other basic administrative structure can also responds to the short-term emergencies and it should be designed to ameliorate transitory food insecurity.

Other important issues pointed out in literature are first, availability of food, second, access to food and third, stability of availability and access. It includes three stages of activity. (Fourteenth Asian Parliamentarians report on Population and Development, 1998)

(a) Production, Stock, Net import and food aid
(b) Distribution/ Marketing
(c) Consumption/access

Both 'a' and 'b' comprises the (availability) supply side of food in an open economy, where as 'c' exhibits the demand side; because consumption mostly rely on the capability to demand.

The turbulent incidence of either issue at any layer (International, National, Regional or Household or Individual) is an antagonist for the amelioration of the tenebrous mark in the society such as, hunger, poverty, malnutrition, undernutrition, morbidity and mortality. Hence it may be essential for the state to provide security in terms of directly distributing food to them or providing other types of income earning sources to the food insecure household.

Section-II

1.2.1 Food Security in India

Today, the world produces adequate food to accomplish the fundamental requirements of each and every human being on the planet and this is also true for India. In fact, the rate of growth

of world population is less than the rate of growth of world food production. Production of major staples such as rice, maize, and wheat has dilated rapidly in the developing world as a result of the green revolution. Again stimulated by enormous subsidies, surplus production is being recorded year after year in many countries. Real food prices have dwindled significantly in recent years.

However, not surprisingly, these positive trends of production and price do not insinuate universal food security and, in actuality, the rosy picture masks a grim reality. Although the world produces enough food for all its inhabitants, there can be no more consequential issue than the persistence of poverty on a global scale. As it evident from the data that over 800 million people do not have access to adequate food to meet the needs for a healthy life (Jakhar and Marimuthu, 1998, cited in Asian Population and Development). Again a survey of World Nutrition Scene reveals that 190 million children are under weight and 20 million children are born under weight every day. About 48.6 per cent person have a Body Mass Index of less than 18.5, (i.e. the lower limit of normality). They are food insecure in the food secure planet and going to bed in a voracious stomach, due to income inequality. Many of these adults (including pregnant women) and children despair from cruel malady of hunger and poverty. And these maladies are more austerious in India. Even if we have accomplished, a self-sufficiency in food production (around 200 million ton), yet, around one third of the world appetite (around 300 million, Chelliah and Sudarshan, 1999) is from India, which is the highest concentration of poverty in any country in the world. So the availability of global or national food supplies does not assure that every one has access to food.

In India over 300 million population to be chronically voracious, tarnishes the image that India is now food secure just because it produces enough food. Again this 300 millions appetite are not symmetrically coming from all over India, rather it varies across region. And one of the highly appetite concentrated state in the country is Orissa, where still 49 per cent of its inhabitants are below the poverty line and around 65 per cent of its youth are growing under malnutrition. It is the source of much of the trepidation not only in international level also, at national and regional level as well. The neglect of the household, as the means for addressing poverty is manifest. It simply insinuates even if much attention has been rendered by international, national as well regional organisations that have not reached to the intended class safely. Therefore, in this study, an effort has been made through grass root level of investigation to assess the utilisation of Public Distribution System by the food insecure

household and detect some of the basic issues of food insecurity in this state. As mentioned earlier, PDS is one of the popular food security programme by the government of India to provide food to the whole population in general and to the food insecure people or to the targeted people in particular. But before discussing about Orissa, it is important to understand the history of the food grains market of India.

1.2.2 Market Failure and State Intervention in Food Grains Market.

The forties and seventies of the 20th century were historic for India, with respect to "the food crisis" and "food self-sufficiency" respectively. Even though the concept of food security in the Indian scenario strikes the economic literature in the latter period of seventies, the food predicament and policy in this country has started since World War II, precisely from 1943, (after the Bengal famine). As it was mentioned by the food grains policy report 1943, there is nothing in the internal condition in India to suggest that, apart from the cessation of imports from Burma and vicissitudes of nature-which affected Bengal perniciously in 1942 and 1943. And that also influenced the Madras position and the absolute physical volume of supply has been impaired. The food crisis has been accentuated on the supply side by penetration of Burma imports, cyclone and crop infirmity in the Aman paddy crop in West Bengal in October 1942, government permission for rice to flow out of Bengal, curtail in inter place movements etc.[9] It has been accentuated on the demand side by diminution in the relative magnitude of the marketable surplus, black marketing of food grains, deleterious supply situation in Bengal with an unfavourable psychological situation due to proximity to the war zone, etc.[10] These prevailing conditions of that time naturally threw the responsibility on governments to nourish the people who could not receive their supplies through the normal trade channels. It was in or about 1942, the first footfall were taken; at the central government layer, the department of food, subordinate to the ministry of agriculture (Now ministry of agriculture and irrigation), was established. It carried out inter alias, the function of importing food grains, procuring with in the country, controlling and regulating the prices, maintain central reserves and constructing and hiring storage accommodation, basically the dual market procedure.[11] Since then through several food grains policy committee, through numerous trial and error methods, and through various five-year plans, efforts have been taken to fortify the food backbone of India.[12] At that time, India received food aid from food surplus countries. But, the then Prime Minister Nehru realised that with immense difficulties, India was able to evade the political strings associated with food aid, but it did hurt national pride. Even in the

later period, when India suffered two very disaster droughts in 1965 and 1966, the American President, in order to teach a lesson to India restricted food aid on monthly basis. Thus, the Government of India started the green revolution, and succeeded in raising her food grains production from 50.8 million tonne in 1950-51 to 200 million tonne in 1999. India at the aggregate level has achieved self-sufficiency in food grains by the year 1976 and since then Indian import of food grains declined and its export performance has increased. But still 36 per cent of the Indian people are below the poverty line[13]. It is also noteworthy that the highest head count ratio (HCR) is recorded among rural labour households (50 per cent). Similarly, the HCRs for disadvantaged groups of schedule caste and schedule tribes were 50 per cent and 51 per cent respectively (NCAER 1994). Therefore, there is need to review and restructure the existing food policy in India.

In the all India level the per capita daily availability of food energy increased from 2061 calorie in 1980-82 to 2330 calorie in 1990-92. But as the National Nutritional Monitoring Bureau data indicates, still 46 per cent of the rural adult population suffered chronic energy deficiency in 1994 and that too, the extent of malnutrition among adults was closer to that among children (51 per cent). Hence, national food security does not ensure regional food security. A growing number of studies in India suggest that at the regional level food insecurity (both chronic as well as transitory) is occurring not due to the non availability of food, but due to non accessibility for food (Sen, 1981). Also, it is noteworthy in some regions "an important aspect of availability is the question of internal production of food, as it is in Kerala (Kannan, 2000).

1.2.3 Why and for Whom Food Security

Increased food production is contemplated to be necessary, though not a sufficient condition for ameliorating food security for the poorest segment of the population. If higher level of production results in cheap food, it would be a competent instrument for food security particularly when the poor have adequate entitlement. In the deficiency of such prerequisite, even refinement in food supply, the market mechanism may not invariably and automatically relocate food to the poor. In periods of short fall in the domestic production, market failures occur due to imperfect markets in credit and insurance and incomplete information, the burden of adjustment is likely to fall heavily on the poorest families. Hence, in order to ameliorate food insecurity for the poor, the government relies on a set of policy instruments such as food

rationing, price subsidies, employment programmes and feeding strategies. And after the Dantwala committee reports (1976), the public distribution system widely spread over the country to move grains from the surplus to deficit state and for stabilising food grain price respectively.

1.2.4 Current National Policies

India accomplished food self sufficiency by 1976, but food for each and every Indian still remains uncovered. Since 1948, several international organisations and especially since early 1970s the government of India have been taken numerous programmes to provide at least a stipulated minimum amount of food grains to the Chronic Energy Deficiency (CED) people. As we have seen in the previous section, the food insecurity basically arises due to non-accessibility (or due to lack of purchasing power) over food by the poor and due to non-availability of food to certain areas (especially to the interior area). Considering these predica-ments, Government of India proceeded with several programmes. On the one hand, to increase the purchasing power among the poor (i.e. to generate effective demand among the poor), it has adopted the strategies of employment generation and poverty alleviation.
In brief these are:

(a) Self-Employment Programmes: Swarnajayanti Gram Swarogar Yojana (SGSY)[14].
(b) Wage Employment Programmes: Jawahar Gram Samridhi Yojana (JGSY)[15].
(c) National Social Assistance Program (NSAP)[16]
(d) Urban employment and anti-poverty program (UEPP).[17]

On the other hand, to provide food particularly to the CED group, the Indian planning strategy includes schemes of Public Distribution System (PDS), Integrated Child Development Services and mid day meal schemes.

All these programmes directly or indirectly reduce food insecurity among the CED people at the national as well as regional level as a whole these measures are known as poverty alleviation measures.

1.2.5 Repercussions of Structural Adjustment on Food Security

With the introduction of the orthodox stabilisation policy and structural adjustment policy[18], the Indian policy formulators became more conscious about the .63 per cent of the GDP (that is total food subsidy) of the government expenditure. And this consciousness reduced the amount of food subsidy in the subsequent food policy of India. As a result, their policy looks like a trade off between weakening of welfare and improving of fiscal deficit. Proponents of orthodox policies assume that the goal of higher economic growth can be achieved by first "stabilising" the macro-economy...followed by "adjusting" the market through supply side reforms, (Taylor and Pieper 1996:1). But the implications of structural adjustment on food security are negative. Programmes of structural adjustment affect both availability of food at the national level and food security at the household level (FAO 1989). There are four types of effects on food policy:

(1) Economy-wide changes in poverty, inequality and unemployment that affect real incomes and household food security.[19]
(2) The role of self-sufficiency in production relinquished in favour of production for export and integration into world trade.
(3) Devaluation and other macro economic changes, which affect the absolute and relative prices of food commodities as well as inflation.
(4) Changes in pattern of public expenditure by governments affect food subsidies and expenditure on agriculture through changes in input subsidies and public investment, and so on.

However in the millennium budget, the restructured of food subsidy has increased the issue prices of wheat and rice from their existing level that induces to a price increase of more than 50 per cent in a single year. And though it has direct impact on the poorest sections of the society, it is somewhat harsh. In the present study, an effort has been made to see the impact of the above restructured food subsidy on the food insecure people. But, before going to address the precise objectives and hypothesis of this study, as the background study, literature review is presented.

1.2.6 Review of Literature

To combat the food insecurity of certain section of the population, one of the popular public support by the Government of India is the Public Distribution System, which has been providing food to the concern people since 1939. Hence, there have been quite a large number of studies done at the micro and macro level on various aspects of public distribution system in particular and providing food security in general. Some of these studies are discussed in the following lines.

- In the earlier studies, authors like Vakil et. al (1943), Gadgil and Sovani (1944), Bhargav (1945), Anjaria et al (1946) and Chartterji (1948) had analysed the supply-demand position in food grains and advocated theoretical justifications for price control and rationing in India. Recent literature shows that, though supply problem has been over come by early 70s due to green revolution, demand side problem still persists in the Indian food grains market. Kumar (1998), Pradumn Kumar and Mathur (1996), Radha Krishna and Ravi (1990); Bhalla, Hazell and John Kerr (1997), and Bansil (2000) and others are of the view that there will be more supply of food grain than demand.

Looking at the issue of the rationale of public distribution system in food grains scholar like Pigou (1952), Johnston (1956), Mellor (1966), Gulati and Krishnan (1975), Ram Saran (1975), Jha (1976), Houthakar (1971) and a few other advocated the system on the ground of social equity and economic efficiency.

Scholar like Bhatia (1967), Laxminarayana (1970), Gulati and Krishnan (1975), George (1996) and few others have favoured the system from the view point of effective procurement of the marketable surplus of cereals for purposes of running the PDS.

On the issue of economics of buffer stock, a seminar was held in 1968 under the auspices of Indian Society of Agricultural Economics where Scholars like Shah, Ram Saran, Jai Krishna and Jha, Puri and Srinivasan, Dantwala and few others expressed their own views on different aspects of the system such as, the nature of the stock, the magnitude, its location, mode and timings of acquisition and disposal and finally the suitable pricing from the points of view of producer and consumer. But all of them unanimously agreed upon the need for such a system

in India for stabilising the year-to-year as well as intra-seasonal fluctuations in the prices of food grains and the farm incomes.

As against this, Shenoy (1974) and Jha (1976), Geetha (1995) have pointed out that buffer stocks in India are a potential source of inflation and affect the poor. Geetha (1995) argues that the amount of stock kept by the FCI was far excess of the generally conceived buffer stock norms. At that time it was 75 per cent more than minimum required. So such a huge amount not only creates storage cost but also non-availability of food in open market and hiking of prices in the open market, in addition to limited supply of food grain by PDS.

Coming to the more recent literature with reference to the PDS, Krishnaji and Krishnan (2000) argued that there is much room for improvements in its design and management at both the macro and the micro levels. The problem at the macro level arises out of the failure of the government to resolve the basic conflict between the interests of the producer and those of consumers, especially rural poor. The main elements of problem are the following.

A regime of continuous upward revision of support prices has helped farmers in maintaining output growth, but in recent years the government has been raising issue prices as well to contain the food subsidy and the budget deficit. This has contributed to inflation in food prices and is making the PDS less protective than it should be, even its limited coverage in rural areas.

Besides, they also pointed out the problem of coverage especially in rural areas, which has been ineffective way of reaching to the people. Their suggestion is that reforms have to be region specific, based on local conditions of incomes, production pattern and markets.

A primary study by Vidya Sagar (2000, cited in Krishnaji and Krishnan, 2000) in Rajasthan shows a positive performance of PDS but it has rural bias in the state. The PDS off take declined because of good crop years and due to decline of the differences between the open market prices to issue prices of different PDS commodities.

Nair (2000, cited in Krishnaji and Krishnan, 2000) pointed out that the increased flow of rice at subsidised prices through PDS contributed to an increase in the per capita consumption of rice. Due to the availability of PDS the open market prices of rice are depressed and thereby

provided certain measure of additional food security and bottom segment of the population has benefited more.

Indrakant (2000, cited in Krishnaji and Krishnan, 2000) has done a primary survey in Andhra Pradesh. He found that mistargeting exists on a wide scale. He also found that the coverage of PDS in terms of percentage of cardholders is better in rural areas but the supply of raw materials appears to be better in urban areas.

Coondoo, Majumdar and Bhattacharya (2000, cited in Krishnaji and Krishnan, 2000) further probe the relationship between unemployment and food security. They found that consumption of superior cereals improves with the level of income but this is found to be true only among non-poor households.

Dev (2000, cited in Krishnaji and Krishnan, 2000), asked an important question: whether providing food through the Employment Guarantee Scheme (EGS) can work as a superior alternative to PDS. The answer appears negative because of the presumed wider coverage of the PDS despite leakages of the intended benefits to the non-poor. Dev found that the PDS does not in general favour the poor, the targeting being defective on the whole. What is suggested for tackling poverty and improving food security is a mix of policies in which there is place for both the PDS and EGS types of scheme.

Balakrishnan and Ramaswamy (1997) are of the view that poor quality supply of food through PDS, reduces its purchase by the household and increases demand in the open market and open market prices hike follows by other related prices to cover cost of production. Besides these studies, there are many others regarding food security by various scholars such as Parikh, Mooji, Swaminathan, Radhakrishna, Dev and Suryanarayana, Mahalonobis Committee and others.

One of the important gaps that can be addressed in this system is to look at the principle of equity and justice, while setting the "issue prices".[20] The precise gap is that irrespective of different consumer price indices and different purchasing power for different states, the issue prices remain equal for the below poverty line people and above poverty line people.

Studies on the economic aspect of PDS particularly in Orissa are very few. A study made by Rath Committee (1969) at the government level examined the working of the civil supplies

Department of the government of Orissa. Another study by Mishra (1980) looked at the economics of PDS in food grains. Both these studies pointed out supply side problem. One recent village study by Sarap (2000), found that PDS has both supply as well demand side problems i.e. less coverage and lack of purchasing power by the people are certain issues.

There are also numerous studies available, which question the achievements of the PDS in India especially in a poorer state like Orissa. These studies put forward the important reasons for the failure of PDS are (i) the problem of coverage, (ii) non-affordability among the poor, (iii) administrative inefficiency, (iv) lack of proper regional policy and (v) groundless political interference. The National Sample Survey Organisation has conducted a survey in its 42nd round (1987-88) to understand the working of PDS in India. Based on that data, Ahluwalia (1993) points out that leakages as a proportion of PDS distribution of rice and sugar is highest in Orissa; 88 per cent and 66 per cent respectively as compared to 37 per cent and 39 per cent at all India level. Whereas, it is 26.9 per cent and 9.7 per cent in Kerala. One of his important conclusion is, "from the limited data that are available, an important policy implication of the rice is that allocation to state such as Bihar and Orissa should not be increased without first taking step to check leakage's and improve targeting". Sarap (2000) also found that in Orissa, the coverage of the PDS is inadequate and people have lack of purchasing power.

Thus, it is very important to find out the different variety of leakages, different reasons of leakages and regional distribution of the magnitude of leakage to reduce the magnitude of the same in Orissa. Though the secondary data available are found inadequate to explain the different type of leakage's and its causes, the primary survey method was adopted, hoping that, it may be more appropriate to understand the situation.

The present study planned to analyse the nature, scope, achievement and problem in providing food security through PDS in Orissa.

Section-III

1.3.1 Food Security in the Context of Orissa

Orissa is one of the backward states in India, where the growth of the economy is very slow with high incidence of income poverty and malnutrition. Not only the HCR of Orissa is (48 per cent) highest in India but also the capability poverty measure not showing any satisfactory

performance (65 per cent of the children are facing malnutrition). But the miraculous aspect is that the state is not only a self-sufficient in food grain production and has sufficient procurement but also exporting rice abroad. The state is predominantly rural with 86.62 per cent of the people who live in rural areas against 74.29 per cent at all India level. The state is constituted with 38.41 per cent of schedule caste and schedule tribes' population (Census of India, 1991), 37.6 per cent male and 43.3 per cent female casual labour. Again, the state is characterised by less diversified economy with heavy dependent on uncertain agriculture; besides half of its population are in chronic poverty and unemployed. Some related statistics are given below (see table 1.1 and 1.2).

Table 1.1 Some Important Resources in Orissa.

Variables	*Percentages of india*
Landmass	4.74
Population	3.74
Forest	7.4
Chromate	98
Nickel ore	95
Coal	24

Source: Economic survey of Orissa, 1999.

Again the ground water potential in Orissa is 23300 million cft, of which only 0.5 per cent has been harnessed so far.

As the tables 1.1 and 1.2 show, there is contradiction between the bounties of nature and poverty of the people in Orissa. As table-1.2 reveals -

(1) The per capita net availability of food grains in Orissa is higher than India.

(2) Also, the per capita net availability of food grains in Orissa is much higher than the norms prescribed.

Table 1.2 How poor Orissa is or Is Orissa food insecure?

Factors of food insecurity	Year	Orissa	India	Sources
BPL people		48.56 %	35.97 %	Planning commission 93-94.
Malnutrition (A)		65 %	51 %	Chelliah and Sudarshan 99
Undernutrition(A) BMI		57.3 %	48.5 %	NNMP 1996
Undernourished(C) S M		22.7 % 53.3 %	20.6% 53.4 %	NFHS 1992, 93
per cent of HH with calorie inadequacy	91-92 93-94	31.2 % 50.8 %	44.2 % 47.7 %	NNMB 1993, 96
Cereal consumption Kg/month	61-62	18.22r 15u	17.55r 12.50u	Suryanarayana 1996, 97 from NSSO figures
	90-91	15.98r 13.93u	14.21r 10.90u	
	93-94	15.93r 13.36u	13.4r 10.63u	
Average intake of cereals and millets gm/day	91-92	598(H)	476	NNMB 1993, 96
	93-94	524(H)	464	
Per capita food production	1999	18.2 Kg.	20.6 Kg.	Economy survey, Orissa 1999
Irrigation	1998	25 %	39 %	
Per capita income	(1994)	Rs. 1578/	Rs. 2255	
Rural people		86.62 %	74.29 %	
Per capita availability of food grain gm/day	97-98	504	450	Estimated by the researcher from Bulletin on food statistics.

Notes: - HH- Households, BPL - Below Poverty Line
BMI Body Mass Index (A BMI of less than 18.5 denotes chronic energy deficiency, it is ratio of weight {Kg} to the square of height {meters}).
A - adult, C - child
S - severe, M - moderate, r - rural, u - urban
Moderate malnutrition occurs when weight-for-age is less than two standard deviations of the WHO norm, and severe malnutrition occurs when weight for age is less than three standard deviation of the norm.

That implies that food insecurity in Orissa is not a supply side problem rather it seems to be a problem of demand side or the problem of distributions. Hence, the demand side problem and the distribution should be taken care of. Secondly, the state is suffering from the second highest level of poverty in India and at the same time availing the highest level of average intake of cereals and millets in India. It is contradictory but possible, when a particular section of people consume more cereals and millet. The more important thing is that what sort of circumstances may lead to such condition. On the one hand, 48 per cent of the total population does not have adequate amount of income to get rid of poverty, but on the other hand consumption is not only preeminent but also far above than the normative requirements of 460 grams per person. Thus, one important point to find out is that who are the consumers to influence the figure of cereal consumption to such a high extent. One possibility is that the figure might be influenced by the consumption of the APL (above poverty line people) consumers, (presumption is that BPL consumer's consumption might be low due to low income unless adequate subsidy and sufficient amount of food grain is provided to them). If this is the case, then the whole income transfer policies adopted in various plan periods might

not be accomplished in this state. Hence, the various causes of inefficiency in income transfer needs investigation. Second possibility is that the government might have provided subsidised food grains so that along with the APL consumers the BPL consumers are also able to afford and increase their cereal consumption as well as calorie intake. But if it would have been the case, then higher level of malnutrition and under-nutrition should not have been there. Again, the increase in household (HH) calorie inadequacy in Orissa within two years (1991-92 to 1993-94) from 31 per cent to 50 per cent is surprising, since it might be the cause of some institutional arrangement that is playing a dominant role to determine the calorie adequacy of the HH rather than PDS. (i.e. 50 per cent of their total need).[21]

Measures Taken in Orissa to Ameliorate Food Insecurity

After India's independence in general and after 1970s in particular, both, Government of India and Government of Orissa have introduced a number of programmes to reduce food insecurity (poverty). Orissa is one of the Indian states where much attention has been given to reduce the same. But, unfortunately, none of those programmes have been able to reduce the extent of high food insecurity to a low level. The failures of government policies are well depicted from the data that, through out the 1990s, poverty level (HCR) in Orissa has remains at around 48 per cent. As table 1.2 shows it has also not achieved a satisfactory performance in other indicators of food security. So it may be more important to find out what are the causes which stand as hindrance to ensuring food security in Orissa. Very few researchers are reflecting upon the ground reality of Orissa. Might be due to lack of education in the state as a whole, people of the state, especially the poor are not so keen to think about their fundamental rights over food. Neither the agricultural wage rate has increased with reference to the consumer price index nor the level of poverty has come down significantly. It is difficult to judge whether the demand for necessary amount of food by the people and for adequate wage rate to the people should be decided by the grass root level it self or can be efficiently provided by the government. Unfortunately in Orissa on the one hand government has failed, on the other hand people are not conscious. The activities of the poor of Orissa can be well narrated by the following line. They are entering to the earth from the belly of a starve mother (general food insecurity as well as gender food insecurity), Surviving for a while (low longevity) in the empty hut (poor) and closing their eyes in the starved and help less bed (no adequate health facility). The heart failure incident was that- it was some time in the 80s for the first time may be in the Indian history, when the country is not only food secured but also exporting food

abroad, Kalahandi district appeared in the headlines of news papers when a mother sold her months-old baby for five rupees (less than US $ 0.12 at today's exchange rates and around 15 cents at that time) to fend off starvation (Chowdhury, 1998). Kalahandi is not exceptional in the state but an example of few other districts. Another least developed district in the state is Boudh (undivided Phulbani), which is famous as the 13th (last) number district. As Sahoo and Sahoo (1999) found this is also one of the most backward districts. Even after 50 years of independence half of the population of Orissa have to get used of every thing, the most bizarre and horrifying included, and like the anger and despair over the never to be forgotten faces of Ethiopian children and Bangladeshi women. And year after year, every new starvation death and migration, became just another static. Considering all these conditions improving food security seems to be necessary in this state.

When chronic drought, famine and consequent 'transient' hunger rule the western Orissa in regular intervals, the coastal belt has suffered from flood, and cyclone. Though, severe flood may lead to transient hunger for a short spell, sometimes, the people of coastal belt do not dislike it's occurrence since it gives a chance to them to get relief without work and to earn through manipulation due to leakage's from relief and construction work for repairing damage. The people in this belt are very conscious and well organised to put public pressure on the government for relief inspite of its leakages, which are shared by politicians, bureaucrats and trader-contractors.[22]

But this is not the case in the western part of Orissa. It is not only far away from the state capital to pressurise sensitively, but the politicians of this area are not that much strong and aware of for people's welfare. Hence, there is much regional disparity in economic development in general and improving standard of living of the people in particular. In Orissa various measures and programmes to eradicate chronic poverty and hunger have also been implemented.

(i) In agriculture through consolidation, supply of inputs, marketing of agricultural products and extension of irrigation, etc.,

(ii) In allied sector through plantation, diary, poultry, Piggery, horticulture, and vital infrastructure such as milk chilling plants and collection and marketing of milk and milk products;

(iii) In rural non-farm sector through PMRY, DPAP, etc.,

(iv) In population control, through family planning program and special benefit to green card holders;

(v) In targeted programmes for poor through IRDP, TRYSEM, DWCRA, JRY, IAY, EAS, OAP and others.

(vi) In health sector through mobile health services, ICDS, etc.;

(vii) In education through mid-day meal scheme, residential high school in every ITDA block, DPEP and others,

(viii) In infrastructure through provision of road communication to every village, water and electricity provision to SC/ST households at a concessional rate and-

(ix) In welfare, through the Public Distribution System.

No doubt these measures have impact in reducing the intensity of poverty in the state but the rate of reduction is, much slower in Orissa when compared to other states like Andhra Pradesh, Gujarat, West Bengal and Kerala. Therefore, many programmes were launched in the state but unfortunately they have not shown any impressive results. It is sad to note that after 50 years of independence, even if Orissa is endowed with vast natural resources, its poverty level is highest than any other states in India (i.e., 47 per cent, 1999 NSSO). Some blocks in Orissa epitomise in many respects the limited success of various uncoordinated and unimaginative policy measures. People in these blocks have suffered due to peripheral location, constant neglect, multiple deprivation and exploitation through outside traders, local feudal elements, power brokers and the state bureaucracy (Samal, 1994). There are also leakage's in the implementation of the targeted programmes for the poor. Some of these phenomena are also prevalent in Kantamal block of Boudh district (formerly in the undivided Phulbani district).

In this regard, this study more emphasis has been given to the functioning of the Public Distribution System, and we try to examine how effectively food security is provided to the needy people in the regional level and how effectively they are able to access it.

1.3.2 Objectives and Hypotheses of the Study

1. To study whether Food security in the context of Orissa is a demand side problem or supply side problem.
2. To estimate the extent to which household depends on PDS and the open market to meet their requirements of food grains.

3. To examine the functioning of Public Distribution System in Orissa; its performance, to what extent it has achieved its objectives of consumption and economic redistribution.

Here mainly four points are to be highlighted,

(i) To find out the causes of inefficient income transfer through public distribution system at the village level.

(ii) To study whether PDS is providing 50 per cent of the total requirements of the BPL people.

(iii)To study whether the PDS policy reforms are both area (less developed and more developed) and income biased.[23]

(iv)To examine the relative impact of current price hiking of the PDS food grains across area and across income groups.

4 To relate the functioning of PDS in Orissa with Kerala, where the PDS is most efficient.

Hypotheses of the Study

(1) Public Distribution System is an effective instrument in reducing poverty, in general and protecting the vulnerable sections in particular, through enhanced access to food.

(2) Impact of current price hiking of PDS is negative on consumer in general, and the poor residing in less developed area in particular.

1.3.3 Theoretical Framework and the Methodology for this Study

Food security is highly expected of than any other kinds of social security. The framework used here is extracted from the literature and designed for our own purposes with some modification.

Generally in an open economy, at the national level, the availability of food constituted with its internal production, net import, previous stock and food aid, if at all. This can be written as: -

$$\mathbf{TFAI}_t = \mathbf{GIPF}_t + \mathbf{NM}_t - (\Delta \mathbf{S})_t$$

Where $\mathbf{TFAI}_t$ implies the total food grains available in India at time period t.

$\mathbf{GIPF}_t$ implies gross internal production of food grains at time period t.

NM_t implies net import at time period t.

ΔS_t implies changes in stock for time period t.

But as previously mentioned, people remains hungry in order to preserve seed for planting, again Sen's (1981) view regarding export when people do not have enough to eat and Geetha's view of buffer stock. Considering all these points, to observe national food security, from the ground of availability what is more important is the net availability rather than gross availability, which can be obtained by-

$$NAFI_t = NPF_t + NM_t - (\Delta S)_t$$

However, at the regional (state) level in India, due to the existence of dual market system, the component of procurement of food grains from the state and supplies of food grains from the Centre (FCI) to the state arise in this equation. Hence, the net food grains availability at any point of time in the state can be expressed as follow.

$$NAFS_t = NPFS_t - TP_t + TSFC_t + NM_t$$

$NAFS_t$ = Net availability of food grains in a state in time period t.

$NPFS_t$ = Net production of food grains in the state in time period t

TP t = Total procurement at time period t.

TSFC t = Total supply of food grains from the Centre.

And at any point of time the per capita net availability of food grains in India and in Orissa can be identified in the following ways.

For India,

$$PNAFI_t = \frac{(NPF\,t + NM\,t - (\Delta S_t)}{P_t}$$

For Orissa,

$$PNAFO_t = \frac{(NPF\,t + TSFC\,t - TP_t)}{P_t}$$

Where,

PNAF - Per capita net availability of food grains, *NPF* - Net production of food

grains, ***NM*** - Net import, ΔS - ***change in stock, t*** - time period, ***P*** - population, ***O*** - Orissa, ***I***-India.

But the availability of food at any level (national or regional) is determined by so many other factors such as productivity, irrigation level etc.

Similarly the demand side also inter linked with many other factors along with consumer expenditure such as poverty level, wage rate, employment opportunities, population growth, Government efficiency etc. All this aspects are taken care of in this study in Chapter 2.

The second thing that this study tries to find out is the difference between the expected income transfer and realised income transfer through PDS. In this context it has been seen that the error of improper targeting of household is the single aspect that affects the system.

There is substantial numbers of literature in the Indian contexts that addressed this problem taking the NSSO data. According to Datta (2000) "the basic purpose of the TPDS is to transfer income to the poor via ration shops, fair price shops and control price shops by supplying essential commodities at subsidised prices". Here we have tried to see the process and magnitude of inefficient income transfer in rice distribution through TPDS. We have also tried to see how the subsidy offered to poor people in sugar ultimately goes to the richer section of the society.

How Income Transfers Take Place Through TPDS

In brief, the difference between the subsidised prices charged to the intended consumers with open market price is the amount of income transfer, provided that for all intended consumers and for all time the subsidised price is lower than the open market prices. Hence, the amount of income transfer to an intended class can be measured as-the difference between the expenditure that the HH would have incurred in the absence of TPDS and the actual expenditure under TPDS. It can be measured by multiplying the quantity purchased from TPDS with the difference between open market and TPDS price. The income transfer to a HH can be expressed by the following equation.

$$PYT^{TPDS} = \frac{\sum_{i=1}^{n} Qi^{TPDS} \quad (P^M - P^R)}{TP \quad BPL} \quad .....(1)$$

Where,

PYT ^{TPDS} - Per capita income transfer through targeted public distribution system based on distribution of rice.

Q i ^{TPDS} - Quantity of rice distributed through targeted public distribution system to the ith household.

P ^{M} - Price of rice per kilogram in open market.

P ^{R} - Price of rice per kilogram in TPDS ration shop.

TP BPL - Total population under below poverty line.

The above equation depicts the expected income transfer and in empirical analysis this will be valid when the intended consumers are really purchasing their all entitlements of commodities. But this income transfer is not always equal to the actual income transfer, which can be calculated by using the actual amounts of off take by intended households. This can be seen in the following ways.

Expected Per Capita Income Transfer

$$EPYT_e^{TPDS} = \frac{\sum_{i=1}^{n} Qi_e^{TPDS} \quad (P^M - P^R)}{TP \quad BPL} \quad .....(2)$$

Where,

EPYT $_e$ ^{TPDS} - Expected per capita income transfer through targeted public distribution system based on entitlement of rice.

Q i $_e$ TPDS - Quantity of rice entitled through targeted public distribution system.

P ^{M} - Price of rice per kilogram in open market.

P ^{R} - Price of rice per kilogram in TPDS ration shop.

TP BPL - Total population below poverty line.

Based on these formulas the income transfer has been calculated from the primary data, which dealt in Chapter 5.

Methodology

As this study attempts to analyse the problem of food insecurity in Orissa with special reference to PDS and its functioning, it uses both types of data- the data collected from the villages and the data collected from the secondary sources. We have presented the details of " Study area and fieldwork" along with the sampling procedure and the nature of data in appendix IV. Here we have stated only about the secondary data.

Research Design

The analyses of the food security at the regional (state) level have concentrated on the secondary data, most of these are relating to agricultural production and the Public Distribution System. But for the village studies we have designed a questionnaire for data collection. Primary data were collected by the researcher in a door to door interview method with the help of structured questionnaire. The fieldwork has taken place in two different localities. The detailed questionnaire was canvassed to the households and data have been collected. To judge the performance of PDS, the available literature and data have been used. Again personal interviews of PDS ration shop's dealers from the study villages has taken. Besides, although household interviews are important, to get extra information additional interviews of selected persons: such as private rice and wheat merchants, government officials known for their commitment, local politicians, representative from traders organisations, were undertaken. These informants might be important because they could tell us things, which were not being disclosed so far and might be helpful for us. The secondary data collected from different sources are mentioned below.

Sources of Information

The secondary data are mostly quantitative, primarily collected from various government reports. The various sources of secondary data are presented below.

1. Bulletin on Food Statistics published annually by the Directorate of Economics and Statistics, Government of India,

2. Data published by Centre for Monitoring Indian Economy Private Limited,
3. Ministry of food and agriculture and Irrigation of the government of India,
4. Data published by the NSSO especially the 42nd round,
5. Statistical Abstract and Statistical Out line published in different years by the Bureau of Statistics and Economics of the government of Orissa and the data available from the Department of Food and Civil Supplies of the Orissa Government,
1. 6.Directorate of Agriculture and Food production Government of Orissa,
6. Economic Survey of Orissa and from the regional office of the Food Corporation of India in Orissa, Bhubaneswar.
7. For the specific district, required data were collected from the District Statistical Handbook.
8. Beside this, concerned literature and secondary data were collected from different library, research institutes.

And the historical sources of materials have been collected and presented while analysing the structure of the village and past experience of the village people at the time of food non-availability or at the time of drought.

Tool Used for Analysis

Tools used for processing data include univariate, bivariate and multivariate tables and descriptive statistics such as average and standard deviation.

1.3.4 Chapterisation

As already discussed, the first chapter is an introductory chapter, where the concepts, meaning and different dimensions of 'food security', at the micro and macro level, have been discussed. The role of distribution in providing food security, at a macro level, has been given special focus in this chapter. The role of PDS in India, to provide food security to the concerned people has also been discussed. This chapter concludes with the formulation of problem (formulating the objectives and hypothesis), methodology, identifying different data sources and the chapterisation scheme.

The second chapter titled as "Macro profile of Orissa with regards to food security" discusses the food economy and other agrarian economy of Orissa. This chapter examines whether the

food insecurity in Orissa is a problem of supply side or demand side, by following the food balance sheet approach.

The third chapter entitled "PDS as an instrument for food security", reviews the evolution and development of PDS in India. This chapter analyses the performances of PDS in India in general and in Orissa in particular from the secondary data sources.

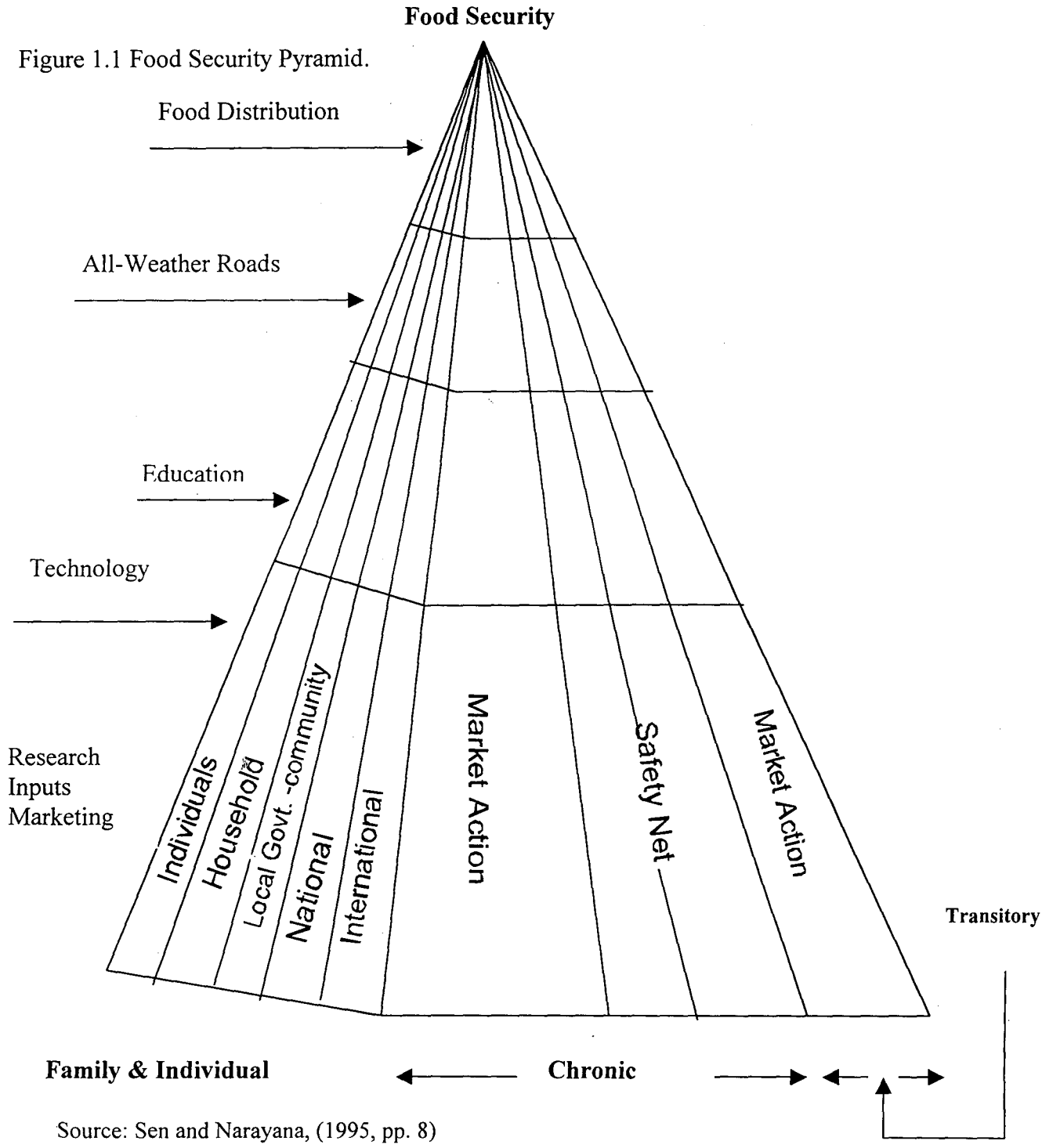
The fourth chapter is entitled as "A micro vision to the functioning of targeted public distribution system". It uses the primary data and analyses various aspects of the functioning of TPDS.

The fifth chapter gives the summary and conclusion, where by taking account Kerala as Reference State, the functioning of PDS in Orissa is compared.

1.3.5 Limitations of this Study

While conducting this study we have come across some limitations, which we have reported below. Though the topic is about food security, we have not included many other programmes of food security such as the quantitative accessibility of ICDS and mid-day meal scheme at the household level etc., because some of these programmes are confined to few selected blocks of Orissa and also due to the limited time allowed for M.Phil. Secondly, in the primary survey researcher has to remain very dependent upon the co-operation of the respondents and their willingness to explain things to the researcher. We have tried our best to minimise the errors as much as possible in data collection, analysis and in its interpretation.

Figure 1.1 Food Security Pyramid.



Source: Sen and Narayana, (1995, pp. 8)

ENDNOTE

[1] Dual food grains market as it has been existed in India, where both private traders as well as by the central authority control the food grain market. And it is the Department of Food Corporation of India that procured food grains from the open market at a pre declared prices and again distributed the same in the subsidised prices especially to certain section of people. It is a dual market because apart from the operation of the free market, the regulated food grain market has been existed (see footnote 10 also).

[2] Maxwell and Smith (1993) reviewed the literature and arrived at some 30 definitions of food security. At the last count, there were close to two hundred different definitions of food security.

[3] For detail description of this part see " Food security: A post-modern perspectives", Maxwell, S. Most of the issues discussed here are cited in that article.

[4] See Poverty and Famine for details.

[5] Ibid.

Also see (Joy, 1973; Berg, 1973; Levinson, 1974; Keilman et al, 1983).

[6] . Please see Maxwell, 1996.

[7] The food security concept operates at all levels: individuals, household, regional, national and global. National, regional or local availability of food is a function of food production, stock holding and trade. National access to food from the international market is determined by world food prices and foreign exchange availability. Household availability of food requires that food is available at local or regional markets, which is determined by market operations, infrastructure, and information's flows. Access to food by household (and individuals) is continued by poverty: the poor usually lack adequate means to secure access to food. Food security at any level does not guarantee food security at any other level. For example household food security does not necessarily mean that all individuals in that household have access to the needed food, some member of the household may be denied their full share of the food. Intra-household inequality in distribution of food, with women in particular eating less than their share of household food, is observed quite often. Similarly, regional and national food security does not necessarily lead to household or individual food security. The available food may not be equally distributed and households and /or individuals may not have equitable access to it. And, of course, global food availability does not mean universal food security, there may be marked national, regional, household, and individual differences in access to food.

[8] A.K. Sen in his "Poverty and Famine" book acknowledges the power of subjective analysis, but concentrates on objective entitlement.

[9] For details, see summary of recommendations of the food grains policy 1943.

Summary of recommendations of the Food grains Policy Committee (1943).

(1,85,000 tons was exported in the first seven months of 1942).

The Birla Institute of Scientific Research Economic Research Division (1980).

[10] Same as endnote 5.

[11] It is a type of market between a complete free trade (no government intervention) and complete socialization of foodgrains trade. The market system is carried on by both private trade and the public distribution system under some prescribed rules of the game.

[12] For more information, see the food grains policy committee 1943, under Sir Thedore Gregory. The food grain policy committee 1947, under Shri Purushottam Das Thakur das.

Chopra, R.N.(1980), Wadia, F.K.(1996) , Das, Ojha G.(1987)

Progressive Decontrol of Foodgrains, November1947.

Control of foodgrains, September 1948.

Foodgrains procurement Committee, 1950.

Recommendations of various five year plan period.

PL 480 aggrements with U.S. governments. (1956, 1961-64)

Report of the foodgrains enquiry committee, (Asoka Mehta 1957, Venkatappaih 1967)

Foodgrains Prices (Jha) Committee, 1964.

Various Annual Report of Food Corporation of India.

Various Agricultural Prices Commission Report.

Department of food and civil supplies, report.

[13] (HCR, 1993-94, the absolute number increases to 300 millions in 1993-94 from 164 millions in 1951 (Chelliah and Sudarshan 1999).

[14] Economic Survey, 1999-2000.

IRDP, TRYSEM, DWCRA and MWS have been restructured into a single self-employment program called the Swarnajayanti Gram Swarozgar Yojana from April 1999. The objectives of SGSY is to bring the existing poor families above the poverty line by providing them income generating assets through a mix bank credit and government subsidy.

[15] ibid

The JRY has been restructured to JGSY and it's primary objective is creation of demand driven village infrastructure including durable assets at the village level to enable the rural poor to increase the opportunities for sustained employment. The wage employment under the program is given to BPL families.

[16] Ibid

[17] ibid

[18] Typically, a stabilisation package comprises policies for expenditure reduction (to control fiscal deficit) and expenditure switching (to control the balance of payments or external deficit). These changes in expenditure are brought about by policies of devaluation, monetary tightening (such as through change in interest rates) and fiscal contraction.

[19] Regarding the impact of structural adjustment policy: -'Besides slowing growth', they tend to make 'income distribution concentrated, increase poverty and reduce social well-being' (Taylor and Pieper 1996:2.)

[20] Issue price is the price at which the central government provides food grains to the state government in the Public Distribution System.

[21] The rainfall must be playing the spacious role to determine people's purchasing power because it is related with agricultural sector, hence with the wage rate. Because in that specific year there was rain failure and net production has came down to 7238 thousand ton (1992) to 5170 thousand ton.

[22] See Samal, K.C., 1998.

[23] For primary data we did not collect income figure, rather collected land holdings.

CHAPTER II

Macro Profile of Orissa with Regards to Food Security

2.1 Introduction

2.2 Supply Side Position of Food Security

- **(a) Per capita Net Availability of Food Grains in Orissa and India (1961-1998)**
- **(b) Land Utilisation And Cropping Pattern**
- **(c) Yield Rate**
- **(d) Fertiliser Consumption**
- **(e) Irrigation**
- **(f) Transport**

2.3 Demand Side Position for Food Security

- **(a) Land Holding**
- **(b) Work Participation**
- **(c) Wage Earnings**
- **(d) Consumer Expenditure**
- **(e) Education**

2.4 Consequences of Demand and supply deficiency on Food security

- **(a) Poverty**
- **(b) Nutritional Status**

2.1 Introduction

This chapter tries to analyse the situation of food security in Orissa from the demand and supply side. It also looks at the perspectives of supply and demand of food grains in Orissa to provide food security to the population of the state in general and to the poor of the state in particular. To analyse the supply side position we have taken per capita net availability of food grains, land utilisation pattern, and irrigation and yield rate. And to see the demand side position of food security, we have taken land holding, work participation, wage rate, consumer's expenditure and education. In the analysis we have found that the most important issue of the food insecurity in Orissa is the 'demand' problem. Therefore, this chapter also looks at the consequences of demand deficiency of the people of Orissa in terms of poverty and nutritional status.

2.2 Supply Side Position of Food Security

a) Per Capita Net Availability of Food Grains in Orissa and in India (1961-1998)

Based on the equation mentioned in chapter I, here the analysis of annual data on per capita net availability of food grains (PNAF) between 1961 to 1999 has been done. Table 2.1 shows the PNAF from 1960-61 to 1998-99, which depicts that for most of the year, not only the per capita net availability of food grains in Orissa has been higher than that of India, but also it has been remaining higher than the conventional approach's per capita requirement of food grains 460 grams per day in India. But, as the same Table reveals, the gross food grains production in Orissa has fluctuated highly over the years. Roughly from 1990-91 and precisely after 93-94 the production of food grains has declined sharply and reached to a low level of 48.1 lakh metric ton during 1996-97. The major factor that contributed to the low production of food grains was the late and erratic monsoon in northern and western parts of the Orissa (Economy Survey of Orissa, 1999-2000) and lower per cent of net irrigated area in the state (41 per cent by 1998-99). But as the Table and Figure 2.1 shows, on an aggregated level the net available food grains of the state can provide at least 460 grams of food grains per person per day for most of the years during that time period of 1961 to 1999. In Figure 2.1, we have presented net per capita availability of food grains in Orissa as percentages of all India. It shows, for most of the years, it remained more than 100 per cent, i.e. net per capita availability of food grains of Orissa is higher than that of all India, but in 1990s it has declined sharply. And this declining trends of the food grains in the 1990s may lead to deficiency in the supply of required food grains in the state and have to

depend much on other sources. Therefore, to know what are the other contributory factors that led to the declining food grains, apart from erratic monsoon, the patterns of land utilisation in the state; the cropping pattern, fertiliser consumption and levels of irrigation are also considered. The per capita availability of food grains in India and in the state and the inter-district variation in production is also presented here.

Table 2.1 (A) Total Availability and Per Capita Net Availability of Food Grains in India (1961-99) (In thousand tons unless otherwise stated).

Year	*GPF*	*NP*	*NI*	*ΔS*	*NA*	*P (000 person)*	*PNA (GPD)*
1	2	3	4	5	6	7	8
1960-61	82018	72035	3486	-165	75686	442372	468.7
61-62	82706	72097	3629	-355	76081	452212	460.9
62-63	80151	70288	4536	-22	74846	462027	443.8
63-64	80642	70612	6252	1243	78107	472132	453.2
64-65	88995.6	78196	7439	1063	84572	482530	480.1
65-66	72030.1	63304	10311	137	73478	493209	408.1
66-67	74231	64952	8659	260	73871	504162	401.4
67-68	95052	83171	5671	2035	86807	515414	461.4
68-69	94012.6	82261	3824	462	85623	526986	445.1
69-70	99501.3	87063	3547	1116	89494	538881	454.9
70-71	108422	94869	2010	2568	94311	551287	468.6
71-72	105167.7	92022	-498	-4694	96218	563833	467.5
72-73	97026.3	84898	3587	-309	88794	576798	421.7
73-74	104664.5	91582	5156	-404	97142	589990	451.0
74-75	99826.2	87348	7536	5559	89325	603465	405.5
75-76	121034	105905	670	10743	95832	617248	425.3
76-77	111167	97271	96	-1626	98993	631304	429.6
77-78	126407	110606	-599	-246	110253	645663	467.8
78-79	131902	115414	-220	359	114835	660276	476.4
79-80	109701	95988	-342	-5780	101426	675157	411.5
80-81	129867	113390	663	-241	114294	688320	454.9
81-82	133295	116633	1580	1329	116884	705204	454.0
82-83	129519	113329	4069	2662	114736	718900	437.2
83-84	152374	133327	2369	7062	128634	734500	479.8
84-85	145539	127347	-351	2657	124339	750400	453.9
85-86	150440	131635	545	-1578	133758	767199	477.6
86-87	143418	125491	-172	9487	115832	783730	404.9
87-88	140353	122809	3444	4569	121684	800496	416.4
88-89	169922	148682	1202	2648	147236	817488	493.4
89-90	171036	149657	1318	6952	144023	834698	472.7
90-91	176229	154341	-141	-4392	158592	851661	510.1
91-92	168374	147326	-442	-1601	148485	867818	468.7
92-93	179484	157048	3111	10382	149777	883910	464.2
93-94	184260	161228	1067	7499	154796	899953	471.2
94-95	191495	167206	-2	-1910	169114	915971	505.8
95-96	180415	157900	3.1	-5396	163299	932000	480.0
96-97	199436	174400		-1900	176300	948000	509.5
97-98	192259	168400	-2.5	8697.5	159700	970900	450.6
98-99	203043	177200	-0.9	8899.1	168300	986600	467.3

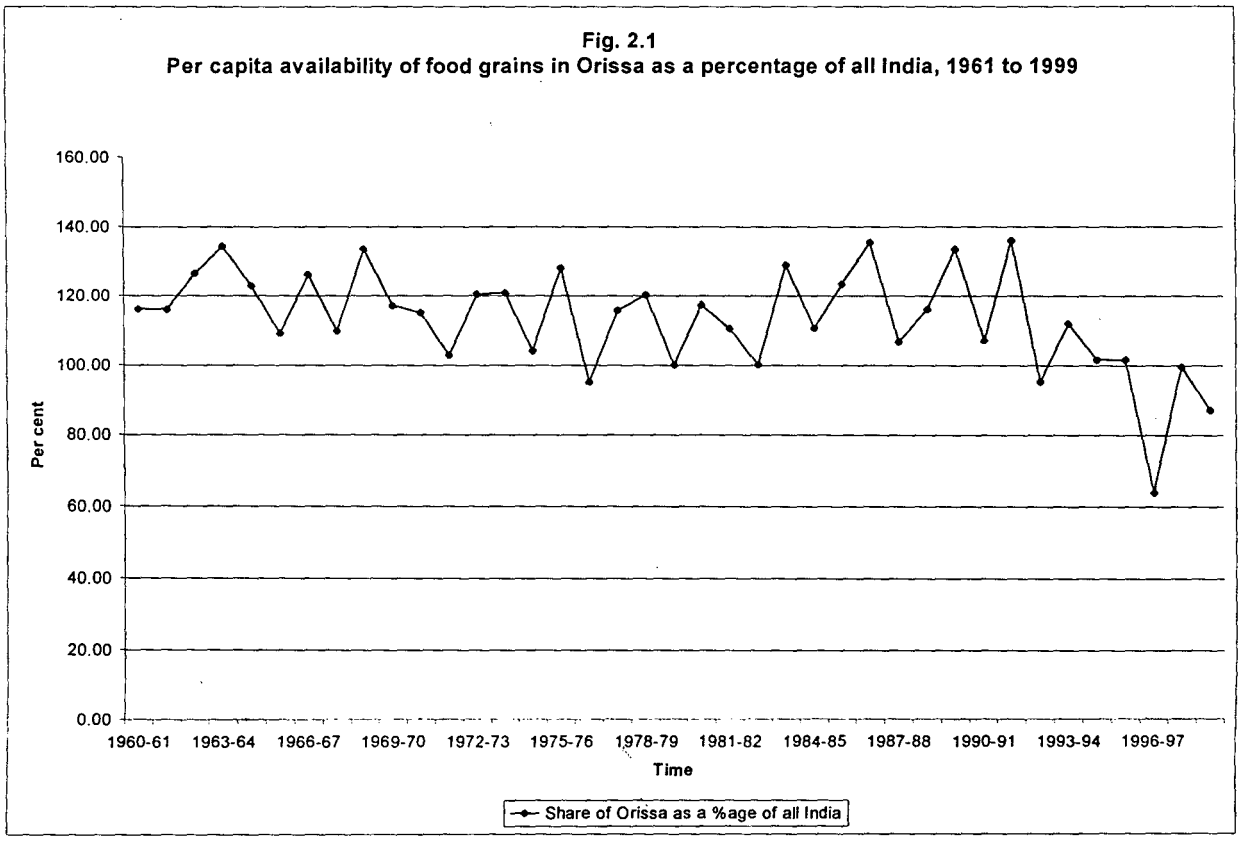
Table 2.1 (B) Total Availability and Per Capita Net Availability of Food Grains in Orissa (1961-99). (in thousand tons unless otherwise stated).

Year	*GPF*	*NP*	*TSF*	*Pc*	*NA*	*P*	*PNA (GPD)*	*R*	*16/8*100*
9	10	11	12	13	14	15	16	17	18
1960-61	4013	3511.37	-	22	3489.375	17548846	544.7	460	116.22
61-62	4034	3529.75	-	28	3501.75	17945539	534.6	460	115.98
62-63	4362.6	3817.27	-	56	3761.275	18351199	561.5	460	126.52
63-64	4842.9	4237.53	-	72	4165.538	18766029	608.1	460	134.18
64-65	4946.4	4328.1	67.3	262	4133.4	19190236	590.1	460	122.89
65-66	3736.5	3269.43	151	228	3192.438	19624033	445.6	460	109.20
66-67	4354.9	3810.53	103	205	3708.538	20067635	506.3	460	126.13
67-68	4334.6	3792.77	181	183	3790.775	20521266	506.0	460	109.68
68-69	5429.4	4750.72	89	292	4547.725	20985150	593.7	460	133.38
69-70	5032.9	4403.78	76	306	4173.788	21459521	532.8	460	117.11
70-71	5104.1	4466.08	116	256	4326.088	21944615	540.1	460	115.23
71-72	4353.8	3809.57	262	150	3921.575	22351498	480.6	460	102.81
72-73	4860.4	4252.85	106	142	4216.85	22765924	507.4	460	120.32
73-74	5274.7	4615.36	150	156	4609.363	23188035	544.6	460	120.73
74-75	3970.6	3474.27	262	98	3638.275	23617973	422.0	460	104.07
75-76	5570	4873.75	131	222	4782.75	24055882	544.7	460	128.06
76-77	4075	3565.62	170	82	3653.625	24501910	408.5	460	95.10
77-78	5561	4865.87	168	99	4934.875	24956208	541.7	460	115.80
78-79	5765	5044.37	311	39	5316.375	25418930	573.0	460	120.26
79-80	3872	3388	554	47	3895	25890231	412.1	460	100.14
80-81	5846	5115.25	177	155	5137.25	26370271	533.7	460	117.32
81-82	5437	4757.37	255	89	4923.375	26856775	502.2	460	110.60
82-83	4563	3992.62	457	83	4366.625	27352255	437.3	460	100.03
83-84	7016	6139	274	124	6289	27856875	618.5	460	128.91
84-85	5619	4916.62	405	118	5203.625	28370806	502.5	460	110.69
85-86	6883	6022.62	316	123	6215.625	28894218	589.3	460	123.38
86-87	6388	5589.5	421	124	5886.5	29427286	548.0	460	135.35
87-88	5021	4393.37	554	86	4861.375	29970189	444.4	460	106.71
88-89	6960	6090	440	143	6387	30523108	573.2	460	116.18
89-90	7974	6977.25	446	260	7163.25	31086227	631.3	460	133.55
90-91	6849	5992.87	554	226	6320.875	31659736	546.9	460	107.21
91-92	8273	7238.87	505	283	7460.875	32082972	637.1	460	135.91
92-93	5909	5170.37	464	389	5245.375	32511867	442.0	460	95.21
93-94	7222	6319.25	387	359	6347.25	32946495	527.8	460	112.00
94-95	6904	6041.00	559	345	6255	33386933	513.2	460	101.47
95-96	6782	5934.25	538	456*	6016.25	33833259	487.1	460	101.49
96-97	4810	4208.75	346	476*	4078.75	34285552	325.9	460	63.97
97-98	6612	5785.50	606	700*	5691.5	34743891	448.8	460	99.59
98-99	5788	5064.50	649	480*	5233.5	35208357	407.2	460	87.14

*Notes: - * These Figures are taken from Reports of The Commission for Agricultural Costs and Prices 1999-2000, and it is only the rice procurement Figure Net import of food grains is insignificant with respect to the net production of food grains of Orissa (less than 5 per cent).*

GPF- Gross production of food grains, NP - Net production, NI - Net import, Δ S -Change in government stock, NA- Net availability, PNA- Per capita net availability, P - Population, Pc- Procurement, GPD -Gram per Day, TSF – Total Supply of Food.

Source: Bulletin on Food Statistics, various issues.



Per Capita Availability of Food Grains: A Disaggregated Analysis of Orissa

Table 2.2 (Appendix, Chapter 2) provides the per capita availability of food grains across the districts of Orissa. We found that there is a high variability of per capita availability of food grains across the districts. It is found that out of the 30 districts of Orissa, around 17 district were having per capita net availability of food grains below the state average of 592 grams per day per person and around 8 districts were having less than 300 grams of food grains during 1994-95. Hence at the disaggregated level it has shown a high variability across the districts. Therefore, unless there will be proper distribution of food grains in the state, people of some districts may face higher food insecurity problem when there is inefficiency in the free market as well as in the dual market system. The next section examines land utilisation pattern and cropping patterns and their influences on production in Orissa.

b) Land Utilisation and Cropping Pattern

Table 2.3 presents the land utilisation pattern in Orissa and India from 1989-90 to 1997-98. As the Table depicts, in Orissa more than $1/3^{rd}$ of the reported area is under forest cover and over

the period of time it has marginally increased. In India as a whole, there is a marginal increase in the forest area but the area covered under forest is, in percentages terms around 1/5th of the reported area, which is less than Orissa (around 36 per cent of the reported area). Having adequate forest may be a favourable factor for good agro-climatic conditions and may lead to agricultural production, but at the same time more forest area may reduce the area for cultivation. Secondly, the percentage of area not available for cultivation has been increasing from 7.55 to 9.35 per cent in Orissa, whereas in India it stood at around 13.5 per cent. Thirdly, as the net area sown shows, in Orissa, it is not only 7 per cent less than that of from India, but also it has reduced marginally from 40.41 to 39.3 per cent. Whereas, for India this figure stood at around 46.7 per cent of the reported area during 1989-90 to 1997-98.

Table 2.3 Land utilisation patterns in Orissa and India, 1988-89 to 1997-98. (Percentage of area reporting).

	Under forest		***Not available for cultivation***		***Other uncultivated land excluding fallow***		***Fallow land***		***Net sown area***	
Year	Orissa	India	Orissa	India	Orissa	India	Orissa	India	Orissa	India
1989	35.93	21.96	7.55	13.52	12.14	9.91	3.98	8.06	40.41	46.55
1990	35.24	22.11	7.99	13.43	13.53	9.91	2.57	7.86	40.68	46.69
1991	35.24	22.2	8.01	13.35	14.04	9.91	2.14	7.71	40.57	46.84
1992	35.28	22.21	8.02	13.44	13.85	9.85	2.07	8.12	40.78	46.38
1993	35.25	22.32	8.45	13.53	13.24	9.71	2.49	7.72	40.57	46.72
1994	35.61	22.44	8.51	13.45	12.8	9.61	2.52	7.88	40.56	46.61
1995	35.61	22.51	8.51	13.46	12.8	9.52	2.52	7.62	40.56	46.9
1996	36.75	22.57	9.06	13.57	10.69	9.39	3.62	7.81	39.88	46.64
1997	36	22.55	9.35	13.63	11.26	9.36	5.06	7.61	38.33	46.84
1998	36								39.3	

Note: 1988-89's Figure is considered as 1989.
Source: Agriculture, Centre for Monitoring Indian Economy, 1998 Figures is taken from Economy survey of Orissa 1999-2000.

Cropping Pattern

To find out the various explanations of the declining trends in the food grain production, we have also looked in to the cropping pattern of Orissa during 1970-71 to 1997-98 (see Table 2.4).

Table 2.4 Cropping patterns of Principal crops in Orissa.

Year	*Rice*	*Other Cereals*	*Total Cereals*	*Green Gram*	*Black Gram*	*Other Pulses*	*Total Pulses*	*Food Grains*
1	2	3	4	5	6	7	8	9
1970-71	66.72	6.29	73.01	4.77	0.00	7.73	12.49	85.51
1975-76	60.57	8.61	69.19	5.48	3.33	5.85	14.66	83.84
1980-81	49.16	11.64	60.80	8.09	4.80	7.34	20.24	81.04
1986-87	48.71	7.15	55.86	7.70	5.91	8.26	21.87	77.73
1990-91	45.90	5.77	51.67	7.66	5.98	8.57	22.22	73.89
1997-98	54.01	5.35	59.37	7.19	5.85	7.06	20.10	79.47

Year	Ground nuts	Sesamum	Other oilseeds	Total oilseeds	Total vegetables	Total fibres	Total condimen & Spices	Sugarc ane	Tobacco	Total non food grains	Gross cropped area
10	11	12	13	14	15	16	17	18	19		20
1970-71	1.04	1.34	2.50	4.88	5.86	1.16	0.85	0.45	0.21	18.3	100.00
1975-76	1.41	1.54	3.46	6.42	5.14	1.08	1.17	0.59	0.22	21.029	100.00
1980-81	2.02	1.84	4.78	8.64	6.74	1.17	1.59	0.57	0.25	27.6	100.00
1986-87	3.83	3.14	4.21	11.17	7.68	0.98	1.79	0.47	0.18	33.445	100.00
1990-91	4.13	3.57	4.36	12.06	8.18	0.94	1.70	0.51	0.16	35.608	100.00
1997-98	3.13	3.37	4.24	10.74	6.18	0.99	2.00	0.53	0.10	31.27	100.00

Source: - Computerised Database of Orissa Economy, Originally from Orissa Agricultural Statistics, Directorate of Agriculture and Food Production, Orissa, Bhubaneswar.

As the Table shows, first, the area under food grains as a percentage of gross cropped area has declined from 85.51 per cent to as low as 73.89 per cent in 1990-91 and stood at 79.47 per cent in 1997-98. This decline has largely contributed to the decline in area under total cereals (from 73.01 per cent in 1970-71 to 59.37 per cent in 1997-98), again the decline in area under total cereals has significantly contributed to the decline in area under paddy cultivation. Secondly, the Table shows that the area under total pulses has increased from 12.49 per cent in 1970-71 to 20.10 per cent in1997-98. The major contributory crops for this are the area increased under Black gram and Green gram cultivation from 0.00 per cent to 5.85 per cent and 4.77 per cent to 7.19 per cent respectively. Thirdly, the area under non-food grains has increased from 18.3 per cent in 1970-71 to 35.60 per cent in 1990-91 and stood at 31.27 per cent in 1997-98. But things are some how different at the disaggregated level.

Table 2.5 shows the cropping pattern in Orissa at the district level. The analysis has been done based on the old districts of Orissa. From the Table it has been observed that the area under food grains has declined for the entire districts during 1970-71 to 1990-91 and the area under non-food grain has increased. However in the post 1990, the area under food grain has shown a marginal increase and that of non-food grain has shown a marginal decrease. But, on the whole during 1970-71 to 1997-98 the area under food grains has declined, which may be the reason of declined in the food grains in Orissa.

Figure 2.2
Yield rate of food grains of Orissa and India, 1970-71 to 1998-99

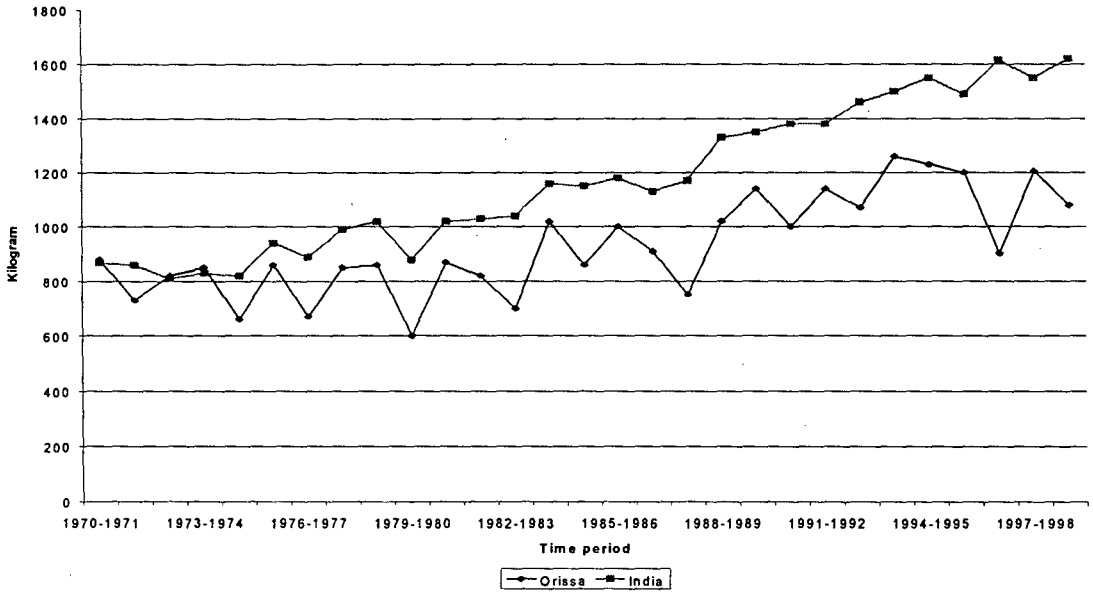


Table 2.5 Cropping pattern in Orissa, a Disaggregated Analysis, and 1970-71 to 1997-98.

Year	*Food Grains*						*Non Food Grains*					
	1970-71	75-76	80-81	86-87	90-91	97-98	70-71	75-76	80-81	86-87	90-91	97-98
Districts												
Balasore	90.07	86.62	82.83	79.61	74.83	85.37	8.6	11.9	17.2	20.4	22.8	14.6
Bolangir	86.84	83.40	87.93	77.92	74.53	80.35	13.0	16.0	12.0	22.0	25.0	20.0
Cuttack	84.90	81.91	79.33	76.83	71.83	80.81	14.0	15.0	21.0	23.0	25.0	19.0
Dhenkanal	84.19	84.05	80.36	71.66	67.53	71.45	15.8	15.9	19.6	28.3	32.5	28.5
Ganjam	84.78	85.6	84.71	79.9	76.01	84.5	15.2	14.4	15.3	20.1	24.0	15.5
Kalahandi	85.88	81.28	77.14	78.54	76.63	77.88	14.1	18.7	22.9	21.5	23.4	22.1
Keonjhar	85.82	83.8	81.29	77.9	73.76	78.00	14.2	16.2	18.7	22.1	26.2	22.0
Koraput	84.43	79.6	76.20	74.1	71.84	-	15.6	20.4	23.8	25.9	28.2	-
Mayurbhanj	88.74	87.37	83.44	80.03	76.44	81.62	11.3	12.6	16.6	20.0	23.6	18.4
Phulbani	74.02	69.32	66.6	69.17	64.48	73.56	26.0	30.7	33.4	30.8	35.5	26.4
Puri	86.33	87.22	57.05	83.21	79.20	87.35	13.7	12.8	43.0	16.8	20.8	12.7
Sambalpur	88.37	87.62	84.97	79.6	75.60	77.54	11.6	12.4	15.0	20.4	24.4	22.5
Sundargarh	88.18	88.46	85.16	79.7	74.44	83.66	11.8	11.5	14.8	20.3	25.6	16.3
Orissa	85.51	83.84	81.04	77.73	73.89	79.47	14.5	16.2	19.0	22.3	26.1	20.5

Source: - Same as Table 2.4

(C) Yield Rate of Food Grains

Yield rate is one of the indices used to examine the level of agricultural development. Table 2.6 and Figure 2.2 shows the yield rate of food grains in Orissa and India for the period of 1970-71 to 1998-99. It has been observed that except in the initial four years, the yield rate of food grains in Orissa has remained lower than that of all India and it showed more fluctuation when compared to all India. The gap of average yield rate between Orissa and India started from a negative value and went on increasing and reached around 540 Kg. The same Table also shows the yield rate of rice in Orissa and India. The yield rate of rice for Orissa remained lower than

that of all India and gap between these two keeps on widening. This shows that the pace of agricultural development in Orissa is slower than all India.

Table 2.6 Yield Rate of Food Grains in Orissa and in India, 1970-71 to 1998-99.

Year	*Yield of food grains (Kg/hectare)*		*Yield of rice (Kg/hectare)*		*Year*	*Yield of food grains(Kg/hectare)*		*Yield of rice (Kg/hectare)*	
	Orissa	India	Orissa	India		Orissa	India	Orissa	India
1970-71	880	870	960	1120	1985-86	1000	1180	1190	1550
1971-72	730	860	780	1140	1986-87	910	1130	1100	1470
1972-73	820	810	890	1070	1987-88	750	1170	860	1470
1973-74	850	830	930	1150	1988-89	1020	1330	1240	1690
1974-75	660	820	710	1040	1989-90	1140	1350	1430	1740
1975-76	860	940	970	1230	1990-91	1000	1380	1200	1740
1976-77	670	890	730	1090	1991-92	1140	1380	1460	1750
1977-78	850	990	980	1310	1992-93	1070	1460	1210	1740
1978-79	860	1020	1010	1330	1993-94	1260	1500	1450	1890
1979-80	600	880	710	1070	1994-95	1230	1550	1430	1910
1980-81	870	1020	1030	1340	1995-96	1200	1490	1370	1800
1981-82	820	1030	930	1310	1996-97	903	1614	993	1882
1982-83	700	1040	740	1230	1997-98	1206	1550	1380	1900
1983-84	1020	1160	1180	1460	1998-99	1080	1620	1210	1930
1984-85	860	1150	970	1420					

Source: - Centre For Monitoring Indian Economy Pvt. Ltd, Nov 2000. Originally data are taken from Directorate of Economics and Statistics under the Union Ministry of Agriculture and National Horticulture Board.

(d) Fertiliser Consumption

Use of fertiliser plays a significant role in increasing productivity. As the Table 2.7 shows the chemical fertiliser consumption in the state, which was 10.84 Kg. per hectare in 1983-84 has increased to 30.52 Kg. per hectare in 1996-97, whereas for all India the same has remained 42.92 Kg. and 75.29 Kg. during the same time period. However, the fertiliser consumption of some districts of Orissa such as Balasore, Cuttack, Puri and Sambalpur has increased rapidly, whereas for other districts such as Sundargarh, Keonjhar, Mayurbhanj and Phulbani., the same has remained at a low level. Hence the agricultural productivity across the state also differed highly.

(e) Irrigation

Adequate amount of irrigated area in an economy is a stimulus to generate satisfactory amount of employment, income and output. But the inadequacy of assured irrigation in Orissa has been a major bottleneck for the agricultural development. In Orissa, the total estimated cultivable land is 65.59 lakh hectare of which, 59.00 lakh hectare can be brought under assured irrigation

through different types of irrigation and of which, only 23.44 lakh hectare of net irrigation potential had been created through all sources by 1996-97. This constituted 39.73 per cent of the estimated irrigable area. Table 2.8 depicts the net and gross irrigated area for India and Orissa from 1989-90 to 1996-97. The Table depicts that as far as the net irrigated area is concerned, the gap between India and Orissa is not much, it is only around 2 per cent through out the time period. But as far as the gross irrigated area is concerned the gap between India and Orissa has increased from around 3 per cent to around 10 per cent. As the gross cropped area represents the area that is sown more than once, it is found that in Orissa the irrigation facility for the lands which are sown more than once is much lower than all India (around 10 per cent less).

Figure 2.3 shows the coverage of different types of irrigation in the state in percentage terms for the year 1996-97. It has been found that 45.41 per cent of the net irrigated area in the state is irrigated by canal irrigation, 40 per cent by total (including tube wells) wells and rest 14.59 per cent is done by tank irrigation. However at the disaggregated level, the area under irrigation varies highly across the districts. Table 2.9 and Figure 2.4 shows the disaggregated analysis of the irrigated area in Orissa. From the Table and from the Figure it is distinctly clear that the gross irrigated area as percentages of gross cropped area is highly concentrated in the districts of Balasore, Cuttack, Ganjam and Sambalpur. Hence as far as the agricultural production is concerned, these district are better off, whereas, the rest of the districts were irrigated poorly, hence the agricultural production of those districts may be low compare to the counterpart. And especially, when the food grains production is hamper, there is more probability that the food insecurity of the people of those districts may threaten unless there will be effective government intervention.

In the next section we have described the role and statistics of transport to provide food security in the state.

(f) Role of Infrastructure in Food Security[1]

Regions with enough infrastructures seem to be less vulnerable to chronic and temporal food shortages. Hence the integrated planning of food production and rural infrastructure may be more effective to ensure a higher level of food security.

Although infrastructure includes many things, but road and railways infrastructure only is dealt with here. Roads play a major role for food security in making food, inputs and services available and accessible by all parts of regions. Better roads will lower transportation costs, they allow for better regional food supply due to better penetration of the region (e.g. surpluses can be marketed, food aid can reach villages in time of food shortage), market efficiency can be increased by making farm supply quicker and providing inputs for agricultural production quickly. In Table 2.10, we have provided the road and rail length in Orissa (all the districts of Orissa) and in India. As on 31.03.99, the total road length in the state was around 222303 kilometres of which 23.33 per cent are surfaced roads. The surfaced road length density was around 333 Km., in Orissa compared to the all India average of 363 Km (per 1000 sq. Km). Table 2.10 provides the total roads and railways length in the country, which shows the total road length density across the state vary from 680 Km. of areas to 3222 Km in Puri per thousand square kilometres of areas. The mean road length density in the state is around 1381 kilometres per thousand square kilometres of areas, but it has observed that the road length density of 13 district out of 30 district were below the state average.

As far as the rail transport is concerned, Orissa has remained far backward. Even after fifty years of independence, the present railway lines pass through fringes of the state leaving the central areas untouched. This low performance of rail way network along with road length are some factors, which have an adverse impact on the pace of infrastructure and industrial development in the state. The total railway route in the state was 2317 km as on 31.03.99. This constituted only 3.5 per cent of the total railway network in the country. The railway length density per thousand sq. km of areas is around 14 km in the state as against 19.0 kilometres of all India average and occupies the 13^{th} position among all the states in the country. Therefore the poor performance in railway network and in the road network also a reason to threatened food security in the state.

With this description of the supply side position of food grains in Orissa, in the next section, we have discussed about the demand side position of food security in the state.

Table 2.7 Fertiliser consumption in Orissa by its districts and all India. (in kg/ha).

Districts	*83-84*	*84-85*	*85-86*	*86-87*	*87-88*	*88-89*	*89-90*	*90-91*	*91-92*	*92-93*	*93-94*	*94-95*	*95-96*	*96-97*
Balasore	9.81	12.97	15.24	23.60	18.60	26.00	26.60	36.20	37.90	-	90.92	113.16	122.41	142.95
Balangir	8.69	9.75	12.44	9.80	11.30	18.90	16.10	13.60	12.70	-	26.88	23.10	26.32	33.29
Cuttack	12.29	14.10	13.48	15.90	17.40	29.00	21.80	20.50	20.80	-	110.68	127.99	110.96	145.08
Dhenkanal	6.02	6.61	7.19	8.00	7.70	9.10	8.40	12.40	10.80	-	21.32	21.74	22.37	30.52
Ganjam	17.12	23.78	30.71	22.50	21.60	36.10	37.20	33.80	28.60	-	57.08	52.49	53.15	82.80
Kalahandi	0.89	1.07	1.35	1.80	2.50	4.30	5.40	7.20	8.60	-	14.98	15.62	17.85	23.64
Keonjhar	4.30	6.70	9.13	7.40	6.80	10.30	10.10	9.10	8.80	-	10.09	7.76	10.56	13.04
Koraput	0.07	4.50	5.96	7.70	6.10	10.40	10.80	10.50	9.10	-	41.74	41.45	54.11	64.73
Mayurbhanj	4.43	5.54	5.66	7.30	6.80	9.90	10.90	13.00	13.90	-	14.03	13.75	13.97	20.06
Phulbani	2.63	2.87	3.61	3.80	3.80	5.60	5.40	7.20	5.70	-	16.23	13.07	21.88	23.00
Puri	13.64	15.73	19.37	21.50	26.90	26.60	34.60	23.50	25.50	-	77.80	101.09	104.91	120.97
Sambalpur	36.38	41.64	49.83	51.30	52.80	54.80	54.10	48.90	45.50	-	150.44	153.56	177.59	180.28
Sundergarh	11.13	10.06	13.62	13.90	13.50	17.80	17.30	10.20	11.10	-	11.70	10.04	12.21	12.25
Orissa	10.84	12.99	15.74	16.40	16.70	22.00	21.70	20.70	20.00	21.60	21.95	23.30	24.57	30.52
India	42.94	46.57	47.48	49.01	51.64	60.57	63.47	67.55	69.84	65.53	66.34	72.13	74.38	75.49

Source: Same as Table 2.6, originally from Directorate of Agriculture and Food Production. Cited in "Economic Survey of1988-89, 1990-91,1992-93 & 1997-98". Planning and Co-ordination Department (Directorate of Economics and Statistics), Bhubaneswar.

Table 2.8 *Percentages of Irrigated Area in Orissa and India, 1989-90 to 1996-97.*

	Net irrigated area as a percentage of net sown area		***Gross irrigated area as a percentage of gross cropped area***	
Year	Orissa	India	Orissa	India
1989-90	30.45	32.81	30.89	33.93
1990-91	30.68	33.61	30.59	34.03
1991-92	30.52	35.24	29.93	36.04
1992-93	32.84	35.29	33.05	35.99
1993-94	33.16	36.21	25.75	36.48
1994-95	33.16	37.07	25.81	37.56
1995-96	33.66	37.55	27.19	38.25
1996-97	35.02	38.61	27.54	38.66

Source: - Agriculture, Centre for Monitoring Indian Economy, (2000).

Figure 2.3
Percentages of Irrigation done by different sources in Orissa, 1996-97.

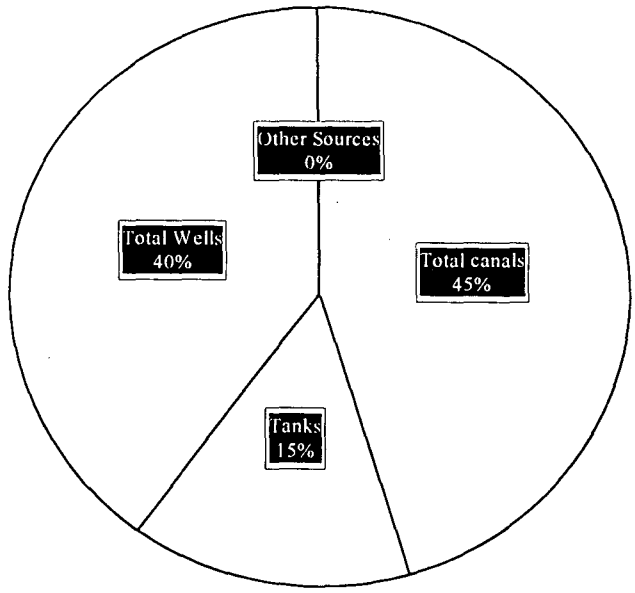


Table 2.9 District wise Distribution of Gross Irrigated Area as a Percentage of Gross Cropped Area in Orissa (1985-86), (Area in hectare).

Districts	*Gross Irrigated*	*Gross Cropped*	*GIA as a Percentage of GCA*
Balasore	104819	457000	22.94
Bolangir	75130	461000	16.30
Cuttack	205332	732000	28.05
Dhenkanal	16311	343000	4.76
Ganjam	199049	529000	37.63
Kalahandi	18580	455000	4.08
Keonjhar	9196	270000	3.41
Koraput	31364	701000	4.47
Mayurbhanj	43981	381000	11.54
Phulbani	23368	179000	13.05
Puri	115702	534000	21.67
Sambalpur	205859	658000	31.29
Sundergarh	23113	270000	8.56
Orissa	1071804	5970000	17.95

Source: Same as Table 2.6

Table 2.10 District wise length of different types of roads and railway in Orissa, 1999. (In KM)

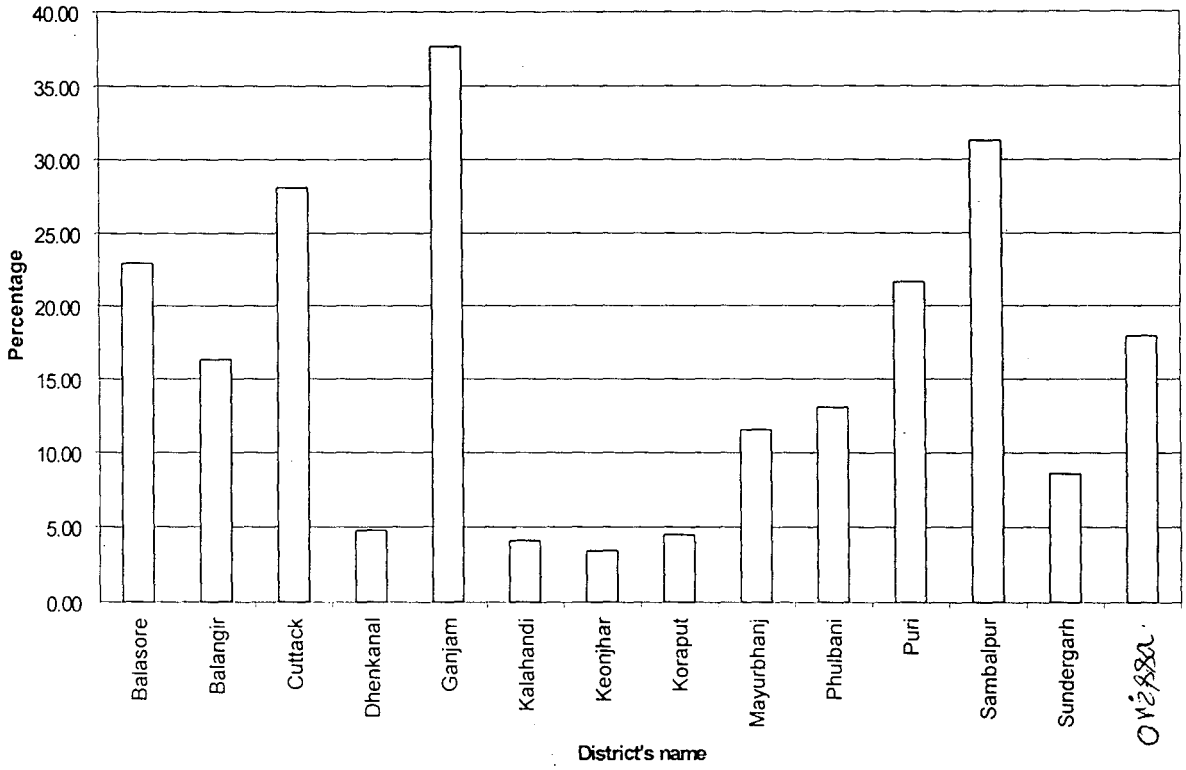
	Roads				Total Railway Route	Road Density	Rail Density
Districts	Category 1	Category 2	Category 3	Total			
Angul	211	443	9238	9892	107	1587.29	17.17
Balasore	149	413	4190	4752	117	1307.65	32.20
Bargarh	166	335	8955	9456	53	1620.84	9.08
Bhadrak	128	282	3171	3581	32	1337.69	11.95
Bolangir	86	632	8043	8761	177	1333.69	26.94
Boudh	168	127	4871	5166	0	1500.00	0.00
Cuttack	120	764	4941	5825	103	1560.41	27.59
Deogarh	139	128	3826	4093	0	1470.19	0.00
Dhenkanal	94	571	7086	7751	67	1686.83	14.58
Gajapati	251	142	5088	5481	50	1423.64	12.99
Ganjam	756	810	10455	12021	80	1380.77	9.19
Jagatsinghpur	72	473	2590	3135	67	1588.95	33.96
Jajpur	180	481	4141	4802	102	1662.74	35.32
Jharsuguda	21	156	4182	4359	66	1981.36	30.00
Kalahandi	176	628	11578	12382	38	1480.39	4.54
Kandhamal	340	524	7089	7953	0	1039.61	0.00
Kendrapara	108	366	3987	4461	0	1750.78	0.00
Keonjhar	321	620	4706	5647	40	680.12	4.82
Khurda	167	792	7335	8294	125	2870.89	43.27
Koraput	278	859	7226	8363	252	1059.01	31.91
Malkanagiri	158	357	4132	4647	0	750.73	0.00
Mayurbhanj	275	1102	10608	11985	150	1150.41	14.40
Nawapara	0	348	6864	7212	0	2116.20	0.00
Nayagarh	144	459	6513	7116	0	1677.51	0.00
Nowarangapur	110	140	5266	5516	32	1041.93	6.04
Puri	55	453	9324	9832	36	3222.55	11.80
Rayagada	248	479	5879	6606	207	871.50	27.31
Sambalpur	332	243	8641	9216	140	1375.93	20.90
Sonepur	72	122	3746	3940	13	1680.89	5.55
Sundergarh	396	651	11839	12886	263	1326.81	27.08
Total	5721	13900	195510	215131*	2317	1381.64	14.88
Mean	190.7	463.3333	6517	7171.033	77.23333	1517.91	15.29
S.D.	142.2484	244.5186	2574.3427	2785.73	73.79642	540.74	13.44

Notes: Category 1 includes National highway, Express highway and state highway, Category 2 includes Major district road, Other district road and classified village road and category 3 includes village road panchyat samiti road, gram panchayat road, forest road and municipal road. All are provisional Figure.

** Total road length includes some other roads and the total was around 222303 kilometres, here the 6277 Km of irrigation road, 88 Km of GRIDCO (Grid corporation of Orissa) and 807 km of non-finalised national road has not included.*

Source: Economy survey of Orissa, 1999-2000.

Figure 2.4
Districtwise distribution of gross irrigated area as a apercentage of gross cropped area in Orissa (1985-86)



2.3 Demand Side Position for Food Security

In the previous section, we have observed that in Orissa, at the aggregated level the extent of food insecurity, due to supply deficiency is not a very big problem. However, as the literature shows that poverty in Orissa is highest, therefore in this section we look into the problem of food insecurity from the demand side.

Demand for food is dependent on many factors, such as price of food, income of the individuals, taste of individuals etc. But here we have considered only the following four factors, to which we thought, would directly or indirectly help individuals while he/she demands for food. The factors considered here are land holding, work participation rate, wage rate and level of education. Land holding is considered because it is the most common form of entitlements. Education is considered because it is the most common qualities to improve the capabilities of the human being. And as basic needs and income are positively related and food security is also an element of basic need, we have considered the work participation rate and wage rate in our analysis because it would provide insights into the income of an individual.

(a) Land Holdings

Among all other types of entitlement, land holding, is one of the most common forms of entitlement. Hence the redistribution of land ownership in favour of the landless and agricultural labourers may provide them a sense of participation in rural life and also let them have an access to food. Table 2.11 shows the number of operational holding in the state during 1970-71 to 1990-91. The Table shows that, first, the marginal land holding and the semi medium land holding size increased from 43.30 per cent to 53.65 per cent and 13.28 per cent to 15.04 per cent respectively. But the small, medium and large size holding's number has decreased, in percentage terms from 32.89 per cent to 26.22 per cent, 9.08 per cent to 4.71 per cent and 1.44 per cent to 4.71 per cent respectively during the same time period.

The area under operation shows that over the same time period it has increased for marginal and semi medium size land holding and has decreased for medium and large size land holdings. The average land holdings has decreased for all sizes and it has remained around 1/2 hectares for marginal size of land holder and for all others, remained at least more than one hectare.

The Table 2.11 also depicts that land reforms has happened in the state, but from the land reforms, the semi medium size land holder has comparatively benefited more than any other size group. For them the area under operation has increased from 21 per cent to 29 per cent, for the marginal land holding size also it has increased from 11 per cent to 19 per cent. Hence they have also partially benefited from the land reform.

Therefore, as the land reforms and access over food is concerned, it is the semi medium land holding size, which largely benefited compared to marginal size holding. Hence the demand side problem has not been removed fully by bringing in reforms on land holdings.

Table 2.11 Number of Operational Holdings and Area Operated by Different Classes of Operational Holdings over the Time Period in Orissa.

		Size classes					
	Year	Marginal	Small	Semi-medium	Medium	Large	All-sizes
Number of Holdings	1970-71	1475539 (43.30)	1120719 (32.89)	452610 (13.28)	309414 (9.08)	49136 (1.44)	3407418 (100)
	1976-77	1675135 (46.66)	1043475 (29.07)	602111 (16.77)	233255 (6.50)	36111 (1.01)	3590087 (100)
	1980-81	1559657 (46.86)	891045 (26.77)	610337 (18.34)	238705 (7.17)	28406 (0.85)	3328150 (100)
	1985-86	1867603 (52.09)	910089 (25.38)	583313 (16.27)	203943 (5.69)	20580 (0.57)	3585528 (100)
	1990-91	2118000 (53.65)	1035000 (26.22)	594000 (15.04)	186000 (4.71)	15000 (0.38)	3948000 (100)
Operated Area (in Hectare)	1970-71	769950 (11.94)	1713915 (26.58)	1362672 (21.13)	17947333 (27.83)	807445 (12.52)	6448715 (100)
	1976-77	853215 (14.84)	1465080 (25.47)	1599918 (27.82)	1304503 (22.68)	528440 (9.19)	5751158 (100)
	1980-81	794448 (15.05)	1193773 (22.62)	1580336 (29.94)	1316212 (24.94)	392743 (7.44)	5277512 (100)
	1985-86	919489 (17.48)	1273057 (24.20)	1567452 (29.79)	1167042 (22.18)	333778 (6.34)	5260818 (100)
	1990-91	1045000 (19.73)	1426000 (26.93)	1561000 (29.47)	1012000 (19.11)	252000 (4.76)	5296000 (100)
Average Area per	1970-71	0.52	1.53	3.01	5.80	16.43	1.89
	1976-77	0.51	1.40	2.66	5.59	14.63	1.60
	1980-81	0.51	1.34	2.59	5.51	13.83	1.59
	1985-86	0.49	1.40	2.69	5.72	16.22	1.47
	1990-91	0.49	1.37	2.62	5.44	16.5	1.34

Notes: Marginal - Below 1, Small - 1 to 2, Semi-Medium 2 to 4, Medium 4 to 10, Large 10 and Above (all are in hectare). Bracketed Figures are in percentages.
Source: For the year we have calculated from Economy Survey of Orissa 1999-2000 and rest are from Padhi, 2000.

Distribution of Land Holding Among Different Social Groups

Table 2.12 provides the land holding size among different social groups as per 1990-91 census. The Table shows that the number of operational holdings of SC farmers had a share of 13.70 per cent in the total number of holdings while their share in the total area constituted only 8.57 per cent. But the number of holdings of the ST farmers constituted 26.56 per cent to the total number of holding and their share in the total operational area constituted 28.70 per cent. This Table shows us that the land holding among the STs is better than that of SCs.

Table 2. 12 Distribution of Land Holding Among Different Social Groups as per 1990-91 Census in Orissa.

	No of Operational Holdings (thousand)			*Area of Operation (thousand)*		
Holding size	SC	ST	All groups	SC	ST	All groups
Marginal	389 (18.37)	514 (24.27)	2118 (100)	164 (15.69)	275 (26.32)	1045 (100)
Small	103 (9.95)	295 (28.50)	1035 (100)	168 (9.68)	414 (29.03)	1426 (100)
Semi-medium	42 (7.07)	180 (30.30)	594 (100)	105 (6.73)	476 (30.49)	1561 (100)
Medium	7 (3.76)	56 (30.11)	186 (100)	40 (3.95)	304 (30.04)	1012 (100)
Large	Nil -	4 (26.64)	15 (100)	7 (2.78)	51 (20.41)	252 (100)
Total	541 (13.07)	1049 (26.56)	3948 (100)	454 (8.57)	1520 (28.70)	5296 (100)

Note: Bracketed Figures are percentages.
Sources: - Economy Survey of Orissa, 1999-2000.

(b) Work Participation

The manpower of an economy is considered as an important asset to a country when they can actively participate in the process of country's development. A larger share of work participation for a longer time (may be Main Worker) may increase the earnings of workers and they may be able to purchase their other necessities of life, along with food grains and hence their food security could be achieved.

Total population of Orissa is 31659736 (1991 census), out of which 37.5 per cent are total workers, which is marginally lower than the proportion of worker to total population in 1981 (38 per cent). Out of the total workers, 87.3 per cent are main workers and 12.7 per cent are marginal workers. The percentage of workers in rural areas was 89 per cent and in urban areas 11 per cent. The proportion of male workers to male population and female workers to female population in 1991 was 54 per cent and 24 per cent respectively compared to 56 per cent and 20 per cent in 1981.

As the classification of the workers are concerned, out of 118.83 lakh active labour force, 38.7 per cent were cultivators, 25.1 per cent were agricultural labourers, 2.7 per cent were household industrial workers and 30.4 per cent were other workers. These Figures for 1981 census was 40.4 per cent cultivators, 23.9 per cent agricultural labourers, 2.8 per cent household industrial workers, 3.1 per cent other industrial workers and 29.8 per cent other workers.

In Table 2.13 (A) we have provided the work participation rate of main workers of all category people and for SC/ST people for 1971, 1981 and 1991 census and Table 13 (B) provides work participation rate of Orissa per cent to India. In Table 2.14 we have provided the same information sector wise for the same time point and in Table2.15 we have provided details of the workers across the districts of Orissa according to 1991 census.

Table 2.13 (A) Work Participation Rates for Main Workers for All Categories and for SC/ST Population During 1971, 1981 and 1991.

Area	*Year*	*For all Category*				*For Schedule Caste*				*For Schedule Tribes*			
		Main worker		F/M ratio		Total workers		F/M ratio		Total workers		F/M ratio	
		India	Orissa	India	Orissa	India	Orissa	India	Orissa	India	Orissa	India	Orissa
Rural	1971	33.8	31.3	24.5	12.2	-	-	-	-	-	-	-	-
	1981	34.8	33.1	30.6	20.1	-	-	-	-	-	-	-	-
	1991	35.8	33.4	36.1	23.9	37.6	35.3	42.3	28.8	42.8	40.6	56.9	40.4
Urban	1971	29.3	30.4	13.5	13.0	-	-	-	-	-	-	-	-
	1981	29.2	30.1	15.0	15.5	-	-	-	-	-	-	-	-
	1991	29.5	28.9	16.8	14.7	29.5	30.2	24.6	23.9	32.7	33.6	37.8	32.3
Total	1971	32.9	31.2	22.7	12.3	-	-	-	-	-	-	-	-
	1981	33.5	32.7	27.3	19.7	-	-	-	-	-	-	-	-
	1991	34.2	32.7	29.0	22.2	36.1	34.8	39.3	28.4	42.0	40.2	55.9	40.0

*Note: * F/M ratio * 100 of workers*

Table 2.13 (A) shows, that the work participation of the main workers of all categories have marginally increased between the time point (32.9 per cent for India and 31.2 per cent for Orissa in 1971 to 31.2 per cent for India and 32.7 per cent for Orissa in 1991). But the number of female per 100 male has increased more rapidly in Orissa (12.3 per cent in 1971 to 22.2 per cent in 1991) compared to India (22.7 per cent in 1971 to 29 per cent in 1991). However the number of female participation in main work is less in Orissa than India. And the female participation in work force is more in rural areas compared to urban areas. From the 1991 census the analyses of work participation shows that- the work participation of scheduled tribes is always higher than that of scheduled castes and the work participation of scheduled castes is always higher than all categories.

Table 2.13 (B) Work participation rates of Orissa as a percentage of India for main workers for all categories and for SC/ST population during 1971, 1981 and 1991.

		For all Category		*For Schedule Caste*		*For Schedule Tribes*	
		Main worker	F/M ratio	Total workers	F/M ratio	Total workers	F/M ratio
Area	Year	Orissa/India *100	Orissa/India *100	Orissa/India *100	Orissa/India *100	Orissa/India *100	Orissa/India *100
Rural	1971	92.6	49.8				
	1981	95.1	65.7				
	1991	93.3	66.2	93.9	68.1	94.9	71.0
Urban	1971	103.8	96.3				
	1981	103.1	103.3				
	1991	98.0	87.5	102.4	97.2	102.8	85.4
Total	1971	94.8	54.2				
	1981	97.6	72.2				
	1991	95.6	76.6	96.4	72.3	95.7	71.6

Source: Census of India 1971, 1981 & 1991 and Padhi, 2000.

The main workers participation's rate of Orissa, was less than India (see Table 13 (B)) but improved from 1971 (94.8 per cent) to 1981 (97.6 per cent), however, from 1981 to 1991, it has again started declined. Secondly, the percentages for F/M ratio, though it was far less in Orissa compared to all India, it has shown a improving tendency, from 54.2 per cent in 1971 to 76 per cent in 1991. However, as the Figures shows at the disaggregated level all the relevant Figures of rural Orissa is well below than the urban Orissa and this is also true for SC, ST workers and for the F/M ratio of the SC, ST workers.

Table 2.14 shows that, the proportion of main workers between 1981 to 1991 has decreased in primary and secondary sector, but it has increased in the tertiary sector. Secondly, as the 1991 census shows, the maximum number of workers were engaged in primary sector, (67 per cent for India and 75 per cent for Orissa) as compared to tertiary sector, (67 per cent for India and 75 per cent for Orissa) and secondary sector (67 per cent for India and 75 per cent for Orissa). Thirdly, the female work participation has decreased in secondary and tertiary sectors but increased in the primary sector. The F/M ratio in 1991, has remained highest in the primary sector (127.9 for India and 111.2 for Orissa) as compare to tertiary sector (46.4 for India and 55.2 for Orissa) and secondary sector (60.7 for India and 97.3 for Orissa).

Table 2.14 Distribution of Main Workers and Female Male Ratio Across Sector in 1981 and 91.

Sector		*Region*	*Rural*		*Urban*		*Total*	
			1981	1991	1981	1991	1981	1991
Primary	Employment	India	83.9	82.8	14.0	14.5	69.4	67.4
		Orissa	84.8	83.3	20.7	20.2	77.9	75.8
	F/M ratio	India	108.8	111.7	185.2	185.2	123.1	127.9
		Orissa	101.7	105.6	147.4	142.0	105.5	111.2
Secondary	Employment	India	7.5	6.8	33.8	30.3	12.9	12.1
		Orissa	6.1	5.7	24.1	21.2	8.0	7.5
	F/M ratio	India	82.1	75.3	82.9	80.4	65.0	60.7
		Orissa	142.1	124.1	70.8	65.5	112.8	97.3
Tertiary	Employment	India	8.6	10.4	52.2	55.2	17.6	20.5
		Orissa	9.0	11.0	55.1	58.7	14.0	16.6
	F/M ratio	India	41.4	37.4	91.3	93.5	47.5	46.4
		Orissa	59.8	50.8	96.6	99.1	64.4	55.2

Note: F/M ratio of Sectoral employment, Source: Census of India 1981 & 1991 and Padhi, 2000.

Table 2.15 shows that (1991 census) 37.53 per cent of the population are workers. But it varied highly across the districts, around 26 per cent in Bhadrak and Jajpur to around 49 per cent in Koraput and Nawarangapur. The total main worker and marginal worker are 87.3 per cent and 12 per cent of the total workers respectively. The main worker across the district varies from 79 per cent in Malkanagiri and Nawarangapur to around 96 per cent in Bhadrak, Cuttack, Jagatsinghpur, Kendrapara, Khurda and Puri, whereas the marginal worker across the districts vary from around 3 per cent in Bhadrak, Cuttack, Jagatsinghpur, Jajpur, Kendrapara, Khurda and Puri to around 18 to 20 per cent in Nawarangapur, Sundargarh, Mayurbhanj, Malkanagiri and Boudh.

When we looked at all these Figures in the Orissa map, it showed the regional disparity in the distribution of main workers and marginal workers. And as the number of working days is important to get continuous earnings, the districts with more percentages of main workers may be availing of more food than those who have fewer percentages of main workers.

Table 2.15 District wise population and proportion of Main workers and marginal workers in Orissa, 1991 census.

Districts	*Population*	*Total Workers*	*Col 3/2*100*	*Total Main Workers*	*5/2*100*	*Total Marginal Worker*	*7/2*100*
1	2	3	4	5	6	7	8
Angul	961037	368170	38.31	315601	85.72	52569	14.28
Balasore	1696583	500758	29.52	473255	94.51	27503	5.49
Bargarh	1207172	534769	44.30	446935	83.58	87834	16.42
Bhadrak	1105834	294635	26.64	284167	96.45	10468	3.55
Bolangir	1230938	501516	40.74	425507	84.84	76009	15.16
Boudh	317622	147856	46.55	120675	81.62	27181	18.38
Cuttack	1972739	585515	29.68	563792	96.29	21723	3.71
Deogarh	234238	105096	44.87	85696	81.54	19400	18.46
Dhenkanal	947870	311871	32.90	284289	91.16	27582	8.84
Gajapati	454708	224136	49.29	190707	85.09	33429	14.91
Ganjam	2704056	1083903	40.08	947048	87.37	136855	12.63
Jagatsinghpur	1014242	279250	27.53	269022	96.34	10228	3.66
Jajpur	1386177	366453	26.44	353280	96.41	13173	3.59
Jharsuguda	446726	174469	39.06	149756	85.84	24713	14.16
Kalahandi	1130903	509730	45.07	426175	83.61	83555	16.39
Kendrapara	1149501	288284	25.08	279392	96.92	8892	3.08
Keonjhar	1337026	519026	38.82	439953	84.77	79073	15.23
Khurda	1502014	449676	29.94	436036	96.97	13640	3.03
Koraput	1029986	514011	49.90	423115	82.32	90896	17.68
Malkanagiri	421917	197709	46.86	157765	79.80	39944	20.20
Mayurbhanj	1884580	863477	45.82	702511	81.36	160966	18.64
Nawapara	469482	214314	45.65	173459	80.94	40855	19.06
Nayagarh	782647	252662	32.28	236575	93.63	16087	6.37
Nowarangpur	846659	414901	49.00	328200	79.10	86701	20.90
Phulbani*	546281	260876	47.75	212946	81.63	47930	18.37
Puri	1305365	383249	29.36	368044	96.03	15205	3.97
Rayagada	713984	349079	48.89	294522	84.37	54557	15.63
Sambalpur	809017	356630	44.08	308397	86.48	48233	13.52
Sonepur	476815	210062	44.06	172599	82.17	37463	17.83
Sundergarh	1573617	620672	39.44	508139	81.87	112533	18.13
Orissa	31659736	11882755	37.53	10377558	87.33	1505197	12.67

Source: Census 1991, cited in Economy Survey of Orissa.

However, the work participation alone does not speak much about the earning of the worker. Therefore, in the following section we have look at the average daily wage earning of the worker in this state and by multiplying it with their annual average numbers of days of employment, try to find out their per capita annual earnings. And in the later part of the thesis, we have tried to see the differences and reason of differences in access to PDS by Kerala and Orissa, to observe the earnings (real wages) of the agricultural workers in Kerala vis-à-vis Orissa; here we have included Kerala also.

(c) Wage Earnings

We have considered here the earnings of the rural labourer. Because first, in Orissa, according to 1991 census 87.5 per cent of the total workers were main workers of which 75.8 per cent were working in the primary sector and out of which, 84.8 per cent belonged to rural area. Secondly, in Orissa around 87 per cent were belonged to rural area (1991 census). Hence we think it is more relevant to know the earning of the rural labourer.

The availability of employment opportunities and their wage earning is the primary source to determine theirs levels of living. Rural Labour Equiry (RLE) published by Labour Bureau, Ministry of Labour, Government of India is one of the source that provides information on wages and earnings of the rural labour households. Here we have tried to understand the wages and earnings of the rural labour household based on the National Sample Survey data of 43rd and 50th round. Table 2.16 provides earning strength; Table 2.17 shows wage earners per labour household and Table 2.18 shows the average daily earnings of workers in Orissa and in India across caste and sex composition.[2]

Table 2.16 Average Earning Strength of Rural Labour Household, 1987-88 and 1993-94 in Orissa and India.

			All category				*Scheduled caste*				*Scheduled tribes*			
			Male	Female	Total	F/M*	Male	Female	Total	F/M	Male	Female	Total	F/M
Average size of HH	Kerala	1987-88	-	-	5.13	-	-	-	4.75		-	-	4.54	-
		1993-94	-	-	4.62	-	-	-	4.31		-	-	4.58	-
	Orissa	1987-88	-	-	4.44	-	-	-	4.28		-	-	4.13	-
		1993-94	-	-	4.41	-	-	-	4.21		-	-	4.28	-
	India	1987-88	-	-	4.63	-	-	-	4.55		-	-	4.6	-
		1993-94	-	-	4.48	-	-	-	4.44		-	-	4.5	-
Earning strength	Kerala	1987-88	1.2	0.58	1.76	46.7	1.14	0.78	1.92	68.4	1.1	0.7	1.8	63.6
		1993-94	1.22	0.44	1.66	36.1	1.18	0.7	1.88	59.3	1.35	1.1	2.14	78.5
	Orissa	1987-88	1.29	0.58	1.87	45	1.23	0.53	1.76	43.1	1.27	0.84	2.11	66.1
		1993-94	1.3	0.63	1.93	48.5	1.27	0.66	1.93	52	1.31	0.86	2.17	65.6
	India	1987-88	1.27	0.71	1.98	55.9	1.25	0.68	1.93	54.4	1.32	0.91	2.23	68.9
		1993-94	1.28	0.68	1.96	53.1	1.27	0.66	1.93	52	1.34	0.89	2.23	66.4
Earner strength to household	Kerala	1987-88	-	-	34.3	-	-	-	40.4		-	-	39.65	
		1993-94	-	-	35.9	-	-	-	43.6		-	-	46.72	
	Orissa	1987-88	-	-	42.5	-	-	-	41.1		-	-	51.09	-
		1993-94	-	-	43.8	-	-	-	45.8		-	-	50.70	-
	India	1987-88	-	-	42.8	-	-	-	42.4		-	-	48.47	-
		1993-94	-	-	43.8	-	-	-	43.5		-	-	49.55	-

**Female/ male*100*

Source: Rural Labour Enquiry, Report on wages and earnings of rural labour households, (50th round of N.S.S.).

The earning strength in a household multiply with its average daily earnings gives a broader picture of the well being of the rural household. Table 2.16 shows the earning strength of rural labour households. The Table shows that the average household size of all categories of the rural labour household for Orissa has increased from 4.4 to 4.41 persons but it has decreased for Kerala from 5.13 to 4.62 person and for India from 4.63 to 4.48 persons during 1987-88 to 1993-94. With increase in the average size of the households in Orissa, the earner strength to households size ratio also increased from 42.5 to 43.8 persons, which may be due to that the increased in the numbers of earning population may be more. But in case of Kerala and India though the household size has decreased from 5.13 to 4.62 and 4.63 to 4.48 persons respectively, the earner strength to households size ratio has increased from 34.3 to 35.9 per cent and 42.8 to 43.8 per cent respectively during 1987-88 to 1993-94. However, the earning strength of female to households size ratio increased in Orissa from 45 per cent to 48.5 per cent, whereas for Kerala and India it has declined from 46.7 to 36.1 per cent and 55.9 to 53.1 per cent respectively during the same time period.

The average size of schedule castes of the rural labour households, both Orissa, Kerala and India has decreased from 4.28 to 4.21 persons, 4.75 to 4.31 persons and 4.55 to 4.44 persons respectively during the same time period. But the earner strength to households size ratio has increased from 41.1 to 45.8 per cent for Orissa, 40.4 to 43.6 per cent for Kerala and 42.4 to 43.5 per cent for India during the same time period. While the women earning strength has increased for Orissa from 43.1 cent to 52 per cent, it has decreased for Kerala and India from 68.4 per cent to 59.3 per cent and 54.4 per cent to 52 per cent respectively.

The average size of the scheduled tribes increased for Orissa and Kerala from 4.13 to 4.28 persons and 4.54 to 4.58 persons respectively, but it has decreased for India from 4.6 to 4.5 person in India during 1987-88 to 1993-94. But the earner strength to households size ratio decreased for Orissa from 51.09 to 50.70 per cent, whereas for Kerala and India it has increased from 39.65 to 46.72 per cent and 48.47 to 49.55 per cent respectively. If we look at the earning strength by sex, we find that the share of women of ST rural labour households has decreased for Orissa and India from 66.1 to 65.6 per cent and 68.9 to 66.4 per cent respectively but it has increased for Kerala from 63.6 to 78.5 per cent. Table 2.17 provides the average number of wage earners in rural labour households for Orissa and India during 1987-88 to 1993-94.

Table 2.17 Average Number of Wage Earners in Rural Labour Households, 1987-88 and 1993-94 in Orissa and India.

			All category				*Scheduled caste*				*Scheduled tribes*			
			Male	Female	Total	F/M*	Male	Female	Total	F/M	Male	Female	Total	F/M
Average size of HH	Orissa	1987-88			4.4	-	-	-	4.28		-	-	4.13	-
		1993-94	-	-	4.41	-	-	-	4.21		-	-	4.28	-
	India	1987-88	-	-	4.63	-	-	-	4.55		-	-	4.6	-
		1993-94	-	-	4.48	-	-	-	4.44		-	-	4.5	-
Average number of earners	Orissa	1987-88	1.09	0.23	1.32	21.1	1.05	0.17	1.22	16.2	1.08	0.4	1.48	37
		1993-94	1	0.45	1.45	45	0.99	0.46	1.45	46.5	1.05	0.71	1.76	67.6
	India	1987-88	1.01	0.3	1.31	29.7	1.03	0.28	1.31	27.2	1.05	0.4	1.45	38.1
		1993-94	1.01	0.55	1.56	54.5	1.06	0.56	1.62	52.8	1.07	0.67	1.74	62.6
Number of earners/HH size*100	Orissa	1987-88	-	-	30	-	-	-	28.5		-	-	35.83	-
		1993-94	-	-	32.9	-	-	-	34.4		-	-	41.12	-
	India	1987-88	-	-	28.3	-	-	-	28.8		-	-	31.52	-
		1993-94	-	-	34.8	-	-	-	36.5		-	-	38.66	-

**Female/ male*100*

Source: Rural Labour Enquiry, Report on wages and earnings of rural labour households, (50th round of N.S.S.).

The average number of wage earners for all classes of rural labour households was 1.56 for India (comprising 1.01 males and 0.55 females), and 1.45 for Orissa (comprising 1 males and 0.45 females) in 1993-94. In 1987-88 the average wage earners per households for India remained at 1.31 and for Orissa it was 1.32. Over all there has been an increase in female earners from 21.1 per cent to 45 per cent for Orissa and 29.7 per cent to 54.5 per cent for India during the same time period (1987-88 to 1993-94).

For the scheduled caste households also the average number of wage earners per rural labour household has increased for both Orissa and India. For Orissa it has increased from 1.22 in 1987-88 to 1.45 in 1993-94 (comprising 0.99 males to 0.46 females in 1993-94), and for India it has increased from 1.31 in 1987-88 to 1.62 in 1993-94 (comprising 1.06 males and 0.56 females). This increase is mostly contributed by the increase in the number of females earners: 16.2 per cent to 46.5 per cent for Orissa and 27.2 per cent to 52.8 per cent for India during 1987-88 to 1993-94.

For the scheduled tribe households also the average number of wage earners per rural labour household has increased for both Orissa and India. For Orissa it has increased from 1.48 in 1987-88 to 1.76 in 1993-94 (comprising 1.05 males to 0.7 females in 1993-94), and for India it

has increased from 1.45 in 1987-88 to 1.74 in 1993-94 (comprising 1.05 males and 0.4 females in 1993-94). This increase is mostly contributed by the increase in the number of female earners, 37 per cent to 67.6 per cent for Orissa and 38.1 per cent to 62.6 per cent for India during 1987-88 to 1993-94.

But all the higher earning strength or the higher numbers of wage earners households do not necessarily earn more when wage rate is not equal. Hence, the number of days employed is also equally important. In Table 2.18 (A), we have provided the average daily earnings of men, women and children belonging to rural labour households for Orissa, Kerala and India during 1987-88 to 1993-94. In Table 2.18 (B) we have provided the average days of numbers of employment and in Table 2.18(C) we have provided the per capita *wage bill*[3] for Orissa, Kerala and India. Also included in this Table the estimated wage bill of Orissa as a per cent of India. Finally, in Table 2.18 (D) we have plotted the real agricultural wages for both the states from 1980-81 to 1994-95.

Table 2.18 (A), Average Daily Earning of Men, Women and Children Belongs to Rural Labour Households for India and Orissa in 1987-88 to1993-94. (Total Earning)

A. In Agricultural Occupations.										
State or country	Year	All category			Scheduled caste			Scheduled tribes		
		Men	Women	Child	Men	Women	Child	Men	Women	Child
Kerala	1987-88	18.29	13.52	13.64	18.7	13.8	15.53	18.87	12.7	13
	1993-94	43.18	29.88	8.57	41.5	30.7	-	44.68	29.7	8.57
Orissa	1987-88	7.89	6.01	4.61	8.06	6.67	4.65	6.7	5.69	5.17
	1993-94	16.3	12.1	8.02	38.24	11.06	6.26	14.11	11.66	7.83
India	1987-88	9.46	7.05	6	9.51	7.03	6.24	8.57	7.26	6.13
	1993-94	21.5	15.3	12.3	21.79	15.74	13.2	18.54	14.93	10.9
B. Non Agricultural Occupations										
Kerala	1987-88	15.93	9.69	6.65	13	9.76	-	22.77	11	10
	1993-94	52.64	22.37	24.47	47.7	25	-	36.41	8.07	-
Orissa	1987-88	9.21	6.63	6.67	8.99	7.31	7.48	9	6.64	-
	1993-94	20.8	14.8	20.8	16.42	11.84	12	18.63	15.89	16
India	1987-88	11	7.99	6.55	11.12	7.97	6.69	10.05	8.58	6.91
	1993-94	32.5	17.5	15.1	30.62	18.09	17.48	27.24	18.99	15.5

Source: Rural Labour Enquiry, Report on wages and earnings of rural labour households, (50th round of N.S.S.).

From the Table 2.18 (A) we found that, first, the average daily earnings of all labourer (men, women and children) belonging to rural labour households and engaged in agricultural occupations, of Orissa has always (one exception) remained lower than that of India and Kerala. The only exception is the average daily earnings of scheduled caste men of Orissa which is much higher than that of all India (Rs. 38.20 in Orissa and 21.8 in India). For the occupation of non-agricultural labourer also the average daily earnings of all, except children of Orissa, is lower

than all India and Kerala. Secondly, the Table shows that there have been increases in all types of labour in their average daily earning for Orissa, Kerala and India during 1987-88 to 1993-94.

Over all, the average daily earnings of rural labour households of Orissa (given the days of employment constant) is lower than the average daily earnings of India and Kerala.

Table 2.18 (B) depicts the average annual days of employment of usually occupied Men, Women and Children for rural labour households for all categorise (SC, ST and all) engaged in agricultural and non-agricultural occupations for the period of 1987-88 to 1993-94.

Table 2.18 (B), Average annual days of wage-employment of usually occupied Men, Women and Children to rural labour households in agricultural labour and non-agricultural occupations, 1987-88 and 1993-94. (Number of days).

A. In Agricultural Labour Occupations.										
		All category			Scheduled caste			Scheduled tribes		
		Men	Women	Children	Men	Women	Children	Men	Women	Children
Kerala	1987-88	190	174	187	165	149	261	196	261	261
	1993-94	257	219	365	256	227	-	313	294	365
Orissa	1987-88	220	126	234	247	119	227	215	131	251
	1993-94	227	186	289	230	208	306	202	166	283
India	1987-88	243	164	240	247	158	251	243	171	230
	1993-94	254	224	248	259	222	250	241	223	224
B. In Non Agricultural Labour Occupations										
Kerala	1987-88	196	206	201	190	196	-	231	270	-
	1993-94	226	222	365	227	237	-	104	243	-
Orissa	1987-88	233	154	251	237	164	236	237	195	209
	1993-94	188	160	104	230	142	-	152	175	-
India	1987-88	225	193	239	218	186	191	218	148	228
	1993-94	233	230	262	252	227	304	216	238	124

Source: Rural labour Enquiry, (50th round of N.S.S.), 1993-94, Main Report.

Table 2.18 (B) shows, first, for the period 1993-94, that in almost all the cases the average annual days of wage employment is lower in Orissa than Kerala and India, both for agricultural labour occupations and for non-agricultural occupations. The only exception is the case of child workers. Secondly, for the year 1987-88, it does not show any systematic variation. Thirdly, as the Table depicts, in agricultural labour occupations, the number of days of wage-employment is more for the children of schedule castes and scheduled tribes compared to all categories. Two main points from the Table are that (I) the average annual days of wage-employment for almost all cases has remained low in Orissa and (ii) the number of days of wage-employment received by the child workers is more in Orissa compare to India for 1993-94, in agricultural occupations.

However, neither per day earnings nor number of wage employment gives clear idea, hence in Table 2.18 (C) we have calculated the wage bill for the rural labour household for agricultural and non-agricultural occupations. Since our data on wage and earnings of the rural labour households are confined to agricultural and non-agricultural occupations (not for the other occupations) we have collected the average annual days of employment only for these two categories. Hence the wage bill that we have calculated is not comprehensive, rather it is the wage bill for rural labour household based on theirs days of employment on agricultural and non-agricultural occupations.[4] Referring to Table 2.18 (C) we plotted the per capita annual earnings of men, women and children for rural labour household in Kerala, Orissa and India, both for agricultural and non-agricultural occupation during 1987-88 and 1993-94. As the Table shows (also Figures 2.5 and 2.6, last page of this chapter), first, for both agricultural occupation and non-agricultural occupation, the per capita annual earnings in Orissa has remained lower than that of India and Kerala. Secondly, our calculated result of Orissa's annual per capita earnings as a per cent of all India shows that, for agricultural occupations between 1987-88 and 1993-94 for almost all the cases, these Figures have more or less remained the same in Orissa. The only exception is the scheduled caste 'Men' rural labour, which increased from 84.75 to 155.8 per cent. But for non-agricultural occupations, in all the cases the same has declined sharply over 1987-88 to 1993-94.[5] In Figures 2.7 and 2.8 we have seen the same across caste and across sex which shows, for agricultural occupations, in 1987-88, as the case of men's average annual earnings is concerned, there is not much difference among the different categories for Orissa, Kerala and India. But in case of women, the average annual earnings of the ST women of Kerala has remained higher than the women labour of Orissa and India. For 1993-94, the average annual earnings of the Kerala's men have remained higher than Orissa and India. For non agricultural Occupations, in 1987-88, as the annual earnings of the both men and women across the caste are concerned, there is no significant difference for Orissa and India. But for Kerala, the average annual earnings of the ST category of men and women remained at a higher level than all categories of men and women. Again for 1993-94 (non-agricultural occupations), there is no systematic variation. However, the SC women of Orissa are the least earners than any other women.

Therefore, the relatively low per capita annual earnings of people of Orissa may be strongly related to food insecurity.

In Figure 2.9 we have plotted the daily average wages (real) of ploughmen (male) and in Figure 2.10 we have plotted the daily average wages of carpenter for Orissa and Kerala (figures presented at the end of this chapter). This shows that the trends of real agricultural wages for both types of workers have remained higher for Kerala than Orissa (the same has been given in Table 2.18 (D).

Table 2.18 (C) Per capita annual earnings of usually occupied Men, Women and Children of rural labour households in agricultural labour and non-agricultural occupations, 1987-88 and 1993-94. (In Rupee)

A. In Agricultural Labour Occupations.										
		All Category			Scheduled Caste			Scheduled Tribes		
		Men	Women	Child	Men	Women	Child	Men	Women	Child
Kerala	1987-88	3475.1	2352	2550.7	3077	2053	4053.3	3699	3304	3393
	1993-94	11097.3	6544	3128.1	10611	6958	-	13985	8735	3128
Orissa	1987-88	1735.8	757.3	1078.7	1991	794	1055.6	1441	745	1298
	1993-94	3700.1	2249	2317.8	8795	2300	1915.6	2850	1936	2216
India	1987-88	2298.78	1156	1440	2349	1111	1566.2	2083	1241	1410
	1993-94	5466.08	3434	3055.4	5644	3494	3300	4468	3329	2437
Oriss/Indi	1987-88	75.5	65.49	74.913	84.75	71.5	67.394	69.17	60	92
a*100	1993-94	67.69	65.49	75.859	155.8	65.8	58.047	63.79	58.1	90.9
B. In Non Agricultural Labour Occupations										
Kerala	1987-88	3122.28	1996	1336.7	2468	1913	-	5260	2957	-
	1993-94	11896.6	4966	8931.6	10821	5934	-	3787	1961	-
Orissa	1987-88	2145.93	1021	1674.2	2131	1199	1765.3	2133	1295	-
	1993-94	3901	2366	2165.3	3777	1681	-	2832	2781	-
India	1987-88	2475	1542	1565.5	2424	1482	1277.8	2191	1270	1575
	1993-94	7567.84	4014	3964.1	7716	4106	5313.9	5884	4520	1924
Oriss/Indi	1987-88	86.7042	66.21	106.94	87.89	80.9	138.15	97.36	102	-
a*100	1993-94	51.5471	58.96	54.623	48.94	40.9	-	48.13	61.5	-

Source: Rural labour Enquiry, (50th round of N.S.S.), 1993-94, Main Report.

Table 2.18 (D), Annual Average Wages (in Rs.) of Ploughmen (male) and Carpenter in Orissa and Kerala, 1980-81 to 1994-95.

	Money Wage Rate						*Real Wage Rate*			
Year	AAWR in Orissa		AAWR in Kerala		CPIALO	CPIALK	Orissa		Kerala	
	Plough Man	Carpenter	Plough man	Carpenter			Plough man	Carpenter	Plough man	Carpenter
1980-81	4.77	11.06	10.98	20.34	100	100	4.77	11.06	10.98	20.34
1981-82	5.3	12.35	12.91	22.47	113.6	110.55	4.67	10.87	11.68	20.32
1982-83	6.09	13.87	14.55	23.41	138.3	126.12	4.40	10.03	11.54	18.56
1983-84	7.09	16.28	15.31	26.21	136.3	154.35	5.20	11.95	9.92	16.98
1984-85	8.07	18.21	17.9	38.72	131.3	156.99	6.15	13.87	11.40	24.66
1985-86	8.32	19.54	19.93	42.86	135.1	158.58	6.16	14.46	12.57	27.03
1986-87	9.02	21.99	22.88	45.93	139.7	175.46	6.46	15.74	13.04	26.18
1987-88	10.06	23.92	24.9	47.5	162.8	186.28	6.18	14.69	13.37	25.50
1988-89	11.01	26.43	27.47	49.8	171.4	207.92	6.42	15.42	13.21	23.95
1989-90	12.27	28.47	29.37	51.82	174.6	223.22	7.03	16.31	13.16	23.21
1990-91	14.48	32.24	34.3	54.45	188.2	247.76	7.69	17.13	13.84	21.98
1991-92	17.37	36.77	39.61	58.98	234.9	274.93	7.39	15.65	14.41	21.45
1992-93	19.77	40.2	48.64	67.89	240.8	307.65	8.21	16.69	15.81	22.07
1993-94	21.34	43.75	53.34	76.99	260.3	347.23	8.20	16.81	15.36	22.17
1994-95	23.28	47.18	62.45	87.6	294.3	386.28	7.91	16.03	16.17	22.68

Notes: AAWR- Annual average wage rate, CPIALO - Consumer price index for agricultural labourer of Orissa, CPIALK - Consumer price index for agricultural labour of Kerala, 1980-81 taken as the base year.
Source: Agricultural wages in India, Directorate of economics and statistics, Department of agriculture and Co-operation, Ministry of agriculture, Government of India, New Delhi.

All these wage rates and wage earning or the wage bill constitutes the income of an individual, but they do not say about the consumer's expenditure. Hence in the following sub section we have looked into the pattern of consumer expenditure for Orissa and India, because that may give a good idea about the standard of living of an individual.

(d) Consumer Expenditures

The economic well being of a household can be seen by looking the level of consumer expenditure. In India, the NSSO conducts survey at regular intervals on the average monthly per capita consumption expenditure (MPCE) on different food and non-food items. Table 2.19 provides the average monthly per capita consumer expenditure (MPCE) for Orissa and India over a period of time for food and non-food items and the per capita expenditure for Orissa as percentage of all India average. This Table shows that, first, the proportion of expenditure on food items has always been higher than the expenditure under non-food items both for rural and urban Orissa. However the ratio of expenditures on food items to total expenditure, for the state has generally declined over the years. In 1972-73 (27^{th} round NSS), the proportion of expenditure on food items to total expenditure was around 75 per cent in rural areas and 72 per

cent in urban areas, which declined to 63.9 per cent in rural areas and 49.9 per cent in urban areas in the year 1995-96 (52nd round NSS). This indicates that the living standards of the people both in rural and urban Orissa have been improving. But compared to all India average, Orissa's consumption expenditure has always remained lower, and more so in the rural areas.

Table 2.19 Average monthly per capita consumption expenditure for rural and urban area of Orissa and India.

NSS round and period	*Orissa*							
	Rural			Urban				
	Food	Non-food	Total	Food	Non-food	Total		
27th round (1972-73)	26.24 (75.06)	8.72 (24.94)	34.96 (100)	44.77 (71.80)	21.58 (34.61)	62.35 (100)		
32nd round (1977-78)	37.47 (71.41)	15.00 (28.59)	52.47 (100)	57.43 (66.02)	29.56 (33.98)	86.99 (100)		
38th round (1983)	72.72 (73.64)	26.03 (26.36)	98.75 (100)	98.89 (65.31)	52.51 (34.68)	151.41 (100)		
42nd round (1986-87)	79.19 (69.35)	35.00 (30.65)	114.19 (100)	135.52 (62.47)	81.42 (37.53)	216.94 (100)		
47 round (1991-92)	149.70 (69.35)	64.72 (30.65)	214.42 (100)	204.57 (61.76)	126.64 (38.24)	331.21 (100)		
51st round (1994-95)	164.51 (67.55)	79.02 (32.45)	243.53 (100)	246.28 (56.04)	193.21 (43.96)	439.49 (100)		
52nd round (1995-96)	197.17 (63.90)	111.38 (36.10)	308.55 (100)	283.81 (49.88)	285.21 (50.12)	569.02 (100)		
53rd round (1997)	192.62 (64.53)	105.86 (35.47)	298.48 (100)	306.72 (54.55)	255.57 (45.45)	562.29 (100)		
	India						*PEOI*	
							Rural	Urban
27th round (1972-73)	32.16 (72.81)	12.01 (27.19)	44.17 (100)	40.84 (64.49)	22.49 (35.51)	63.33 (100)	79.15	98.45
32nd round (1977-78)	44.33 (64.35)	24.56 (35.65)	68.89 (100)	57.67 (59.98)	38.48 (40.02)	96.15 (100)	76.16	90.47
38th round (1983)	73.73 (65.57)	38.71 (34.43)	112.44 (100)	96.97 (59.12)	67.06 (40.88)	164.03 (100)	87.82	92.31
42nd round (1986-87)	92.55 (65.67)	48.38 (34.33)	140.93 (100)	128.97 (57.93)	93.66 (42.07)	222.63 (100)	81.03	97.44
47 round (1991-92)	153.59 (63.08)	89.91 (36.92)	243.50 (100)	207.77 (56.10)	162.57 (43.90)	370.34 (100)	88.06	89.43
51st round (1994-95)	188.89 (61.04)	120.54 (38.96)	309.43 (100)	271.49 (53.44)	236.58 (46.56)	508.07 (100)	78.70	86.50
52nd round (1995-96)	207.76 (60.34)	136.53 (39.66)	344.29 (100)	299.98 (50.06)	299.28 (50.06)	599.26 (100)	89.62	94.95
53rd round (1997)	231.99 (58.73)	163.02 (41.27)	395.01 (100)	320.26 (49.62)	320.26 (49.62)	645.44 (100)	75.56	87.11

Note: PEOI- Per capita expenditure for Orissa as percentage of all India average.
Source: Different NSSO reports, also cited in Economy survey of Orissa. (1999-2000)

Table 2.20 shows the Engel's ratio, which is defined as the proportion of consumption expenditure under food items to total consumer expenditure. Engel's ratio is an index of the standard of living of the people. Smaller value of this ratio indicates higher standard of living.

The Table depicts that Engel's ratio in Orissa, both for rural and urban areas, was higher than that of all India for all the three rounds except for urban areas in the 52nd round. This indicates that the standard of living in Orissa has continued to be generally lower compared to the national average.

Table 2.20 *Engel's ratio for Orissa and India, During 51st, 52nd and 53rd Round of NSS*

	Orissa		***India***	
NSS Round	Rural	Urban	Rural	Urban
51st round (1994-95)	67.55	56.04	61.04	53.44
52nd round (1995-96)	63.9	49.88	60.34	50.06
53rd round (1997)	64.53	54.55	58.73	49.62

Source: Different NSSO reports, Also Cited in Economy Survey of Orissa. (1999-2000).

Table 2.21 shows the distribution of population by MPCE classes across regions and across MPCE class, which reflects the difference in the standard of living of the people and the magnitude of poverty. The Table shows that in Orissa, the proportion of population in the MPCE classes of less than Rs.190 and Rs. 190 to Rs. 265 are higher than the corresponding Figures for all India both in rural and urban areas. But for the two higher MPCE classes this proportions, both for rural and urban areas, were lower for Orissa than the all India Figures. This means that the living standard in Orissa was lower than all India.

Table 2.21 *Distribution of population by MPCE classes (NSS 53rd round, 1997)*

MPCE Classes	***Percentage of Population***			
	Rural		Urban	
	Orissa	India	Orissa	India
Less than Rs. 190/	16.9	11.1	3.6	2.8
Rs. 190-265	37.3	21.1	12	8.6
Rs 265-355	23.7	25.5	15.3	16.8
Rs. 355 and above	22.1	42.3	69.1	72.4
All classes	100	100	100	100

Source: Different NSSO Reports, Also Cited in Economy Survey of Orissa. (1999-2000).

In the following section we have looked at the level of education of people in the state in general and of the workers in particular to understand their capabilities in the labour market.

(e) Education and Food Security

The literature on capability and human capital demonstrates that education is one of the most important elements of a person's standard of living. Therefore, we discuss below the education scenario of the people and the workers in Orissa.

The literacy rate in Orissa was 15.8 per cent whereas for all India it was 18.3 per cent in 1951. And this has increased to 49.1 per cent for Orissa and 52.1 per cent for all India in 1991. The literacy rate of 1991 shows that, the male literacy rate of Orissa was 63.1 per cent which was nearer to national average of 64.1 per cent but the female literacy stood at 34.7 per cent which was 4.6 per cent lower than the all India average of 39.3 per cent. The literacy rate of scheduled castes and scheduled tribes population remained far below the literacy rates of all other categories. As the 1991 census shows, the literacy rate was 36 per cent and 22.3 per cent for scheduled castes and scheduled tribes' population respectively for Orissa compared to 37.4 and 29.6 respectively at all India level. Table 2.22 provides the effective literacy rate of Orissa and its districts.

Table 2.22 shows that, first, among all categories of population the literacy rates in 1991 vary from 22.66 per cent in Koraput to 63.28 per cent in Cuttack. Whereas, these Figures for rural population varies from 11.43 per cent in Mayubhanj to 61.30 per cent in Cuttack. Secondly, the male literacy for all categories varies from 32.15 per cent in Koraput to 76.82 per cent in Cuttack. For the rural population it varies from 26.46 per cent in Koraput to 74.65 per cent in Puri and for the urban population it varies from 47 per cent in Dhenkanal to 87.39 per cent in Phulbani. Thirdly, the female literacy rate for all categories of population varies from 13.09 per cent in Koraput to 50.38 per cent in Cuttack. For rural population it varies from 8.22 per cent in Koraput to 48.13 per cent in Cuttack and for the urban population it varies from 47.09 per cent in Kalahandi to 70.95 per cent in Puri. Lastly the standard deviation Figures of literacy rates show that there is high variability of literacy rate in the rural areas than urban areas. A point to be noted is that in Orissa, Koraput and Kalahandi belong to the categories of backward districts and located in south-western part of Orissa, while Cuttack and Puri belong to the category of developed districts and located in eastern part of Orissa.

Table 2.22 District wise Literacy Rates (for population aged 7 +) by Place of Residence and Sex in Orissa, 1991.

State/	*All Categories Population*			*Rural Population*			*Urban Population*		
District	Male	Female	Total	Male	Female	Total	Male	Female	Total
Orissa	63.09	34.67	49.08	60	30.79	45.45	81.21	61.18	71.99
Sambalpur	64.64	33.55	49.38	52.60	29.30	45.61	78.09	55.37	75.19
Sundergarh	65.41	39.60	52.97	55.35	27.70	45.45	83.28	64.88	74.95
Kendujhar	59.04	30.00	44.73	56.51	27.18	41.91	74.70	51.09	64.12
Mayurbhanj	51.84	23.67	37.88	39.95	24.14	11.43	81.99	62.77	73.11
Baleswar	72.55	44.57	58.78	72.17	43.51	58.01	75.97	55.16	66.18
Cuttack	75.74	50.38	63.28	74.36	48.13	61.30	84.45	67.92	77.13
Dhenkanal	68.23	37.34	53.22	66.10	34.44	50.57	47.63	66.15	77.06
Phulbani	56.91	20.25	38.64	54.80	17.73	36.24	87.39	61.61	75.29
Balangir	57.26	21.88	39.74	54.67	18.55	36.71	80.30	53.91	67.72
Kalahandi	45.54	14.56	30.05	43.46	12.38	27.88	73.97	47.09	61.08
Koraput	32.15	13.09	22.66	26.46	8.22	17.35	74.31	51.62	63.34
Ganjam	60.77	28.09	44.26	57.05	23.11	39.79	80.29	56.70	68.82
Puri	76.82	49.94	63.82	74.65	45.23	60.11	84.64	70.95	78.66
Std. Dev. of districts	12.49	12.55	12.43	14.00	12.43	15.41	9.97	7.34	6.00

Source: Primary Census Abstract, part II - B (i) 1991.

Table 2.23 shows, the distribution of persons, attending school/college by completed level of education, in Orissa based on the census data of 1991.

Table 2.23 Distribution of Persons Attending School/College on the basis of completion of Education by Age & Sex in Orissa (1991).

	URBAN			*RURAL*		
	Percentage of Persons Attending School/College by Completed Level of Education			Percentage of Persons Attending School/College by Completed Level of Education		
Age-group	Total	Males	Females	Total	Males	Females
6-11	70.43	73.52	67.13	53.93	60.80	46.94
12-14	73.69	78.85	68.26	50.34	61.76	39.12
15-19	53.21	59.82	45.79	23.32	33.18	14.08
20-24	20.93	27.69	12.62	6.08	9.84	2.43
25-29	3.98	5.66	2.18	1.47	1.93	1.02
30-34	1.72	1.80	1.62	0.97	1.08	0.86
35+	1.41	1.52	1.27	1.01	1.10	0.92

Source: Census of India 1991,series 19-Orissa, Part IV A-C Series. Socio- cultural Tables. Directorate of Census Operations, Orissa. Table C-3 Part A & Part-B, p.172-208 & 214-250, Cited Padhi (2000).

This Table (2.23) shows that,

(i) For all age groups, lower percentage of males and females in rural areas are attending school/college as compared to their counterparts in urban areas.

(ii) For all age groups and for rural and urban areas, very low proportions of females are attending school/college as compared to the males.

(iii) For all groups, males in urban areas are at an advantage in term of percentage of person attending school/college, and females in rural areas are at a disadvantage in this respect.

Table 2.24 provides the educational level of the main workers in Orissa based on the 1991 census. It shows that,

(i) Among the workers, half of them are illiterates. Most of the female worker are illiterates as compared to the male workers (87.1 per cent and 42.5 per cent) respectively.

(ii) Male and female workers in urban areas have better literacy levels as compared to their counterparts in rural areas. Nearly 90 per cent of female workers in rural areas and 60 per cent of female workers in urban areas are illiterates.

At the other extreme, less than half (45.4 per cent) of male workers in rural areas and less one-fourth (22.5 per cent) of male workers in urban areas are illiterates.

Table 2.24 Distribution of Main Workers by Educational Level in Orissa, 1991,(Per cent of Main Workers)

		Number of main workers	*Illiterate*	*Below primary*	*Primary but below middle*	*Middle but below metric*	*Metric but below graduate*	*Graduate and above*
Total	Person	10377635 (100)	50.6	16.2	10.9	12.5	6.7	3.1
	Male	8490943 (100)	42.5	18.8	12.8	14.8	7.6	3.5
	Female	1886692 (100)	87.1	4.3	2.5	2.2	2.3	1.6
Rural	Person	9152526 (100)	53.8	17.1	10.9	11.6	5	1.6
	Male	7404111 (100)	45.4	20.1	12.9	13.9	5.8	1.9
	Female	1748415 (100)	89.3	4.2	2.4	2	1.5	0.6
Urban	Person	1225109 (100)	26.7	9.7	11.1	19	19.2	14.3
	Male	1086832 (100)	22.5	10.3	12	20.8	20	14.4
	Female	138277 (100)	60.3	4.8	3.8	4.9	12.5	13.7

Source: Census of India 1991, Orissa State District Profile

This section shows the demand side problems in Orissa, which are depicted with low level of wage rates, low level of education of the workers and small size of land holdings in Orissa as

compared to India. The next section looks at the consequences of demand deficiency and the consequences of distribution problems.

2.4 Consequences of Demand and Supply Deficiency on Food Security

The consequences of the lack of demand for food and deficit in supply of food have examined by considering two aspects: incidence of poverty and nutritional status. We have discussed both these aspects one by one.

(a) Incidence of Poverty

Primary poverty is defined as the inability to command enough income (expenditure) to buy the bare necessities of life. This poverty line is usually constructed by computing the cost of a minimum diet of essential food items and the fuel required to prepare it, (Streeten, 1995).[6]

Orissa is characterised by high incidence of poverty. Table 2.25 shows the poverty ratio for rural and urban areas of Orissa and India. As the Table shows, the poverty ratio in Orissa has declined from 66.18 per cent in 1973-74 to 47.15 per cent in 1999-2000. Whereas during the same period the poverty ratio for all India has remained much lower than Orissa, (54. 88 per cent and 26.1 per cent respectively). The over all poverty ratios in Orissa has remained around 48 per cent for the last 8 years. The pace of reduction in poverty in Orissa during the last 25 years is relatively slow as compared to all India.

Table 2.25 Percentage of population below poverty line in Orissa and India, 1973-74 to 1999-2000

Year	*Orissa*			*India*		
	Rural	Urban	Combined	Rural	Urban	Combined
1973-74	67.28	55.62	66.18	56.44	49.01	54.88
1977-78	72.38	50.92	70.07	53.07	45.24	51.32
1983-84	67.53	49.15	65.29	45.65	40.79	44.48
1987-88	57.64	41.53	55.58	39.09	38.2	38.36
1993-94	49.72	41.64	48.56	37.27	32.36	35.97
1999-2000*	48.01	42.83	47.15	27.09	23.62	26.1

*Note: * Poverty Figures according to 30 days recall method.*
Source: Planning commission, Government of India, recent Figure downloaded from www.indiastat.com by Press Information Bureau, Government of India.

(b) Nutritional Status

This section discusses the nutritional status of individuals. To observe the nutritional status of individuals (of India), we have found three data sources, the National Nutritional Monitoring Bureau (NNMB) data, the National sample survey (NSS) data and the National Family Health Survey (NFHS) data.

NNMB undertakes nutritional surveys at regular intervals. Two recent surveys conducted by NNMB in selected Indian states. Various findings are presented in the following Tables.

2.26 Nutritional Status of Individuals, in Orissa and India.

A. Average intake of cereals and millets (grams/consumption/ unit/day)		
State	1991-92	1993-94
Orissa	598.3	524
Pooled states	476	464
Balanced daily requirements	460	460
B. Proportion of households with calorie inadequacy, by state (per cent)		
Orissa	31.2	50.8
Pooled states	44.2	47.7
C. Average energy intake (Kcal)		
Orissa	2397	2106
Recommended daily intake	2350	2350
D. Proportion of adults with chronic energy deficiency by state (BMI criteria)		
Orissa	46.47	57.3
Pooled states	45.93	48.5

Source: NNMB (1993, 1996), Cited in Swaminathan, M. (2000).

Table 2.26 shows that the average intake of cereals and millet per consumption unit per day has remained higher in Orissa than the pooled state's average.[7] It remained 598.3 grams and 524 grams in Orissa and 476 grams and 464 grams for rest of the surveyed state during 1990-91 and 1993-94 respectively (see Table 2.26). Also it remained higher than balanced daily requirements. Secondly the same Table depicts that proportion of households with calorie inadequacy has increased in the state from 31.2 per cent to 50.8 per cent compared to India from 44.2 per cent to 47.7 per cent during 1991-92 to 1993-94. Thirdly the same Table shows that the average energy intake in terms of kilo calorie has declined from 2397 to 2106 during the same time period and that was less than the recommended daily intake for the year 1993-94. Fourthly, the Body Mass Index (BMI) shows the proportion of adults with chronic energy deficiency (CED) was more in the state (57.3 per cent) compared to the average of the pooled states (48.5 per cent).[8] The other source of data on nutritional status that we obtained is the NSSO data. The recent data (50th round, 1993-94) shows that the per capita calories intake in Orissa has remained higher 2199

Kcal and 2261 Kcal than all India level of 2153.00 Kcal and 2071 Kcal in rural and urban areas respectively.

Another source of data that provides information about nutritional status of individual is NFHS data. In Table 2.27 we have provided data on nutritional status of children of 1 to 47 months.

Table 2.27 Proportion of Undernourished Children, Ages 1- 47 Month, 1992-93 (weight-for-age criterion).

State	***Boys***		***Girls***		***All children***	
	Severe	Moderate	Severe	Moderate	Severe	Moderate
Orissa	22	53	23.6	53.2	22.7	53.3
All India	20.2	53.3	21	53.4	20.6	53.4

Source: National Family Health Survey 1992-93 Cited in Swaminathan, M. (2000).
Note: Moderate malnutrition occurs when weight-for-age are less than two standard deviations of the World Health Organisation norm, and severe malnutrition occurs when weight-for-age is less than three standard deviations of the norm.

As the Table 2.27 shows, when weight -for-age criterion was used, 53.4 per cent and 53.3 per cent of boys and girls were found to be moderate undernourished and 20.6 per cent and 22.7 per cent were found to be severe undernourished in India and Orissa respectively. Kannan (2001) looked at the state-wise comparison of the nutritional status and the mortality rates of children under four years, from the NFHS data. Table 2.28 reported some of the results that he found. The Table shows that while the severe under nutrition in the country was 20.6 per cent, it remains at 22.7 per cent in Orissa i.e. 22.7 per cent of the under four years children are growing under severe under nutrition in Orissa whereas in the state like Kerala it is only 6.1 per cent. The moderate under nutrition also remains at a high level (53.3) per cent for Orissa. As far the mortality rates, both the Neonatal and infant mortality rate of Orissa remained highest in the country. The under five years mortality rates also remained at a high level for Orissa (131.0 whereas for India it is 118.8).

Table 2.28 State-wise Comparison of Nutritional Status and Mortality Rates of Children Under Four Years (NFHS, 1992-93).

State	*Sex of child*	*Nutritional status (Weight - for -age) per cent*		*Mortality rates**			*Death rate** (0-4) years*
		<-3SD	<-2SD	Neonatal	Infant	Under five	
India	M	20.2	53.3	57	88.6	115.4	23
	F	21	48.1	48.1	83.9	122.4	23.6
	T	20.6	52.7	52.7	86.3	118.8	23.3
Kerala	T	6.1	28.5	15.5	23.8	32	3.8
Tamilnadu	T	13.3	48.2	46.2	67.7	86.5	17.7
Karnataka	T	19.4	54.3	45.3	65.4	87.3	13.7
Andhra Pradesh	T	15.6	49.1	45.3	70.4	91.2	18.5
Haryana	T	9	37.9	38.4	73.3	98.7	22.1
Delhi	T	12	41.6	34.9	65.4	83.1	18.6
Punjab	T	14.2	45.9	31.2	53.7	68	14.2
Rajasthan	T	19.2	41.6	37.2	72.6	102.6	26.3
Gujarat	T	17.6	50.1	42.3	68.7	104	20.6
Maharastra	T	21.3	54.2	36.4	50.5	70.3	12.1
Goa	T	8.9	35	20.6	31.9	38.9	4.9
Madhya Pradesh	T	22.3	57.4	53.2	85.2	130.3	27.3
Bihar	T	31.1	62.6	54.8	89.2	127.5	28
Uttar Pradesh	T	24.6	59	59.9	99.9	141.3	31.6
Himachal Pradesh	T	12.9	47	34.2	55.8	69.1	15.5
Jammu Kashmir	T	13.8	44.5	31.9	45.4	59.1	15.6
Orissa	T	22.7	53.3	64.7	112.1	131	27.3
West Bengal	T	18.6	48.8	51.8	75.3	99.3	18.7
Assam	T	18.7	50.4	50.9	88.7	142.2	32.1
Arunachal Pradesh	T	14.5	39.7	17.5	40	72	U
Manipur	T	7.2	30.1	25.1	42.4	61.7	U
Meghalaya	T	17.2	45.5	37.8	64.2	86.9	U
Mizoram	T	5.3	28.1	8.3	14.6	29.3	U
Nagaland	T	7.6	28.7	10	17.2	20.7	U
Tripura	T	18.6	48.8	43.6	75.8	104.6	U

*Notes: U-Not available, * - Mortality rates for India are calculated for the 10 year period preceding the survey while mortality rates for the states are for a five-year period preceding the survey in 1992-93.*
*** - The age-specific death rate is based on the annual number of deaths reported during the two-year period prior to the NFHS, 1992-93.*
Source: Kannan, 2001.

All these results indicate a relatively higher level of nutritional deprivation among the population in general and children in particular in Orissa as compared to India. To mitigate the ill effects of nutritional deficiency, food security can play a major role in Orissa.

Summary

This chapter found that in Orissa, the supply side deficiency of food grains has come to picture after 1992-93. But it is difficult to say whether the state was self-sufficient or not in food grain production in that period. However the food self-sufficiency had been realised in the state since

long and in the present time period also it is not far way from that, based on the conventional requirements of 460 grams of food grains per person per day. Hence at the aggregated level, the supply deficiency is not a bigger problem. But at the disaggregated level the supply side problem is clearly visible. We have looked into some of the supply side constituents of food production. It has been found that- the food production; the yield rate, the fertiliser consumption and the irrigation level vary highly across the districts of the state. Hence to reduce the inequality in supply of food grains across the district an unbalanced growth approach may be appropriate in agricultural investment.

In second section, we analysed the demand constraints of food security using certain key indicators (distribution of land holding, work participation rate, earning of rural labour, the level of literacy among workers). They also confirmed the existence of demand constraints in the state.

In third section, after confirming the supply and demand constraints we looked at their consequences. Poverty rate, nutritional status of children and consumption expenditure are taken in to consideration for analysing the consequences. It is observed that Poverty rate has not declined since the last five years. Consumer expenditure, between the 52^{nd} and 53^{rd} round of NSSO's survey, on food items increased marginally while the expenditure on non-food items declined marginally. Nutritional status of children (below 4 years) still remains at a lower level in Orissa. As recorded by NFHS-1 survey nearly 57.4 per cent of the children were moderately undernourished and 22.3 per cent were severely undernourished in Orissa against 53.4 per cent and 20.6 per cent respectively for all India. These are the symptoms of a lack of food security in Orissa.

Based on the above three sections it is found that the food insecurity in the state is more from the demand side than supply. Hence food security is needed in the state. There are many welfaristic programs that provide food security to the people in general and to the poor in particular and the Public Distribution System (PDS) is one such program, which is considered as one of the welfaristic programme to provide food security specifically to the poor. Chapter- 3 looks into the functioning of PDS in detail.

Figure 2.5
Per capita annual earnings of men, women and children of rural labour household in Kerala, Orissa and India, 1987-88 and 1993-94 for agricultural occupation

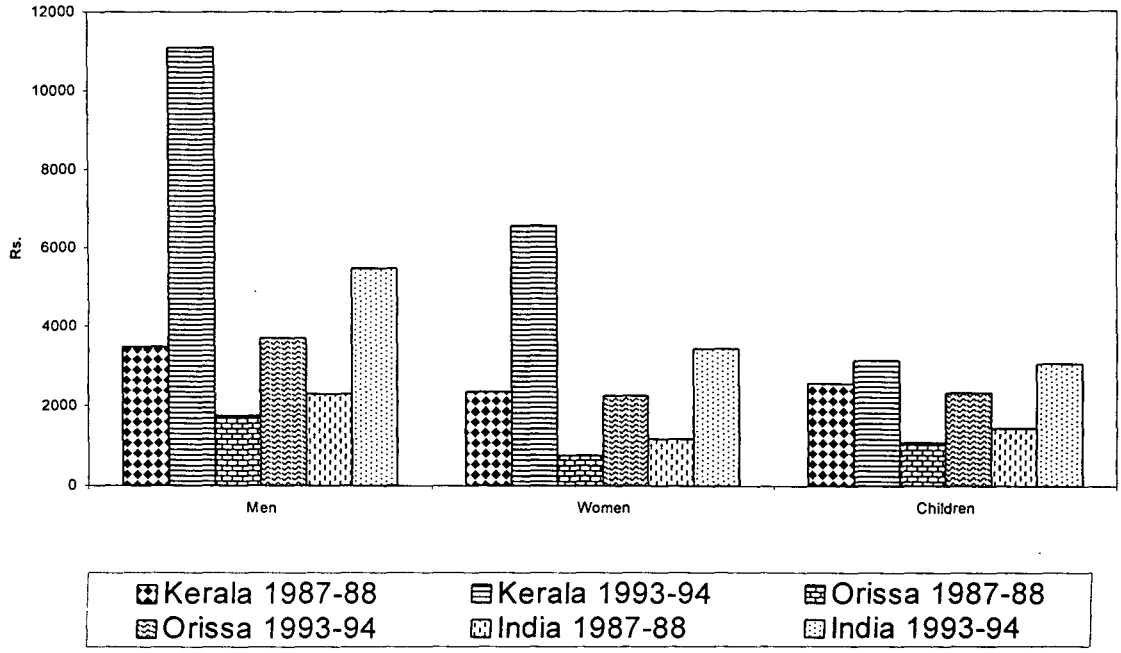


Figure 2.6
Per capita annual earnings of men, women and children of rural labour household in Kerala, Orissa and India, 1987-88 and 1993-94 for non agricultural occupation

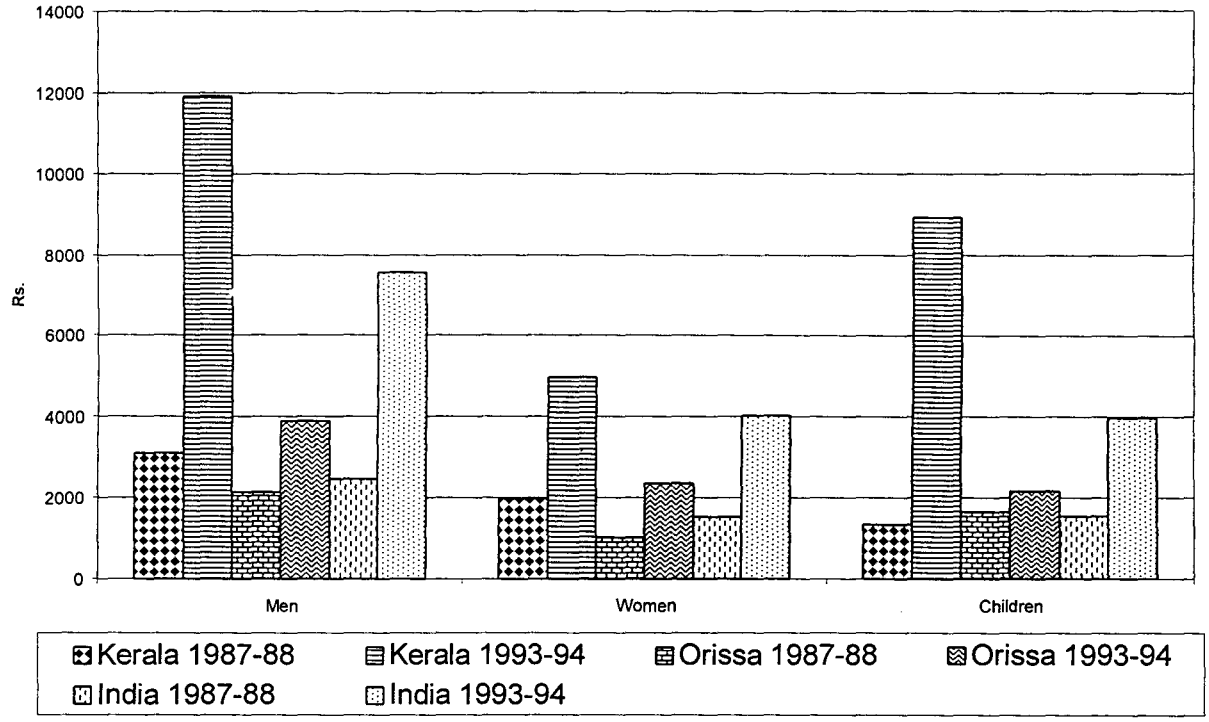


Figure 2.7
Per capita annual earnings of Men and Women Across Caste and Sex of rural labour household in Kerala, Orissa and India, 1987-88 and 1993-94 for agricultural occupation

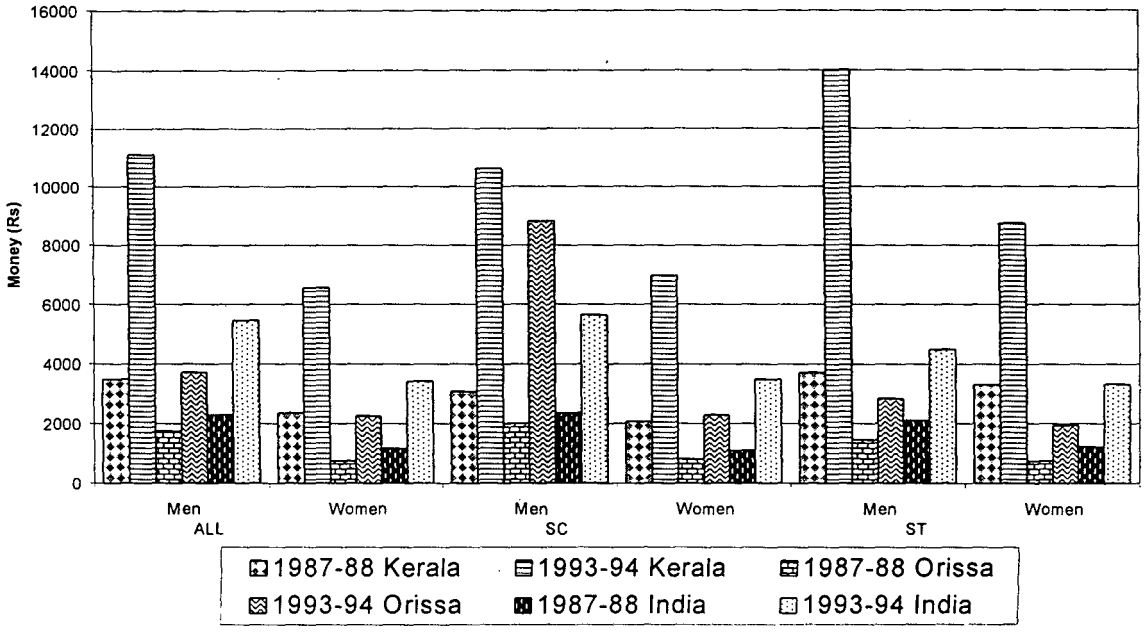
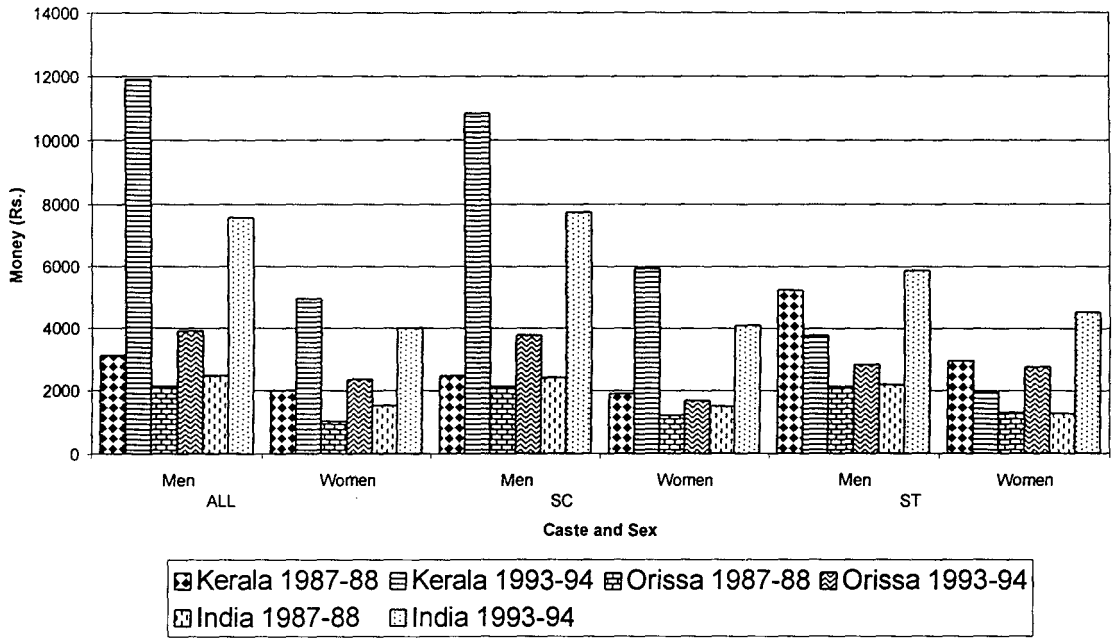
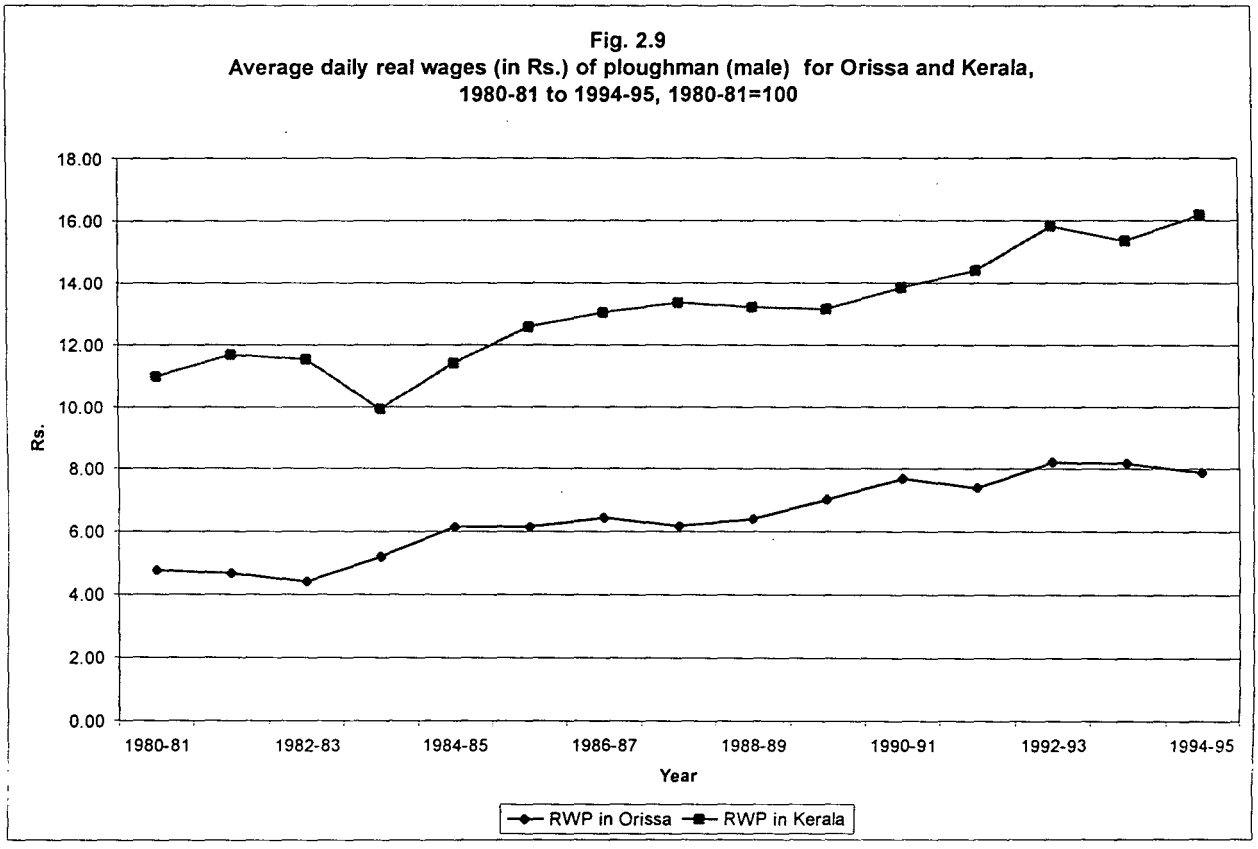
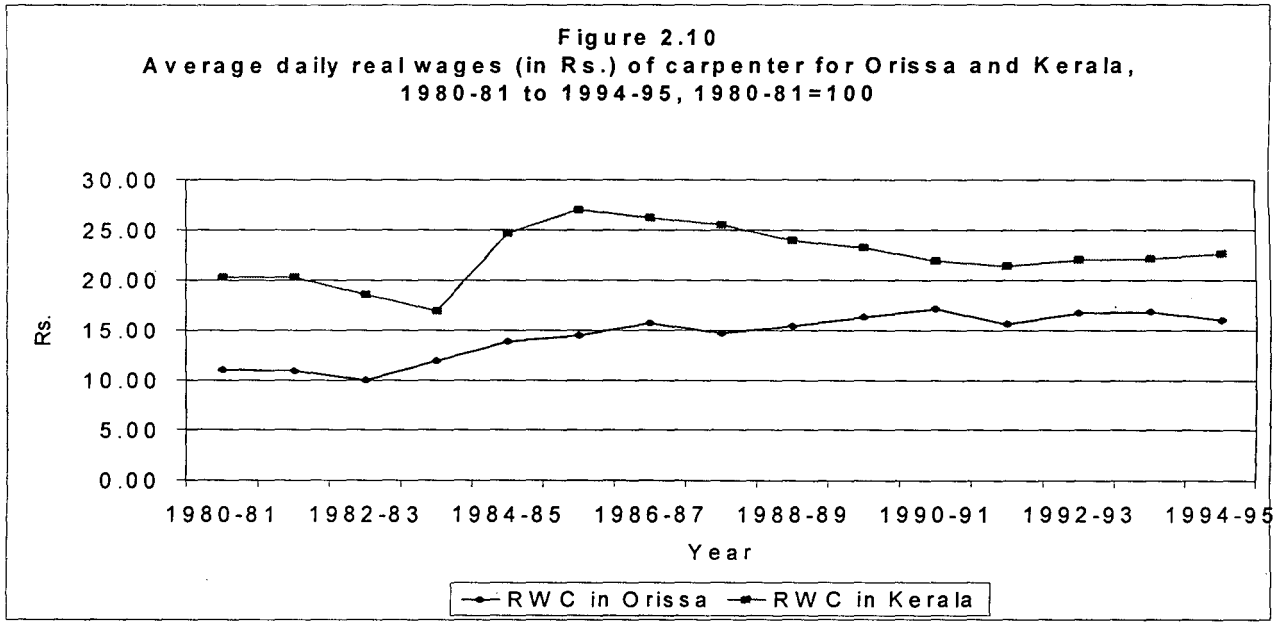


Figure 2.8
Per capita annual earnings of Men and Women across Caste and Sex of rural labour households in Kerala, Orissa and India, 1987-88 for non-agricultural occupations





Notes: RWP -Real wage rate for ploughmen.



Notes: RWP -Real Wage Rate for Carpenter

ENDNOTE

[1] See food policy 1993, PP- 445-455

[2] The earnings strength of a household is a broader concept as besides 'wage earners' it includes, 'other earners' (not necessarily wage earners) and self-employed persons (RLE report, 50th round of N.S.S.).

[3] . We have calculated per capital annual wage bill by multiplying the average annual days of wage employment of usually occupied Men, Women, Children belonging to Rural Labour Households, with the daily earnings in agricultural and non agricultural occupations.

[4] . To compute complete wage bill for the rural labour households, we require the aggregate picture of the wage and earnings of other occupation category. It requires time because for this data are available at a very disaggregated level. Another reason of not putting much stress to that Figure is that the days of earnings are so less in other types of occupations.

[5] The standard way of comparison between these two year's money value is, deflate it with the consumer price index, but since we have only two time points we did not deflated here. But at the same time though the price level has increased in India one can expect that the total annual earnings may increase but as the Table shows it has decreased.

[6] . Poverty is generally measured in terms of poverty ratio, which is the proportion of population in the region that lies below poverty line. There is enormous literature on 'poverty in India'. Important contributions to this literature include Dandekar and Rath (1971), Srinivasan and Bardhan (1974), Ahluwalia (1978, 1990), Datt and Ravallion (1992, 1994).

[7] . Both survey were undertaken by NNMB, but the 1990-91 survey was conducted by referring to NSSO sampling framework, whereas the 1993-94, survey was conducted by referring to the NCAER sampling framework.

[8] . Body Mass Index is commonly used to measure under nutrition among adults defined as the ratio of weight (in Kg) to the square of height in meters. A BMI less than 18.5 denotes chronic energy deficiency.

CHAPTER III

PDS as an Instrument for Food Security

Section - I

Evolution and Development of PDS in India

3.1 Introduction

3.2 Genesis of the PDS in India[1]

3.3 Objectives and the effect of PDS

3.4 The Organisational Structure and Phases of Development

Section – II

3.2 Performances of PDS in India and in Orissa

3.2.1 Coverage of PDS in India, Orissa and Kerala, 1961- 1995

3.2.2 Evidence from the National Sample Survey Data, 1986-87

3.2.3 Distribution of PDS commodities across the districts of Orissa

3.1 Introduction

Ameliorating, chronic as well as transient food insecurity is the foremost responsibility of food policy in India. As it has been mentioned earlier in chapter one and empirically shown in chapter two, augmented food production is contemplated to be a necessary, but not sufficient requirement to ameliorate food insecurity of the poorest segments of population. Unless the poor have adequate entitlements and have improved human capital with them, the higher levels of production (or the cheap food) alone may not be an effective instrument for food security. In the absence of such pre-conditions, the shortfalls of any domestic production or the failure of market will put the entire burden on the poorest families.[2] Hence, in order to improve food security for the poor, the government relies on a set of policy instruments and the PDS is one of them.

The public distribution system in India is one of the most popular public supports, to provide food security, especially to the poorer segment of the population. But the imperious orthodoxy of structural adjustment preaches that the PDS is dismantled and the fiscal deficit started adjusted by reduction of food subsidy. As a result the welfaristic oriented PDS has been started divergent movements from its objectives and leads to weakening of welfare.[3]

In this chapter the first section deals with the genesis of the PDS in India, its objectives, organisational structure and phases of development. The second section describes the role of PDS for providing food security in India in general and in Orissa in particular.

3.2 Genesis of the PDS in India[4]

The PDS in India is a heritage of the Second World War. With the outbreak of the war in 1939, the demand for food grains for armed forces increased while supplies from the exporting countries became uncertain. The uncertainty created speculative motives among the individuals (mainly among sellers and businessmen) and this situation induced for the sudden spurt in prices at that time. Following such a condition, several countries introduced rationing of food grains and other essential commodities. Most of the countries, especially European countries discontinued the rationing system after the war. India too, abolished the system in 1947. But with the onset of planning, it was reintroduced in 1950 as a welfare scheme and the system has been continuing although it has undergone changes in size, nature and coverage. During the mid sixties when the food situation was critical, India opted for a production strategy of spreading the

HYV-seed-fertiliser-technology in a few high potential regions through a policy package consisting of output price support, input price subsidies and a public distribution system. This PDS is the revised one after the establishment of Food Corporation of India (FCI) in 1964. FCI is one of the government branches in the food grain market of India. There are four major forms of intervention by the government in food grain markets in India.[5] First there is a system of public procurement of food grain. Secondly, the government manages the food stocks through storage and buffer stock operations. Thirdly, there is a state-guided system of delivery of cheap food, the public distribution system (PDS). Finally, the government intervenes in the trade and restriction of external trade. In India procurement and distribution of food grains are done directly by the FCI.

3.3 Objectives and the Effect of PDS

The PDS has multiple objectives, which are also conflicting in nature. From its inception, the objectives of PDS have included the following: -

(i) Rationing during situations of scarcity,

(ii) Maintaining price stability,

(iii) Keeping a check on private trade, and

(iv) Raising the welfare of the poor (by providing basic foods to the vulnerable population at reasonable prices, Bapna 1990).

But the emphasis on different objectives has changed over time. Based on these objectives the impact of PDS can be classified into two categories. The direct effect in terms of objectives such as whether the poor benefited from the scheme and what determines the benefits and whether the PDS has helped in stabilising prices? The indirect effects are equally important for decision-making and formulation of policy for the PDS. The indirect effects spring from the fact that PDS is an intervention in the market structure and affects various participants differently. For example to what extent does the PDS influence labour productivity and supply? Which classes of consumers increase consumption and how far income transfer has achieved? How far open market prices influenced by PDS and how demand and supply of food grains are affected by PDS? The empirical analyses of some of these effects are discussed in section II.

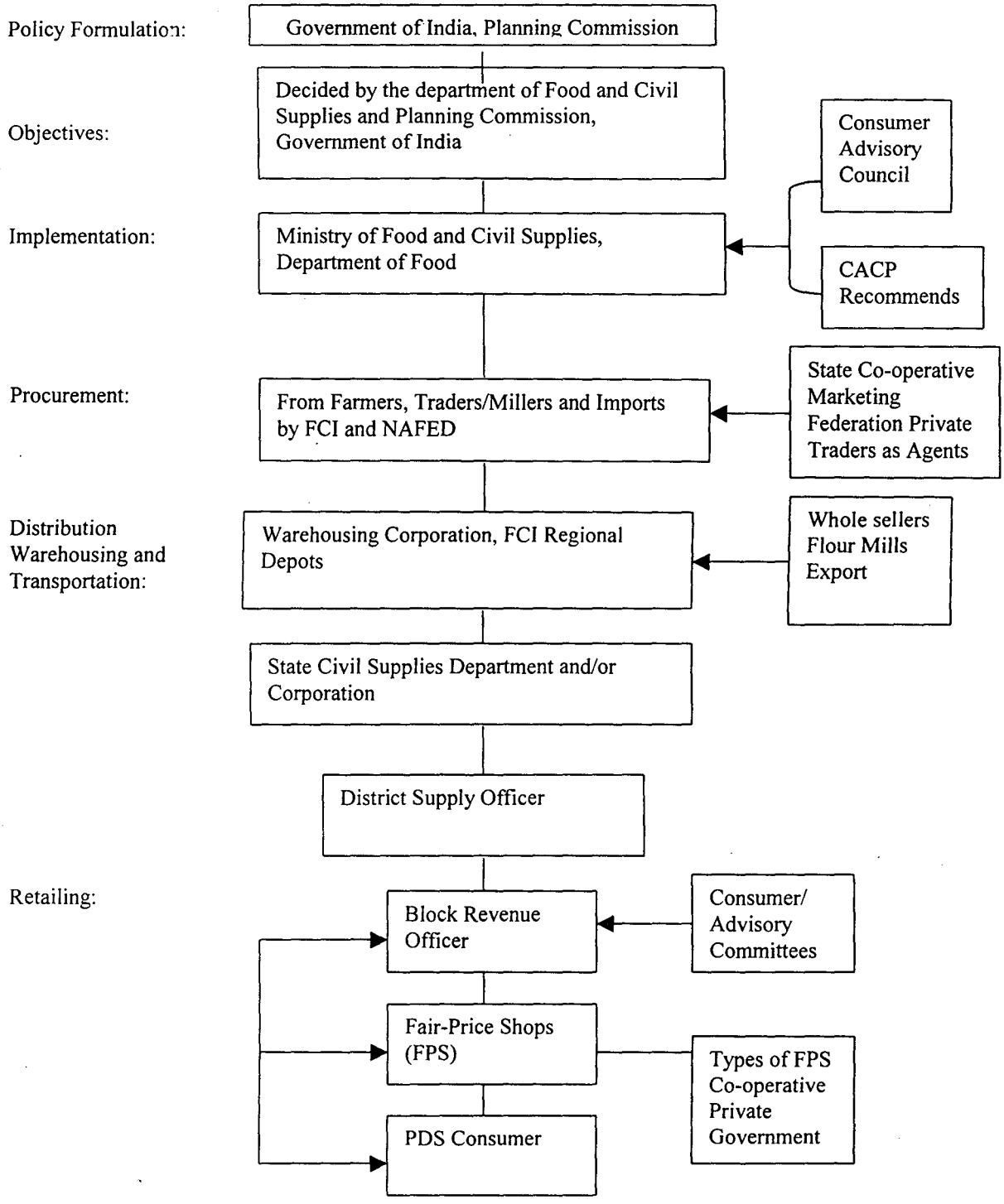
3.4 The Organisational Structure and Phases of Development

The organisational structure includes the policy formulation, fixing of objectives, strategy for procurement and distribution of food grains and other essential commodities where as the phases of development describe the space of PDS over a period of time.

The organisational structure of PDS is delineated in figure 3.1 (see next page). In India, the planning commission (constituted by the expert groups) is the main policy formulating body. Objectives of PDS are decided by the Planning Commission and Food and Civil Supplies. And to achieve the objectives the planning commission along with the Food and Civil Supplies, the Ministry of Food has primary responsibility for policies of food procurement and food distribution through PDS. The FCI, which comes under the jurisdiction of Department of Food is an implementing body and is the sole central agency in charge of procurement, storage, transport and distribution of food commodities. Prior to the establishment of the FCI in India, procurement from the internal sources was limited. And the State Department of Revenue and the Department of Civil Supplies carried on the procurement task by imposing a levy on farmers, traders and millers. But for India the major source of procurement prior to the mid-sixties was imports under PL-480 handled by the Government of India through the State Trading Corporation. Since 1965 the FCI implements the government's policies on procurement, storage, transport and distribution. Usually, procurement is under-taken by the state co-operative marketing federation from farmers, Traders/Millers and supplied to the FCI. The government on the recommendation of the Commission for Agricultural Costs and Prices (CACP) fixes the price paid to the seller (procurement). The important decisions in procurement are how much to procure and what prices should be offered? The prices to be offered are recommended by the CACP. The commission takes into account the cost of production for agricultural commodities, stocks, crop situations etc. The government generally accepts the recommendations and instructs the FCI to procure commodities at the suggested prices. The decision about quantity to be purchased is difficult. Generally a target is fixed keeping in view the crop situation. However, because a support price is announced to the farmers, the FCI has to buy the farmers offer.

The state government purchases the commodities from the FCI required for distribution within their states at the issue prices charged by the government and then the states are responsible for supplying the commodities to fair price shops. The implementing agency at the state level is the State Civil Supplies Department or Corporation.

Figure 3.1 Organisational structure of PDS in India



Source: Bapna (1990)

PDS entitles specified quantities of selected commodities at subsidised prices to different households. In post liberalisation period the norms of PDS have changed so rapidly, which we shall discuss in the latter part of this chapter. In the present situation the eligible households are

given a ration card that entitles them to buy fixed rations (varying with household size and age composition) of selected commodities.[6] The exact entitlement (quantity, range of commodities and prices) varies across states. The six essential commodities supplied through PDS nationally are rice, wheat, sugar, edible oils, kerosene and coal. Additional commodities like pulses, salt, tea are supplied selectively. The commodities are made available through a network of fair-price shops (FPS). In 1999-2000, there were 4.6 lakhs of PDS retail outlets in the country. As Swaminathan (2000) narrated, in 1998, there were 4.5 lakhs of FPS in the country, of which 3.6 lakhs were in rural areas. Private agents ran the shops and co-operatives and few were state owned. As of 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.

Phases of Development

As mentioned earlier the PDS was born in 1939 to manage wartime scarcity. But in the post war period (1947) it was abolished and again reintroduced in 1950 as a welfare scheme. The drought and unpleasant relation with the USA (restriction of food aid to India) led to a situation of food shortages in the mid-sixties. And to manage the circumstances there was a need for strengthening and continuing with a system of food distribution and PDS was made a universal scheme in the 1970s. Bapna (1990) has made useful classification of the evolution of PDS in terms of three phases and Swaminathan (2000) added the fourth phase. Here we have added the recent upgradation in the PDS. Table 3.1 below records the net availability, procurement, and public distribution of food grains, number of FPS and population cover per FPS from 1951 to 2000. The table also shows the demarcation of these four phases.

Table 3.1 Net availability, procurement, and public distribution of food grains, India, 1951-2000. (Million tonnes)

Year	*Net production of food grains*	*Net imports*	*Net availability @*	*Procure ment*	*Public distribution $*	*Col. 5 as % of col.2*	*Col.6 as % of Col.4*
1	2	3	4	5	6	7	*8*
1951	48.1	4.8	52.4	3.8	8	7.9	15.3
1952	48.7	3.9	52	3.5	6.8	7.2	13.1
1953	54.1	2	56.6	2.1	4.6	3.9	8.1
1954	63.3	0.8	63.9	1.4	2.2	2.2	3.4
1955	61.9	0.5	63.2	1.3	1.6	2.1	2.5
1956	60.7	1.4	62.6	Neg.	2.1	Neg.	3.4
1957	63.4	3.6	66.2	0.3	3.1	0.5	4.7
1958	58.3	3.2	61.8	0.5	4	0.9	6.5
1959	69	3.9	72.3	1.8	5.2	2.6	7.2
1960	67.5	5.1	71.2	1.3	4.9	1.9	6.9
1961	72	3.5	75.7	0.5	4	0.7	5.3
1962	72.1	3.6	76.1	0.5	4.4	0.7	5.7
1963	70.3	4.5	74.8	0.8	5.2	1.1	6.9
1964	70.6	6.2	78.1	1.4	8.7	2	11.1
1965	78.2	7.4	84.6	4	10.1	5.2	11.9
1966	63.3	10.3	73.5	4	14.1	6.3	19.2
1967	65	8.7	73.9	4.5	13.2	6.9	17.8
1968	83.2	5.7	86.8	6.8	10.2	8.2	11.8
1969	82.3	3.8	85.6	6.4	9.4	7.8	11
1970	87.1	3.6	89.5	6.7	8.8	7.7	9.9
1971	94.9	2	94.3	8.9	7.8	9.3	8.3
1972	92	-0.5	96.2	7.7	10.5	8.3	10.9
1973	84.9	3.6	88.8	8.4	11.4	9.9	12.8
1974	91.6	5.2	97.1	5.6	10.8	6.2	11.1
1975	87.4	7.5	89.3	9.6	11.3	10.9	12.6
1976	105.9	0.7	95.8	12.8	9.2	12.1	9.6
1977	97.3	0.1	99	9.9	11.7	10.1	11.8
1978	110.6	-0.6	110.2	11.1	10.2	10	9.2
1979	115.4	-0.2	114.9	13.8	11.7	12	10.2
1980	96	-0.3	101.4	11.2	15	11.6	14.8
1981	113.4	0.7	114.3	13	13	11.4	11.4
1982	116.6	1.6	116.9	15.4	14.8	13.2	12.6
1983	113.3	4.1	114.7	15.6	16.2	13.7	14.1
1984	133.3	2.4	128.6	18.7	13.3	14	10.4
1985	127.4	-0.4	124.3	20.1	15.8	15.8	12.7
1986	131.6	0.5	133.8	19.7	17.3	15	12.9
1987	125.5	-0.2	134.8	15.7	18.7	12.5	13.8
1988	122.8	3.8	130.8	14.1	18.6	11.5	14.2
1989	148.7	1.2	147.2	18.9	16.4	12.7	11.1
1990	149.7	1.3	144.8	24	16	16	11
1991	154.3	-0.1	158.6	19.6	20.8	12.7	13.1
1992	147.3	-0.4	148.5	17.9	18.8	12.2	12.7
1993	157.5	3.1	149.8	28.1	16.4	17.9	10.9
1994	161.2	1.1	154.8	26	14	16.1	9.1
1995	167.6	-2.6	166.7	22.6	15.3	13.5	9
1996	157.9	-3.1	163.3	19.8	18.3	12.5	11.2
1997	174.5	-0.5	176.2	23.6	17.8	13.5	10.1

Table continued...

1998	168.2	-2.5	159.6	26.3	18.4	15.6	11.5
1999	177.7	-1.3	169.4	30.8	17	17.3	10
2000*	180.2	-1	170.5	35.5	12.1	19.7	7.1

** - Provisional, Neg.- Negligible.*
Net availability = Net production + Net imports - changes in government stocks.
$ - Includes quantities released under the food for Work Programme during the year 1978 to 1990.
Notes: 1. Production figures relate to agricultural year: 1951 figures correspond to 1950-51 and so on. Figures for procurement and Public distribution relate to calendar years.
2. Net imports from 1981 to 1994 are only on government account and from 1995 onwards the net imports are total imports and export of the country.
Source: Government of India, Economic Survey 2000-2001.

Phase-I - Starting or Restricted Phase (origin to1960)

The British government had first introduced the rationing system in India in1939. Precisely, it was first introduced in Bombay, which was subsequently extended, to six other cities under the defence of India Rule. And later on, it was extended to Bengal, Utter Pradesh, Bihar, Madras, etc.[7] There after the price control measures were also adopted and reviewed in the price control conferences from time to time. The Department of Food was established in 1942, to deal with the problems related to food supply. By that time the occurrence of the Bengal famine and the fall of the amount of rice import from Burma and Japan, worsened the Indian situation. As a consequence in 1943, the First Food grain Policy Committee was set by the Food Department and they recommended the continuation of rationing, maintenance of a reserve stock and extension of the rationing scheme to rural areas. The system grew slowly, from initial seven cities to 13 cities in 1943, 103 cities and towns in 1944 and 771 cities and towns in 1946. As it was mentioned earlier rationing was an arrangement for the wartime scarcity. And at the end of the war, several countries abandoned the rationing system; India also abolished the system after following the recommendation of the Second Food grain Policy Committee of 1947. But in the post-war period the prices of food grains increased rapidly. It was four times more than the pre war level and the rise in prices was continued due to Korean War. As a result rationing was reintroduced in India in 1950. And when the process of planned development was introduced in the fifties, the PDS was continued as a welfare measure.

In the First Plan, the PDS was extended to those rural areas where the food grain deficit was most prominent. These were demarcated as statutory rationing areas where supply from the ration shop or FPS was obligatory under the Act while other areas were to be covered by non-statutory rationing. Hence the scope of rationing was widened (included both rural and urban), but as the table 3.1 shows the amount of food grain distributed through PDS declined during the

1950s and through to the early 1960s. Again, for most of this period, the quantity distributed through PDS was greater than the quantity procured domestically. And this deficit was fill up by the import of food grain, primarily food imported under the US Public Law 480 (PL-480) regime. Further, though the number of FPS increased from mere 18,000 in 1956-57 to 51,000 in 1960-61, the coverage of the PDS in terms of population was small.

Phase-II- Re Organisational or the Universal Phase (1960-78)

In the 1960s, there were major changes in the organisational structure of the Indian food policy. In response to crop failures, food shortages, disturbances due to China war and the price fluctuations, it was decided to make PDS a permanent and universal programme. Following organisational changes, two new organisations, the Agricultural Price Commission (later renamed the Commission on Agricultural Cost and Prices {CACP}) and the Food Corporation of India (FCI) were set up in 1965. This was immediately followed by two consecutive drought years (1965-66 and 1966-67), that provided a strong impetus for the expansion of PDS. That is why, in these years (1965-68, as table 3.1 shows) the Public distribution is distinct from the rest of the 1960s. India managed the situation by importing food grains (around 10.3 million tonnes in 1966) but prices continued to increase. Hence in the Fourth Plan the buffer stocks was created to maintain regular supplies. Gradually, the production of food grain increased due to the introduction of HYV and good rainfall, as a result import has declined and purchase from PDS also fell, but due to the drought of 1972-73, the distribution of food grain through PDS picked up again. The number of FPS also increased over time, from 121,032 in 1971-72 to 240,210 by 1975-76.In this phase the coverage of PDS in terms of population was increases (see table 3.6, A also)

Phase-III - Expansionary Phase or Sustaining Phase (1978-91)

One of the significant features of this phase was the piling up of the buffer stocks, and this initiated the basis for large-scale expansion of PDS through programmes like Food for Work, Antyodaya (up liftment of poorest) etc[8]. As depicted in the table from 1978 to 1991 there was a steady growth in quantity of food grain distributed. It started from 10.2 millions tonnes in 1978 and reached to 20.8 million tonnes in 1990. The stock of grains with the FCI has touched 30 million tonnes by 1987-88. During this phase, PDS worked as an important instrument to alleviate poverty. The network of fair-price shops grew from 238985 in 1978 to 374799 in 1991;

person per FPS for all India has decreased from2702 to 2272, and the number of commodity coverage was also increased (to seven). Special schemes were introduced in states such as Andhra Pradesh to expand the supply of cheap food to the poor. It was in this phase a study was done by NSSO at the national level, to see the working of the PDS. They found a number of leakage's on the functioning of PDS, such as problems of off take, coverage, inadequate amount, poor quality, high price etc. And these leakages are still continuing in the states like Orissa and Bihar[9].

Phase-IV - Contractionary or the Weakening Phase (1991 to present)

This is the phase of post reforms period. The amount of food grain distributed through PDS has fallen substantially, from 20.8 million tonnes in 1991 to 14 million tonnes in 1994. A number of factors were responsible for the fall in distribution, such as rise in the buffer stock, excessive holdings of stocks, narrowing the price differential between PDS and market prices, and a number of contractionary reforms in PDS. In 1992, when Narasimha Rao was the Prime Minister, the government of India introduced the Revamped PDS, to expand and improve the system of delivery of commodities through FPS in certain areas (such as areas with a concentration of SC/ST people or drought prone areas). The policy aimed to improve the coverage of income-poor consumers by the PDS, but it was failed[10]. Again in 1997 when Deve Gowda was the Prime Minister one more reform has brought up, the Targeted Public Distribution System (TPDS). The main aim was to curtail food subsidy. It has spitted the society into two groups, above poverty line (APL) and below poverty line (BPL). The income poverty line was used to demarcate "poor" and non-poor" households. The government was providing subsidy on food grains to the BPL households. But this scheme is also likely to worsen food security among the poorest households [ibid. 7]. In Orissa the targeted households were identified considering certain features, which were decided by the government.

The recent policy change was the hiking of PDS ration prices steeply. As the Finance Minister in his budget speech (2000-2001) announced, the Central issue prices will be set at half the "economic cost" incurred by the FCI for BPL households and at the full "economic cost" for APL households. Orissa is one of Indian States where the retail prices have not changed much from the central issue prices. But considering the proportion of population under BPL, we

thought; though 49 per cent of population were already under income poverty, the impact of price hiking may be high. In the next chapter a case study is presented on this aspect.

After APL and BPL, a new PDS class, Antyodaya was born. The demerit of the TPDS was the narrow target and reform of price hiking was to help reduce the amount of off take. During April-October 2000, off take of rice fell from 78 percent to 45 per cent and that of wheat from 47 per cent to 30 per cent. This led to the emergence of few other changes in the Indian food grain market.

The decline compounded the mounting food stock problem, some of the concerned members were suggested to dump the grains into the sea. But instead of that the **Antodaya Scheme** came up as the 76th birthday gifts to the poorest of the poor by Prime Minister Atal Bihari Vajpayee.

The problem still persists, because even if Antodaya scheme will be implemented the problem of excess stock is not going to be resolved. And rather than using the abundance of grain as an opportunity to raise consumption among the people, the government has declared its intention to sell its stocks in foreign markets at subsidised prices. Foreign buyers of Indian rice and wheat will only have to pay the rates charged to BPL consumer in India. But selling in the foreign market at BPL prices, will it reduce food subsidy or reduce the budgetary deficit? However, selling in the foreign market at BPL prices will not incur the economic cost to the FCI. Next section deals with the role the PDS has played to achieve food security in Orissa and India.

Section II

3.2 Performances of PDS in India and in Orissa

The Role of PDS in providing food security in India may be considerable, but in Orissa, it has failed in meeting the desired objectives. Neither the prices charged in the PDS is lower than the prevailing market prices of Orissa, nor the PDS provided adequate food grains to the needy people of the state. Even if there is large number of undernourished persons it has failed in Orissa, because of less allotment to the needy section of the population. The main reasons of inefficient functioning of PDS are- the households who actually need it do not have the purchasing power or other human power to claim their rights, or excluded from the targeting

group (in TPDS scheme), and the household who have these power, they use it for other purposes, (Sarap, 2000).

In the next section a detailed analysis of secondary data relating to PDS is discussed. As we have mentioned earlier the starting period is 1960, because the administrative set up of Orissa became more efficient after 1959 after the reintroduction of Panchyatraj. Also PDS was not widely spread in Orissa prior to 1960. Apart from this, we have presented the comparative picture of Kerala with Orissa. The next section discusses the following aspects. First, an attempt has been made to examine the coverage of PDS in terms of issues of food grains and number of fair price shops over a period of time for India, Orissa and Kerala. Secondly, it discusses some of the findings from the 42nd round of NSSO data, which are based on the utilisation of PDS. Thirdly, we have presented a disaggregated analysis across the districts of Orissa, about the allotment of PDS commodities and number of ration shops.

3.2.1 Coverage of PDS in India, Orissa and Kerala, 1961- 1995

We have looked at the coverage of PDS with respect to distribution of food grains and the fair price shops in Orissa, Kerala and India as a whole.[11] Table 3.2 (A) provides the details of total public distribution, total procurement of food grains and total numbers of Fair Price Shops over a period of 1961 to 1995, for India, Orissa and Kerala. And table 3.2 (B) shows the per capita distribution of food grains by PDS and population covered per PDS ration shop in Kerala, Orissa and India. The data suggest that, the absolute as well as the average amount of distribution food grains in Kerala (comparatively less poor people are living there) is always higher than Orissa (the poorer state) and there is a huge gap between these two as the average amount of distribution of food grains are concerned.

As the numbers of FPSs are concerned, For India and Orissa, the absolute differences in the number of ration shops are though non-comparable in numbers, as theirs trends show both are showing the increasing trends. But for Kerala, a remarkable thing has happened in 1963 – 1964. During this period the number has increased from around 6000 to 12000 and there after the increase of FPS has been slow. The data depicts that till 1979, the number of FPS has remained higher in Kerala than Orissa but after that year it has continuously increased. But though the number of ration shops and amount of public distribution also depend on number of population, here we have calculated the number of persons per ration shop. In the same table it shows that

the number of persons per ration shop at the initial period is so high for Orissa than Kerala and all India, but during post 80s this remained at the low level. It is roughly 2300 for Kerala and India and even lower for Orissa (less than 2000 (see figure 3.)). In the subsequent section, some evidence has been presented from NSSO (42nd round) data.

3.2.2 Evidence from the National Sample Survey Data, 1986-87

It has been seen that the official information on PDS is of aggregate in nature and does not provide scope to know about the utilisation of PDS at the individual level for different economic strata.[12] At the national level a survey was conducted by the National Sample Survey Organisation (NSSO, 42nd round) in 1986-87 on the utilisation of PDS by the households in different expenditure classes. This kind of information is not available from any other sources for the recent period. Therefore some of the salient findings from this survey have been presented below.

Participation in PDS

From the NSSO data, the extent of household participation on PDS can be categorised into two groups.

(1) Households, those for whom PDS grain accounted for all the grain they bought and

(2) The household, for whom PDS grain, accounted for only a part of their purchases of grain.

Using the data of this round, Parikh (1994) looked to the utilisation of PDS for all the states by household expenditure classes. Tables 3.2 and 3.3 have been taken from Parikh (1994). This shows the result for the participation of rural and urban population in PDS.

In Orissa, Bihar and Utter Pradesh, around 98 per cent of the rural population did not purchase any grain from PDS that is they did not participate in PDS. In other words PDS reached only around two per cent of the rural population. Whereas, in Kerala, over 87 per cent of the population had purchased grain from PDS. And for the smaller states like Mizoram and Goa also it remained at a high level of 93.6 per cent and 79.6 per cent respectively.

In Orissa, Bihar, Utter Pradesh and Madhya Pradesh, the urban non-participation in PDS also remained at a higher level, 86.2 per cent, 92.9 per cent, 93 per cent and 86 per cent respectively.

Table 3.2 Dependence on the PDS for purchase of food grain, all State, rural and urban areas, 1986-87 (percentage of households by type of purchase)

States	*Rural*			*Urban*		
	Type of purchase from PDS			Type of purchase from PDS		
	No purchase from PDS	Partial purchase from PDS	All purchases from PDS	No purchase from PDS	Partial purchase from PDS	All purchases from PDS
Mizoram	6.4	47	46.6	1.1	54.6	44.3
Kerala	12.3	79	8.6	13	83.8	3.3
Goa	20.4	69.1	10.5	18.3	70.6	11.2
Tripura	30.8	66.5	2.7	21.4	49	29.6
Karnataka	38.1	53.9	8	26.3	17.1	56.6
Andhra Pradesh	40.3	47.3	12.4	37.3	58.9	3.8
Tamil Nadu	46.5	44.9	8.5	40.2	51.2	8.5
Maharastra	52.3	32.4	15.3	44.4	52.8	2.8
Gujarat	55.5	30	14.6	44.6	52.8	2.7
Meghalaya	61.2	31.5	7.4	48.6	47.9	3.5
Delhi	64.6	20.4	15	56.2	38.5	5.3
Sikkim	70	2.6	27.4	57	40.6	2.5
Himachal Pradesh	71.8	13.1	15.1	64.1	28.6	7.3
West Bengal	73.1	22.7	4.1	68	24.5	7.5
Assam	75.4	21.9	2.8	74.7	14.1	11.3
Jammu & Kashmir	76.7	10.2	13.2	79	5.3	15.8
Madhya Pradesh	90.9	4.8	4.3	82.6	12.1	5.3
Rajasthan	91.2	3.6	5.2	86.2	11.4	2.4
Manipur	94.6	4.5	0.9	92.9	4.3	2.8
Haryana	96.6	1.6	1.5	92.9	6.4	0.7
Uttar Pradesh	97.6	0.6	1.6	93	4.6	2.5
Orissa	98.3	1.2	0.5	94.4	2.2	3.4
Bihar	98.3	1.2	0.5	95	3	2
Punjab	99.9	0	0.1	95.4	3.6	1

Source: Parikh (1994), Table 2.

From the above table one conclusion can be drawn that PDS has not served to vast majority of the population of India and the coverage varied across states (a similar conclusion was drawn by Swaminathan, 2000).

Sikha Jha, (1992), found that among all poor households very small fraction had participated in PDS. At the all India level, she found that among the lowest 10 per cent of rural households in terms of expenditure, 43 per cent purchased rice from PDS, 30 per cent purchased wheat and only 10 per cent purchased jowar.

As far as the quantity distributed or purchased from PDS, wide variation was observed across it's also vary highly across the Indian states. Using the same data Parikh's (1994) findings of the share of bottom 20 per cent of population in quantity of food grain distributed through

PDS, by state and by rural and urban area have been presented in table 3.3. From table 3.3 it is clear that, in the all India level the lowest percentage of food grains distributed was in rural Orissa (7.1 per cent). For the urban Orissa also the figure remained as low as 6.8 per cent. The remaining 92.9 per cent of the rural population and 93.2 per cent of urban population from bottom 20 per cent had not used PDS's food grains.

Table 3.3 Share of Bottom 20 per cent of population in quantity of food grain distributed through PDS, by states and rural-urban areas, 1986-87.

States	*Rural*	*Urban*	*Rural*	*Urban*
	% of population	% of quantity distributed	% of population	% of quantity distributed
Andhra Pradesh	26	24.6	24	28.2
Assam	24	28.4	30	33.3
Bihar	24	16.9	24	14.4
Delhi	27	56.6	26	28.1
Goa	30	31.4	25	24.7
Gujarat	23	26.6	25	37.6
Haryana	24	33.2	30	21
Himachal Pradesh	29	21.6	31	29.4
Jammu & Kashmir	24	30.4	26	22.3
Karnataka	24	20.8	25	21.8
Kerala	25	25.1	29	28.2
Madhya Pradesh	24	20.9	24	22.9
Maharastra	23	22.2	26	23
Manipur	22	21.4	26	2.4
Meghalaya	25	28.6	30	25.2
Mizoram	26	26.2	24	23.4
Orissa	21	7.1	26	6.8
Punjab	23	100	27	20.5
Rajasthan	24	33.3	27	36.9
Sikkim	30	25.4	32	0
Tamil Nadu	26	24.3	24	23.6
Tripura	26	27	21	25.9
Uttar Pradesh	24	10.8	27	19
West Bengal	23	19.3	26	23.6

Source Parikh (1994), Table 6

In this context Dev and Suryanarayana (1991) also found that, very less percentage of population in Orissa had purchased rice provided through PDS compare to their rice purchased from all other sources (see table 3.4). Table 3.4 shows, in rural areas, the percentage of quantity of rice purchase from the PDS by the ultra poor varied from less than one per cent in Orissa and Bihar to 60 per cent in Kerala.[13] For other states like Madhya Pradesh, Utter Pradesh and West Bengal these shares remained at less than 10 per cent. For urban area, these shares remained less than the all India average for the state like Orissa, Bihar and Madhya Pradesh. This indicates that the ultra poor have benefitted very little from the

PDS in these states. For wheat also, similar findings are observed in respect of the share of purchase from PDS for the states such as Bihar, rural Orissa, Madhya Pradesh, Uttrer Prades and urban Rajasthan.

Table 3.4 Quantity of purchase from PDS as a percentage to total purchase by fractal group: Rice

States	*Rural*				*Urban*			
	0-10	10-20	90-100	All	0-10	10-20	90-100	All
Andhra Pradesh	39.16	37.32	21.25	32.54	30.31	28.63	11.36	21.47
Assam	20.02	14.39	11.26	14.41	18.48	19.54	10.1	14.83
Bihar	0.76	0.49	0.82	0.42	0.41	0.1	0.09	0.29
Gujarat	56.36	49.39	26.84	46.53	31.84	38.39	9.83	26.21
Haryana	10.36	17.33	2.54	7.29	7.49	5.47	12.61	8.89
Himachal Pradesh	43.52	51.85	25.34	35.8	8.9	28.54	-	20.48
Jammu & Kashmir	43.59	40.92	30.59	37.91	54.35	68.32	53.11	63.87
Karnataka	25.63	26.48	16.5	22.22	28.24	28.79	18.8	25.69
Kerala	64.91	58.61	38.84	51.36	54.38	54.1	51.54	46.19
Madhya Pradesh	5.48	6.8	9.57	6.14	7.66	16.99	2.91	10.47
Maharastra	28.29	26.82	23.95	27.45	25.89	34.49	12.54	27.77
Orissa	0.78	-	0.45	0.4	-	-	2.49	0.41
Punjab	-	-	-	-	7.96	3.66	3.68	5.15
Rajasthan	16.59	12.55	3.06	7.47	7.66	7.06	43.17	15.94
Tamil Nadu	20.85	20.96	11.6	18.66	14.67	15.69	8.86	12.17
Tripura	29.9	16.82	27.38	26.03	44.46	20.16	6.4	24.52
Uttar Pradesh	0.95	2.43	13.94	4.45	12.13	7.14	6.04	12.17
West Bengal	8.38	5.73	8.03	6.59	18.45	24.07	17.13	19.48

Source: Dev and Suryanarayana (1991).

The questions that arises from these findings are remained unanswered: Why did the poor of Orissa purchased less from PDS ration shop and more from open market, compared to the poor of all India? Is it a result of the government's efforts of pushing up to the market prices without inducing the purchasing power among the poor of Orissa?

We have found a partial response to this matter from the study of Alhuwalia (1994). He used the same data (NSSO, 1986-87) and found that- at that time the price per Kg. of rice was less than that in the PDS (see table 3.5). Hence if a household is getting the same type of rice at a lesser price in the open market, why should he/she will go for PDS? The low market price in the regional market does not mean that all the consumers are able to afford it, hence PDS is required but the price charged in the PDS ration shop should remain low in absolute term and at least low than the market price of the region. We have conducted a primary survey to

examine various aspects of utilisation of PDS in Orissa (see chapter four). In the next section, we have presented the distribution of PDS commodities across the districts of Orissa.

Table 3.5 Retail Prices: free market and PDS, by state, 1986-87

State (market)	*Free market retail price at specified market (Rs/kg)*	*Actual price paid at PDS outlet in urban areas (state average, (Rs/kg)*	*Free market price over PDS urban price (%)*
Rice			
Andhra Pradesh (Hyderabad)	3.12	2.12	47.2
Bihar (Patna)	3.64	2.38	52.9
Karnataka (Mangalore)	3.53	2.66	32.7
Madhya Pradesh (Raipur)	3.22	2.96	8.8
Orissa (Balasore)	3.2	3.25	-1.5
Tamil Nadu (Kumbakonam)	3.28	2.39	37.2
Utter Pradesh (Varanasi)	3.24	2.78	16.5
Wheat			
Bihar (Patna)	2.86	2.04	40.2
Madhya Pradesh (Raipur)	2.72	2.19	24.2
Maharastra (Bombay)	2.81	2.21	27.1
Orissa (cuttack)	2.44	2.22	9.9
Rajasthan (Kota)	2.24	2.13	5.2
Utter Pradesh (Kanpur)	2.24	2.03	10.3
West Bengal (Culcutta)	2.24	2.24	0

Notes: PDS prices are the prices actually paid as calculated from NSS 42nd round data. Only those market have been chosen where the quality of grain quoted is closet to what is sold through the PDS. Since the market price data that are available refer primarily to urban markets, price comparisons with PDS prices are shown only for urban areas.
Souce: Ahluwalia, 1993

Table 3.6 (A) Total amount of public distribution, internal procurement and number of person per FPSs in India, Orissa and Kerala, 1961-1995. (Thousand metric tonnes)

	India					*Orissa*					*Kerala*				
Year	TPD	IP	No FPS	P	Col 5/4	TP D	IP	No FPS	P	Col 10/9	TPD	IP	No FPS	P	Col 15/14
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1961	3977	541	47818	442372	9251	58	22	405	17548	43330.4	241	-	6262	16903	2699
1962	4355	479	50523	452212	8951	92	28	693	17945	25895.4	248	-	6367	17302	2718
1963	5178	750	60123	462027	7685	173	56	842	18351	21794.7	206	-	6365	17711	2783
1964	8663	1414	102193	472132	4620	118	72	1591	18766	11795.1	500	3	11968	18129	1515
1965	10079	4031	109881	482530	4391	87	262	2400	19190	7995.93	1294	38	12537	18557	1480
1966	14077	4009	135997	493209	3627	242	228	2182	19624	8993.59	1143	19	12345	18996	1539
1967	13164	4471	142815	504162	3530	201	214	4850	20067	4137.65	1151	73	12117	19444	1605
1968	10140	6805	140402	515414	3671	247	183	4829	20521	4249.58	1092	78	12122	19903	1642
1969	9464	6581	138777	526986	3797	123	292	2855	20985	7350.31	911	94	11851	20373	1719
1970	8855	6714	122038	538881	4416	120	306	3708	21459	5787.35	925	83	11465	20854	1819
1971	7816	8857	121032	551287	4555	213	256	2713	21944	8088.69	930	70	11277	21347	1893
1972	11396	7665	165081	563833	3415	397	150	2985	22351	7487.93	994	61	11224	21726	1936
1973	11414	8424	200655	576798	2875	234	242	4099	22765	5554.01	1011	62	11230	22111	1969
1974	10790	5645	221975	589990	2658	297	156	11587	23188	2001.21	1033	42	11596	22504	1941
1975	11253	9563	240210	603465	2512	289	98	10574	23617	2233.58	1053	40	11473	22903	1996
1976	9174	12853	236196	617248	2613	229	222	10498	24055	2291.47	1191	29	11784	23310	1978
1977	11729	9974	238727	631304	2644	264	82	10039	24501	2440.67	1465	21	11775	23724	2015
1978	10183	11093	238985	645663	2702	234	99	10684	24956	2335.84	951	8	11875	24145	2033
1979	11663	13828	243828	660276	2708	383	39	10345	25418	2457.12	636	1	11534	24573	2131
1980	14993	11178	283560	675157	2381	594	47	16255	25890	1592.75	925	-	11504	25009	2174
1981	13106	12932	282920	688320	2433	291	155	17150	26370	1537.62	1185	-	11635	25453	2188
1982	14768	15419	277672	705204	2540	414	89	17156	26856	1565.44	1272	-	11635	25796	2217
1983	16206	15571	248028	718900	2898	452	82	17858	27352	1531.65	1545	-	11848	26144	2207
1984	13326	18723	302360	734500	2429	272	124	19343	27856	1440.15	1536	-	12100	26496	2190
1985	15447	20079	315290	750400	2380	399	111	19603	28370	1447.26	1590	-	12366	26853	2172
1986	17269	19720	325081	767199	2360	306	123	19724	28894	1464.92	1816	-	12606	27215	2159
1987	18700	15667	333467	783730	2350	416	124	19468	26856	1511.57	1821	-	12744	27581	2164
1988	18306	14065	345191	800496	2319	542	86	21114	27352	1419.44	1841	-	12826	27953	2179
1989	15903	18950	351802	817488	2324	421	143	20861	27856	1463.16	1486	-	12828	28330	2208
1990	16014	24002	385490	834698	2165	461	260	21259	28370	1462.26	1763	-	12956	28711	2216
1991	20816	19606	374799	851661	2272	625	226	21709	28894	1458.36	2061	-	13007	29098	2237
1992	18797	17877	388500	867818	2234	500	283	22467	29427	1428.00	2088	-	13050	29361	2250
1993	16788	28008	408596	883910	2163	464	389	22004	29970	1477.54	2002	-	13157	29626	2252
1994	14091	25973	424865	899953	2118	387	359	23968	30523	1374.60	1484	-	13325	29894	2244
1995	15460	22566	429557	915971	2132	559	345	24156	31086	1382.13	1654	-	13875	30165	2174
1996			435375	932000	2141			25210	31659				14176	30437	2147

Notes: TPD- Total Public Distribution, IP- Internal procurement, No FPS - Number of fair price shop, P- Population (thousand, '- Negligible,

Source: Bulletin on Food Statistics (various years).

Table 3.6 (B), Per capita distribution of food grains in India Orissa and Kerala, and 1961-1995.

(Kilogram per annum)

Year	*India*	*Orissa*	*Kerala*	*Year*	*India*	*Orissa*	*Kerala*
1961	8.99017117	3.30506066	14.257221	1981	19.0405625	11.035154	46.55509
1962	9.63043882	5.12662233	14.3328746	1982	20.9414581	15.4151047	49.3087903
1963	11.2071372	9.42717698	11.6308813	1983	22.5427737	16.5251459	59.0953811
1964	18.3486821	6.28795789	27.5790429	1984	18.1429544	9.76419633	57.9701049
1965	20.8878204	4.53355543	69.728006	1985	20.5850213	14.0637529	59.210375
1966	28.5416527	12.3318179	60.1704117	1986	22.5091534	10.5903542	66.7274224
1967	26.1106549	10.0161277	59.1937507	1987	23.860258	14.1365399	66.0216338
1968	19.6735052	12.0362946	54.8639354	1988	22.8683216	18.0846375	65.8594238
1969	17.9587314	5.86128755	44.7143043	1989	19.4534966	13.7928289	52.4530522
1970	16.4321993	5.59192352	44.3540842	1990	19.185382	14.8297186	61.4033526
1971	14.1777332	9.70625374	43.56509	1991	24.4416499	19.7411629	70.8280982
1972	20.2116584	17.7616733	45.7510813	1992	21.6600716	15.5845909	71.1133669
1973	19.7885568	10.2785196	45.7220243	1993	18.9928839	14.271712	67.5735036
1974	18.2884456	12.8083296	45.9022455	1994	15.6574843	11.7463179	49.6406983
1975	18.6473118	12.236444	45.9749533	1995	16.8782636	16.7430774	54.8316233
1976	14.8627456	9.51950146	51.0933058				
1977	18.5790047	10.7746702	61.7517375				
1978	15.7713854	9.37642437	39.3868628				
1979	17.6638254	15.0675107	25.8813725				
1980	22.2066867	22.9430165	36.9854781				

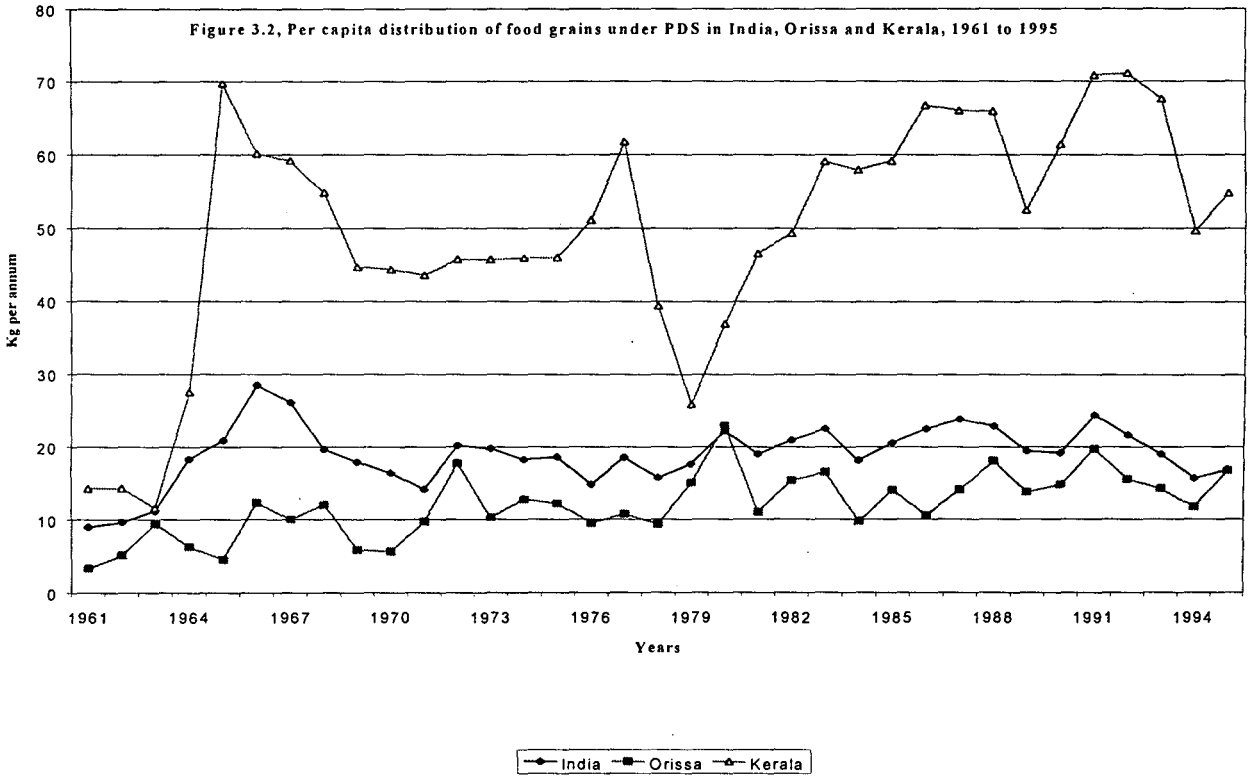
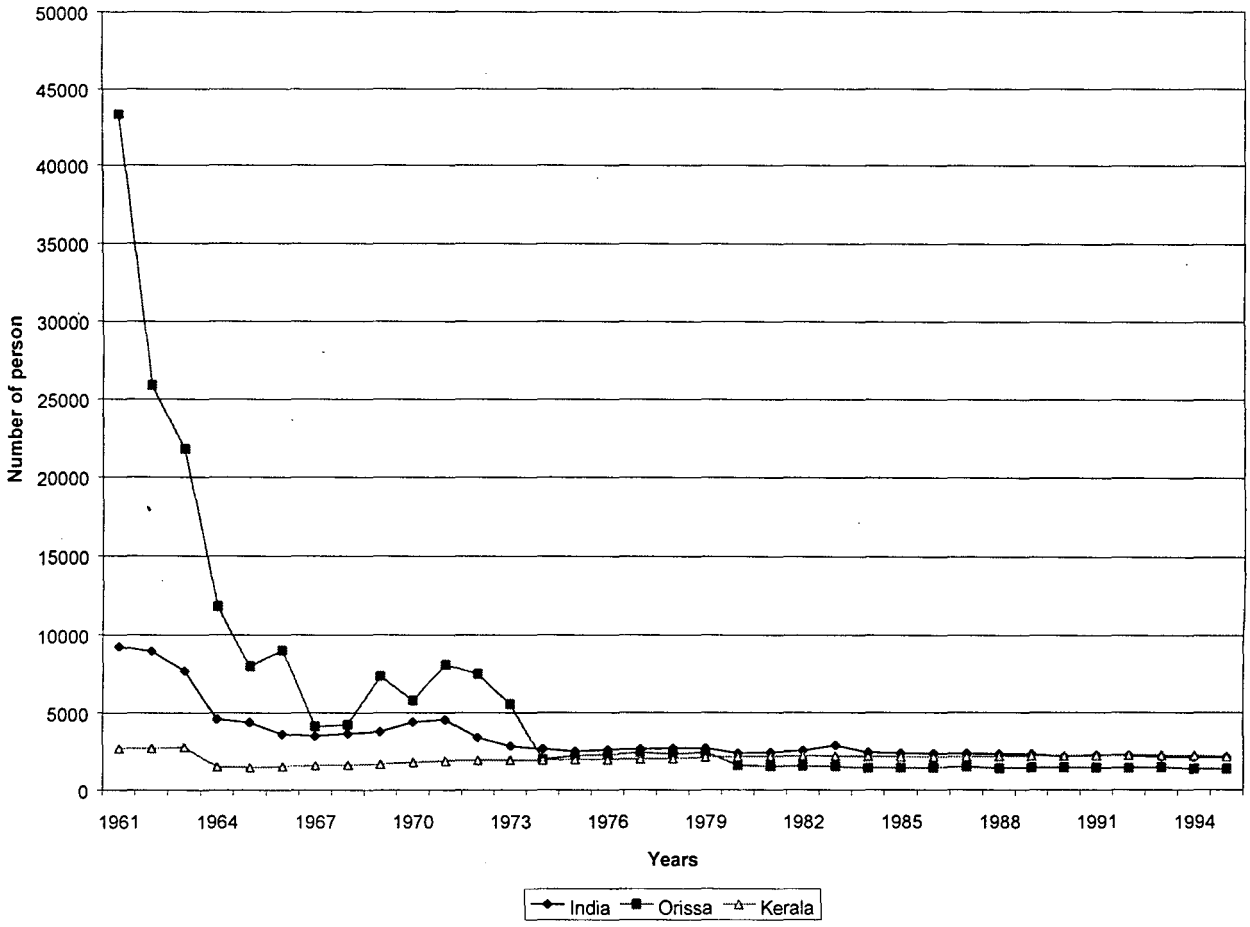


Figure 3.3, Population covered per FPS in India, Orissa and Kerala, 1961-1995



3.2.3 Distribution of PDS Commodities Across the Districts of Orissa

On the basis of public distribution data from the District Statistical Handbook of all districts of Orissa a simple analysis has been attempted (see table 3.7). Annual per capita entitlement of rice, wheat, sugar, kerosene and, rice and wheat together has been calculated. Along with this, the number of persons covered per ration shop for each district has been calculated.

High variability in allotments of PDS commodities is found across districts from the data. Per capita allotment of rice across the districts ranges from .18 kg (Dhenkanal) to 93.04 kg (Angul), wheat ranges from .089 kg (Sonepur) to 253 kg (Cuttack), sugar ranges from .08 kg (Deogarh) to 55.10 kg (Cuttack), and, rice and wheat together ranges from 1.20 kg (Ganjam) to 285.3 kg (Cuttack). The coefficient of variation of the total allotment of rice, wheat, sugar, and kerosene are 1.03, 2.99, 2.44, 0.7 respectively. The box plot for the per capita allotment of rice and wheat

together shows that, Cuttack and Angul are appeared as two upper outliers; the box plot for per capita allotment of rice alone shows Angul as the upper outlier and for the per capita allotment of wheat alone, Cuttack, Balasore, Kendrapara and Angul are the upper outliers. All the upper outlier's districts found here are belong to eastern part of Orissa, indicating the regional disparity in the state.

Population covered per ration shop also shows wide variability across the districts. It ranges from 929 (Bhadrak) to 1908 (Khurda) numbers of persons.

This chapter concludes that PDS has failed to achieve its objectives in Orissa, mainly due to higher issue prices of rice than the open market prices in Orissa. This becomes the prime cause of the failure of effective demand for PDS commodities. But apart from the higher issue prices there are many other contributory factors responsible for the failure of PDS in Orissa, But the aggregate data do not provide a clear picture about these factors. Hence, we have undertaken a primary survey. Some the findings that we have derived from the field survey are presented in the next chapter.

Figure- 3.4, Box plot of per capita rice allotment of different district of Orissa, 1995.

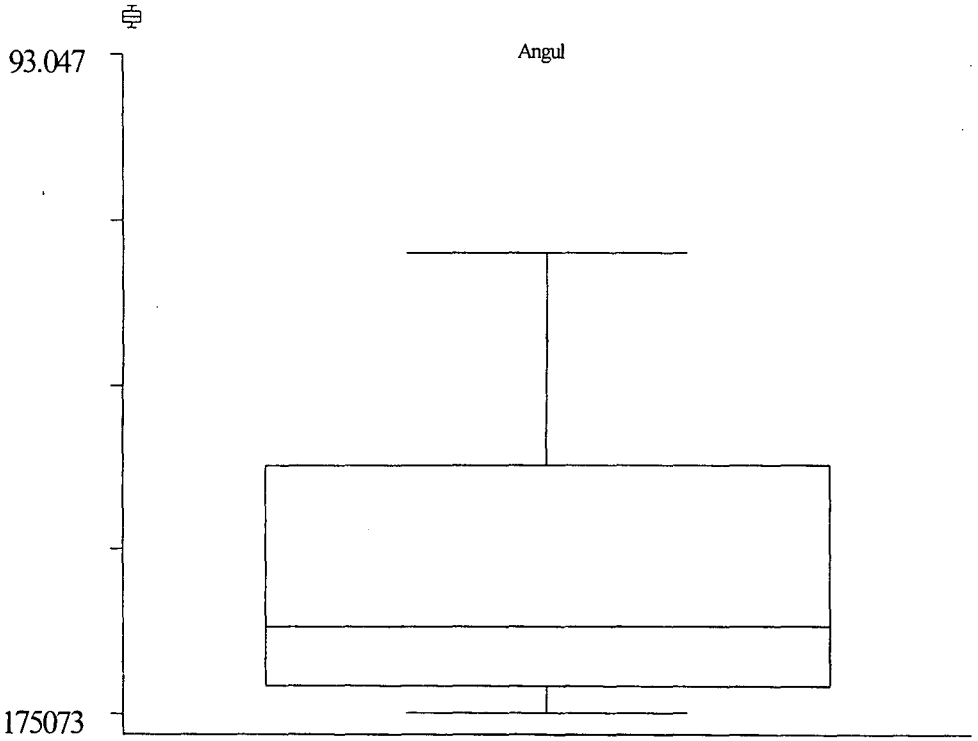


Figure 3.5

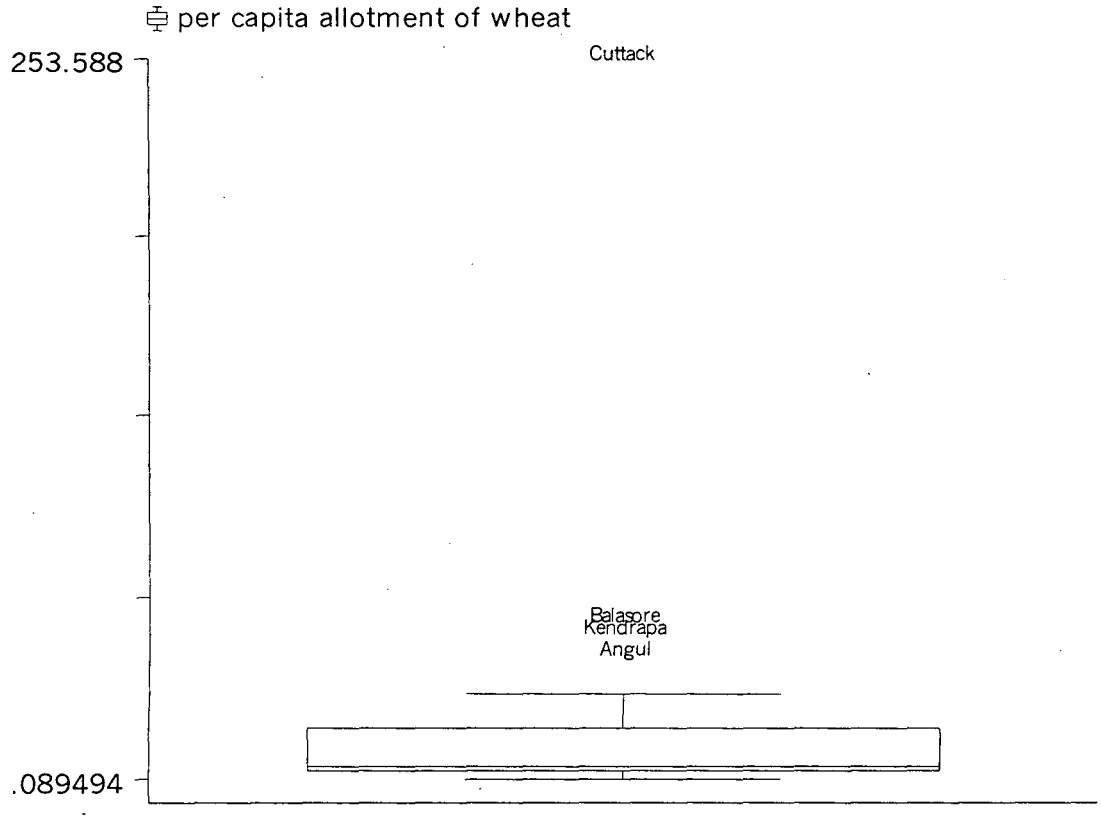


Figure 3.6,

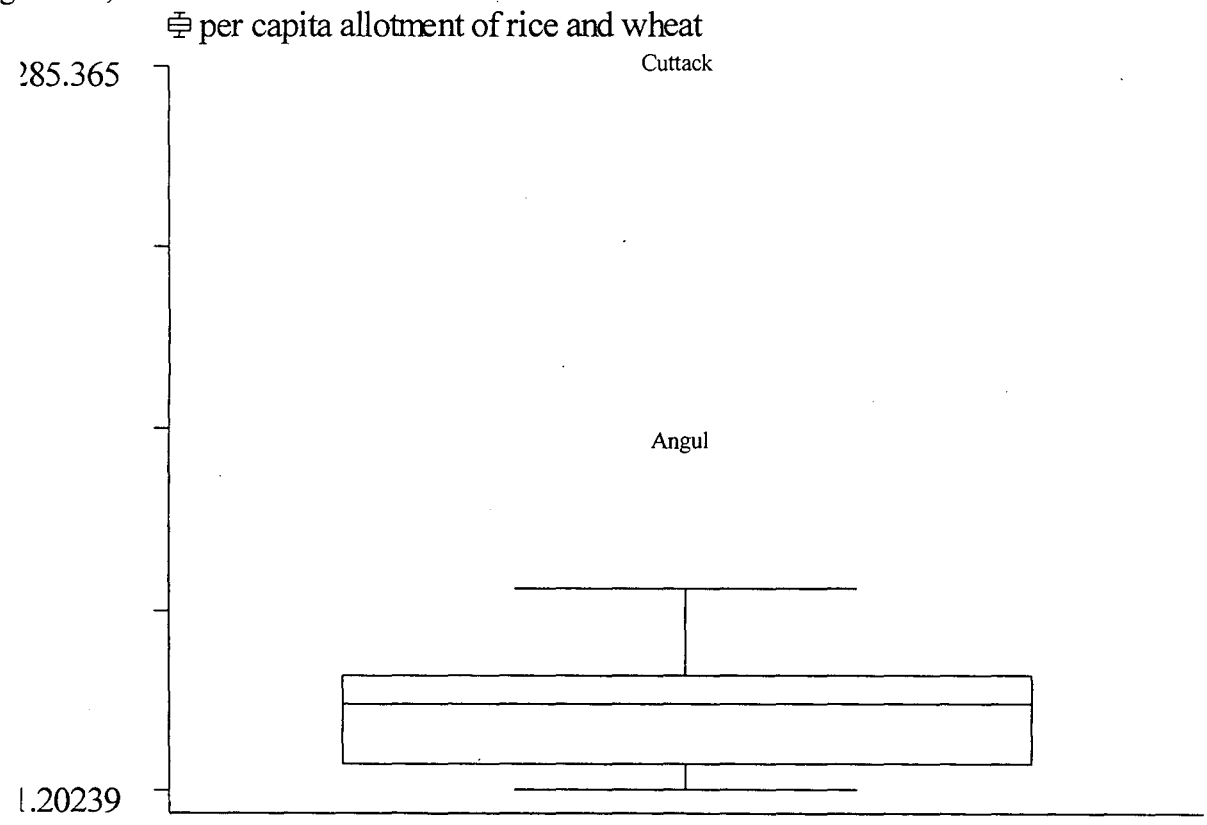


Table 3.7 Per capita allotment of essential commodities under PDS across districts, 1995. (Kerosene in kiloliter, others are in Metric ton, unless otherwise mentioned)

Districts	*Area (Sq. Km)*	*Population*	*Rice*	*Wheat*	*Sugar*	*Kerosene*	*Nr.R.T*	*PARPPY (Kg)*	*PASPPY (Kg)*	*PAWPPY (Kg)*	*PPRS*	*PD*	*PARWPPY*
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Angul	6232	1013	94300	44520	48720	6336	838	93.05	48.07	43.93	1209.39	163	137
Balasore	3634	1789	44600	99600	81635	17534	1273	24.93	45.63	55.67	1405.4	492.33	80.60
Bargarh	5834	1273	16107.4	6754.6	5348	9324	846	12.65	4.20	5.31	1504.7	218.21	17.96
Bhadrak	2677	1166	11599.9	34905.3	54968	10152.8	1255	9.95	47.14	29.93	929.21	435.62	39.88
Bolangir	6569	1298	49512	32150	59634	7308	851	38.14	45.94	24.77	1525.3	197.61	62.91
Boudh	3444	3349	21828.2	1140	1212	2770	253	65.17	3.62	3.40	1323.9	97.26	68.57
Cuttack	3733	2080	66108	527554	114634	-	1588	31.78	55.10	253.59	1310.0	557.29	285.3
Deogarh	2784	2470	3000	3000	19.5	156	208	12.14	0.08	12.14	1187.5	88.73	24.29
Dhenkanal	4595	9995	175	3339	4545	6558	744	0.18	4.55	3.34	1343.5	217.54	3.52
Gajapati	3850	4795	14565	1390	2312	3996	407	30.37	4.82	2.90	1178.1	124.55	33.27
Ganjam	8706	2851	1582.3	1846.4	13288	22085	1593	0.55	4.66	0.65	1790.0	327.54	1.20
Jagatsinghpur	1973	1069	3790	4680	46938	9264	823	3.54	43.88	4.38	1299.6	542.11	7.92
Jajpur	2888	1461	5630	10115	6288	780	1029	3.85	4.30	6.92	1420.6	506.16	10.77
Jharsuguda	2200	4710	1560	8500	2785	3744	269	3.31	5.91	18.04	1751.2	214.14	21.35
Kalahandi	8364	1192	13200	3186	5520	5836	856	11.07	4.63	2.67	1393.2	142.59	13.74
Kendrapara	2548	1212	7010	62415	53200	8268	745	5.78	43.89	51.49	1627.1	475.75	57.27
Keonjhar	8303	1409	43398	7330	64230	10170	1381	30.78	45.55	5.20	1020.9	169.81	35.98
Khurda	2889	1583	8974	37389	5445	19114	830	5.67	3.44	23.60	1908.3	548.27	29.27
Koraput	7897	1086	37855.9	2240	4182.9	6294	962	34.85	3.85	2.06	1129.0	137.54	36.91
Malkanagir	6190	4449	19253	1220	1683	2760	338	43.27	3.78	2.74	1316.3	71.88	46.01
Mayurbhanj	10418	1987	7982	1250	765	1143	1901	4.02	0.38	0.63	1045.4	190.77	4.65
Nawapara	3408	4950	20024	1950	2394.8	2464	300	40.44	4.84	3.94	1650.3	145.27	44.38
Nayagarh	4242	8253	852	3720	3518	531	517	1.03	4.26	4.51	1596.4	194.56	5.54
Nowarangpur	5294	8928	41868	1260	3216	5616	714	46.89	3.60	1.41	1250.4	168.65	48.30
Phulbani*	7650	5760	23065	2082	2021.9	3091	385	40.04	3.51	3.61	1496.3	75.31	43.65
Puri	3051	1376	3072	4870	5680	13178	758	2.23	4.13	3.54	1816.0	451.19	5.77
Rayagada	7580	7529	26400	2213	2813	5280	691	35.06	3.74	2.94	1089.6	99.33	38.00
Sambalpur	6698	8531	9687	14655	5168	9504	673	11.35	6.06	17.18	1267.6	127.37	28.53
Sonepur	2344	5028	1500	45	198	276	291	2.98	0.39	0.09	1727.9	214.52	3.07
Sundergarh	9712	1659	52846	21518.2	8751.7	10652	1626	31.85	5.27	12.97	1020.5	170.87	44.81
Mean			21711.4	31561.2	20370.4	7040.85		22.56	15.30	20.11	1384.50	252.17	42.68
Std. Deviation			22391.1	94683.4	29441.3	5514.47		21.71	19.17	45.85	258.59	159.78	53.11
Coef. of Variation			1.03	2.99	1.44	0.78		0.96	1.25	2.27	0.18	0.63	1.24

*Notes: * rename as Kandhamala, Nr. R.T.- Number of ration shop, PARPPY- Per capita allotment of rice per person per annum, PPRS- Population covers per ration shop, PARWPPY- Per capita allotment of rice and wheat together per person per annum, PD - Population density. Population in thousand.*

Sources: Data on PDS commodities allotment has collected from the District Statistical Hand Book 1995 of respective district, Population figure calculated by us taking the growth rate of 1991 to 2001 of Orissa and multiplying that with the district population and added with the previous population

ENDNOTE

[1]. See Bapna 1990.
[2]. See Narayana and Sen (1995)
[3]. As the objectives of PDS is concern, in some literatures it has given much important to price stabilization in the food grain market, where as in some other literature like food policy committee of 1940s, it had also addresses much about, to provide food to the low income group. And in 1976, after Dantwala committee report it also became an instrument to provide food security. And again in 1990s after the introduction of TPDS it is clearly an instrument to reduce food insecurity.
[4]. See Bapna 1990.
[5]. See Swaminathan, madura. (2000).
[6]. In Orissa, at present (2000) the variation of rice to the Below Poverty Line household is neither judged by composition of members nor by age.
[7]. For detail, See Bapna (1990).
[8]. See Gaikwad, 1976. Also sited in Bapna (1990)
[9]. For leakages in Bihar see Mooji, (2000).
[10]. For detail see Madhura Swaminathan, 1995.
[11]. Distribution of food grains indicates the total amount of food grains allotted to the state both from the center and state governments.
[12]. Official informations on PDS can be obtained from Ministry of Consumer Affairs and Public Distribution, Government of India; Bulletin on Food Statistics, Economic survey of India, Commission on Agricultural Cost and Prices (CACP) etc.
[13]. Ultra poor refer to the last two fractile groups (0-10 and 10-20) whereas rich are represented by the 90-100 fractal group (see Mahendra Dev and Suryanarayana 1991).

Chapter IV

A Micro Vision to the Functioning of Targeted Public Distribution System

4.1 Introduction

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4.5.3 Social Stigma and Food Security in the Study Villages

4.1. Introduction

As it has been pointed out earlier, secondary data on public distribution of food in Orissa is very limited and inadequate to study the access of rural households to the system of public distribution. As a result, a detailed examination of extent and nature of food insecurity, effect of public distribution of food on food security, and differences in access to the public distribution require village-level study based on primary data.

NSSO data on PDS (42nd round) are old and do not capture the effect of reforms on PDS in 1990s. These data are available only for the state as a whole and do not provide information on regional difference within the state. Official statistics from Ministry of Food and Civil Supplies throw no light on inter-regional, inter-household and intra-household differences in access to food and food security. There are no other sources of secondary data, which could speak better, on the functioning of PDS to provide food and food security to the rural households.

This chapter describes the study area and analyses the data that were collected from primary field survey. Section 4.2 provides the selection of the study area and narrated the socio-economic aspects of the households (Sampling methodology, nature of the data and the village descriptions are presented in appendix, IV). Section 4.3 focuses on the functioning of the TPDS in the selected villages. Section 4.4 presents details of the functioning of the ration shops. And the final section 4.5 deals with other problems of food insecurity of the sample villages. Apart from this, the important views of interviewee are presented wherever it is needed in the study.

Section-I

4.2.1 The Study Area

For the purpose of this study, we decided to conduct the fieldwork in Boudh (undivided Phulbani) district, which is one of the most under-developed districts in the state. Sahoo and Sahoo (1999) have used the principal component method and constructed three types of indexes such as economic development, infrastructural development and human resource development and ranked all the districts of Orissa (also they included the farm and non-farm activities). From their study out of 13 districts of Orissa, Boudh (undivided Phulbani) was 12th rank in economic development index and infrastructural development index, 8th rank in human development

index, 13th rank in farm activities index and 11th rank in non-farm activities index.[1] Secondly, it is also my native district. This, given the limitation of time and financial constraints, was an additional consideration in selection of Boudh.

There were 30 districts in Orissa by 1995. Boudh is one of the newly formed district, which was separated from Phulbani and covered 3444.0 Sq.Kms in the center of the state (see Map1 appendix, Chapter IV). As per the District Statistical Handbook (1995), the district consists of 58 panchayats, 1156 villages, one N.A.C., one town and 95.5 per cent of its inhabitants are living in the rural area. From the administrative and legislative sides, the district has one subdivision, two Tehsil offices, three Community development blocks and one assembly constituency. The demographic features of the district exhibit, a decennial growth rate of population (1981-91) of 18.35 per cent compared to 20.06 per cent for Orissa, and a Sex ratio (1991 census) of 981 for the district compared to the state average of 971. Out of the total populations of 317622 in the district, 19.64 per cent were SCs and 12.92 per cent were STs, whereas in the state as a whole the percentage of SCs and STs people were 16.20 per cent and 22.21 per cent respectively. The literacy rates were 60.61 per cent and 21.01 percent for males and females respectively and 40.81 per cent for Orissa as a whole. The SC/ST populations were still having low levels of literacy rate. It was 29.74 per cent for SCs and 28.88 per cent for STs, whereas the state average was 36.78 percent for SCs and 22.31 percent for STs. The literacy rate for STs in Boudh is better than the literacy rate for STs in Orissa as a whole. But due to low density of population (92 for Boudh and 203 for Orissa per Sq.Kms) the district has certain advantage over the state. The average size of operational holdings was 1.38 hectare in 1990-91 (includes undivided Phulbani) and the per capita availability of food grain was 277 Kg. for Boudh (1995). The corresponding figures for Orissa were 1.34 hectare and 203 Kg. respectively.

As far as infrastructure is concerned, the district has performed poorly when compared to the state as a whole. Boudh district has no national highway, no express highway and no railways. As on 1999, the district has connected 168 Kms of state highway (4.2 % of the state), 57 Kms of major district road (1.2 % of state) and very negligible percent of other district road (ODR) and classified village road (CVR), (.6 % and .8 % of the state respectively). A total of 5166 Kms of total road were spread over the district (1999), but again this is also very low (2.4 % of the state total). The level of irrigation is also very low in the district. For example, in 1993-94, gross irrigated area as a per cent of gross cropped area was 14.55 per cent in Boudh as

compared to 20.9 per cent in Orissa. In 1995-96, 68.28 per cent of villages were electrified in Orissa whereas it was only 48.22 per cent in Boudh district.

Table-4.1 A Comparative Picture of Boudh and Orissa of Selective Variables.

Name of the Indicators	*Orissa*	*Boudh*
Gini coefficient of operational holdings of land (1990-91)	0.45	0.45
Average size of operational holding of Land (1990-91) In hectare.	1.34	1.38@
Yield rate of rice, (1998-99) (quintal/hect.)	12.12	14
Fertilizer consumption (Kg/hect.) 1997-98	34.93	37.78
% of worker to total population	37.53	26.68
% of agricultural labourers to main workers.	28.68	32.48
% of SC/ST population	38	33
% of HH having safe drinking water	39.07	28.12@ L
% of HH having electricity	23.54	8.65@ L
% of HHs having safe drinking water, electricity and toilet	52.42	33.96@ H

Source: Gini coefficient of land holding based on the data from Economy survey of Orissa (1999) and District Statistical Hand Book of Boudh. Data on HHs having safe drinking water, electricity, and HHs having safe drinking water, electricity were obtained from Orissa state district profile (1991). Development index has taken from Sahoo and Sahoo (1999); rests are obtained from economic survey of Orissa (1998-99).
Notes: @ relates to undivided Phulbani district, H-Highest in the state, L-Lowest in the state.

Table 4.1 shows that in certain aspects, like percentage of worker to total population, percentage of agricultural labour to main worker, percentage of HHs having safe drinking water, percentage of HHs having electricity and percentage of HHs having safe drinking water, electricity and toilet together, the district shows lower performance than the state but not far away from state, whereas in terms of the average size of operational holding, yield rate and fertiliser consumption per hectare, Boudh is some how better than the state figures. However, the inequality of land distribution is similar both for the state and for the district. Based on the above metioned indicators we have choosen boudh district for survey.

4.2.2 Study Villages and Households

The following sections are based on analysis of primary data collected from two villages in Boudh districts of Orissa. First, two villages (one more developed and one less developed) were purposively selected from the district. Kalara Kotha is more developed and Kultajore is less developed. Second, each village was stratified into two groups: Bhal Para and Ganda Para. Finally, following the methodology of probability proportion to size (PPS), 120 households were selected at random comprising 66 households from Kalara Kotha and 54 households from from Kultajore. Analysis in this Chapter is based on data collected from these 120 households. (For details regarding selection of study villages, households, nature of data and process of data collection see the appendix).

4.2.3 Some Socio-economic Aspect of the Head of the Households

This section examines the individual particulars like education, occupation, caste and sex of the head of the households (here after HOHH for singular and HOHHs in plural) and also each member of the household. Table 4.4 shows some of the individual particulars of the HOHHs.

Table 4.4 Socio Economic Particulars of the Head of the Household, Kalara Kotha and Kultajore (per cent)

Variables name		*Kalara Kotha Sample size=66 HHs*			*Kultajore Sample size=54 HHs*			*Combine Sample size=120 HHs*		
		M	F	T	M	F	T	M	F	T
Education	1	42.5	73.6	51.5	63.4	76.9	66.6	52.2	75.0	58.3
	2	42.5	21.0	36.3	09.7	00.0	07.4	27.2	12.5	23.3
	3	10.6	00.0	07.5	19.5	15.3	18.5	14.7	06.2	12.5
	4	04.2	05.2	04.5	07.3	07.6	07.4	05.6	06.2	05.7
Total		100	100	100	100	100	100	100	100	100
Occupation	1	12.7	31.5	18.1	39.0	53.8	42.5	25.0	40.6	29.1
	2	38.2	26.3	34.8	39.0	23.0	35.18	38.6	25.0	35.0
	3	19.1	26.3	21.2	09.7	07.6	09.2	14.7	18.7	15.8
	4	14.8	05.2	12.1	09.7	00.0	07.4	12.5	03.1	10.0
	5	14.8	10.5	13.6	02.4	15.3	05.5	09.0	12.5	10.0
Total		100	100	100	100	100	100	100	100	100
Caste	SC	42.5	36.8	40.9	17.7	30.7	20.3	30.6	34.3	31.6
	ST	04.2	05.2	04.5	14.6	00.0	11.1	09.09	03.1	07.5
	Others	53.1	57.8	54.5	68.2	69.2	68.5	60.2	62.5	60.8
Total		100	100	100	100	100	100	100	100	100
N		47	19	66	41	13	54	88	32	120

Source: Household surveys, Kalara Kotha and Kultajore.

Notes: N-Number of observations; M-Male, F-Female, T-Total; For Education, 1-Illiterate, 2-Primary, 3-Middle, 4-Secondary and above; For Occupation, 1-Cultivator, 2-agricultural labor, 3-Non-agricultural laborer, 4-Self employed, 5-Salary.

It is observed from the Table 4.4 that in both the villages combined together, 58.3 per cent of the HOHHs are illiterate, whereas 5.7 per cent are having secondary and above level of education. In households with female heads, it is found that their education levels are extremely poor, with 75 per cent of them illiterate. On the other hand, male heads of households were relatively better off, in terms of education level; i.e. lower per cent of male heads are illiterate as compared to female (52.2 per cent). On the whole, the literacy scenario is very poor in both the villages. In both the villages, there are high proportions of head of the households who are illiterate (Kultajore, 66.6 per cent Kalara Kotha, 51.5 per cent). But in Kultajore, 18.5 per cent of the HOHH had middle school education when compared to 7.5 per cent in Kalara Kotha. Whereas, 36.3 per cent of the HOHH of Kalara Kotha have primary school education, 7.4 per cent of HOHHs in Kultajore have similar levels of education. It is observed that there are some better off persons in Kultajore and it is found that in this village there are higher percentages of HOHH having middle school education. But it is clear from the Table that there are maximum numbers of the HOHH that are illiterate. Another aspect which is distinctly clear is the high proportion of illiterate female heads of households that both the villages together (58.3 per cent) and individually (73.6 percentage in Kalara Kotha and 76.9 percentage in Kultajore, the female heads household are illiterate. Panda (1997) also found that around 78 per cent of the head of the female-heads of households were illiterate. He concluded that female headship and poverty are strongly linked, hence the lack of education might be the reason of growing food insecurity of illiterate head of the household in general and illiterate female headed household in particular.

The Table also shows the distribution of occupation of the HOHH across sex, across villages separately and together. Both villages together, it is found that in around 1/3rd (29.1 per cent) of the HOHHs, cultivation is their main occupation. While 35 per cent of the HOHHs are agricultural labourers, other petty occupations are comparatively less in percentage. Both the villages together, the female-headed households are having cultivation[2] as their main occupation (40.6 per cent) compared to that of male headed households (25 per cent). And again, they have lower proportion of agricultural labour as their main occupation (25 per cent) when compared to that of male male headed household (38.6 per cent)[3]. This condition also prevails in both the villages individually. But there are differences in certain aspects across the villages. Another feature is that the HOHHs who are agricultural labourers in both villages

individually and together, is around 35 per cent but the cultivation as their main occupation is more in Kultajore (42.5 per cent) as compare to Kalara Kotha (18.1 per cent).

The HOHHs across caste is also presented in this table. It is observed that in both villages together, the dominant proportions of HOHHs belong to other castes (60.8 per cent) and the majority of male-headed households also belong to other castes (60.2 per cent). However, in the female-headed households also, the maximum percentages of the HOHHs belong to other castes, namely Brahmins and non-brahimns (62.4 per cent). While examining both villages individually, the majority of the HOHHs of Kalara Kotha belong to SC caste (40.9 per cent), whereas in Kultajore, they belong to other caste (68.5).

4.2.4 Some Important Individual Particulars of the Sample Households (HHs)

Some individual information related to socio-economic and demographic features of the both the sample villages that were collected in the field are detailed in Table 4.5. Analyses of the Table as follows.

Education: - It is found that the levels of literacy are much lower in Kultajore than Kalara Kotha. In both the villages, the levels of literacy are much lower among women than among men. Out of the total population of the study villages, 11.3 per cent are children below seven years, hence they are excluded while the literacy rate was calculated. Then, the percentages of illiteracy are at a higher level for all the cases (37.1 per cent in Kalara Kotha, 55.5 per cent in Kultajore and 45.8 per cent in both villages together). Neither of these villages has a good performance in higher education. One more important aspect, in both villages separately and together, is that female education is always less than the male education. And the comparison across the villages has shows; Kalara Kotha has better performance than the Kultajore, both in the case of male as well as in female education.

Table 4.5 Socio Economic and Demographic Particulars, Kalara Kotha and Kultajore

(Per cent)

Variables Name		*Kalara Kotha Total Sample HH=66*			*Kultajore Total Sample HH=54*			*Combine Total Sample HH=120*		
		M	F	T	M	F	T	M	F	T
Education	1	24.8	53.0	37.1	45.6	66.4	55.5	34.3	59.6	45.8
	2	36.0	23.8	30.7	21.7	16.8	19.39	29.7	20.3	25.4
	3	21.8	18.4	20.4	15.9	12.0	14.0	19.2	15.2	17.4
	4	17.1	4.6	11.7	16.6	04.8	11.0	16.6	4.7	11.2
Total		100	100	100	100	100	100	100	100	100
N		169	130	299	138	125	263	306	255	561
Occupation	1	17.1	23.5	19.7	37.9	42.6	40.0	26.4	32.5	28.9
	2	31.1	54.4	40.7	41.7	50.8	45.7	35.9	52.7	42.9
	3	23.2	00.0	13.7	6.3	1.6	4.2	15.7	0.7	9.4
	4	14.1	22.0	17.3	10.1	3.2	7.1	12.3	13.1	12.7
	5	14.1	00.0	08.3	3.7	1.6	2.8	9.5	0.7	5.8
Total		100	100	100	100	100	100	100	100	100
N		99	68	167	79	61	140	178	129	307
Caste	SC	41.7	41.7	41.6	18.4	21.8	36.8	31.1	32.5	31.7
	ST	3.2	3.2	3.2	12.1	13.5	12.7	7.3	8	7.5
	Other	55.1	55.1	55.1	69.4	64.7	67.4	61.6	59.5	44.8
	Total	100	100	100	100	100	100	100	100	100
	N*	187	156	343	157	133	290	344	289	633
Age	<15	38	40.4	39.0	40.1	39.1	39.6	39	39.8	39.3
	15-50	54	53.2	53.6	53.5	48.9	51.3	53.8	51.2	52.6
	>50	8	6.4	7.2	6.4	12.0	8.9	7.3	9.0	8
Total		100	100	100	100	100	100	100	100	100
Average family		2.83	2.36	5.19	2.9	2.46	5.37	2.86	2.4	5.27

Source: Household surveys, Kalara Kotha and Kultajore.

Note: - N-Number of observations and N is applicable for age and average family size also; M-Male, F-Female, T-Total; For Education, 1-Illiterate, 2-Primary, 3-Middle, 4-Secondary and above; For Occupation, 1-Cultivator, 2-agricultural labor, 3-Non-agricultural laborer, 4-Self employed, 5-Salary.*

Occupation:- Occupation of the individuals of the household is associated with the economic conditions of the households. In both the villages', agricultural worker is the most common type of occupation among male as well as females. Out of 384 total population above 15 years, 286 (74 per cent) are engaged in some occupation. Within the working category, 28.90 per cent are cultivator, 42.9 per cent are agricultural labourer, 9.4 per cent are non-agricultural labourer, 12.7 are self-employed and 5.8 are salaried. Apart from this, when examining the occupation of cultivation across villages, 40 percent in Kultajore are cultivators, compared to 19.7 per cent in Kalara Kotha. And the higher percentages of workers in these villages are agricultural labourers (45.7 per cent in Kultajore and 40.7 per cent in Kalara Kotha). Therefore this may create food insecurity among the agricultural labourer, due to low wage rate in that occupation. Apart from this, in all other type of occupations, (non-agricultural

employment) Kalara Kotha is relatively better off over Kultajore. And therefore, there may be lower food insecurity as compared to Kultajore

Caste: - The caste wise distribution of total sample population shows that the proportion of populations who do not belong to schedule castes (SC) schedule tribes (ST) population is high (44.8 per cent in both villages together, 55.1 per cent in Kalara Kotha and 67.24 per cent in Kultajore). Scheduled caste population follows (31.7 per cent in both villages together, 41.6 per cent in Kalara Kotha and 36.8 per cent in Kultajore) and the least percentage of population is in schedule tribes. However, in both the villages, the percentage of SC/ST population are more than 40 per cent, these constitute the socio-economically backward class.

Demographic Profile: - The total numbers of population of both the sample villages are 633, of which 54.3 per cent are male and 45.7 per cent female. In Kalara Kotha, 54.5 and 45.6 per cent is males and females respectively compared to 54.1 per cent of males and 45.9 per cent of females in Kultajore.

It is clear from the Table 4.5 that there is not much difference in the average number of persons per HH[4] but the male to female ratio is in favor of male; 1.19 in Kalara Kotha, 1.18 in Kultajore and 1.19 in both villages together.

Table 4.5 shows the age structure of the population in two villages. About 47.3 per cent of the total populations are falling in the age group of either below 15 age old or above 50 age old. In the sample villages, the percentages are 46.2 and 48.5 for Kalara Kotha and Kultajore respectively. The rest population i.e. 53 percent (both villages together) and 53.6 per cent of Kalara Kotha and 51.3 per cent of Kultajore are the working population. It is observed that the percentage of worker whose age is above than 50 and less than 15 to observe how many of them are dependent. And found 6.8 per cent (21/307) of the total worker belonged to below 15 age group while 1.6 (5/307) per cent of the total worker belong to above 50 age. Hence most of this age group population are dependents of other age group (15-50) population. Therefore, because the percentage of the dependent population is high in rural areas, the low wage rates may increases the incidence of food insecurity.

Employment: - The NSSO (1997, report no 442) definition is refered and classified the employment into three categories- Casual, Regular and Salaried. And, to distinguish salaried class from the regular, other government/private assistant to a worker considered. As the Table 4.6 shows, in the sample villages as a whole, first, 88 per cent of the total working class are casual labourers and very few are regular and salary class people. Secondly, the female proportion of the casual labour is comparatively more than male. Both this aspects are true for each of the villages individually. However, Kalara Kotha has the comparative advantage over Kultajore in each type of labour. As Spring (2000) argued, the incidence of food insecurity of women is more due to most of them working on the non-farm sector or the lack of employment opportunities to them. And hence in the sample villages though the percentages of casual female labour are more, there may be possibility that female food insecurity is more for them compared to others, which need further research.

The proportion of the organised labour force is only five per cent from the total working class. But, the response to participate in the pulic work in the previous year and did not get employment is quite high. Around 60 per cent of the total working population are interested to work but there are no employment opportunities. It is a main reason for demand side of food insecurity, even though food is available but no afforadibility.

Table 4.6 Employment status and food security, Kalara Kotha and Kultajore (per cent).

Variables Name	*Kalara Kotha Total Sample HH=66*			*Kultajore Total Sample HH=54*			*Combined Total Sample HH=120*		
	M	F	T	M	F	T	M	F	T
Casual labour	79.7	94.2	85.7	89.8	95.0	92.1	84.2	94.6	88.6
Regular labour	12.1	5.7	9.4	8.8	3.2	6.4	10.6	4.5	8.0
Salaried labour	8.0	0	4.7	1.2	1.6	1.4	5.0	0.7	3.2
Total	100	100	100	100	100	100	100	100	100
N	99	68	167	79	61	140	178	129	307
Latent labour	-	-	47.9	-	-	33.5	-	-	59.6

Source: Household surveys, Kalara Kotha and Kultajore.
Note: - N-Number of observations; M-Male, F-Female, T-Total.

Distribution of Land Holding: - Land is the prime asset to produce food. Hence, the possession of cultivable land may reduce food insecurity, but lack of land resource is a threat

to food security unless the individual or society is able to import/purchase food. Hence possession of land is a desirable condition for food security, but not necessary. Therefore, the land distribution in the sample villages is examined. The Table 4.7 shows the patern of land distribution in the study villages. The evidence from the study villages shows that the over all distribution of ownership land is skewed. In the sample villages, both together, around 21 per cent of HHs are landless and 30 per cent has owned between 0.001 to 1 acre of land. Hence, 50 per cent of the households of the sample villages are constituted with either no land or less than one acre of land. And, only 8 per cent of the HHs have more than 4 acres of land. However, the case is different across the villages. As the land less HHs are concerned, it is roughly same in both the villages (22.7 and 20.3 per cent for Kalara Kotha and Kultajore respectively). But, there is a difference in the class size of 0.001 to 1.00 acres. In Kalara Kotha, 39 per cent and in Kultajore 18.5 per cent are belongs to that group. Again, in the case of HHs having 2.51 to 5.00 acres of land in Kalara Kotha, it is less than 12.1 per cent whereas in Kultajore it is 33.3 per cent.

Although, the average size of land holding is comparatively high in Kultajore (2.8 acres) than Kalara Kotha (1.49 acres), the inequality of land distribution is better in Kultajore than Kalara Kotha. The Gini coefficient of the distribution of ownership holding for all households was .49 for Kalara Kotha and .54 for Kultajore.

Table 4.7 Distribution of ownership of land holdings, Kalara Kotha and Kultajore (per cent)

Size of land holding (Acres)	*Kalara Kotha Total sample HH=66*		*Kultajore Total sample HH=54*		*Combine Total sample HH=120*	
	% of Frequency	% of area	% of Frequency	% of area	% of Frequency	% of area
Land less	22.7	0	20.3	0	21.6	0
0.001-1.00	39.3	19.6	18.5	5.7	30	11.1
1.001-2.5	19.6	23.61	16.6	9.8	18.3	15.2
2.51-5.0	12.1	28.4	33.3	45.0	21.6	38.6
5.001-10.0	6.0	28.2	5.5	13.0	5.8	18.9
>10	0	0	5.5	26.2	3.25	16.0
Total N	100 66	100 98.98 acres	100 54	100 156.38 acres	100 120	100 255.36 acres
Percapita land holding		1.49 acres	2.8 acres		2.14 acres	
% of HH without own homestead land		24.8	6		19.2	
Gini coefficient of own land distribution		.49	.54		.57	

Source: Household surveys, Kalara Kotha and Kultajore.
Note: - N-Number of observations.

Other Socio-economic Status of the Sample Villages: - Additional information was collected to examine the economic position of the sample villages and is presented in Table 4.8.

The economic status of the households was measured in terms of type of house, number of rooms available per household (with out kitchen), eletrification, drinking water facility, use of toilet facility, and assets holding. In Kalara Kotha, some households had higher living standards than that of households in Kultajore village. With respect to eletrification, drinking water and type of house and possession of consumer durable goods and farming implements, Kalara Kotha has comparative advantage.

Table 4.8 Other socio-economic status of the households, Kalara Kotha and Kultajore

(Per cent)

Socio Economic Status	*Kalara Kotha (%)*	*Kultajore (%)*	*Combinely*
Type of house- Pucca	9.0	3.7	06.6
Kutcha	75.7	57.4	67.5
Semi pucca	15.7	38.8	25.8
Living conditions			
Living conditions: Electrified	18	00	10
Number of room per HH with out kitchen	1.5	2.2	1.82
Drinkin water: Own well and tube well	7.5	3	5.25
Tube well and P.H.D. pipe	90	83	86.5
pond/river	2.5	14	8.25
Types of toilet uses: Open field	97	100	97.5
Assets holding Motor cycle/Scooter	9	0	4.5
Fan/TV/Tape	10	0	5
Cycle/Clock/Radio	63	77	70
Cow/Buffalo/Ox	66	75	70
Axe/Spade	89	64	79

Source: Household surveys, Kalara Kotha and Kultajore.

With this background information, the next section analyses the functioning of TPDS in these sample villages.

Section-II

4.3 Functioning of the Targeted Public Distribution System

In this section, the functioning of TPDS is examined in the study villages. First consumption of the households (both in peak and lean season), by land distribution class, by caste for both the villages among all the categories (APL HHs, BPL HHs and the HHs not possessing TPDS ration card (NPC) is presented.

The other aspect examined is the utilisation of the TPDS by the HHs. Here the problem of identification in APL HHs and BPL HHs is observed and the magnitudes of Type I errors ('F' mistake) and Type II errors ('E' mistake) are calculated. However in the calculation process the NPC HHs (not possessing TPDS ration card) are excluded.

Here the illegal uses of TPDS ration card are also discussed. Aspects such as targeting of HHs, selection of commodity for the targeting group and the poor economic conditions of the concerned HHs are examined. All these three constitute a part of the reasons for inefficient income transfer through TPDS. And the process by which inefficient income transfers are happening in the study area has been examined separately for rice. With respect to sugar, though the offtake by the poor HHs is low, there is the unused subsidy offered to the HHs through sugar distribution in TPDS. Here the movements of TPDS ration (rice) from the TPDS ration shop (in the study villages the distribution was done by a Mobile Van of the department food and civil supplies) to illegal BPL HHs to resale market to real BPL HHs has been observed. In case of rice, the difference between expected income transfer and actual income transfer has been examined. While in case of sugar, the average use of subsidy by the HHs in the last year has been examined.

In the next part of this section, the impact of current price hiking[5] in both the villages, by caste, by the land holding group and by different types of HHs has been examined. It is observed that the current price hiking has a contagion impact on the standard of living of HHs' in general and poorer section of the HHs in particular. Hence both quantitative and qualitative responses of the HHs have been incorporated in the analysis.

The last part this section looks into various reasons of the difference between entitlement and actual purchase of TPDS ration. This part also examined few other aspects such as the quality of TPDS ration, normal time spent for obtain the ration, facility of credit purchase and the comments from the HHs about the better functionig of TPDS.

4.3.1 Pattern of Cereal Consumption

The HHs consumption data mainly covers three aspects.

(1) The total amount of consummption of rice and other cereals by the HHs in the last 30 days has examined.

(2) Secondly, though the field survey for this study has done at the time of harvesting when the cereals consumption of the HHs are at the peak position, to capture the influence of seasonality, we also enquired the consumption of cereals at the lean season.

(3) Thirdly, the various sources from which these cereals were bought are also discussed.

Table 4.9 and 4.10 shows the monthly percapita consumption of cereals in the peak season across and by land holding class and caste respectively. And Table 4.11and 4.12 shows the same in the lean season. Table 4.13 shows the sources from where the cereals have been obtained in the last 30 days (in this regard data for lean season has not been collected). However, while doing analysis all cereals (rice, wheat, sujee, parched rice and beaten rice etc) are taken together, but for Table 4.13 only rice has been taken.

Table 4.9 shows the percapita consumption of cereals in the last 30 days (in the peak season). It is the highest among the APL HHs (18.6 kg) and lowest amongst the NPC (non-possessing TPDS ration card) HHs (17.4 kg). And by the land ownership holding, it is lowest amongst the landless class and highest among those HHs who have more than 10 acres of land (20.5 Kg). However the monthly per capita consumption of cereals in that period is lower in Kalara Kotha (17.8 kg) than Kultajore (18.6 kg). There is no systematic variation in consumption of cereals within the village or across the villages. Also there is no systematic pattern of consumption across the land ownership size or by the land ownership size (see Table 4.9).

Table 4.10 shows the consumption of cereals across the caste group and by the caste group. In all the cases the amount of consumption of cereals is highest among ST population and lowest among the SC population.

Table 4.11 shows the monthly per capita cereals consumption in the lean season (mid August to mid October) across and by the types of HHs and land ownership size. The amount of consumption is highest among the APL HHs (16.2 kg), then BPL HHs (15.1 kg) and lowest among the NPC HHs (12.6 kg). Although pattern of consumption by the types of HHs and by land ownership holding size are similar to that of peak season, the absolute amount of per capita monthly cereals consumption is around 3 kg less in lean season (see Table 4.9 and 4.11). However, the consumption pattern of cereals in the lean season and across land ownership size has varied from 12.8 Kg. to 20.8 Kg per person in the last month, whereas, the same varied from 17 Kg to 20.5 Kg in the lean season.

Table 4.12 shows the amount of per capita monthly cereals consumption in the lean season across and by caste and types of HHs. Here too, the amount of monthly per capita cereal consumption is highest among the ST HHs and lowest among the SC HHs and by both villages together, there is around 3 kg reduction in cereals consumption in the lean season than the peak season.

Table 4.9 Per Capita Monthly Consumption of Cereal (Kg.) by Different Types of Households Across and by the Landholdings Sizes in Peak Season, Kalara Kotha and Kultajore.

Ownership holding size-class (acres)	***Kalara Kotha***					***Kultajore***					***Kalara Kotha+ Kultajore***				
	APL	BPL	NPC	T	N	APL	BPL	NPC	T	N	APL	BPL	NPC	T	N
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Land less	15.0	16.5	17.9	16.7	72	18.1	17.8	15.4	17.4	59	16.9	17.0	17.0	17.0	131
0.001-1.00	18.8	17.6	17.3	17.6	120	19.4	18.9	20.7	19.2	45	19.1	18.0	17.6	18.1	165
1.001-2.5	18.1	18.7	20.5	18.6	69	16.6	18.3	14.0	17.6	43	17.8	18.5	17.2	18.2	112
2.51-5.00	20.3	18.6	0	19.3	46	17.7	20.0	0	19.1	103	18.5	19.6	0	19.1	149
5.001-10.0	19.4	12.4	0	17.6	36	21.2	17.8	0	19.0	20	19.8	16.0	0	18.2	56
>10	0	0	0	0	0	20.5	0	0	20.5	20	20.5	0	0	20.5	20
T	18.5	17.6	17.7	17.8	-	18.6	18.9	16.4	18.6	-	18.6	18.2	17.4	18.2	-
N	85	202	56	-	343	97	174	19	-	290	182	376	75	-	633

Source: Household surveys, Kalara Kotha and Kultajore.
Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not possessing ration card, N-Number of total population in that group, T-total, '-' is for not applicable.
The total figures on column 5,10,15 and on 8th row, are not necessarily is the simple average all other categories, because this is the result of total consumption in that group divided by total population of that group.

Table 4.10 Per Capita Monthly Consumption of Cereals (Kg.) by Different Types of Households Across and by Caste in Peak Season, Kalara Kotha and Kultajore.

Name of caste	*Kalara Kotha*					*Kultajore*					*Kalara Kotha+ Kultajore*				
	APL	BPL	NP C	T	N	APL	BPL	NP C	T	N	APL	BPL	NP C	T	N
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SC	20.6	17.0	17.5	17.8	147	16.8	17.1	15.4	16.8	58	19.9	17.0	17.1	17.5	205
ST	20.0	21.0	22.2	21.0	11	19.5	19.2	0	19.4	37	19.6	19.7	22.2	19.9	48
Others	17.2	17.8	17.1	17.6	185	18.6	19.5	17.3	19.0	195	18.1	18.7	17.2	18.3	380
T	18.5	17.6	17.7	17.8	-	18.6	18.9	16.4	18.6	-	18.6	18.2	17.4	18.2	-
N	85	202	56	-	343	97	174	19	-	290	182	376	75	-	633

Source: Household surveys, Kalara Kotha and Kultajore.
Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not possessing ration card, N-Number of total population in that group, T-total, '-' is for not applicable.
The total figures on column 5,10,15 and on 5th row, are not necessarily is the weightage average all other categories, because this is the result of total consumption in that group divided by total population of that group.

Table 4.11 Per Capita Monthly Consumption of Cereals (Kg.) by Different Types of Households Across and by the Landholdings Sizes in Lean Season, Kalara Kotha and Kultajor.

Ownership holding size-class (acres)	*Kalara Kotha*					*Kultajore*					*Kalara Kotha+ Kultajore*				
	APL	BPL	NP C	T	N	APL	BPL	NP C	T	N	APL	BPL	NP C	T	N
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Land less	11.1	12.8	13.3	12.7	72	14.6	13.1	10.4	13.0	59	13.2	12.9	12.3	12.8	131
0.001-1.00	14.6	13.7	12.0	13.1	120	16.1	15.6	17.7	15.9	45	15.3	14.3	12.5	13.9	165
1.001-2.5	14.8	15.0	16.5	15.1	69	14.2	15.8	11.0	15.1	43	14.7	15.4	13.7	15.1	112
2.51-5.00	18.9	16.6	0	17.4	46	16.0	18.1	0	17.3	103	16.9	17.6	0	17.3	149
5.001-10.0	18.0	12.1	0	16.5	36	20.7	17.4	0	18.5	20	18.7	15.6	0	17.4	56
>10	0	0	0	0	0	20.3	0	0	20.3	20	20.3	0	0	20.3	20
T	15.7	14.1	12.6	14.1	-	16.7	16.1	12.3	16.0	-	16.2	15.1	12.6	15.0	-
N	85	202	56	-	343	97	174	19	-	290	182	376	75	-	633

Source: Household surveys, Kalara Kotha and Kultajore.
Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not possessing ration card, N-Number of total population in that group, T-total, '-' is for not applicable.
The total figures on column 5,10,15 and on 8th row, are not necessarily is the weightage average all other categories, because this is the result of total consumption in that group divided by total population of that group.

Table 4.12 Per Capita Monthly Consumption of Cereals (Kg.) by Different Types of Households Across and by Caste in Lean Season, Kalara Kotha and Kultajore.

Name of caste	*Kalara Kotha*					*Kultajore*					*Kalara Kotha+ Kultajore*				
	APL	BPL	NPC	T	N	APL	BPL	NPC	T	N	APL	BPL	NPC	T	N
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SC	18.3	12.7	11.9	13.5	147	13.3	12.6	10.4	12.3	58	17.5	12.7	11.6	13.1	205
ST	14.5	16.3	16.7	15.8	11	17.8	16.2	14.3	17.0	37	16.9	16.2	16.7	16.6	48
Others	14.4	14.9	13.0	14.5	185	16.6	17.5	0	17.0	195	15.8	16.2	13.3	15.7	380
T	15.7	14.1	12.6	14.1	-	16.7	16.1	12.3	16.0	-	16.2	15.1	12.6	15.0	-
N	85	202	56	-	343	97	174	19	-	290	182	376	75	-	633

Source: Household surveys, Kalara Kotha and Kultajore.
Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not possessing ration card, N-Number of total population in that group, T-total, '-' is for not applicable.
The total figures on column 5,10,15 and on 5th row, are not necessarily is the weightage average all other categories, because this is the result of total consumption in that group divided by total population of that group.

Sources of Last Month Rice Consumption

Table 4.13 examined the variation in per capita rice consumption in the last month across types of HHs, across size of land ownership and across caste. Along with this, the dependence on TPDS and all other sources are also examined here. It may be noted that HHs not possessing card also obtained the TPDS rice by using others card (other includes who have seasonally migrated from the village). Hence though the NPC HHs were using the card and ration, this rice has entered in the name of NPC HHs. Secondly, even if the total monthly consumption of a HHs are coming from own cultivation, they are buying TPDS ration because they are wrongly included in the BPL list and these HHs use the TPDS ration as a payment to their worker[6]. Thirdly, there is some insignificant amount of homegrown rice for the landless HHs that is produced through shares cropping. From the table, it may be noted that-, in both villages together, the BPL HHs received only 17.9 per cent of their last month's rice consumption from TPDS, while that purchased from all other sources was 25.7 per cent of their last month's consumption of rice. This is more severe for the NPC HHs, who were not entitled any amount of rice from TPDS and by using others' card get only 2.3 per cent of their last month's consumption of rice from TPDS, while they purchased 42.2 per cent from all other sources. This is important because 23 per cent of the landless HHs were not possessing TPDS ration card. However, in the last 30 days, there is not much difference by villages as far as rice received from TPDS is concerned (17.7 per cent and 18.0 per cent of their last month's consumption of rice from TPDS for Kalara Kotha and Kultajore respectively).

Among the land ownership size (see Table 4.13), on an average both villages together received around 11.3 per cent of their last month per capita consumption of rice (per HHs) from TPDS. But varies across the land ownership size. The landless HHs received only 11.95 per cent from TPDS, while their purchase from all other sources are 42.1 per cent of their last month's rice consumption. But the land size group of 1.001 to 2.5 acres, received 13.7 per cent of their last month rice consumption from TPDS whereas that purchased from all other sources for their last month rice consumption is 26.79 per cent. The same pattern is following in Kultajore also. The landless group purchased more percentage of their last month rice consumption from all other sources than landed HHs (i.e possessing of some land, or possessing of 1.001 to 2.5 acres of land has been given stress). The reason could be that, first, while the TPDS entitlement to their last month rice consumption of landless HHs might be less than that of landed HHs i.e. number of person among landless HHs might be more than that of having land types of HHs. Secondly, though the TPDS ration supply in that locality is irregular and provides at a time a bulk amount of rice to the HHs, the landless HHs might not have enough purchasing power, to lift a bulk amount of rice from the TPDS ration shop. Also, due to wrong enumeration, the landless might not be provided any type of card.

Among the caste, in both villages together, the SC HHs were received 12.2 per cent of their monthly rice consumption from TPDS whereas that purchased from all other sources are 33.54 per cent of of their last month rice consumption. Across the villages Kultajore is slightly ahead from the villages' average and Kalara Kotha is slightly behind the village averages (for both villages together this percentage is 11.38 per cent, for Kultajore it is 11.38 per cent and for Kalara Kotha it is 10.91 per cent). The SC of that village received only 6.06 per cent of their last month rice consumption from TPDS, whereas that purchased from all other sources is 35 per cent of theirs last month rice consumption.

One thing is clear from the Table 4.13, is that as the last month's rice consumption of the sample HHs are concerned, in an aggregate level for the villages, the TPDS provided only around 11 to 12 per cent of the total last month's consumption of cereals. And at the disaggregated level, the TPDS provides only 17.7 per cent to 18 per cent of their monthly consumption of cereals to the BPL HHs of the sample villages. It will be clearer when the per capita entitlement of riceis also examined.

Table 4.13 Per capita consumption in the last month of rice by types of households, by land ownership size and by caste, and the sources from which that come, Kalara Kotha and Kultajore.

	Kalara Kotha							*Kultajore*							*Kalara Kotha + Kultajore*						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	TCR	HG	TPD	AOS	KW	4/2* 100	5/2* 100	TCR	HG	TPD	AOS	KW	11/9* 100	12/9* 100	TCR	HG	TPD	AOS	KW	18/16 *100	19/16* 100
Types of household																					
APL	16.9	10.9	0.53	3.1	2.37	3.14	18.34	16.8	9.5	0.35	3.8	3.15	2.08	22.62	16.9	10.1	0.43	3.5	2.87	2.54	20.71
BPL	16.3	5.2	2.9	4.9	3.3	17.79	30.06	17.2	7.8	3.1	3.7	2.6	18.02	21.51	16.7	6.4	3	4.3	3	17.96	25.74
NPC	16.4	2.9	0.26	7	6.24	1.59	42.68	15	3.2	0.8	5.9	5.1	5.33	39.33	16.1	3	0.37	6.8	5.93	2.30	42.23
Total	16.4	6	1.8	5	3.6	10.98	30.49	16.9	8	2	3.9	3	11.83	23.08	16.7	6.9	1.9	4.5	3.4	11.38	26.94
Size of land ownership																					
0	15.5	0.4	2	7	6.1	12.90	45.16	16.4	0	1.9	6.4	8.1	11.59	39.02	15.9	0.24	1.9	6.7	7.06	11.95	42.13
1	16.4	4.7	1.7	5.4	4.6	10.37	32.93	17.7	6.6	1.9	4.9	4.3	10.73	27.68	16.8	5.2	1.8	5.3	4.5	10.71	31.54
2	17.2	8	2	4.8	2.4	11.63	27.91	16.1	5.5	2.8	4.2	3.6	17.39	26.09	16.8	7	2.3	4.5	3	13.69	26.78
3	17.5	12.5	1.7	2.7	0.6	9.71	15.43	17	11.8	2.2	3	0	12.94	17.65	17.1	12	2	2.9	0.2	11.70	16.95
4	15.8	15.8	0.57	0	0	3.61	0.00	17.1	17.1	1.3	0	0	7.60	0.00	16.4	16.4	0.9	0	0	5.49	0
5	0	0	0	0	0	0.00	0.00	18	18	0	0	0	0.00	0.00	18	18	0	0	0	0.00	0
Total	16.5	6	1.8	5.04	3.66	10.91	30.55	16.9	8	2.05	3.9	2.95	12.13	23.08	16.7	6.9	1.9	4.5	3.4	11.38	26.94
Caste																					
SC	16.5	5	1.7	5.5	4.3	10.30	33.33	16	1.3	0.97	5.6	8.13	6.06	35.00	16.4	3.9	2	5.5	5	12.20	33.53
ST	19.4	8.6	1.7	2.5	6.6	8.76	12.89	17.7	10.7	2	3.6	1.4	11.30	20.34	18.3	9.5	1.2	3.2	4.4	6.56	17.48
Other	16.2	6.5	1.8	4.8	3.1	11.11	29.63	17	9.7	2	3.4	1.9	11.76	20.00	16.6	8.1	1.9	4.1	2.5	11.45	24.69
Total	16.5	6	1.8	5	3.7	10.91	30.30	16.9	8	2	3.9	3	11.83	23.08	16.7	6.5	1.9	4.5	3.8	11.38	26.94

Source: Household surveys, Kalara Kotha and Kultajore.

Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not Possessing Ration Card, TCR –Per Capita Total Consumption of Rice in Last Month, HG – Home Grown, AOS – All Other Sources, KW – Kind wage, TPD- Targeted Public Distribution System; Land classification: landless=0, 0.001-1.0=2, 1.001-2.5=3, 2.51-5.0=4, 5.001-10=5, >10 =6.

4.3.2 The Problem of Identification of the BPL HHs and the Magnitude of Targetting Errors

Here three aspects of the functioning of TPDS has been discussed:

1. the identification of types of HHs,
2. distirbution of TPDS ration card across and by the caste and land holding group,
3. and the magnitude of the type one and type two error.

(a) Identification of Types of HHs

Table 4.14 Possessing or not possessing of TPDS rations card and the reason for not possessing, Kalara Kotha and Kultajore. (Per cent).

			Kalara Kotha		*Kultajore*		*Combined*	
Possessing card			77.3	(51)	94.4	(51)	85	(102)
Not possessing card			22.7	(15)	5.6	(3)	15	(18)
Total			100	(66)	100	(54)	100	(120)
Types of card	APL		29.4	(15)	70.5	(18)	32.35	(33)
	BPL		70.5	(36)	64.7	(33)	67.64	(69)
Total			100	(51)	100	(51)	100	(102)
Reason for not possessing card	R1	Yes	100	(15)	100	(3)	100	(18)
	R2	No	100	(15)	100	(3)	100	(18)
	R3	No	100	(15)	100	(3)	100	(18)
	R4	No	93.3	(14)	100	(3)	94.4	(17)
	R5	Yes	100	(15)	100	(3)	100	(18)
Number of HHs applied in last year.			100	(15)	100	(3)	100	(18)

Source: Household surveys, Kalara Kotha and Kultajore.
Note: - Figures in paranthesis are actual number of HHs.
Reason for not possessing card; R1- applied for TPDS ration card, R2- absent at the time of enumeration, R3- migrant households, R4-recently separated from parents, R5- bureaucratic delay in obtaining ration card.

This study identified three types of HHs, APL (above poverty line), BPL (below poverty line) and NPC (non-possesing ration card). As the Table 4.14 shows, there are 15 per cent of the HHs (in both villages together) who do not possess TPDS ration card at the time of field survey. However across village it varies and in Kalara Kotha, there are 22.5 per cent of the households who do not possess ration card. In the field survey, these HHs were told that they had ration cards before 1997, but after the TPDS has started they were asked to return their old card and get new card. Some of them returned their old card immediately, but did not receive any type of card (neither APL nor BPL card) till December 2000.

About 77.3 per cent of HHs of Kalara Kotha and 94.4 per cent HHs of Kultajore do possess TPDS ration card. And out of which, in Kalara Kotha, 29.4 per cent are APL category and

70.5 per cent are BPL category HHs, while in Kultajore 35.2 per cent are APL and 64.7 per cent of HHs are BPL category of HHs.

The other types of HHs who do not possess ration card stated different reasons of non-possession of ration card. All of these NPC HHs reported that, all of them applied for TPDS ration card since one year before, and are present at the time of enumeration, noneof the sample HHs have immigrated within one year and only one NPC HHs had get separated from old home. And all of these NPC HHs reported that there might be bureaucratic delay to get ration cards.[7]

(b) Distribution of Ration Card Across And by the Caste and Size of Land Ownership

This section deals with the TPDS ration card distribution by caste, across size of land ownership, by caste and by size of land ownership. Table 4.15 indicates that 50 per cent of the NPC HHs belonged to schedule caste and 44.4 per cent belonged to other caste. Secondly, 60.9 per cent of the BPL HHs are from other castes.

Across the villages, in Kalara Kotha 33.3 per cent of the APL HHs are from scheduled caste, whereas in Kultajore only 5.1 per cent of APL HHs were from schedule castes. And in both villages, majorities of the BPL cardholders were from other castes (58.3 per cent in Kalara Kotha and 63.7 per cent in Kultajore).

Table 4.16 shows that majority of HHs of scheduled caste and other castes HHs belong to BPL category (60.5 per cent of SC and 57.7 per cent of other caste) and for ST HHs, the proportion of APL and BPL HHs remain the same at 44.4 per cent.

Across villages, 51.8 per cent of the SC HHs in Kalara Kotha are BPL and 58.3 per cent of other caste HHs are BPL, whereas in Kultajore, 81.8 per cent of the SC HHs are BPL and 56.7 per cent of other caste are BPL. In Kalara Kotha 22.7 per cent of HHs do not possess card whereas in Kultajore 5.5 per cent HHs do not possess TPDS ration card.

Table 4.17 shows that the percentages of landless HHs in BPL category is comparatively less. It is seen that 22.1 per cent of the BPL HHs, were from landless HHs whereas 27.9 per cent were from the land ownership size of 0.001 to 1.0 acres of land and 23.5 per cent were from the land size of 2.5 to 5 acres of land ownership size. In Kultajore, 34.4 per cent of the BPL

HHs were from 2.51 to 5 acres of land ownership size and 18.8 per cent were from landless HHs, while in Kalara Kotha, 39.3 per cent of HHs were from 0.001 to 1 acres of land ownership size and 22.7 per cent were from landless HHs.

Table 4.18 depicts that among the landless HHs, 19.2 per cent belonged to APL, 57 per cent belonged to BPL and 23 per cent belonged to NPC categories of HH. Again among 2.51 to 5 acres of land ownership size, 61.5 per cent belong to BPL, 38.4 per cent APL and none are from NPC category of HH.

In Kalara Kotha, among landless around 13.3 per cent was APL, 60 per cent were BPL and 26 per cent were NPC categories HH. And among 2.5 to 5 acres of land ownership size around 62.5 per cent are BPL, 37.5 per cent were APL and none of them were NPC categories of HH, while in Kultajore among landless HHs around 27.2 per cent were APL, 54.5 per cent BPL and 18.1 are NPC category of HHs. Among land ownership size of 2.51 to 5 acres of land 38.9 per cent are APL and 61.1 per cent were BPL HHs.

It may be summarised that most of the NPC HHs were either from scheduled caste or from landless HHs or these with lower amount of land ownership.

Table 4.15 Distribution of different types of ration card across castes, Kalara Kotha and Kultajore (per cent).

Caste	***Kalara Kotha***				***Kultajore***				***Kalara Kotha+Kultajore***			
	APL	BPL	NPC	Total	APL	BPL	NPC	Total	APL	BPL	NPC	Total
SC	33.3	38.9	53.3	40.9	5.1	27.3	33.3	20.3	18.2	33.3	50	31.6
ST	6.7	2.8	6.7	4.5	16.7	9.1	0.00	11.1	12.1	5.8	5.5	07.5
Others	60	58.3	40	54.5	77.8	63.7	66.7	68.5	69.7	60.9	44.4	60.8
Total	100	100	100	100	100	100	100	100	100	100	100	100
N	15	36	15	66	18	33	3	54	33	38	18	120

Source: Household surveys, Kalara Kotha and Kultajore.
Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not possessing ration card, N-Number of observation.

Table 4.16 Distribution of hourseholds by types of ration cards, by caste, Kalara Kotha and Kultajore (per cent).

Caste	*Kalara Kotha*					*Kultajore*					*Kalara Kotha+Kultajore*				
	APL	BPL	NP C	Total	N	APL	BPL	NP C	Total	N	APL	BPL	NP C	Total	N
SC	18.5	51.8	29.6	100	27	9.0	81.8	9.0	100	11	15.7	60.5	23.6	100	38
ST	33.3	33.3	33.3	100	3	50	50	0	100	6	44.4	44.4	11.1	100	9
Others	25	58.3	16.6	100	36	37.8	56.7	5.4	100	37	31.5	57.5	10.9	100	73
Total	22.7	54.5	22.7	100	66	33.3	61.1	5.5	100	54	27.5	31.6	15	100	120

Source: Household surveys, Kalara Kotha and Kultajore.
Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not possessing ration card, N-Number of observation.

Table 4.17 Distribution of Different Types of Ration Card Across Size of Ownership Holdingss, Kalara Kotha and Kultajore. (per cent)

Ownership holding size-class (acres)	*Kalara Kotha*				*Kultajore*				*Kalara Kotha+ Kultajore*			
	APL	BPL	NPC	Total	APL	BPL	NPC	Total	APL	BPL	NPC	Total
Land less	13.3	25.0	26.7	22.7	16.7	18.8	50.0	20.3	15.2	22.1	31.6	21.6
0.001-1.00	20.0	36.1	66.7	39.39	16.7	18.8	25.0	18.5	18.2	27.9	57.9	30
1.001-2.5	26.7	22.2	6.7	19.6	5.6	21.9	25.0	16.7	15.2	22.1	10.5	18.3
2.51-5.00	20.0	13.9	0.0	12.12	38.9	34.4	0.0	33.3	30.3	23.5	0.0	21.6
5.001-10.0	20.0	2.8	0.0	06.0	5.6	6.3	0.0	5.5	12.1	4.4	0.0	5.8
>10	0.0	0.0	0.0	0.0	16.7	0.0	0.0	5.5	9.1	0.0	0.0	2.5
Total	100	100	100	100	100	100	100	100	100	100	100	100
N	15	36	15	66	18	32	4	54	33	68	19	120

Source: Household surveys, Kalara Kotha and Kultajore.
Notes: APL-Above poverty line, BPL- Below Poverty line, NPC- Not possessing ration card, N-Number of observation.

Table 4.18 Distribution of households by types of ration cards, by size of holding, Kalara Kotha and Kultajore (per cent).

Ownership holding size-class	*Kalara Kotha*					*Kultajore*					*Kalara Kotha+ Kultajore*				
	APL	BPL	NP C	Total	N	APL	BPL	NP C	Total	N	APL	BPL	NP C	Total	N
Land less	13.3	60	26	100	15	27.2	54.5	18.1	100	11	19.2	57.6	23.0	100	26
0.001-1.00	11.5	50	38.4	100	26	30	60	10	100	10	16.6	52.7	30.5	100	36
1.001-2.5	30.7	61.5	7.6	100	13	11.1	77.7	11.1	100	9	22.7	68.1	9.0	100	22
2.51-5.00	37.5	62.5	00	100	8	38.9	61.1	00	100	18	38.4	61.5	00	100	26
5.001-10.0	75	25	00	100	4	33.3	66.6	0	100	3	57.1	42.8	00	100	7
>10	00	00	00	100	0	100	0	0	100	3	100	00	00	100	3
Total	22.7	54.5	22.7	100	66	33.3	59.2	7.4	100	54	27.5	56.6	15.8	100	120

Source: Household surveys, Kalara Kotha and Kultajore.

(c) Targeting Errors[8]

Table 4.19 Magnitude of Type I error or the 'F' mistake (excluding NPC HHs), Kalara Kotha and Kultajore (per cent)

		Kalara Kotha		*Kultajore*		*Combined*	
1	2	3	4	5	6	7	8
2	Criteria	APL	BPL	APL	BPL	APL	BPL
3	HHs less than 2.5 acres of land	60	83.3	38.8	59.3	48.4	71.0
4	Not possessing of TV	86.6	97.2	100	100	93.9	97.1
5	Not possessing of Freeze	86.6	100	100	100	93.9	98.5
6	Not possessing of Ceiling Fan	86.6	88.8	100	100	93.9	92.7
7	Not possessing of Two wheeler	80	100	100	100	90.9	97.1
8	Not possessing of Pucca House	80	100	94	96	87.8	98.5
9	Monthly income of any member in family not less thanRs.1700/	53	88.8	72.2	87.5	63.6	97.1
10	Either 3/4/5/6/7/8/9	46.6	72.2	27.7	50	36.6	60.8
	N	15	36	18	32	33	69

Source: Household surveys, Kalara Kotha and Kultajore.

Table 4.20 Magnitude of Type I error or the 'F' mistake (including NPC HHs), Kalara Kotha and Kultajore (per cent).

		NPC HHs		
1	2	3	4	5
2	Criteria	Kalara Kotha	Kultajore	Combined
3	HHs less than 2.5 acres of land	100	100	100
4	Not possessing of TV	100	100	100
5	Not possessing of Freeze	100	100	100
6	Not possessing of Ceiling Fan	100	100	100
7	Not possessing of Two wheeler	100	100	100
8	Not possessing of Pucca House	100	100	100
9	Monthly income of any member in family not more thanRs.1700/	93.3	100	100
10	Either 3/4/5/6/7/8/9	93.3	100	94.4
	N	15	3	18

Source: Household surveys, Kalara Kotha and Kultajore.

Type II Error or the 'E' Mistake with out NPC HHs

Column two of Table 4.20 depicts different criteria to select BPL HHs. Column three of the Table depicts the percentages of APL HHs from total APL HHs of Kalara Kotha that satisfied the respective criteria. Column 4 depicts the percentages of BPL HHs from the total BPL HHs of Kalara Kotha possesed the above mentioned criteria and have BPL ration card, hence this is not valid enumeration. The simple explanation Table 4.20 is as follow. The cell value of 3rd

column and 3rd row is 40, which indicate 40 per cent of the APL HHs of Kalara Kotha possesses APL ration card and their land ownership size of more than 2.5 acres, hence based on the criteria of land ownership this percentages of HHs are validly enumerated. Similarly the cell value of 3rd row and 10th column (53.3), depicts 53.3 per cent of the APL HHs of Kalara Kotha are enumerated validly based on all the above mentioned criteria. And these percentages are 72.2 per cent for Kultajore and 63.6 per cent for both the villages together. But the cell value of 4th column and third row (16.6) depicts around 16.6 per cent of BPL HHs of Kalara Kotha having more than 2.5 acres of land, hence according to land ownership criteria these HHs are not deserving but included. Similarly the cell value of 4th column and 10th row depicts based on all the above mentioned criteria, 27.7 per cent of the BPL HHs of Kalara Kotha are wrongly enumerated and that is the magnitude of Type II error or 'E' mistake of that village (with out NPC HHs). The same for Kultajore is 48.4 per cent of their total BPL cardholder. And for both villages together the same is 37.6 per cent of their total BPL cardholder.

Table 4.21 Magnitude of Type II error or the 'E' mistake (excluding NPC HHs), Kalara Kotha and Kultajore

		Kalara Kotha		*Kultajore*		*Combined*	
1	2	3	4	5	6	7	8
2	Criteria	APL	BPL	APL	BPL	APL	BPL
3	HHs more than 2.5 acres of land	40	16.6	61.1	39.3	51.5	27.5
4	Possessing of TV	13.3	2.7	0	0	6.0	1.4
5	Possessing of Freeze	13.3	0	0	0	6.0	0
6	Possessing of Ceiling Fan	13.3	11.1	0	0	6.0	5.7
7	Two wheeler	20	0	0	0	9.0	0
8	Pucca House	20	0	5.5	3.0	12.1	1.4
9	Monthly income of any member in family more thanRs.1700/	46.6	11.1	27.7	12.1	36.3	11.5
10	Either 3/4/5/6/7/8/9	53.3	27.7	72.2	48.4	63.6	37.6
	N	15	36	18	33	33	69

Source: Household surveys, Kalara Kotha and Kultajore.

4.3.3 The Consequences of Improper Targeting and the Inefficient Income Transfer

In Table 4.22 to 4.25 the consequences of improper targeting of HHs in TPDS in the study villages is discussed. Here we shall discuss the consequences of improper targeting of HHs, on income transfer in the study villages. According to Datta (2000) "the basic purpose of the TPDS is to transfer income to the poor via ration shops, fair price shops and control price

shops by supplying essential commodities at subsidised prices". Here we have tried to see the process and magnitude of inefficient income transfer in rice distribution through TPDS. We have also tried to see, how the subsidy offer to poor people in sugar ultimately goes to the richer section of the society.

As it has made clear in chapter one, the income transfer to a HH from TPDS is defined as the difference between the expenditure that the HH would have incurred in the absence of TPDS and the actual expenditure under TPDS. It can be measured by multipling the quantity purchased from TPDS with the difference between open market and TPDS price. The income transfer to a HH can be expressed by the following equation.

$$PYT^{TPDS} = \frac{\sum_{i=1}^{n} Qi^{TPDS} (P^M - P^R)}{TP\ BPL} \quad \text{.....(1)}$$

Where,

PYT^{TPDS} - *Per capita income transfer through targeted public distribution system based on distribution of rice.*

Qi^{TPDS} - *Quantity of rice distributed through targeted public distribution system to the ith household.*

P^M - *Price of rice per kilogram in open market.*

P^R - *Price of rice per kilogram in TPDS ration shop.*

TP BPL - Total population under below poverty line.

4.3.3 Improper Targeting, TPDS Rice Distribution and Inefficient Income Transfer

The process and magnitude of the inefficient income transfer in the following stages are presented.

(i) The difference between the expected income transfer and actual income transfer without eliminating type-two error.

(ii) The actual income transfer with eliminating the type-two error.

(iii) If the entitlement of rice to the real BPL HH would have equal to the gross amount of TPDS rice that a HH is consuming from all sources (from ration shop, from resale market of TPDS rice and from villagers) then what would be the income transfer?

(IV) The actual use of sugar subsidy offered to the real BPL HHs through TPDS.

The Difference Between the Expected Income Transfer (through rice distribution) and Actual Income Transfer Without Eliminating Type-Two Error.

Expected income transfer, means if the income transfer will be calculated considering the entitlement of rice, whereas actual income transfer means if the same will be calculated considerong his/her real purchase from the ration shop of TPDS. And without eliminating type-two error means, considering the previous enumeration (enumeration done by the official agents) of APL HHs and BPL HHS are valid. Based on this, we have calculated the expected income transfer and actual income transfer for the BPL HHs in the following ways.

Expected Per Capita Income Transfer

$$EPYT_{e}^{TPDS} = \frac{\sum_{i=1}^{n} Qi_{e}^{TPDS} (P^{M} - P^{R})}{TP\ BPL} \quad \text{.....(2)}$$

Where,

$EPYT_{e}^{TPDS}$ - Expected per capita income transfer through targeted public distribution system based on entitlement of rice.

Qi_{e} TPDS - Quantity of rice entitled through targeted public distribution system.

P^{M} - Price of rice per kilogram in open market.

P^{R} - Price of rice per kilogram in TPDS ration shop.

TP BPL - Total population under below poverty line.

Based on the above formula we have calculated the numeric figure of the expected per capita income transfer per month for both the study villages separately and combinedly (only for rice). At below we have presented the expected percapita income transfer per month for both village together (for both village separately see Table 4.22).

$$EPYT_e^{TPDS} = \frac{1104\ Kg\ (Rs.\ 6.45 - Rs.\ 5.30)}{376}$$

=Rs. 3.37 ..... (3)

But Rs.3.37 is the expected per capita income transfer, which will be realised only if the HHs will lift all the entitled rice. And if there will be any difference between the entitlement and offtake of rice for any BPL HHs then the actual income transfer will differ from the expected per capita income transfer. And it is found that there are around four per cent of the rice allotment of rice of last month (from the survey period) was not offtake by the HHs. Hence at below we have shown the actual per capita income transfer through TPDS based on rice distribution.

$$APYT_o^{TPDS} = \frac{\sum_{i=1}^{n} Qi_o^{TPDS} (P^M - P^R)}{TP\ BPL} .....(4)$$

Actual Per Capita Income Transfer

The equation 4 shows the actual per capita income transfer, which remains same with the equation (2) except in place of entitlement offtake has replaced. And based on that the actual per capita income transfer is as follows (see Table 4.23).

$$APYT_o^{TPDS} = \frac{1064\ Kg\ (Rs.\ 6.45 - Rs.\ 5.30)}{376}$$

=Rs. 3.25 ..... (4)

There is not much difference between expected and actual income transfer. However there is 37.6 per cent of type two errors in the study villages, which means around 37.6 per cent of the card holder are supposed to be APL HHs based on certain criteria. Hence the rice, which are meant for real BPL HHs is going to these HHs, therefore the actual income transfer is also not the exactly equal to the amount of income transfer to the real BPL people. Therefore, based on the criteria taken by the government of Orissa to identify BPL HHs, the real BPL HHs were

identified and the actual per capita income transfer to the real BPL HHs was seen (see Table 4.24).

The Actual Income Transfer with Eliminating the Type II Error.

There are 26 HHs (37 per cent of BPL HHs) in all that are supposed to be APL HHs, but included in BPL HHs list. Now the income transfer to these HHs through TPDS rice distribution is not going to the real BPL people. Hence these 26 HHs are excluded and then looked into the per capita income transfer (see Table 4.25). There is not much difference between the actual per capita income transfer with Type II errors and without Type II errors are found. But when the absolute income transfer between these two types of HHs is observed, it is found that found that the percentage of income transfer to the real BPL HHs is only 62.3 per cent of the total income transfer to all BPL HHs. Hence to be precise, in the last month's TPDS rice distribution the real income transfers to the real BPL HHs is 62.3 per cent of total income transfer to the all BPL HHs.

Now the obvious doubt is that if the relatively richer HHs were purchasing the TPDS rice, whether they were consuming that or using for any other purposes. This information may be difficult to get but interesting to observe. However, Sarap (2000), in his primary survey in some semi arid area of Orissa addressed this problem and found that the HHs having more than 2.5 acres of land were using this rice for payment of wages and for selling purposes. But since getting data from these rice sellers is time taking, the data was collected from the purchaser directly. The question how much of TPDS types of rice they purchased from all other sources other than ration shop and price was explored. The movement of the distributed TPDS rice is examined in the following section.

Movements of the TPDS Distributed Rice

In the pilot survey the villagers disclosed about the functioning of reselling market, where the distributed TPDS rice was resold. The reselling market for TPDS rice is a distinct row in the open market of the respectives villages. The BPL HHs[9] who do not want TPDS rice for their own consumption but purchased from the ration shop, and other traders, who collected the TPDS rice from the other sources or from other HHs (who do not want to offtake their ration) were sold in the reselling market. And those HHs, who were not capable of affording the open market price of rice, were the puchasers in the reselling market. One more important features

of the reselling market of TPDS rice is that the price per kilogram of rice is more than that of ration shop and less than that of open market. With these background features of the reselling market, movement of TPDS rice is observed.

The TPDS rice was distributed by the mobile van in the study villages. From the van, some amount of rice goes to real BPL HHs and some amount goes to some other BPL HHs (who are not eligible for BPL HHs according to the criteria). And from these two groups the rice received by the real BPL HHs were consumed by themselves but the rice collected by the other BPL HHs and by the traders were moved to reselling market. And from the reselling market it ultimately moved to the poor HHs who were not capable of purchasing rice from the open market. Here too, it is clear that the price of the rice at resell market is higher than that of ration shop (price paid to the person while distributing rice from the van) and lower than that of open market. And hence the poor HHs found it cheaper to buy.

From the above, it is observed that, the income gain to the relatively richer, and BPL HHs is more than that of the real BPL HHs. Since the income transfer to the real BPL HHs has happened there when they purchased that rice from the van and consumed for themselves. But for other two groups, the first stage income transfer is when they were purchasing the rice at a TPDS price and the second stage income gain is when they are selling this rice to others at a higher price.

Hence due to lower entitlement and the careless process of the TPDS the income gains to the real BPL HHs is lower than that of the relatively rich BPL HHs and to the traders. And as a result it may lead to increase in inequality in the society rather than reduction. It is found that all the real BPL HHs are the purchaser of the reselling market.

Therefore, considering the empirical evidence, if the entitlement of rice to the real BPL HHs would have more, atleast the amount what they are purchasing from the reselling market, then the situation would have been much better. Instead they are purchasing the same rice from non-ration shop at a higher prices.

Table 4.26 shows the additional income transfer that would have happened if the additional quantity of rice that the real BPL HHs were purchasing from the non-ration shop would have been provided through TPDS. Applying the similar arithmatic procedure as earlier the

probable per capita additional income transfer has been calculated. This indicates that there would have the possibility of an additional per capita income transfer of Rs 3.03 to the real BPL HHs and their entitlement would have more, atleast the amount of TPDS rice that they purchased from non-ration shop.

Table 4.22 Expected per capita income transfer through TPDS due to rice distribution in Kalara Kotha and Kultajore during the last month

		Kalara Kotha	***Kultajore***	***Combined***
1	Total rice entitled to the HHs through TPDS	576 Kg.	528 Kg.	1104 Kg.
2	Price of rice per kilogram in TPDS	Rs. 5.30	Rs. 5.30	Rs. 5.30
3	Price of rice per kilogram in open market	Rs. 6.50	Rs. 6.40	Rs. 6.45
4	Row (3 -2)	Rs. 1.20	Rs. 1.10	Rs. 1.15
5	Row (1*4)	Rs. 691.20	Rs. 580	Rs.1269.60
6	Total below poverty line populatio	202	174	376
7	Row (5/6)	Rs. 3.42	Rs. 3.33	Rs. 3.37
	N	36	33	69

Source: Household surveys, Kalara Kotha and Kultajore.

Table 4.23 Actual per capita income transfer through TPDS due to rice distribution in Kalara Kotha and Kultajore during the last month's (with Type II error).

		Kalara Kotha	***Kultajore***	***Combined***
1	Total rice entitled to the HHs through TPDS	564 Kg.	500 Kg.	1064 Kg.
2	Price of rice per kilogram in TPDS	Rs. 5.30	Rs. 5.30	Rs. 5.30
3	Price of rice per kilogram in open market	Rs. 6.50	Rs. 6.50	Rs. 6.50
4	Row (3 -2)	Rs. 1.20	Rs. 1.10	Rs. 1.15
5	Row (1*4)	Rs. 676.80	Rs. 550.00	Rs.1223.6
6	Total below poverty line populatio	202	174	376
7	Row (5/6)	Rs. 3.35	Rs. 3.16	Rs. 3.25
8	N	36	33	69

Source: Household surveys, Kalara Kotha and Kultajore.

Table 4.24 Actual per capita income transfer to the real BPL HHs through TPDS due to rice distribution in Kalara Kotha and Kultajore during the last month's (without Type II error)

		Kalara Kotha	*Kultajore*	*Combined*
1	Total rice entitled to the HHs through TPDS	404 Kg.	260 Kg.	664 Kg.
2	Price of rice per kilogram in TPDS	Rs. 5.30	Rs. 5.30	Rs. 5.30
3	Price of rice per kilogram in open market	Rs. 6.50	Rs. 6.40	Rs. 6.45
4	Row (3 -2)	Rs. 1.20	Rs. 1.10	Rs. 1.15
5	Row (1*4)	Rs. 484.80	Rs. 286.00	Rs.763.60
6	Total below poverty line populatio	146	82	228
7	Row (5/6)	Rs. 3.32	Rs. 3.48	Rs. 3.34
8	N	26	17	43

Source: Household surveys, Kalara Kotha and Kultajore.

Table 4.25 Probable additional per capita income transfer through TPDS due to rice distribution in Kalara Kotha and Kultajore during the last month's (without Type II error)

		Kalara Kotha	*Kultajore*	*Combined*
1	TPDS rice purchased from resell market	414.25	188	602
2	Price at ration shop	Rs 5.30	Rs 5.30	Rs 5.30
3	Price in open market	Rs 6.50	Rs 6.40	Rs 6.45
4	Row (3-2)	Rs 1.20	Rs 1.1	Rs 1.15
5	Row (1*4)	Rs 497.1	Rs 206.8	Rs 692.3
6	Total BPL population in that group	146	82	228
7	Per capita additional income transfer	Rs 3.40	Rs 2.52	Rs 3.03
8	N	26	17	43

Source: Household surveys, Kalara Kotha and Kultajore.

Use of Last Year's Sugar Subsidy by the Real BPL HHs for Themselves

Providing subsidy to the poor to the BPL HHs through a wrong targeting commodity like sugar is an serious issue. They suggested that the subsidy provided to them through sugar distribution of TPDS would have better realised by the BPL HHs, if that amount of subsidy would have been provided to them through rice distribution of TPDS. Hence, to see the use of sugar subsidy by the BPL HHs we looked at the difference between the amount of sugar subsidy provided to them and the amount they have used in the last year (only the real BPL HHs). Table 4.26 shows the per capita uses of sugar subsidy in the last year in the villages. For this purposes, we have assumed that, in the last year, the prices of sugar changes marginally both in ration shop and in the open market. Hence, the recent prices that prevailed

at the dealer shop and in the open market of the respective villages are considered to calculate the difference between the entitled sugar subsidy and the realised sugar subsidy. From the table, it is clear that the real BPL HHs of both the villages together for themselves used only 25 per cent of their total sugar subsidy in the last year. And at a disaggregated level, use of sugar subsidy by the real BPL HHs did not differ much between the villages. Hence, about 75 per cent of the total sugar subsidy of these HHs were either used by some one else or the dealers.

Therefore considering all the issues, the high requirement of rice and low use of sugar subsidy by these HHs, leads us to suggest that even keeping the amount of subsidy constant the welfare of these HHs in terms of food security could be improved, if some amount of sugar subsidy could be transfer to TPDS rice.

Table 4.26 Per capita use of sugar subsidy by the real BPL HHs in the last year, Kalara Kotha and Kultajore.

		Kalara Kotha	***Kultajore***	***Combined***
1	Quantity of sugar entitled in last year	465 Kg	312 Kg	777 Kg
2	Quantity of sugar offtake in last year	118 Kg	80.5 Kg	198.5
3	Price sugar in ration shop (per Kg)	Rs 13.50	Rs 13.75	Rs 13.62
4	Price sugar in open market (per Kg)	Rs 16.50	Rs 16.50	Rs 16.50
5	Row (4-3)	Rs 3.00	Rs 2.75	Rs 2.88
6	Total subsidy offered through sugar	Rs 1395	Rs 858	Rs 2237
7	Total subsidy used	Rs 354	Rs 221.37	Rs 571.68
8	Used subsidy as proportion to grant subsidy	Rs 3.40	Rs 2.52	Rs 3.03
9	Total population in that group	146	82	228
10	Per capita used of sugar subsidy for themselves	Rs 2.45	Rs 2.69	Rs 2.50
11	Number of household in that group	26	17	43

Note: Total amount of sugar entitled in last year = quantity of sugar entitled per month multiply with 12.
Total amount of sugar offtake in last year = quantity of sugar entitled per month multiply with number of times they offtake for themselves.
Source: Household surveys, Kalara Kotha and Kultajore.

4.3.4 The Impact of Current Price Hiking

In 2000-2001 budget meeting the Finance minister has announced the steep price increase of TPDS ration, especially of rice and wheat. The speech of Finance Minister precisely depicts that, the Central issue prices will be set at the full of the "economic cost" incurred by the FCI for APL HHs and at the half of "economic cost for BPL HHs. As a result the wheat prices has gone up from Rs. 6.82 to Rs. 8.40 per Kg and rice prices have gone up from Rs.9.05 to Rs.

11.70 per Kg for APL HHs. And for the BPL HHs, the wheat prices have been hiked from Rs. 2.50 to Rs. 4.20 per Kg and the rice prices have been hiked from Rs. 3.50 to Rs. 5.85 per Kg. These are the prices of the respective ration by the central government, but its impact on the consumer depends on the retail prices set by the respectives state government and the increase in the income of the HHs.

The impact of current price hiking is an important aspect. An earlier study (Sarap, 2000) found that- even the prices charged in Revamped Public Distribution System for rice were high to afford by some of the poorer section of population of Orissa (especially in some semi-arid region). Hence to capture the impact of current price hiking, we enquired- whether their consumption of TPDS ration has been affected due to the price hike. There are two issues: One is the percentage change in the consumption of quantity of TPDS ration, second is the contagient impact of the price hiking that includes- how their children's education, their health care, their food consumption and their uses of clothes are affected. Table 4.24 depicts the manner in which the HH's consumption of rice has been affected due to price hike in villages among BPL HHs and the consumption of rice and sugar being affected due to price hike in villages among APL HHs and BPL HHs.

In the two villages, the actual market (not includes the price of resale TPDS rice) prices of rice had fluctuated between Rs. 6.00 to Rs. 7.00. And the issue price of the rice for the APL HHs is Rs. 11.70; hence no APL HHs purchased rice from TPDS at that price. Therefore, the impact of price hike on consumption of rice is limited with the rice consumption of the BPL HHs. And for the BPL HHs the old retail prices was Rs. 2.00 per Kg. And the present retail price is Rs. 5.30. Table 4.24 shows percentages change of purchased of rice from the TPDS ration shop by the BPL HHs between old price and new price. It was found that there is 56 per cent increase of rice consumption in Klara Kotha and 57.2 per cent increase in Kultajore between old price and new price of the TPDS rice. There is no significant difference between the villages as the absolute percentage of rice purchase from FPS in the post price-hiking period is concerned. And even if the retail prices of rice in the study villages changed from Rs. 2.00 to Rs. 5.30 (165 per cent) the quantity of consumption of rice has increased by around 57 per cent. This may be due to the fact that rice is most essential commodity and may be due to the low per capita entitlement and may be since they can not afford the market price of rice. However at the same time period the sugar purchased from the TPDS by both APL and BPL

HHs has declined significantly. It was found that in Kalara Kotha, the average quantity of sugar purchased by APL HHs has declined by 36 per cent and for BPL HHs it has declined by 63.1 per cent, while in Kultajore, the average quantity of sugar purchased per APL HHs has declined by 28 per cent and for BPL HHs it has declined by 50 per cent. It is necessary to note that the price of sugar also increases from Rs.12 to Rs. 13.50 per Kg and the absolute price charge per Kilogram of sugar always remain higher than that of rice. Therefore this might be the reason that though rice is an essential commodity, even if its price has been increased the BPL HHs were bound to purchased by reducing their expenditure on sugar purchased. And if this might be valid the impact of price hiking might be more in Kalara Kotha than Kultajore because the decline in sugar consumption is more prominent in Kalara Kotha than Kultajore.

Another aspect that is observed is that even there was price hike for rice, purchase consumption of rice has increased, that means the previous entitlement of rice was not adequate for the BPL HHs. It is important to explore whether the present amount of of rice entitlement is adequate for the BPL HHs that is presented in the next section (see Table 4.29).

Table 4.27 Impact of price hike (2000-2001) on the purchased of rice and sugar from the FPS Klara Kotha and Kultajore (per cent).

		Kalara Kotha				***Kultajore***				***Combined***			
		Op	Np	% Δ	N	Op	Np	% Δ	N	Op	Np	% Δ	N
APL	Qty of sugar purshased per HHs	2.5	1.6	-36	15	1.8	1.4	-22	18	2.1	1.5	-28	33
BPL	Qty of rice purchased per HHs	10	15.6	56	36	9.6	15.1	57.2	33	9.8	15.4	57.1	69
	Qty of sugar purchased per HHs	1.6	.59	-63.1		1.6	1.0	-37.5		1.6	.79	-50.6	

Source: Household surveys, Kalara Kotha and Kultajore.

Other impact of TPDS Ration's Price Hiked

The price hike of TPDS ration has produced a contagient impact on the other aspects of life, hence it is difficult to clarify. However some informations were collected that illustrates, aspects of their life that have been mostly affected. And their responses can be classified into

four categories- reduction expenditure on education, food, health care and clothing. As Table 4.24 shows, around 16.7 per cent HHs of Kalara Kotha and 9.3 per cent HHs of Kultajore responded that due to price hike, their children's education has been hampered. Around 59.1 per cent HHs of Kalara Kotha and 50 per cent HHs of Kultajore responded that due to price hike, their expenditure on food has been reduced. Around 18.2 per cent of HHs of Klalara Kotha and 38.9 per cent HHs of Kultajore responded that due to price hike their expenditure on cloth have reduced. Hence, it is clear that as the HH's expenditure on education and food are concerned, due to price hike Kalara Kotha was more affected than Kultajore, but as the HH's expenditure on cloth is concerned, the impact is more on Kultajore than Kalara Kotha.

Table 4.28 Impact of current price hiking on certain basic aspects of human life, Kalara Kotha and Kultajore (per cent).

	Kalara Kotha	***Kultajore***	***Combined***
Reduced expenditure on education	16.7	9.3	13.3
Reduced expenditure on food	59.1	50.0	55.0
Reduced expenditure on health care	6.1	1.9	4.2
Reduced expenditure on cloth	18.2	38.9	27.5
Total	99	100	100
N	65	54	119

Source: Household Surveys, Kalara Kotha and Kultajore.

Apart from this, we have found that the education of some of the students were in the stage of discontinuation due lack of money which was partially caused due to the hike of TPDS ration's price and increase of +2 examination fee. We have taken the interview of some HHs, whose children are academically good and from which one case study is presented below.

Interview with Madhabi Mahar: - She is around 37 years old. One month before her son, Sushanta was student of +2 II nd year. Sushanta appeared his test examination and secured a good performance. Now he required around Rs. 700/ for his examination fee, but his parent were not able to provide money for his examination because at the same time period along with other financial constraint faced by her family, the TPDS ration prices has hiked by 165 per cent for them. She told she already lost almost all the assets in her house in the process of mortgage. She describes her experience that when the TPDS rice distributing mobile van is reaching to her locality she has to run from one rich person's door to another rich person's

door to get some money and quickly offtake her ration. Otherwise she has to loose the chance for another one or two month. Some times she moves with some bronze vessel or plate or other HH's instruments of her own or getting from some body else and some times with empty hand. Now she asked me sugesstions that at this condition whether she should go for her son's education or for her family's food? Madhbi's husband also there in her family but inadequate work availability and low local wage rate (Rs. 20/ per day) keeps them in poorer conditions. Now both of them (both husband and wife) neither like to tell their son to stop his education nor they are in a position to speak him to continue his education. I met Sushanta, he told - Hope never dies, I am still hoping my parent can arrange my examination fee. He also told, right now he is preparing for the same examination by collecting book and other materials from his other friends. If his parents will be able to arrange the examination fee for him then he will write the examination.

There is many other HHs who has reported this type of incidence. I observed that the TPDS price hiking is not the single reason of discontinuation of their's children education but the reason of discontinuation of education was accentuated with many other reasons. For these HHs money constraint, non-availability of work and taking inadequate water-rice etc.are not a new things and they have been feeling the absence of money for their survival as well as for their's children's education. But the drought of previous year in that region (which leads to non-availability of work) and the 165 per cent increase of TPDS's rice prices created a situation for them to select either their family's food or the children's education.

From the above analysis we found that the impact of price hike is negative for rice and sugar consumption and more on developed villages (Kalara Kotha) than the less developed village (Kultajore).

Entitlement and Offtake of the TPDS Commodities by the Sample HHs

To examine the amount of assistance obtained by individuals from the TPDS, we calculated the per capita entitlement from the sample HHs of both villages. And to understand the extent of that assistance really used by the individual, we calculated the share that goes to each individual of the family from the total purchase of TPDS ration. Apart from this, we have collected data on the reason for and the difference between entitlement and offtake. There are several reasons discussed below. To judge the functioning of the system, the data on the

duration of ration distribution, the duration of supply of ration and the number of installments in the process of distribution of the TPDS commodities in the sample villages are examined. Table 4.29, 4.30 and 4.31 shows the HH's offtake as percentage of allotment in the last month for rice, sugar and kerosene oil.

The per capita rice entitlement in the previous month for the study villages is around 2 Kg, 800 grams for Kalara Kotha and 2 Kg, 900 grams in Kultajore (see Table 4.25). In the villages and across land ownership size, in Kultajore, the per capita rice entitlement vary from 2 Kg to 3 Kg.200 grams, whereas in Kalara Kotha it varies from 2 Kg 200 grams to 3 Kg.and 100 grams. However there is not much difference between offtake and entitlement of rice in the villages. But the offtake of rice remains at a lower level for the low land ownership class.

From the HHs ration card, it is observed that irrespective of number of members in the family, the entitlement of rice per card remain at 16 Kg that might be one of the reason that the percapita rice entitlement remain at a low level.

In case of sugar (see Table 4.29), even though the percapita entitlement for the previous month is low, the percentage of offtake from entitlement remains at a very low level. And it is still lower for the landless HHs of Kultajore (the less developed village). But percentage of the offtake of the higher land ownership size is more than 100 per cent, because though most of the low land ownership size did not offtake their full entitlement of sugar, the dealer distributed the surplus sugar to others whoever wanted it. Another distinct case, is that in Kultajore for the land ownership size of 1.00 to 2.5 acres, their sugar offtake is only 16 per cent of their entitlement. That might be due to that some of them are using saccharine in place of sugar and some other HHs do not have adequate amount of purchasing power.

Many respondents' felt that they would benefit more, if the sugar subsidy would have shifted to rice.

In the case of kerosene oil, per house entitlemnet is slightly high in Kalara Kotha but the offtake is more in Kultajore. This might be due to the reason that, there is no electricity in Kultajore.

Therefore on the whole, it is seen that the per capita entitlement of rice is so less (as low as 2.8 Kg per person per month) and, the per capita offtake of sugar is very less too. Finally, the

per house offtake of kerosene oil remains more than 80 per cent. There are many other reasons, which are responsible for the diffference between the entitlement and offtake, which are discussed below.

Table 4.29 Amount of allotment and Offtake of TPDS rice in previous month, Kalara Kotha and Kultajore (kilogram).

	Kalra Kotha				***Kultajore***			
Size of land ownership	Per capit entilement	Per capita purchased	3/2* 100	N	Per capit entilement	Per capita purchased	3/2* 100	N
Landless	2.8	2.56	100	50	3.0	2.9	96.6	37
0.001-1.00	3.1	3.0	98.2	67	3.2	2.9	90.6	30
1.001-2.5	2.6	2.5	96.1	49	3.2	3.0	93.7	35
2.51-5.00	2.7	2.7	100	29	2.9	2.9	100	55
5.00-10.00	2.2	2.2	100	7	2	2	100	17
Total	2.8	2.7	96.4	202	2.9	2.8	96.5	174

Source: Household surveys, Kalara Kotha and Kultajore. Note: - Only BPL HHs are included

Table 4.30 Amount of allotment and Offtake of TPDS sugar in previous month, Kalara Kotha and Kultajore (grams).

	Kalra Kotha				***Kultajore***			
1	2	3	4	5	6	7	8	9
Size of land ownership	Per capit entilement	Per capita purchased	3/2* 100	N	Per capit entilement	Per capita purchased	7/6* 100	N
Landless	344	129	37.5	58	288	087	30	52
0.001-1.00	290	112	38.6	80	329	171	51.8	41
1.001-2.5	268	111	41.4	67	313	050	16	40
2.51-5.00	293	304	103.7	46	286	311	108.4	103
5.00-10.00	277	375	135.3	36	225	375	166.6	20
>10.0	0	0	-	-	400	550	137.5	20
Total	295	179	60.6	287	301	232	77.5	276

Source: Household surveys, Kalara Kotha and Kultajore. Note: - NPC HHs are excluded

Table 4.31 Amount of allotment and Offtake of TPDS Kerosene in previous month, Kalara Kotha and Kultajore (litre)

	Kalra Kotha				*Kultajore*			
Size of land ownership	Per capit entilement	Per capita purchased	3/2* 100	N	Per capit entilement	Per capita purchased	3/2* 100	N
Landless	2.273	2.000	88.0	11	1.800	1.550	86.1	10
0.001-1.00	2.000	1.750	87.5	16	1.556	1.444	92.9	9
1.001-2.5	2.125	1.792	84.3	12	2.063	1.688	81.8	8
2.51-5.00	1.875	1.813	96.7	8	2.028	1.972	97.3	18
5.00-10.00	2.250	2.000	88.9	4	2.500	2.500	100	3
>10.0	0	0	-	-	3.333	4.667	140	3
Total	2.088	1.843	88.3	51	2.010	1.941	96.6	51

Source: Household surveys, Kalara Kotha and Kultajore. Note: - NPC HHs are excluded

Table 4.32 Percentages of households reporting reason for the difference between their actual purchase and entitlement of TPDS ration for the last 30 days, by village and by reason.

Reason for difference for different TPDS ration	***Kalara Kotha***		***Kultajore***	
Rice	Per cent	N	Per cent	N
Lack of purchasing power to lift a bulk amount of rice	11.1	4	9.1	3
Not applicable	88.9	32	90.9	30
Total	100.0	36	100.0	33
Sugar				
Lack of enough purchasing power	66.7	34	49.0	25
Not applicable	21.6	11	27.5	14
Approaching to dealer	9.8	5	17.6	9
Uses molasses	2.0	1	5.9	3
Total	100.0	51	100.0	51
Kerosene Oil				
Not enough purchasing power	9.8	5	9.8	5
Not needed	5.9	3	0.0	0
Not applicable	72.5	37	76.5	39
Approaching to dealer	11.8	6	13.7	7
Total	100.0	51	100.0	51

Source: Household surveys, Kalara Kotha and Kultajore. Note: - NPC HHs are excluded

Table 4.32 shows the reasons for differences between the entitlement and offtake of rice, sugar and kerosene oil. In Kalara Kotha, 11.1 per cent of the HHs told that the difference is due to lack of purchasing power, whereas this percentage in Kultajore is around nine per cent. About 90 per cent of the HHs are able to offtake their entitlement. For sugar, the majority of the HHs stated the difference between entitlement and offtake is due to lack of purchasing

power (67.7 per cent in Kalara Kotha and 49 per cent in Kultajore), very few HHs uses the substitute commoditiy of sugar- molasses. It might be possible that the HHs stated lack of purchasing power as a reason of partial offtake of sugar, may be use of molasses/saccharine but they reveal lack of purchasing power as the sole cause of not offtaking sugar. For some cases the offtake was more than 100 per cent, that is because they are getting the sugar by approaching the dealer. For kerosene oils, most of the HHs are offtaking their alloted amount.

In the next part of this section, other aspects of the functioning of TPDS are discussed.

4.3.5 Other Aspects of the Functioning of the TPDS.

The aspects considered here are the quality of TPDS rice, duration of ration supply,the duration of ration distribution, normal time spent for ration collection, the facilities of credit purchase from TPDS and the comments and suggestion of the villagers about the better functioning of TPDS.

Uses of TPDS Ration Card by the Sample Households

Since the entitlement of rice to the sample HHs is not adequate for their family, as a result some these groups of HHs tried to use other's cards for rice. And, though there are some other HHs who are supposed to be APL category and they have their home production, but are categorised as BPL HHs, they do not want the TPDS rice for their home consumption. But they want more sugar from TPDS. And due to warm relationship among the HHs in the villages, the former group of HHs uses the ration card of the later group for rice. On the other hand, the later group uses the ration card of former group for sugar. As the Table 4.34 shows, in Kalara Kotha out of 66 HHs 24 HHs uses others ration card for one or other TPDS commodities. Whereas, in Kultajore, out of 54 HHs 21 HHs uses others ration card for the same purposes. As the same Table shows, out of these 24 HHs of Kalara Kotha, 11 HHs uses others card to get sugar from TPDS, 2 HHs uses others card to get both sugar and rice and other 11 HHs uses to get rice from TPDS, whereas in Kultajore out of 21 HHs 11 HHs uses others card to get sugar from fair price shop (FPS) and 10 HH uses for rice. As discussed earlier, it is interesting to note the number of times a particular HHs has taken sugar in his/her ration card from the FPS for his/her own family in the last year. On an average in the last year, the APL HHs of Kalara Kotha offtake around 8 times, whereas the BPL HHs offtake around 4

times. In Kultajore also the APL HHs offtake around 8 times but the offtake of the BPL HHs (6.5 times) is two times more than the BPL HHs of Kalara Kotha.

Table 4.33 Percentages of households reporting reason for the difference between their actual actual purchase and allotment.

		Kalara Kotha					*Kultajore*					*Combined*				
		APL	BPL	NPC	Total	N	APL	BPL	NPC	Total	N	APL	BPL	NPC	Total	N
Using other's card	Yes	41.6	12.5	45.8	100	24	38	52.3	9.5	100	21	40	31	28.8	100	45
	No	11.9	78.5	9.5	100	42	30.0	63.6	6.0	100	33	40	20	72	8	75
For which items																
Sugar		54.5	27.2	18.1	100	11	63.6	36.6	0	100	11	20	66.6	13.3	100	15
Rice		18.1	0	81.8	100	11	10	70	20	100	10	46.4	14.2	39.2	100	28
Both		100	0	0	100	2	0	0	0	0	0	100	0	0	100	2

How many times you offtake sugar for your family last year?

	Kalara Kotha	Kiltajore
Average number of times APL HHs offtake	8.06	8.2
Average number of times BPL HHs offtake	4.08	6.5
TOTAL	5.2	6.2

Source: Household surveys, Kalara Kotha and Kultajore. Note: - NPC HHs are excluded

The additional informations about the functioning of TPDS in the study villages are as follows (see Table 4.34). First, quality of TPDS rice is discussed (only for BPL HHs). In Kalara Kotha, out of 36 BPL HHs, 18 HHs (50 per cent) reported that they were not satisfied with the quality of rice distributed in the TPDS. And out of that 18 HHs, 11 HHs (61 per cent) reported that there are so many husk, paddy and small stone in the TPDS rice; 4 HHs (22 per cent reprted there is foul smell in the TPDS rice and 3 HHs (around 16 per cent) reported that TPDS rice is insect infected. In Kultajore, out of 33 BPL HHs, 15 HHs (45 per cent) HHs reported that they are not satisfied with the distributed rice in the TPDS. And out of that 15 HHs, 9 HHs (60 per cent) HHs reported, there is so many husk, paddy and small stone in the TPDS rice, 4 HHs (26 per cent) reported that foul smell coming from TPDS rice. Secondly, there is no credit purchase facility in the TPDS, but it is possible for the villagers from other

sources like- open market, village shop, resale market etc. Thirdly the reason for long waiting (NPC HHs are excluded). Although, in majority cases the head of the HHs collect ration (the rice offtake done by the head of the HHs is 84.3 per cent in Kalara Kotha and 78 per cent in Kultajore), the average time spent in ration collection remains high. It is around two and half hour both for Kalara Kotha and Kultajore. In Kalara Kotha, out of 51 ration card holders, 39 card holders (76 per cent) reported that the reason of long waiting is rush in the ration shop and the rest 12 card holders (around 26 per cent) reported the reason of long waiting is due to dealer give special preference to some persons of the locality, whereas in Kultajore, out of 51 card holder, 44 HHs (around 86 per cent) reported the long waiting is due to rush in the ration shop and rest 7 HHs (around 14 per cent) reported the long waiting is due to giving extra preference to some person in the locality. Fourthly, the duration of ration supplies to the village and the duration of ration distribution in the sample villages. There is no specific interval of time for the TPDS ration supply to both the villages. At the time of survey, it was found that, none of these villages has received TPDS ration for last two months. As the villagers told, since last one year, they are receiving rice once in every two-month. Sugar varies from one month to one and half month. Again, the distribution of rice and sugar is confined with three or four days. That is another problem for the poor households to lift the bulk amount. However, villagers received kerosene oil in every week, except in exceptional cases. Also, the weighing problem, in Kalara Kotha 100 per cent HHs are satisfied with the weighing system of the dealer, however in Kultajore around 4 per cent of the sample HHs are not satisfied with the weighing system of the dealer and the weighing system at the rice distributing centre. Lastly, the comments of the HHs, in Kalara Kotha, 97 per cent of the HHs prfered all the essential commodities to be distributed through mobile van but with a prior information to the villagers, whereas in Kultajore the same is 89 per cent. About the supply period of ration in Kalara Kotha and Kultajore around 91 per cent and 72 per cent of the HHs respectively suggested to distribute the TPDS's ration weekly and 9 per cent in Kalara Kotha and 24 per cent in Kultajore suggested to distribute the TPDS ration fortnightly.

Table 4.34 Additional information about the functioning of the TPDS in the sample villages

(Number of households)

Quality of TPDS Rice	*Kalara Kotha*	*Kultajore*
Satiesfactory	18	18
Unsatiesfactory	18	15
Reason of unsatiesfactory		
Foul smell	4	4
Insect infected	3	2
So many husk, paddyand small stone	11	9
Who collect ration?		
Children	1	0
Head of the house	43	40
Other adult	7	11
Average time spent for ration collection	2 hour 37 minute	2 hour 30 minutes
Reason for long waiting		
Rush in the ration shop	39	44
Giving preference to others	12	7
Supply period (Comments (include all HHs)		
Weekly	60	39
Fortnightly	6	13
Monthly	0	1
Who should be the distributor		
Dealer of TPDS as earlier	1	1
Mobile van but prior notification	6	48
Panchyat	1	4

Source: Household surveys, Kalara Kotha and Kultajore.

Section III

4.4.1 Functioning of Rations Shop in the Study Villages

As a part of primary data collection, we have collected some information from the dealer of the respective villages, which are discussed below.

Mr. Lala Matali (under matric) has been doing the service of PDS/RPDS/TPDS dealership since 1993 in Kalara Kotha. He has deposited a specific amount of money and received the license from the District Food and Civil Supply department. Two years before, he was distributing rice, wheat, sugar and kerosene in that locality for nine villages, but now since rice is distributed by the district mobile van of the concern department, he distributes only sugar and kerosene. He told there is no salary for the dealer, the only profit to them is they have to make adjustment from the PDS/RPDS/TPDS ration. He told that he gets around

Rs.900 per month as his profit. But while calculating other expenses he bears to run the ration shop, it is more than his monthly profit. As Table 4.35 shows his total expenses are around two times of his monthly profit (since the godown is 10 Km. away from the dealer shop he has to bear more transport cost). Still he runs the shop and interested to run it in the future. Because, he anticipates a good prospect in the department. Apart from this, the other observation is that many consumers do not come to ration shop to buy sugar. And that is an advantage for him to adjust his expenses. But some times, some cosumers also make irritated to him and some others also threatened him to give more sugar. About the quality, he has been not using any types of qualitative instrument to check the quality of the ration and as the quanity is concerned, there is quantitative constraint the per card entitlement of sugar is 1.5 Kg and that of kerosene it is 5 litres.

The functioning of the ration shop in Kultajore also remains more or less similar to that of Kalara Kotha. Lal Bihari Rana has been doing the dealership in Kultajore since 1986-87. At present, he distribute only sugar and kerosene to five villages along with Kultajore. He told, his normal profit is around Rs. 500, whereas the cost he incurs to run the ration shop is around Rs.1448. It shows there is a huge gap between the profit he received and the cost he incurred. He told, though there are so many HHs who do not take the entitled amount of sugar, he adjusts the cost that he incurred to run the ration shop by selling the unlifted amount in the open market.

However, it is clear that it is the unlifted amount of sugar by the HHs, produced a stock in the ration shop, which help to the dealers to adjust their cost and make an additional profit.

Table 4.35 Cost Incurred by the Dealer to Run Ration Shop in the Sample Villages.

	Kalara Kotha	***Kultajore***
Salary given to the employee (one)	Rs.900	Rs.750
House rent, (where the rations are kept)	Rs.400	Rs.100
Electricity charge	Rs.120	0
Transport cost of sugar	Rs.280 (10 begs)	Rs.298 (6 begs)
Transport cost of Kerosene	Rs.300 (10 barels)	Rs.300 (6 barels)
Total	Rs.2000	Rs.1448

Source: Household surveys, Kalara Kotha and Kultajore.

Section IV

4.5 Other Socio-economic Problems of the Sample Villages and Their Food Security Prospects

Other aspects discussed are the problem of food insecurity at the village level, the functioning of output market, labour market, credit market, potential resources available in the study villages and the prevailing social stigma with respect to food security.

4.5.1Output Market and food Security in the Sample Villages

Increase in the net food availability of food grain, may be due to internal production or may be due to import is an essential condition to reduce food insecurity, though not a sufficient condition. But the production of foodgrain depends on many reasons, and a market is one of them where the producer can sell his output at least at a normal profit. On other hand, the reduction of food insecurity also requires a sufficient amount of purchasing power with the poor HHs. However in the study villages, it is found the food insecure people do not have enough purchasing power in their hands to purchase food from the open market. That might be a reason that prices of certain commodities in the local market remain at a low level compared to market situated at the state capital Bhubaneswar, Sahidnagar (see Table 4.29). Table 4.29 shows the difference in prices of various commodities in three different places, Kalara Kotha's market place, Kultajore market place and Sahidnagar (Bhubaneswar) market place. It has been found that vegetable prices remain at lower levels in the villages than state capital (Bhubaneswar). The villagers told that, the prices of the vegetable would be coming down to lowest level in the January (in winter season). About the prices of rice, though the TPDS rice per Kg for APL HHs is around Rs. 11/, it is around Rs. 6.50 in the study villages. That might be the reason that the rice purchased by the APL HHs from the ration shop is not happening in the study villages.

Table 4.36 Prices of certain selected commodities in the study areas in December 2000.

Commodities	***Prices per Kg unless otherwise mentioned***		
	Kalara Kotha	Kultajore	Sahidnagar
Rice (boil)	Rs.6.00 to Rs. 7.00	Rs.6.00 to Rs. 7.00	Rs.9 to Rs.12
Sugar	Rs. 16.50	Rs.16.50	Rs. 16.30
Kerosene (liter)	Rs.11	Rs.11.50	Rs.16.50
Tomato	Rs.7	Rs.5	Rs. 10
Beans	Rs. 9	Rs. 8	Rs.10
Cauliflower	Rs. 9	Rs.7	Rs.12
Onion	Rs. 10	Rs. 10	Rs. 8
Patatose	Rs. 5	Rs. 5	Rs. 4
Moong dal	Rs.20	Rs.18	Rs.30

Sources: - Local market place of the respective places.

Another reason for low prices of the output in the study villages might be that, of slow process of monetization in that region (around 80 per cent of the agricultural wages are paid in kind), and also the demand for foodgrains by the food insecure HHs is less. Hence, the prices might be remaining at a low level in the local market. And this low price sometimes becomes a disincentive for the cultivators to produce more.

Apart from this some, other reasons of food insecurity in the study villages are as follows: The traditional technology is still persisting there. Farmers of these localities, till their land by the help of wooden plough, ox or bullock and manpower. Cow dung is the main fertilizer that they use. Things are relatively better in Kalara Kotha as far as use of fertilizer is concerned. But due to vagaries of monsoon and lacks of irrigation facilities, people do not acquired confidence to get returns from HYV. Hence they mostly use traditional seeds. Due to lack of irrigation facilities in either village, farmers were helpless to cultivate their land in the Rabi season even if they have surplus manpower and a little other capital such as land, seeds etc. These farmers were overwhelmingly resource-poor and they do not have heavy amount of capital to invest in any kind of irrigation or purchasing of new technology for cultivation. Hence the inability of these farmers 'to get hold of technologies' make them food insecure. There are other group of households in the study villages, who are rich and control all types of market (land market, labor market, credit market and commodity market) in the village. They have their own well; they cultivate some of their land in the Rabi season also. In Kharif season they cultivate mainly paddy, but in Rabi season they cultivate some green vegetables, some pulses and sugar cane. They have enough capital to do cultivation for commercial proposes, but low level of demand

and inadequate marketing facilities not giving them any incentives to produce more. Unfortunately, though the market price of paddy (Rs. 350/ per quintal) is less than its minimum support price (Rs. 440/ for the fair average quality paddy and Rs. 470/ for the Grade-A varieties in 1999), in practice, no government agent come there to procure. As a consequence, low level equilibrium price created disincentives to go for marketed surplus by the rich people of the study villages. The poor marketing facilities leading to the low market price, inadequate infrastructure and the fear to take risk to go for HYV cultivation due to uncertainty of monsoon are the real disincentives to produce more. Many economists suggested the intervention[10] of state to take care of market, but if government is inefficient to take care all the region equally, then the level of development also going to remain on an unequal level and that is the situation in the study villages. Apart from this, it is also true that some of the rich households were also not interested to invest in agriculture because they do not face any problem even if they are not going for that. That leads to the immobilization of village resources. The households, who wants to invest, does not have assets, and who have assets they do not want to invest. Hence very few households get the marketed surplus and the extent of food insecurity even in food balance sheet approach has increases. But there is another group of households (in our framework they are Fragile household); they are basically lands less and their food insecurity have been threatened due to less consumption. And sometimes they go to bed in an empty belly because they are too poor to grow enough or buy enough food; they do not have money to exercise effective demand in a free market. However, the villagers avail the facility of credit purchase from the local market due to their healthy relations with sellers. Apart from open market, they use to purchase their cereals requirements from rice mill which are owned by the village Gauntia (rich person of the village, in earlier days they were village head). Here, the miller exercises his discriminating power up to the maximum extent that can be possible to increase his profit level, as a result people reluctant to purchase from there.

Therefore, the poor farmer and people in poor households have no means and there is ineffective demand. In both the villages, the growth rate of non-farm employment is very slow. The only major source of employment is agricultural sector, which depends on monsoon. Hence, the chance to earn wage and income to enable them to buy food remains with the condition of good monsoon. It is the poverty, the deadliest form of violence that trap the households with marginal holdings, low yields, lack of productive services, using inefficient input, bind with low level production and hence low savings trap.

Interviewee's Responses to Paddy Prices.

Farmer 1

Mr. Gobardhan, is a medium class farmer of Kalara Kotha. Last year, he received a good amount of marketed surplus. He thought to sell it in the market and use that money to improve his agricultural field, dig a well to go for double crop and improve his own standard of living. But the low price did not support him. He sells around 30 quintals of paddy at Rs 350/ per quintal, whereas the Minimum Support Prices are Rs 440/ and Rs. 470/ for common and grade-A paddy respectively. And ultimately, he has to drop the idea of digging of well and failed to utilize his agricultural field optimally

Farmer 2

Mr. Akrura, belongs to the upper level medium class farmer in Kalara Kotha. He told that, if they would took care to their land properly they can produce for commercial purposes, but though the market prices are low, they do not put extra efforts to get surplus production over home consumption. It is important to note that, in previous year he did not cultivate some of his agricultural land

Farmer 3

Mr. Jagat was a large class farmer in Kultajore. He regularly earned marketed surplus from his agricultural field. Of course it varied with the nature of monsoon. From Bargarh (a well-known place known for rice mill and rice market) side businessmen were come to his locality to purchase paddy. But these businessmen were agreed to purchase only at the prevailing local market price which is very low (well interpreted in farmer 1 case). We asked him, why don't you directly sell your paddy at Bargarh market. He told, first of all there is no proper road (problem of infrastructure) from his village. Secondly, even if he will manage to bring his paddy to the nearest main road through Bullock cart, there is the problem of getting a reserve truck or any other vehicle through which the paddy can be taken to Bargarh. Thirdly, he also fearful to take risk, to take that amount of paddy in a reserve truck.

All the three random case study shows, the under developed output market (paddy in these locality) was the sole cause of the delayed in the expansion of the capitalistic mode of production in those locality. As a consequence, the amount of land cultivated has decreases and

that affects to income and employment of the people in general and the food security of the poor in particular. Literature shows, the system of procurement prices are there in Orissa, but how much more time it will require to reach those villages (or to rural Orissa), can be decided only by the administrative efficiency and their attention to that locality. Because in India, the functioning of the output market also taken care by the State and civil organizations.

4.5.2 Labour Market and Credit Market and Food Security in the Study Villages

The functioning of the labour market can be important for the reduction of food insecurity, if it will be able to increase the level of wages of the worker to purchase adequate food from the output market. But, in both the study villages, the wage rate remain at a low level (Rs 20 for male and Rs 15 for female, but during the data collection period it was in the process of increase for male Rs. 25 and for female it was Rs.20). The second note worthy point as it was shown in Table 4.6 of this chapter, there are around 60 per cent of the total working population that are latent labour i.e. the surplus labour in the villages. If they will be provided with employment, then may be food in security in the study villages will reduced. And as it was suggested by the villagers and the local official, also my own visit to the river Tel near by the villages, if some irrigation project will be done than that might be able to reduced the food insecurity in this locality.

Credit is essential for the producers to invest more on production and it is essential to the consumers for consumption purposes. But since the formal sources of credit facilities in the study villages are not adequate for the villagers, some of them are rely on informal sources of credit, where the interest rate is very high. In the informal sources, if there is mortgage of gold against money then the interest rate is Rs. 5 per hundred rupees of money for one month and if it is mortgage of brass, then the interest rate is Rs. 7 per hundred rupees of money for one month. Hence according to the ability to pay of consumer and of producer the informal credit is so high. On other hand, the formal credit is not adequate for the HHs. And as some of the head of the HHs reported in formal source of credit, there is so much curruption and that HHs are eliminated from the previlege of getting formal credit who do not have means to give advance bribe. Therefore, the absence of proper credit facilities is an obstacle to reduced food insecurity of the concerned class of people.

4.5.3 Social Stigma and Food Security

The prevailing social stigmas of the study villages drawn our attention to discuss the safe drinking water as the component of food security. In both the villages, people obtained their drinking water from tube well/ pond /well/river. But due to strong caste system, in Kultajore, stratum 'B' people not permitted to the stratum 'A' people to touch the village tube well which, are situated at stratum 'B'.[11] And though these people are less in number, government has not granted a separate tube well for that stratum. As a consequence, people of that stratum have to collect their drinking water either from near by pond where people make bath to their ox and bullock, or from the river Tel, which is around two kilometers away from the village. Hence, the poor of Kultajore are becoming poorer to get safe drinking water, because they are economically poor to dig a well also morally poor to raise their voice to use the public good (tube well) for their safe drinking water. As Sen (2000) pointed out, the essential requirements for the participatory freedom are knowledge and basic educational skill. And these indicators are at low level in those localities which making them more vulnerable. This problem is not limited to that village, also prevails in Kalara Kotha. Some case studies are presented at below.

Case 1

In Kalara Kotha, I met a schoolmaster and asked some question about the prevailing caste system in that village. He told that the caste system has reduced comparatively, but the prevailing conditions have not reduced. His family does not feel happy to attend the various types of social function of other forward social caste even they receive invitation from them, because they have to sit separately.

Case 2

From other sources, I am able to know that the caste system also prevails in the local educational institutions of Kalara Kotha. We asked to some of the students of the village and to the concern schoolmaster. The students were replied that in some special occasion (Saraswati Puja or Ganesh Puja celebration) when some feast has arranged in the school, then their Bijaya teacher asked to the stratum 'A' student to sit separately. Others told us if the schoolmaster allow them to sit together, then the parents of the stratum 'B' student would complain to him.

Case 3

This is a recent (2000) incident. In Kalara Kotha, people use to celebrate a famous festival called "kartika purnima". On that occasion for devoting to their God, some of the girl students of stratum 'A' of that village entered to the lord "Shiva" temple, which situated at the neighboring village. When they are inside the temple a lady of other caste has identified them and suddenly it spreaded to all other person presented there. They were shouted, you untouchable caste people entered into our temple, our God became polluted (they use their local word Marah), our temple became Marah etc and within no moment the students were jettisoned from the temple. The temple person and other well-known person asked explanation to the senior student of that group that even you are educated (she was student of post graduation) and well known about the custom, tradition, still you are breaing all these and entered into the temple?

I met one senior student to test the validity of the incidence and she told that incidence was true.

Summary

This chapter can be summarized in the following lines. First, from section I, we found that estimated literacy rate remained at a low level for both the villages. Secondly, most of the working people are agricultural laborers.

Thirdly, ST caste households are very few, fourthly around 50 percent of the total population are in the age group of 15-50. They may be the working class population. Fifthly, most of the workers are casual labor. Sixthly around 50 percent of this sample household are constituted with either no land or less than one acre of land.

The second section depicts that first, cereal consumption of the SC population is lowest. Secondly, there is clear distinction that cereal consumption between lean and peak seasons are different. Thirdly, as the rice consumption of the sample household are concerned, at the aggregate level TPDS provided only 11 to 12 percent of the total last months consumption of cereals. Fourthly 15 percent of the total household don't possess ration cards and most of them belong to either SCs or land less household. Fifthly in the sample villages we found, 27 percent Type II Errors and 36.3% Type I Error (with out NPC households). And due to these

targeting errors, there is inefficient income transfers for the indebted household. Sixthly, after the price hiked of the TPDS commodities, the sample household felt that it has affected mostly to their food consumption expenditure on children's education. Seventhly, most of the APL households used other ration cards.

The third section depicts that even if the ration shops incurred losses, they are running the shops by adjusting their expenditure from the issued ration to the ration shop. Fourth section found that, less developed commodity market; labour market and prevailing social stigma are some of the importance hindrance to achieve food security of certain sections of the society. The next Chapter gives the summary and conclusion of the present thesis.

ENDNOTE

[1] See Sahoo and Sahoo (1999)

[2] Cultivation is better than agricultural labour because in the former the owner will cultivate his own land hence more freedom and probability of food security.

[3] In our survey period, we collected some data on wages of the labourer and found that in agricultural labour it is lowest (Rs 20/ per male and Rs. 15/ per female per day).

[4] The average number of HH includes both resident and non-resident of a HH. In our population we found only 1.1 per cent are non-resident.

[5] In 2000-2001 budget, the price of TPDS ration has hiked, for detail see budget of India 2000-2001.

[6] *As Mr. Nayak and Mr. Mahananda of Kalara Kotha said many times they received TPDS rice as their daily wage.*

[7] After HH survey, while I took the interview of the local Block Development Officer and local Tehesildar, they told- In 1997, the five year programme has started in Orissa under food and civil supplies department and the TPDS ration cards were distributed. And the next issue of ration card will be done only after 2002. Till that year these NPC HHs might not be going to get any types of cards. Hence it might be the problem of policy that they adopted and the careless enumeration which, result around 22.7 per cent of the HHs in Kalara Kotha are with out card.

[8] Social scientists have calculated the errors in targetting of public programmes in different ways (Cornia and stewart, 1993, Jha, 1992). We calculated the errors in the following process.

In 1997, the Government of Orissa adopted two set of questionnarie to identify the BPL HHs. Set 'A' of that questionaire consisted with certain criteria. Among those, a BPL HH's land holding should be less than 2.5 acres, should not have a pucca house (Indira Awas Yojana are not considered as pucca house for this purposes), monthly income of any member of the family from self employment should not exceed Rs. 1700. Among the consumer goods a BPL HHs should not possess a TV, Freeze, Ceiling fan, motor cycle/ scooter, three wheeler, tractor, power tiller, and thresser. Some special cases if any physical handicapped person is/are there in the family than other aspects of the HHs are taken into consideration to decide, whether that HHs is APL or BPL, and for that they uses set 'B' questionnaire. Apart from this, in the set 'B' questionnaire they collected some subsidiary information about the HHs and their monthly consumption expenditure. If any HHs have possess the above mentioned commodities and having more earning and more land than the above mentioned, than that particular HHs should be excluded from the BPL list. And if these HHs were included than the targetting error arise (Type II error or 'E' mistake). Also, if a particular HHs do not possess the above mentioned criteria and excluded from BPL list than also the targeting errors has arise (Type I error or 'F' mistake).

Based on the above-mentioned criteria in Table 4.19 and Table 4.20, the type one and type two errors are presented in percentage terms. Initially the targeting errors are included only those HHs who have TPDS ration card and this has followed by including the NPC HHs.

TYPE I ERROR OR THE 'F' MISTAKE WITH OUT NPC HHS

In Table 4.19, the Type I error has presented. Column two of Table depicts different criteria to select BPL HHs. Column three depicts the percentages of HHs of Kalara Kotha, who do not possess the above mentioned requirements and considered as APL HHs. For example, the first numerical cell in this Table is 60 (3rd column and 3rd row), which indicates around 60 per cent of the APL HHs of Kalara Kotha are below the land ownership of 2.5 acres and they have APL ration card. Hence based on the criteria of land ownership, these percentages of HHs are suppose to be BPL HHs but considered as APL HHs by the enumerator. Similarly, the cell value of 3rd row and 10th column (46.6 per cent) represents, based on above mentioned criteria 46.6 per cent of the APL HHs of Kalara Kotha are suppose to be BPL HHs but considered as APL HHs (they are deserving as BPL HHs but excluded). Hence this percentages of HHs depicts the Type I error with out NPC HHs. And the same for Kultajore is 27.7 per of their total APL HHs. And for both villages together is 36.3 per cent from total APL HHs in both villages.

TYPE I ERROR OR THE 'F' MISTAKE WITH OUT NPC HHS

However, from the total of 18 NPC HHs, 17 HHs do not possess any of the criteria which are essential for an APL HHs and though they do not have TPDS ration card, hence excluded from the benefit of TPDS. In Kalara Kotha out of 15 NPC HHs 14 and in Kultajore all the 3 NPC HHs and in both village together, out of 18 NPC HHs 17 do not possess any of the above mentioned criteria (see Table 4.20). These HHs are supposed to be BPL HHs, but due to not possession of TPDS ration card are excluded from the benefit of provided through TPDS.

Hence when these HHs included the type one error in both villages together increases from 36.3 per cent to 56.8 per cent, in Kalara Kotha it increases from 46.6 per cent to 73.3 per cent and in Kultajore it increases from 27.7 to 38.0 per cent.

[9] Wrongly enumerated, otherwise should be APL.

[10] See, State, Market and Civil Organisations. New Theories, New practices And Their Implications for Rural Development, Edited by Alain de Janvry, 1995.

[11] The problem of caste system also addressed by some journalist, See 21st Hindu, Sunday special, 2001 January.

CHAPTER 5

Summary and Conclusions

5.1 Economic Growth Dimension of Food Security

5.2 PDS and Food Security in Kerala and Orissa

5.3 Findings of this Study and Steps to be taken

5.1 Economic Growth Dimension of Food Security

Providing nutritious food to all people is an important objective of an ideal food security policy. Nutritious food has its implications on physical activity, mental activity, fighting against disease and growth and well being of individuals (Foster and Leather, 1999). And as it has been empirically found that working capacity of individuals are positively related with their physical fitness and mental conditions, which is again positively linked with their earning and actively participating in the process of country's production and consumption (Fogel, 1994). Hence, ultimately it will contribute to country's economic growth. Therefore, a well-designed food policy, which can provide adequate and nutritious food to each individual, could be an effective instrument for a country's economic growth.

As it has been narrated in Chapter Three, PDS is one of the important *welfaristic* policy instruments of the government of India, for ensuring food security. At the same time, we also want to explore whether this can be an instrument for *economic growth also.*[1] In this context, referring to the above paragraph of the link between nutritional status and work capacity and work capacity with economic growth, we are trying to see how PDS is providing nutritional status to the people of India. In this regard, we considered Kerala as the reference state, because this is the state where the performance of PDS is most satisfactory. The second section of this concluding chapter looks at the different aspects and achievements of PDS in Kerala as pointed out by different authors. In this section, we also provide a discussion on various aspects of PDS in Orissa to provide a comparative picture with Kerala. The third section provides the findings and summary of this study and tries to point out some of the important steps, which may be considered as policy suggestions. And the last section shows the limitations of this study.

5.2 PDS and Food Security in Kerala and Orissa

As mentioned earlier, PDS was reintroduced in India in 1950 as a welfaristic measure especially for the vulnerable sections of the society. In many states of India, PDS has been functioning successfully and Kerala's success is a remarkable one. In this section, we are interested to know, how PDS has performed well in Kerala and non-performance in other states such as Orissa (one of the objectives of this thesis).

Large numbers of empirical studies are available regarding the working of PDS in Kerala and to a certain extent in Orissa also. From this, we selected four studies from both of states (two from each state). Around 1980, we have chosen George's 1979 work on Kerala and Mishra's 1980 work on Orissa. In 1990s, we have chosen Kannan's 1995 work on Kerala and Sarap's 2000 (for this fieldwork was done in 1996-97) work in Orissa. Our present work supplements this comparison. Selection of these two studies on Kerala is not arbitrary. Rather these studies are related to our present study. George's work spoke about income distribution aspects of PDS, whereas, Kannan's study addressed the nutritional support of PDS. Both of these aspects are also discussed in our present thesis. For Orissa, we selected these two works because it provides details about the functioning of PDS taking data both from secondary and primary sources. Brief descriptions of these literatures are provided below. Finally, we conclude why PDS is more efficient in Kerala than Orissa.

George's Study on Kerala, (1979)

In 1979, as a part of International Food Policy Research Institute's research report, Dr. George has worked on "Public Distribution of Food Grains in Kerala- Income Distribution and Effectiveness". His main findings are-

(1) Kerala's PDS was reputed to be the best Public Distribution Program in India, which covers about 97 per cent of the population in both rural and urban areas.

(2) His study showed that the performances of PDS in Kerala was influenced by the small portion of food requirement met by the inside production of the state, large differences between the open market price and the ration price, a comprehensive distribution net work, flexibility in the frequency of purchases from FPSs, the limited quantity of grains sold through FPSs and the low quality of ration grains, when compared to preferred varieties.

(3) He attempted to find out the determining factors of the quantities of grain sold through ration shops. By using a normal demand variables model, he found that, the volume of ration rice sold was influenced by supply constraints and not by variables influencing consumer choice, but the volume of wheat purchases from ration shops was affected by demand variables.

(4) Regarding the income distribution aspects of PDS, he found that in Kerala, procurement arrangements reduced the skewness in farm income among the consumers and resulted in interregional income transfer.

(5) Regarding the rice consumption, he found that the low-income groups obtained about two-thirds of their household consumption from the ration shops, while consumers belonging to upper income groups obtained about one-third of their rice from the ration shops. The consumers belonging to the low-income groups preferred to consume tapioca (less costly). He also found that as the income levels of the consumers increases their tapioca purchases were replaced by rice purchased from the open market.

(6) Regarding the income transfers, he found that the subsidised public distribution system was better than direct income transfer for raising the consumption levels of low-income consumers, from the point of view of feasibility and cost effectiveness.

Mishra's Study on Orissa, (1979)

At the same time period (1979) B. Mishra has completed his work entitled " Economic Aspects of the Public Distribution System in Food grains in Orissa", which was the result of his Ph.D. thesis. Some of the important findings of that study are as below.

(1) The introduction of zonal restrictions of movement of food grains has helped to raise the per capita availability of cereals in Orissa compared to the all-India average, but failed to narrow down the inter state differential of food grains procurement as well as availability.

(2) The quantum of buffer stock in Orissa has been inadequate since the inception of the FCI in the state. The Corporation used to launch the rice procurement in the post-harvest period and distribute that in the lean seasons. Apart from this it also exported a substantial quantity on Government of India's account. However, the distribution costs of rice by the FCI were always remaining higher than the distribution costs by the state. But, in around 1979 the distribution costs by the corporation has remained 10 per cent lower than the distribution costs borne by the state government of Orissa. However, in spite of these many achievements, the corporation failed to stabilise the price of food grains in the state.

(3) As far as the prices of rice and paddy were concerned, he found that the procurement prices of rice have remained lower than its open market prices for many years in 1970s and 1980s and incidentally these prices in Orissa also have been remained lower than her

neighbouring states. Therefore, he had suggested raising the producers' price in the state. But on the other side, the consumer's price of rice fixed by the government for public distribution system also did not benefit the consumers in view of their lower off-take. The hypothesis that he tested and proved was that, in Orissa, the incentive prices for the producers of rice as well as the issue prices fixed for the consumers have not benefited either growers or the consumers of rice. He found that, while people in lower income brackets consumed less rice than their standard requirements, people in higher income bracket consumed more. In this respect, his field investigation revealed that quite a large number of farm households make distress sale of rice at lower than the support prices.

(4) The study also found that the system of public distribution in food grains in Orissa has been haphazard and failed to maintain a steady supply to the consumers.

Kannan's Study on Kerala, (1995)

This study was entitled "Public Intervention and Poverty Alleviation: A Study of the Declining Incidence of Rural Poverty in Kerala, India", where along with other arguments, he also highlighted the role of PDS in providing food security in general and declining incidence of poverty in Kerala in particular. He argues that, one way to alleviate poverty was by aiming at creation of entitlements and building up of capabilities among the poor. This can be achieved by targeted programmes as well as by non-targeted programmes in which the poor will be benefited significantly. As he pointed out, in targeted programmes, *entitlements* can be provided to the people by providing nutritional status to the vulnerable sections of the society, by providing social security for them and by creating employment and income for the people (especially for the rural land less households). On the other hand, for building up of capabilities of the poor people, he stressed on support for education and housing. Under non-targeted programmes, to provide food entitlements, PDS is important, whereas basic capabilities can be build up through free education and free health care. But for all these state intervention may be required.[2] As he pointed out, "expansion of state-directed programmes is seen to be the single most important determinant in reducing rural poverty". This study of Kannan pointed out the role of PDS in reducing poverty in Kerala.

When PDS began in Kerala in 1964, it covered, more than 90 per cent of all households. And remaining were having enough production for their own consumption. The most important characteristics of the PDS in Kerala that he summarised are as follows:

(i) Nearly two-thirds of the total cereal purchase of poorer households is through the PDS, the highest proportion in the country;

(ii) Per capita distribution of food grains has increased and for rice increased from 25 kg in 1975 to a little over 59 kg in 1987;

(iii) The implicit subsidy is quite significant: in 1986-87 the price of rice in PDS was around two-thirds of the open market price;

(iv) Rural areas receive a slightly larger proportion than their share of population for most of the items distributed through PDS.

Sarap's Study on Orissa, (1997)

Dr. Sarap has done the field survey in 1996-97. The main findings of his study are-

(1) The food delivery system has limited coverage in terms of percentage of households as well as in terms of the amount of food grains supplied.

(2) There are many contributory factors responsible for the inadequate and inefficient food delivery system, such as lack of purchasing power among the poor that kept some of their limited quota non-lifted; poor infrastructure and poor quality of grains.

(3) As the study shows, the access to BPL rice and other commodities reveals that even though a majority of the households in the study area have access to these items, the amount supplied and bought by them does not satisfy even a quarter of their requirements.

(4) Even though a majority of the households have access to the RPDS rice, around 80 per cent of their requirements come from the market, a part of which has been financed through private borrowing.

(5) Income generated through employment assurance scheme has negligible contribution to their income and could not come to the rescue of the poor.

From the above it may be derived that, in Orissa the failure of PDS to provide food security is due to lack of purchasing power with the people, whereas, in Kerala though the situation is better off, it faces supply side problems. But as Mishra's study shows in Orissa PDS has failed to maintain a steady supply to the consumer. As Sarap pointed out this, may be due to lack of infrastructure facility in Orissa. While PDS covers more than 90 per cent of the households in Kerala, (stated by both Kannan and George), it is only 0.4 per cent of rural households and 0.41 per cent of urban households (Dev and Suryanarayana, 1991).

Another important aspect is the difference between the procurement price and the market price and the difference between issue price and the market price of rice. As Mishra pointed out the procurement price in Orissa was lower than the prevailing market price. And the difference between the issue price of PDS commodities and the open market commodities is not much, whereas, this gap is more in Kerala. Other important causes are the role of state, and awareness among the citizens. As Kannan points out, expansion of the state-directed programmes is seen to be the single most important determinant of reducing rural poverty in Kerala. In Orissa, there are several problems: the difference between the open market price and issue price, and the open market price and the procurement price, and the low purchasing power of the people of the state. Although these problems were decades old and addressed by various researchers[3] again and again no effective measures have been taken against these, either by the state government or by the central government or by any other organisations to improve the food security of the people in Orissa. Hence in Orissa failure in the reduction of poverty or failure in the reduction of food insecurity may be attributed to State failure (both Central government and state government).

As the trends in agricultural wages indicate as presented in second chapter of this study, it remained higher for Kerala than India or Orissa. Hence this could be a reason that the accessibility to the subsidised PDS ration by the Kerala people is more compared to Orissa.
These are some of the reasons that PDS in Kerala is far ahead than Orissa. The next section provides the summary and findings of the present study.

5.3 Summary and Findings of this Study and Steps to be Taken

The first objective of this study is to find out whether food security in the context of Orissa is a demand side problem or supply side problem. Chapter 2 deals with this issue. Some of the striking findings are highlighted below.

(1) As regards supply side of food security in Orissa, we found that there is no dearth of food grain supply. In fact the per capita net availability of food grains in Orissa remained at a level higher than that of India between 1961 and 1999. However, many of the districts in Orissa recorded less than all India average per capita availability of food grains. This suggests that the supply constraints existed in major parts of Orissa. Considering the failure of PDS in most of parts of Orissa, it became relevant to see the supply problems at the district level.[4] Hence, we looked at the supply side constraints in detail using certain key indicators (land utilisation pattern, yield rate, fertiliser consumption, level of irrigation and level of infrastructure). They confirmed the existence of supply constraints in major parts of Orissa.

(2) We also checked the demand constraint of food security using certain key indicators (distribution of land holding, work participation rate, earning of rural labour, the level of literacy among workers and the households' consumption expenditure). They also confirmed the existence of demand constraints in the state. Consumer expenditure, (between the 52nd and 53rd round of NSSO's survey), on food items increased marginally while the expenditure on non-food items declined marginally. Per capita wage bill of Orissa remained lower than that of the country, not to speak of Kerala.

Finally, food insecurity in Orissa arises both from demand side and supply side, but the relative importance of the demand side problem is more than that of supply side.

(3) After confirming the supply and demand constraints, we looked at their consequences. Poverty rate and nutritional status of children is taken into consideration for analysing the consequences. It is observed that poverty rate has almost not declined in the state since the last seven years. Nutritional status of children (below 4 years) still remains at a lower level in Orissa compared to all India. As recorded by National Family Health Survey-1, nearly 57.4 per cent of the children were moderately

undernourished and 22.3 per cent were severely undernourished in Orissa against 53.4 per cent and 20.6 per cent respectively for all India. These are certainly symptoms of an absence of food security in Orissa.

But since the per capita annual average wage bill of the state is lower than that of India the consequences are seem to be more in Orissa compared to all India. Again the low per capita annual earnings of women compared to men means heightened food insecurity for the former.

The second objective of the present study was to find out how PDS has performed in Orissa and to what extent households depend on PDS and the open market to meet their requirements of food grains. The first hypothesis, PDS is an effective instrument in reducing poverty in general and protecting vulnerable sections, in particular through enhanced access to food also related with this objective. Third chapter deals with this issue. The main findings are the following.

(1) The analysis shows that in Orissa PDS did not successfully achieve either the objectives of reduction of poverty or protecting the vulnerable sections of the society.

(2) As regards the performances of PDS in India, Kerala and Orissa, it is found that the absolute amount of food grains distributed in Kerala is always higher than Orissa during 1961 to 1995 though Kerala is having less number and less percentage of poor. According to 1986-87 NSS data, the participation of rural population in the PDS in Orissa was around 2 per cent where as it was around 87per cent in Kerala. Among the ultra poor, less than one per cent of Orissa uses PDS whereas in Kerala around 60 per cent of the total population use it. This chapter also shows from 1986-87 data that the market price of rice in Orissa was lower than the price of rice in PDS ration shop. These are evidences from the 1986-87 NSS data. Apart from this, at the disaggregated level it is found that the per capita allotment of rice is highly varied across the districts and biased to a certain region i.e. eastern Orissa. In fact, all the upper outliers of the per capita allotment of rice are from eastern part of Orissa. Therefore, PDS has not served as an instrument of food security in Orissa in general and certain districts in particular. The next obvious question to ask the poor of Orissa is to know the reasons of not using the PDS ration in the past and examine the current scenario. The next section deals with the main results derived from the primary field survey. Some of the main findings of this are as follow.

(1) TPDS provides only around 11 per cent of the monthly per capita consumption to the surveyed households, whereas around 26 per cent of the household's rice requirements come from all other sources.

(2) As the access over food grains of TPDS is concerned, in Kalara Kotha, (developed village in our sample) around 22.5 per cent of the households do not possess ration card, whereas, in Kultajore (less developed village) around 5.6 per cent of the total household do not possess TPDS ration card. Hence the access to TPDS by the developed village is less compared to less develop village. Secondly, the magnitude of Type-I Error is relatively higher in the developed village (46.6 per cent) compared to less developed village (27.7 per cent). This means that in the developed village 46. 6 per cent of the households were eligible but excluded from the use of TPDS, whereas this is less in less developed village (27.7 per cent). However, a Type-II Error is less in the developed village (27.7 per cent) and more in the less developed village (48.4 per cent). This indicates that TPDS was more accessible by the less developed village.

(3) We also found that the impact of price hike is negative for rice and sugar consumption in both the villages, but the impact is more in the in developed village (Kalara Kotha) than the less developed village (Kultajore).

(4) This study found that actual income transfer is less than the expected income transfer, which are contributed by many factors such as wrong selection of BPL household, irregular and block amount of ration supply etc.

(5) Apart from this the under developed labour market, credit market and the prevailing social stigma were some of the important hindrances in the studied villages to achieve food security.

The fourth objective of the present study is to find out why the PDS did not work more efficiently in Orissa compared to Kerala. Some the reasons are as follows.

(1) In Orissa the market prices of the commodities that are provided through PDS are either low or slightly higher than that of the price in ration shop, whereas in Kerala the open market price is much higher than ration shop price.

(2) The real wage rate trend of the agricultural labourers of Kerala has remained far above than that of Orissa.

(3) The annual per capita wage earnings of Orissa (for all men, women and children) remained far below than that of Kerala.

Some questions however remain unanswered. These are

(a) Whether PDS should be continued, because it has management problems and incurring cost to the governments?
(b) Should it be stopped? Then resulting in loss of welfare, loss of probable economic growth and may be price instability.

We are supporting continuation of this programme, with certain reforms should be effectively worked out by the State. Instead of keeping a significant proportion of the population underfed with ample amount of food in the country, it may be wise to provide them food, provide them work, make them able to participate in the country's production and consumption process and hope to make them an important part in the country's economic growth. Considering the present functioning of TPDS in Orissa we would like to suggest some steps for its improvement. These are:

(1) TPDS should cover the entire vulnerable section of the society, both in rural or less developed areas as well in the urban or developed areas. As the evidence from the sample villages shows, around 22 per cent of the households were with out ration cards i.e. they were excluded from the TPDS due to one or other reasons.
(2) As our study shows, under TPDS, households were entitled for ration but they are unable to access it, due to lack of purchasing power with them or due to the failure of effective demand with them. Hence to improve the situation, it may be essential to create sufficient number of regular days of employment opportunities for the 59 per cent of the latent labour (seasonal) in the sample villages. They would not only be able to earn wages for themselves, but also can contribute to country's production and consumption and ultimately become a part of country's economic growth.
(3) Again, as the evidence from the field shows, the fixed amount of rice quota of only 16 kg per household is only around one-tenth of household's cereal consumption. Hence instead of keeping 27 per cent of the Indian below the poverty line and exporting rice and wheat abroad at a subsidised price, or instead of piling up of FCI stock, it may be better to increase the ration quota for the vulnerable sections of the people, so that their nutritional status can be improved. As the quality of grain is concerned, definitely efforts are required

to protect the quality. The quality deterioration due to stock piling may be solved by increasing the amount of quota to the needy at reasonable prices.

(4) As the use of ration card by others is concerned (illegal use), one reason is the wrong targeting of commodities for different households. As the field experience shows, some households required more rice/wheat than sugar and vice versa. In such case the probability of using others' cards is high. These activities may be illegal but economically beneficial for the households. They are exchanging- what they have with what they require. Hence, if the TPDS will provide the amount of commodities according to their requirements may be the existing problem can be checked to small extent.

(5) As far the dual market prices are concerned, neither the procurement prices have been an effective incentive to the producer class, nor the issue prices have been an effective instrument to provide food security to the vulnerable section of the people of Orissa. Hence, strengthening the organisation of the Food Corporation of India in Orissa, it is required to carry out efficiently the procurement and distribution of rice. Reducing the consumer's price of rice up to well below the open market price may be helpful for releasing the demand constraint.

(6) As the trend in real agricultural wages shows, it remained higher for Kerala as compared to Orissa. The problem may arise, when providing PDS ration at an equal price to both the states (irrespective of differences in their purchasing power), which can lead to circumstances of providing an additional incentive to the people of the richer state like Kerala compared to Orissa. In the long run this may be a reason for widening the gap of inter state inequality.

(7) Again even though the consumer price index (CPI) of Orissa, Kerala and India are different (we have taken CPI for agricultural labourers) the issue prices charged for them remain uniform. Hence the state (s) which have higher level of CPI get benefited more compared to other state (s). In this context, from the present study, it is clear that Kerala enjoyed a comparative advantage compared to Orissa. Apart from this in Kerala the real wage trends (for agricultural labourers) remains higher than Orissa, also the per capita annual earnings remains higher than Orissa, still Kerala continue to receive the government support equally like any other state of India. Hence if two unequal persons (based on purchasing power) residing in a country are offered equal benefits by the government, then the inequality will persist rather than declining. Therefore, necessary reforms are required to remove such problem of the PDS.

(8) Lastly, given that half of the populations of Orissa have been living below the poverty line for at least the last seven years, no serious attempt has been taken either by the state government or by the central government to mitigate it. And the negligible change in poverty rate for the last seven years shows that if it all any attempt has been taken in general, it has not been implemented effectively to raise their effective access to TPDS. Therefore, to make more food secure and accessible to the people of Orissa, it may be helpful if the state will follow the broadened rural development policies (including expansion of rural infrastructure and employment generation programmes).

ENDNOTE

[1] . Measuring of economic growth is not our intention, what we are trying to say is, if PDS has been able to reduce food insecurity, then the additional numbers of person who are becoming food secured after receiving PDS assistant may be additional units to the country's production and consumption process. Hence may be country's economic growth will increase.

[2] . For detail see Kannan, (1995), *Development and Change*.

[3] . See Mishra (1979), Ahluwalia (1993), Sarap (2000).

[4] . AS a result of topography and poor infrastructure facilities, the goods and services provided by government do not reach in time and in regular intervals. Hence unless there will be movement of food grains by the private traders, food security of some district, which are producing less may threaten. It is in this context, we have look at in the district level production.

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Appendix

Chapter 2

The per capita availability of food grains at the district level became relevant for us due to many reasons. First, the failure of PDS (Mishra, 1979) to provides food grains to all the needy districts of Orissa and relying on private traders for the movement of food grains from one district to another is not regulatory. In such a situation, if a district is producing more may be the market price for food grains remains low in that district compare to the situation if the food grains will be supplied by the private traders. Secondly, due to low purchasing power of the people, to purchase from open market, may be higher domestic production advantageous for them. Thirdly, low infrastructure (transport) is a hindrance for a smooth movement of food grains from district to district. In the state like Kerala, due to high infrastructural facility, there is smooth movement of food grains from district to district, hence inter-district variation at the district level does not creates much problem. But in the case of Orissa it might be a problem.

Table 2.2 Per capita availability of food grains across districts of Orissa, (1994-95)

Districts	*Kg In 1994-95*	*Grams Per Day Per Person*	*Districts*	*Kg In 1994-95*	*Grams Per Day Per Person*
Angul	156	427.39*	Keonjhar	176	482.19*
Balasore	206	564.38*	Khurda	108	295.89*
Bargarh	463	1268.4	Koraput	197	539.7*
Bhadrak	221	605.47	Malkanagiri	264	723.28
Bolangir	274	750.68	Mayurbhanj	233	638.35
Boudh	277	758.90	Nawapara	253	693.15
Cuttack	104	284.93*	Nayagarh	253	693.15
Deogarh	320	876.71	Nowarangapur	265	726.02
Dhenkanal	196	536.98*	Phulbani*	164	449.31*
Gajapati	173	473.97*	Puri	107	293.15*
Ganjam	210	575.34*	Rayagada	182	498.63*
Jagatsinghpur	144	394.52*	Sambalpur	280	767.12
Jajpur	120	328.76*	Sonepur	353	967.12
Jharsuguda	215	589.04*	Sundergarh	155	424.65*
Kalahandi	245	671.23	Mean	216.4	592.87
Kendrapara	178	487.67*	Standard deviation	78.30735	214.5407

* For district, which are below the average of per capita food availability.
Source: District Statistical HandBook of Orissa, 1995.

Chapter IV

Selection of Study Villages

Following criteria were used for selection of study villages.

(1) To capture diversity in level of development, we wanted one village that was near to a block headquarter, a main road and is accessible by road transport. In order to capture a contrast, we wanted another village to be a remote village, one that is inaccessible by road transport and is far from the block headquarter and main road.

(2) Land less agricultural and non-agricultural labourers in village are specifically vulnerable to problem of food insecurity. To capture access of agricultural and non-agricultural labourers to PDS, we wanted, to select villages with proportion of manual labour supply of the same order as in the state as a whole (25 per cent).

(3) We wanted to select villages with similar size of households.

Keeping the criteria of village selection in mind, I went back to Orissa in July 2000, in order to select two villages for the fieldwork and to test preliminary questionnaire. I based myself in my own village, Kalara Kotha in Kantamal block. I consulted the tehsildar, block development officer and two teachers and the sarapanch of the block panchyat and discussed my requirements. Based on their suggestions, I visited four villages (two less developed and two developed).

The first village I have visited was Dedhelmal, which was situated in too interior area. Most of the landless households of the village are not staying regularly (due to lack of employment), and migrating to other irrigated districts. (Sambalpur, Bargarh etc). I felt that data collection in this village would not give actual result due to large-scale migration.

The second village I visited was Kultajore; a village about 25 kilometers from Block headquarters Kantamal towards the south and in the jurisdiction of the Kultajore panchayat. During this visit I spoke to the schoolmaster (Bijaya Mallik), and some other members of Kultajore. This village suited many of my requirements (as the less developed village). It is around 8 to 10 kilometres from the main road. There are roads to the village, a bus can go there,

but in rainy season it is difficult. To that village one has to cross either the river Tel (2 kilometres from the village towards north) or a river let from the east (see map 2, B). This village satisfied all other criteria of the village selection. And the village consists of 150 households.

The third village for my choice to do my survey was Kalara Kotha. It is about 2 kilometres from Kantamal block headquarter towards west, 76 kilometres from district head quarters towards the west and 350 kilometres from state capital Bhubaneswar towards west. It is attached with the district main road (all weather road). Other infrastructure facilities are relatively better here as compared to previous two villages. It also satisfied all other criteria. And the total number of households in this village is 182 and the Public Distribution System has been in operation for more than 20 years. But I did not finalize to select this village for field survey.

The last village I visited was Kantamal, about one kilometre from block headquarter towards the north. This village also satisfied some of the criteria as I wanted, however, being the block headquarter, a large number of salaried employees, landlords and business men lived here. As a result this village was not typical of the block.

Given theses features of the four villages, I decided to select Kultajore from less developed villages and Kalara Kotha from developed villages for my field survey. Both of these villages are revenue village and Public Distribution System is in operation. One more reason to select Kalara Kotha is that it is my own village.

In the next couple of days I collected some further preliminary information on the two villages, met some more people and tested the questionnaire. I visited the local market where I could observe the reselling of PDS rice at a higher price. The resellers were not at all agreeing to mention the quantity that they were resell. But I could able to get the concerned information from the purchaser of PDS ration from non-ration shop. With that search for villages was ended. I left Orissa, to return after about three month for the primary data collection.

Basic Profile of the Study Villages

In pilot survey, I collected some village level information, which includes the map of both villages, population of the villages, number of households, literacy rate in the villages, total geographical area of the village and other village level information.

Map 2 (A) and 2 (B) (see last of the Appendix of this chapter), shows the geographical location of Kalara Kotha and Kultajore. Both the villages have two settlements: One in which scheduled castes live (locally called Ganda para, meaning settlement of untouchables) and another in which upper castes and some touchable schedule castes live (locally called Bhal para, meaning settlement of gentlefolk). Though in our constitution, there is no such system of untouchability, still it persists in Orissa. One more thing we want to highlight in the map is that both villages are surrounded with paddy field and in both the villages there is enough potential for irrigation. Both the villages are having a separate river let close to the agricultural fields and a common river where there is always enormous water available. Our discussion with respective village officials and with the local leaders conclude that, irrigation must be an effective strategy to increase the food grains production, level of employment and income in general and reduction of food insecurity in particular in these locality. Hence these locality is in need of high administrative attention. Table 4.2 gives some preliminary information on Kultajore and Kalara Kotha.

Table 4.2 Preliminary information of Kalara Kotha and Kultajore (socio-economic aspects).

Parameters	***Kalara Kotha***				***Kultajore***			
Total Population	S C	S T	OBC	TOTAL	S C	S T	OBC	TOTAL
Males	245	37	644	926	67	178	540	785
Females	126	18	345	489	33	87	250	370
Literate (male)	-	-	-	182	-	-	-	159
Literate (female)	-	-	-	143	-	-	-	41
Number of household	-	-	-	182	-	-	-	150
Total geographical areas (in hectare)	-	-	-	190.75	-	-	-	130.49

Source: Kantamal Tehsil Office, Village Particular (1995).

In 1995 the total population of Kalara Kotha was 926 persons, of whom about 47 per cent were females and 53 per cent were males. It was also observed that all the residents in that village were Hindus; about 26 per cent belonged to the scheduled caste, about 3 per cent to schedule tribes and rest 69 per cent to the other castes. The total literacy rate of the village is 35 per cent, of which male literate were 37.2 per cent and female literate were 32.7 per cent. The ratio of male to female population is 1.1, where as the ratio of the male to female literacy rate is 1.13; (The female literacy rate was around 78 percent of the male literacy rate). The total population of

Kultajore was 785 persons of whom about 47 percent were males and 53 per cent were females. Here too, all the residents were Hindus; about 8 per cent belonged to scheduled caste, about 22 per cent belonged to the scheduled tribes and the remaining 68 per cent belonged to other castes. The total literacy rate of the village is 25 percent of which males' literates were 43 percent and female literates were only 9 percent. The ratio of male to female population is .89, where as the ratio of the male to female literacy rate is 3.8, (The female literate were around 25 percent of the male literate).

The total geographical area of Kalara Kotha is 190.75 hectares and that of Kultajore is 130.49 hectares. The population pressure on land was higher in Kultajore; the land per person was 0.166 hectares in Kultajore and 0.206 hectares in Kalara Kotha. Table 4.3 provides some basic village-level information.

Table 4.3 Some Basic Village Information of Kalara Kotha and Kultajore

Variable's name	*Availability with in the village area-yes/not (if yes number)*		*If not distance (nearest) from the village to availing the facility.*	
	Kalara Kotha	Kultajore	Kalara Kotha	Kultajore
Rice Mill	No	2	1 kilometer	
PDS ration shop	No	1	½ kilometer	
Drinking Water				
Tube Well	5	4		
Pond	No	2	1 kilometer	
River	No	No	2 kilometers	2 kilometer
Well	18	12		
Educational Institutions				
Primary	1	1		
Middle	No	1	2 kilometer	
Secondary	No	No	2 kilometer	8 kilometers
College	No	No	1 kilometer	25 kilometers
Medical Facility				
Medical	No	No	2 kilometers	25 kilometers
Primary health center.	No	No	1 kilometer	6 kilometers
Formal Credit Sources				
State Bank of India	No	No	1 kilometer	25 kilometers
Kalahandi Bank	No	No	2 kilometers	6 kilometers
Co-operative Bank	1	No	1 kilometer	

Table Continued...

Communication Facility				
Bus Stop	2	No		10 kilometers
Bus Station	1 (10 buses are coming to their)	No		15 kilometers
Nearest town			30 kilometers	55 kilometers
Main road	Yes	No		10 kilometers.
Railway Station	No	No	80 kilometers	25 kilometers
Post Office	1	1		
Telegraph office	No	No	30 kilometers	25 kilometers
Other Important Features of The Villages				
Electricity supply and its Use	Yes, see text	No		4 kilometers
Days of market	No	No	1 (2 days)	3 (1 days)
Other Socio Cultural Institute and its Use by People				
Gudigarh	2	1		
Community house	1	1		
Type of Common Property and its Use by the People				
Forest	See the text		3 kilometers	2 kilometer
Staple Food	Rice	Rice		
Land use pattern	Mainly they (in both villages) use their land for paddy cultivation and most of them were uses once due lack of water (irrigation) facility. Their cultivation also included some pulses such as green gram, red gram and other type of dal. But the household who have their own well they were going for sugar cane and other green vegetable such as Tomato, Bringer cauliflower, onion etc.			
Village map, See Map 2, (A) and (B).				

*Note: * Gudighar is a sacred chamber where the villagers were use to devote their god.*
Sources: Household surveys, Kalara Kotha and Kultajore.

The brief analysis of table 4.3 and other observations from the study villages is as follow.

Rice was the staple food in both the villages, which are available to the households from open market, ration shop, own production and from wages in 'kind'. There are two rice mill and one ration shop in Kultajore, where as these facilities were not available in side Kalara Kotha. The nearest rice mill for is situated around ½ Kms distance from the village and the nearest ration shop is situated around 1½ Kms distance. PDS provides food grains to both the villages at least

20 years back. In Kalara Kotha, Lala Matali was the PDS dealer for Kerosene and Sugar. He is the only dealer for nine villages. For the other village, Lal Bihari Rana was the dealer for same products and he distributes to five villages. The District mobile van from the Department of Food and Civil Supplies provides PDS rice in both the villages. However it is not regular in either of these villages. At the time of data collection, both the villages did not get PDS rice for the last two months.

The amount of rice a particular household receives from the ration shop is insignificant compared to the household's monthly consumption. That might be the reason that their land utilisation pattern confined to the cultivation of mainly paddy and a few pulses (like green gram, and horse gram).

As regards drinking water facilities, Kalara Kotha village has more advantage than Kultajore; this village has five tube wells, 18 privately owned wells, two public wells, one river let and the river Tel, which flowed at a distance of two kilometres from the village. Where as Kultajore has four tube wells, two ponds, 12 private wells, one public well, one river let and the river Tel which flowed 2 kilometres away from the village.

Both the villages have a primary school and there is one middle school in Kultajore. But the higher levels of educational facilities are nearer to Kalara Kotha (secondary schools and college are situated around at 1 kilometre distance) and far away from Kultajore (secondary educational institutions are situated at 8 kilometres distance and a college is situated at 25 kilometres distance).

The medical facilities were also nearer for the village Kalara Kotha (around 2 Kilometres distance) than Kultajore (around 25 Kilometres distance).

The facilities on formal credit, such as State Bank of India, Kalahandi Bank, Co-operative Bank etc are more accessible by Kalara Kotha than Kultajore.

Transport and communications to Kultajore remain at a poor level. So the case of electricity. In Kalara Kotha, electricity was available but its use was confined to household consumption, rather than irrigation purposes or any other agricultural productive works. However, the chance of food insecurity will likely to be more in Kultajore compared to Kalara Kotha.

Both the villages have a community home. Kultajore has two gudigarh and Kalara Kotha has one gudigarh.

Both the villages access the local market near to other village. (For Kalara Kotha it is twice in a week where as for Kultajore once in a week).

Forest and river Tel are two types of natural resources that exist near by the villages. The area under forest cover is now declining as some households collect woods from there and sell to others to maintain their daily life. But from the selected interview we find that the massive deforestation was not done by the poor households (to whom forest guard catches and charges fine), but it was done by the rich person, local politician and educated unemployed. River Tel, provides the needs of the local people of the two villages as water is available even in summer season of the drought year.

The Field-Work

In the following section, we discuss the sampling methodology, nature of primary data and the process of data collection.

The Sampling Methodology

As discussed earlier, our sample villages were selected purposively. On the first day of my fieldwork I collected the household (here after Population) list of both the villages from Kantamal Tehsil office. As the habitat of the people were situated at two distinct places (known to us from the pilot survey), we decided to go for stratified random sampling considering Probability Proportional to Size (PPS). The stratifying variable was the geographical settlement of the households. The so-called untouchable (Ganda para) people have their dwelling at a separate place than the other households (Bhal para). We categorise the first group of households as strata 'A' and to the second group of households as strata 'B' in both the villages (refer to figure 4.2). The total numbers of households of both the villages were 332. From the total, I selected a sample of 120 households, which was 36 per cent of the total population. The total Population of Kalara Kotha was 182, it was 55 per cent of the total Population of both villages, and hence we took 55 per cent of sample households from Kalara Kotha from total required households of 120 and that come out as 66 households. The next task was to decide from which strata how much of households to take? From the population list of Kalara Kotha it was found

that the total number of households reside in strata 'A' is 28, and it was around 16 per cent of total number of households of the village. So we have calculated 16 per cent from the total number of sample (66) to choose from stratum 'A'. And the number of sample households to be surveyed from strata 'A' was come out as 11 households and the same for the other strata (B) was 55 households. Similar procedure was followed for Kultajore and the number of sample households to be surveyed was come out as 9 households for strata 'A' and 45 households for strata 'B'. The next task was to which particular households to be surveyed? For this purposes we took the help of Pseudo random digit table.

Initially, a sample of 66 households was selected for Kalara Kotha. When the data collection has started, I found that some household are absent in the village. Hence, I have continued the previous random table and selected 10 reserve households in the similar process that were used in the case of absence or non-existence of a particular selected sample in the village. And this reserve list of 10 households also followed the principle of proportion, for both the strata. In Kultajore I moved horizontally for the generation of required random numbers and 54 sample households were similarly selected initially. And latter on 10 additional households were selected as reserve list.

The Process of Data Collection

The process of data collection involves three stages (see figure-4.1). The first stage was the pilot survey, which involved mainly selection of villages and testing of preliminary questionnaires. The second stage involved the households' data collection, interview of dealers, and interviews of some selected person, some selected households, and the interview of some local officials. After finishing the primary survey, some other secondary information from various institutions were also collected in the 3rd stage.

I finalised the household questionnaire by November 3rd week and went to Orissa for primary data collection. First I collected data from Kalara Kotha. For the working class households the data collection time was 6 A.M. to 8.30 A.M. and 5 P.M. to 8.30 P.M. In the rest of the day, I collected data from other households and in the night I used to organise the facts told by each respondent in a sequential way. As a part of data collection I had also visited the local market and noted down the prevailing prices of some products for which analysis has been presented in the latter part of the thesis. After finishing the fieldwork in Kalara Kotha, I proceeded to

Kultajore village. There I stayed in the house of a schoolmaster of that village. In the first day, the ward member called a meeting. In the meeting I tried to clarify them about my purpose. Next day onwards I started data collection; a secondary student assisted me for some days and by an MA student for other days. With the healthy co-operation by the villagers I had finished my fieldwork in time and moved towards the state's capital, Bhubaneswar to collect some secondary data of Orissa. I visited different institutes and libraries for secondary data and literature. At that time I had also presented a seminar in the same topic, in a research institute (NCDS) which was pre arranged. I had received a good number of comments and complements. With this my fieldwork was completed but I was in touch with the respondents either by letter or by phone.

Nature of the Primary Data

During the field-work, information was collected at the village and household levels. The household level questionnaire was designed to capture food security through collecting data on actual consumption (as the NSSO does) and not through collecting data on net availability of food.

The detailed description about the household questionnaire is given below, but basically we are concerned about the household's consumption of cereals and related issue of under nourishment. In this context the assistance provided through PDS was taken into consideration. In addition, we have also put emphasis on the household's education and land holding etc. As it was not feasible for us to collect data, about all the factors of food security from the household, for certain information such as all weather road, technology, input use, marketing facilities etc, we have collected the village level information.

Household was the unit of study for survey, which was defined as a group of persons staying together and usually having their food from the same kitchen.[1]

The household questionnaire covered inter alia, the following aspects: -

(1) Introductory information on the household (about respondent/head of the household)[2]*:* Data were collected on occupation, education, caste, sex and the settlement he/she belongs to.

[1]. In the exceptional case of a household in which members of more than one families lived in the same house and each of them had separate kitchens but owned and cultivated their land together, we consider these households as single household.

[2] We found 95% of respondent were the head of that household.

First occupation is classified by cultivator, agricultural labourer, non-agricultural labourer, self-employed and salaried. Secondly occupations were classified on the basis of nature of employment; casual, regular and salaried.

(2) *Introductory information on members (both resident and non-resident) of the household:* Data were collected on the sex, age, occupation, education and relationship to the head of the household, of all the members in the household.

For education, we consider as child up to below five years and rests were classified in to illiterate, primary, middle, secondary and above secondary.

For caste we classified in to three groups, Scheduled caste, Schedule tribe and others. The main idea behind this is to see how access to PDS differs across caste or by caste. For age, we have collected their actual age, but while for analysis purposes we coded it into like less than 15, 15 to 50 and above 50 etc.

(3) *Household land holding:* Data were collected both on the ownership and on operational holding of land.[3] we have also collected data of homestead land holding.

(4) *Economic status of the household:* - After referring to various literatures including NSSO questionnaire, we have selected certain indicators of household status to analyse my research problem. These variables include- types of house, number of room other than kitchen, electrification of the house, safe drinking water, frequency of cooking per day and frequency of having full meals per day and types of toilet they are using. We have also collected information if the frequency of cooking or frequency of having full meals differ due to seasonality. Apart from this, we have also collected some information about a bundle of commodities, and whether the household possesses those commodities? And the bundle constituted those commodities that could distinguish between APL people and BPL people[4].

(5) *Employment particulars:* - To capture the latent labour force we have collected information on how many persons were interested to work in the last year but did not get work either from the public sources or private sources. We have also collected data on the prevailing wage rate.

[3] In most of the cases I have found, the legal ownership of land holding are more than any other type of holding. And this is supplementing to Prof. Sarap's finding of 1991, that 92.38 percent of the cultivated area is owned and self-cultivated.

[4]. In this regards we have referred to the Government of Orissa's documents (1997), i.e. the

(6) Data on Public Distribution System: - Detailed data were collected on the functioning of the PDS. This includes possession of ration card, reason for not possessing ration card (if it is there), type of card, use of card by the households and by others, entitlement and actual purchase on the card, quality and quantity of PDS ration provided to the households, reselling of PDS rice, time spend for ration collection etc. Data were also collected on total consumption of cereals in the last month (for the data collection it was mid October to mid November). And though November month was the harvesting period hence to capture the seasonal fluctuation of cereal consumption, the monthly cereal consumption at lean season also was collected (mid august to mid September, Bhuda month in oriya). To see the impact of current price hiking, two types of information were collected: one is the change in the amount of off take of PDS ration and the other is the other indirect impact on other activities of the households. We have also collected information on, how the fragile households have been managing their life in the period of natural calamities?

Lastly, the respondents were asked to give their opinion on the performance of ration shop in their village and suggestion to improve its functioning.

(7) Village level information: - At the time of household data collection I had also visited the local market of both the villages and collected data on prices of certain commodities (Rice, Patato, Dal etc and other vegetable). We also collected some data on informal credit facility in that locality and the interest rate that they charged. Other few information are at the period of drought in the region how the HHs manages them? And some case studies were done on the negative influences of the caste system in those villages.

(8) Data from ration shop: - This basically includes details about the dealer and shop particulars, such as- what are the merchandise items in the shop? How much cost the dealer is bearing and how much return he is receiving, Whether he has any quality control instrument etc. The dealers were asked about the behaviour of consumers towards them. At the last part we asked some suggestions from the dealer to improve the System.

Figure 4.1 The Administrative Map of Orissa and the Study Area.

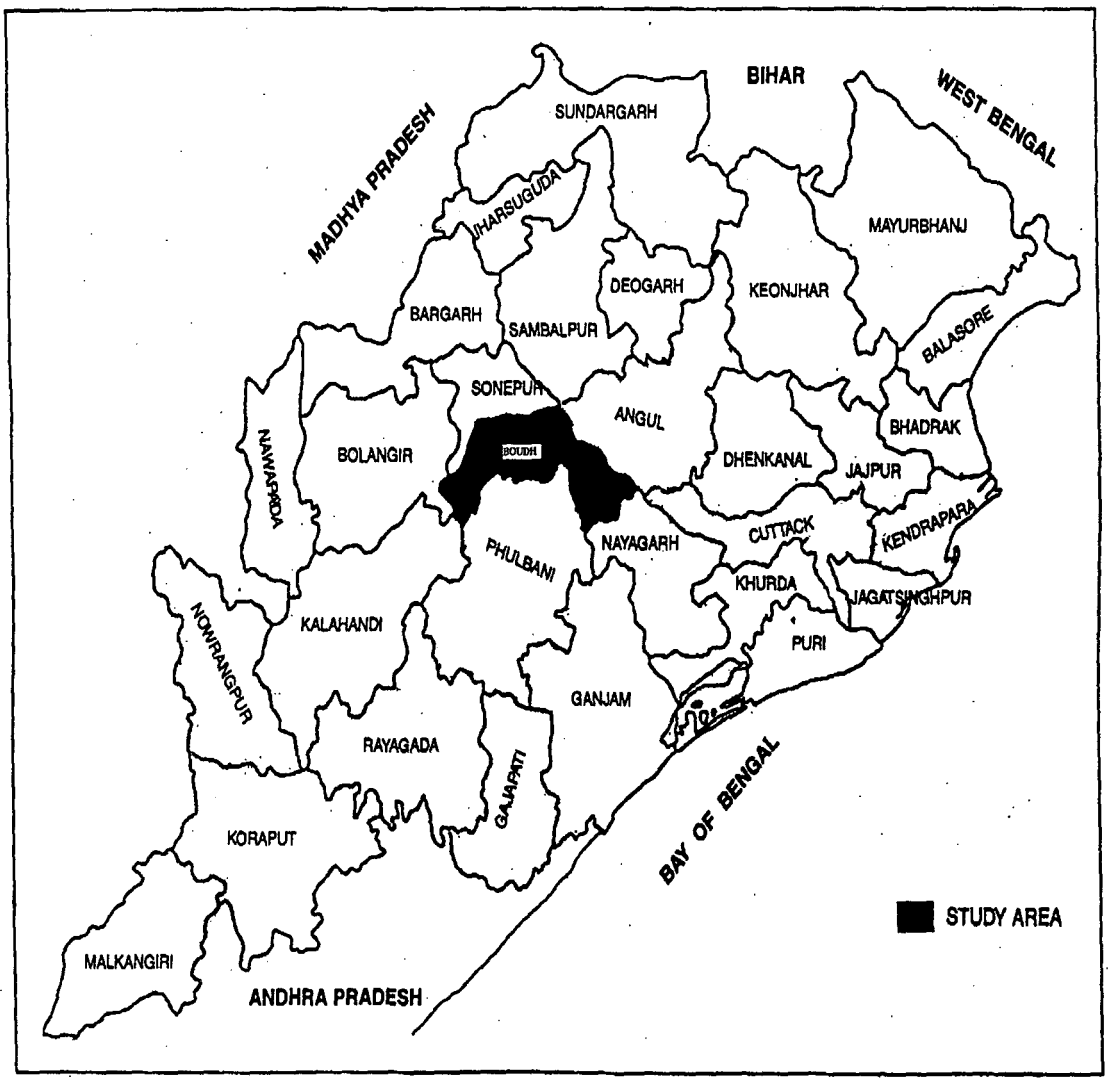
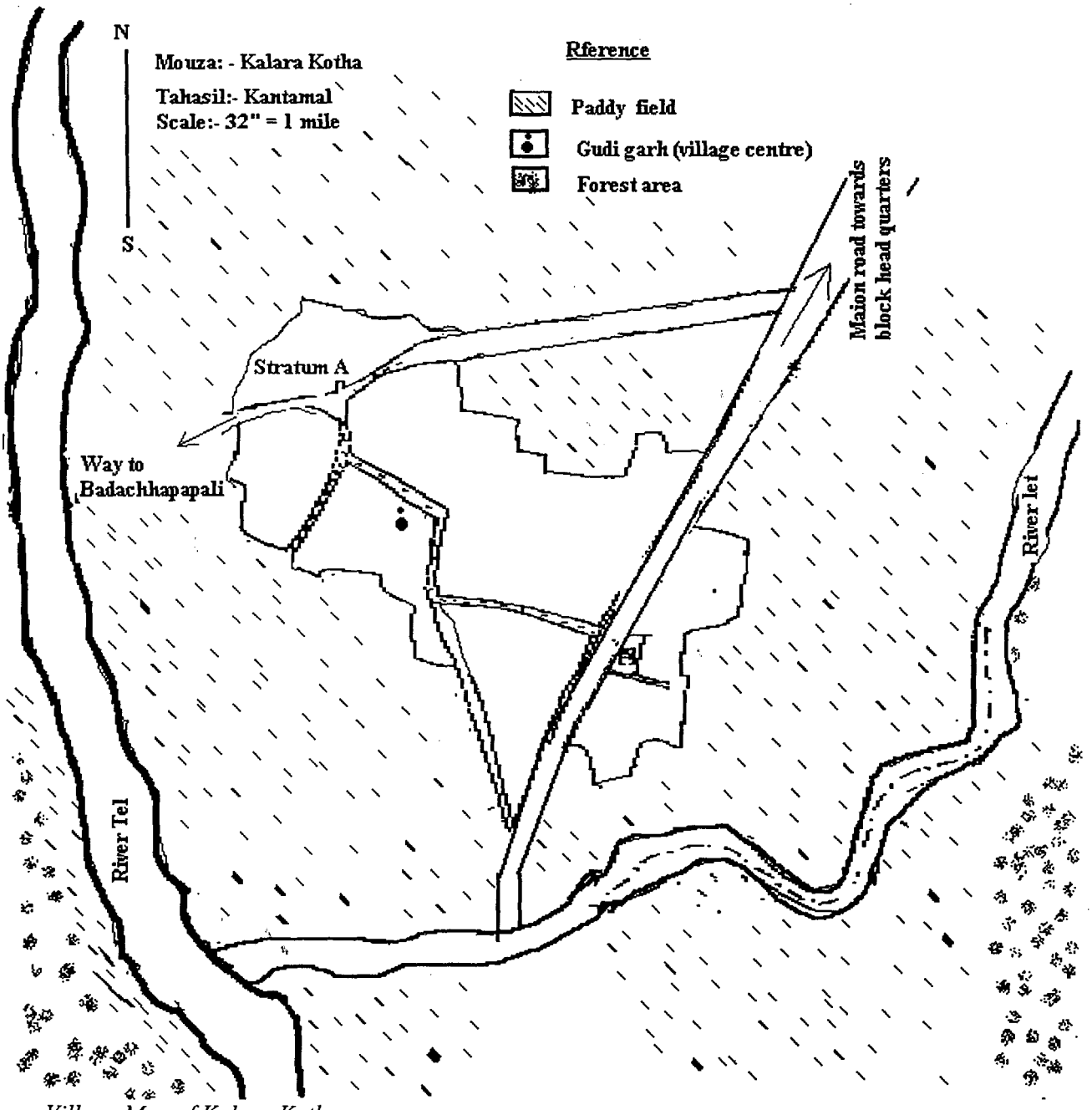
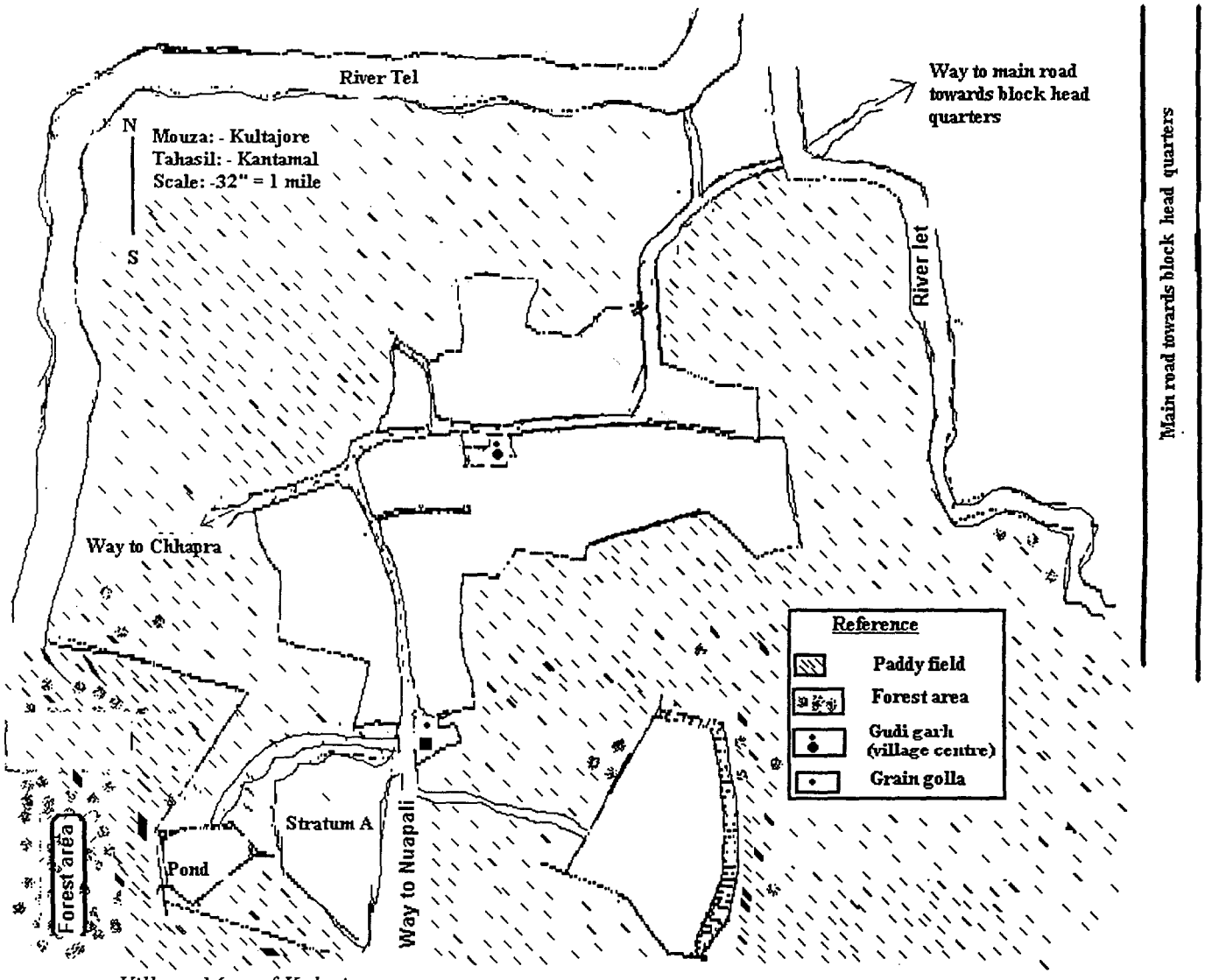


Figure 4.2 (Map A)



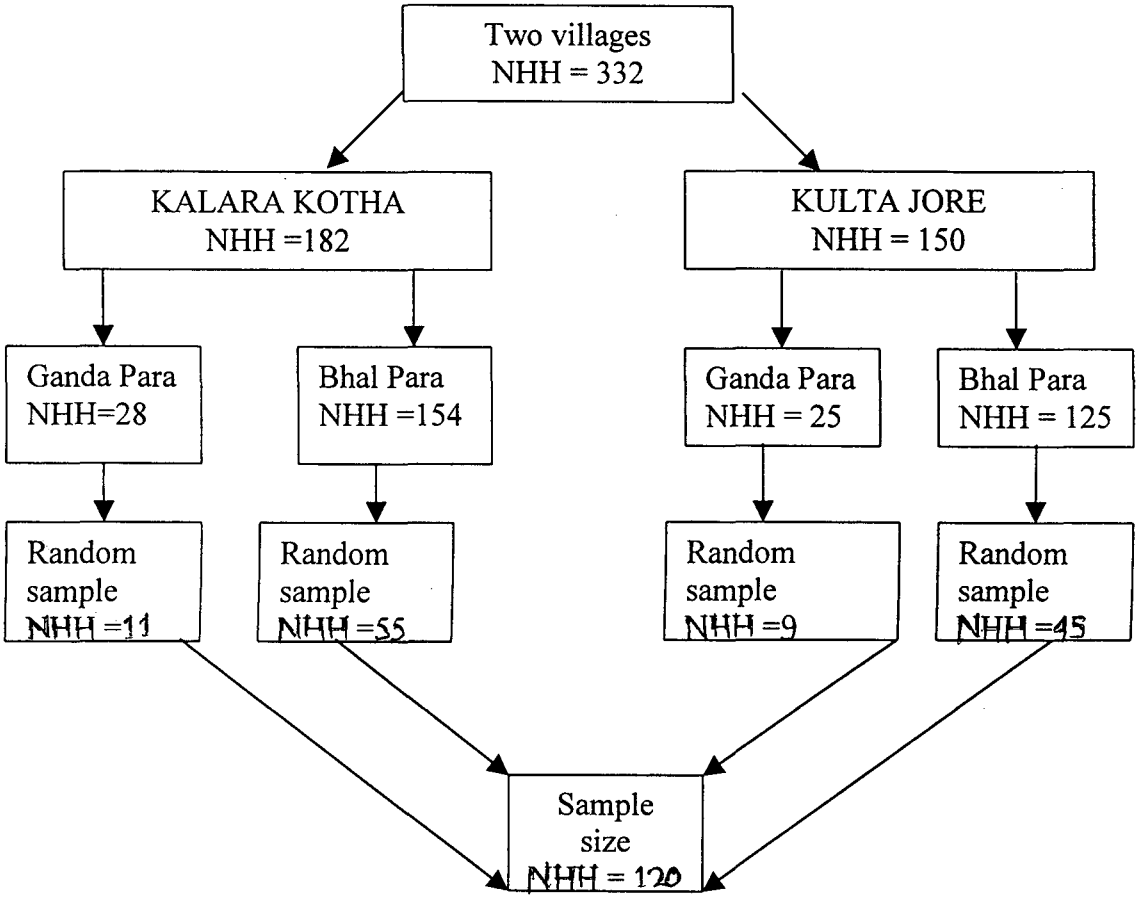
Village Map of Kalara Kotha
Source: Kantamal Tahasil Office and field observation
Notes: Map has taken from Kantamal Tahasil Office, but the identification of road, river, paddy field and forest area are sketch by us, hence they are not to the scale

Figure 4.3 (Map B)



Village Map of Kultajore
Source: Kantamal Tahasil Office and field observation
Notes: Map has taken from the Kantamal Tahasil Office, but the identification of road, river paddy field and forest area etc are sketch by us, hence they are not to the scale.

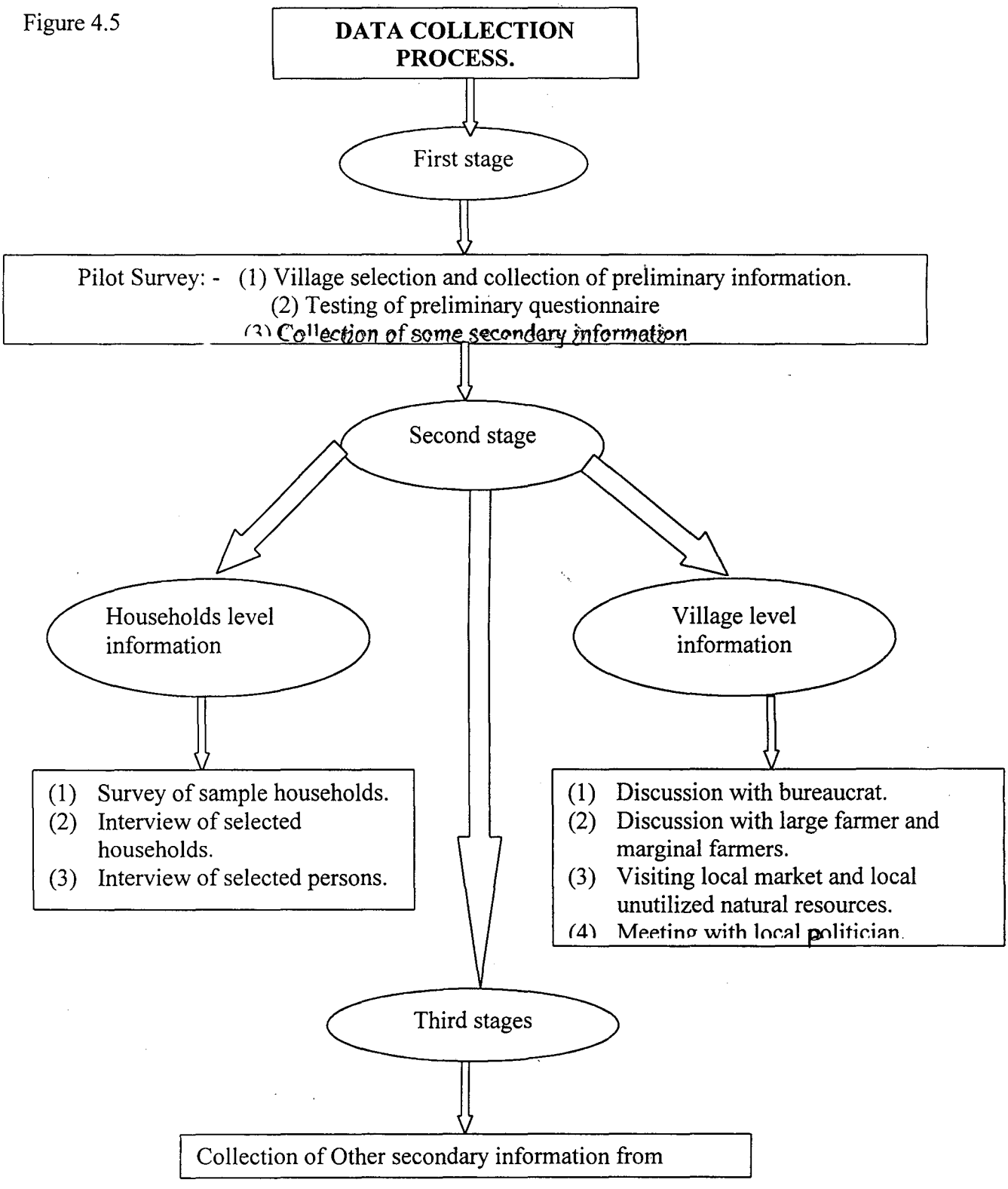
Figure 4.4 Procedure Adopted for the Selection of Sample Household.



Note: - NHH -Number of Household.

Reserved list are not shown in figure

Figure 4.5


DATA COLLECTION PROCESS.
First stage
Pilot Survey: - (1) Village selection and collection of preliminary information.
(2) Testing of preliminary questionnaire
(3) Collection of some secondary information
Second stage
Households level information
Village level information
(1) Survey of sample households.
(2) Interview of selected households.
(3) Interview of selected persons.
(1) Discussion with bureaucrat.
(2) Discussion with large farmer and marginal farmers.
(3) Visiting local market and local unutilized natural resources.
(4) Meeting with local politician.
Third stages
Collection of Other secondary information from

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CENTRE FOR DEVELOPMENT STUDIES
M.Phil Programme in Applied Economics, 1999-2000
(Performa of schedule use for collection of data from household)
Food Security in Regional Perspective: A Study of Public Distribution System in Orissa, India.

NAME OF INVESTIGATOR	RATHI KANTA KUMBHAR		
Date of survey	Day	November	2000

I.1 IDENTIFICATION

1.1 NAME OF RESPONDENT:		1.2 (I) M (II) F	1.3 DISTRICT- BOUDH
1.4 Village- Developed-1/ Less developed-2			
1.5 STRATUM :- A	B	1.6 Hse. Nr.	

I.2 HOUSEHOLD CHARACTERISTICS

RESIDENT'S NAME	RELATION TO HEAD	SEX [1]	AGE[2] (YEARS)	OCCUPATIONS [3]			EDUCATION
				TYPES	C/R/S	ORGANIZED / UN ORG.	
1.							
Non resident's name.							
1.							
Total							

Note: 1. Male (M), Female (F).
2. Collect information for completed age
3. (1) Specify the Occupation if more than one and enter the days of employment in different occupations. Where ever applicable classify in to casual wage (C), regular wage (R) and salary wage (S). In regular wage see the organized labor (O) and unorganized labor (U). Where ever necessary use the row "total.".
4. Followed by occupation ask the caste of both resident and non-resident in that household and enter in the box of 1st column and in the box near to non-resident name.
(1) Scheduled Castes (SC); (2) Scheduled tribes (S.T.); (3) OBC; (4) Other (specify).
5. Non resident taking food for whole day (p) Otherwise (specify)

I.3 LAND HOLDING.

LAND PARTICULARS	IRRIGATED		NON-IRRIGATED		TOTAL	
	S^1	D^2	S^1	D^2	S^1+S^1	D^2+D^2
Owned						
Leased in						
Other possession						
Ceiling						
Total*						

Note. (1) Single cropped (S), (2) Double cropped (D).

I.4 HOMESTEAD LAND

Owned	Some Body Else's	Total *

- Summation of both type of lands zero means completely land lees.

II. Economic Status of the Household*

II.1 TYPE OF HOUSE	(I) PUCCA	(II) SEMI PUCCA	(III) KUTCHA	
II.2 Number of room other than kitchen.	Number-			
II.3 Is the house electrified?	(i) Yes	(ii) No		
II.4 Sources of drinking water.	(i) Own well	(ii) P.H.D. Pipe	(iii) Tube well	
	(iv) Near by pond / River	(v) Other (specify)		
II.5 How many times do you cook per day?	Ans.			
II.6 How many times do you have full meals?	Ans.			
II.7 Type of toilet use.	(i) Open field	(ii) Private Latrine	(iii) Other (specify)	

* Another part relating to this aspect is at the last part (XVI).

III. Employment Particulars.

III.1

Name Of Worker	Emp.Code	Number Of Days Employed During											
		Last year						last 30 days					
		Self Emp. (code)		Paid Emp. (code)				Self Emp (code)		Paid Emp (code)			
		No	Total earns.	No	Mode of pay (V) C	Mode of pay (V) K	Total earn	No.	Total earn	No	Mode of pay (V) C	Mode of pay (V) K	Total earns.
Agricultural season													
1													
Non agricultural season													
1													

Note: - Specify the name of employment. For last 30 days seasons are not applicable. C-Cash, K-Kinds, V-Value.

III.2 EMPLOYMENT FROM PUBLIC WORKS.

(i) Are you or any other family member employed in any public work (such as FFW/IRDP/NREP etc)?	(i) yes(go to iii.3	(ii) no

III.3 Number Of Days Got Employment In Public Works In Last Year.

WORKER'S NAME	KIND OF WORKS*	NR. OF DAYS	TOTAL EARNING
1			

* May be road construction, building of school or any other building, or may digging of irrigation dam etc. Mentioned the month in which the public works are available.

III.3.1 Were there any members in the household who were willing to work in public work, but could not be employed?	yes , then how many?

IV. Possession of Ration Card

IV.1 Do you have ration card?	(I) YES (GO TO IV.2)	(II) NO (GO TO IV.3)
IV.2 Which type of card?	(i) APL	(ii) BPL
IV.3 Had you applied for card?	(i) Yes (go to IV.3.1)	(ii) No
IV.3.1 When did you apply?	Ans.-	
IV.3.2 Whether you are absent at the time of enumeration?	(i) Yes	(ii) No
IV.3.3 Did you immigrate?	(i) Yes	(ii) No
IV.3.4 Did you get separated from family?	(i) Yes	(ii) No
IV.3.5 Is there any bureaucratic delay in issuing ration cards?	(i) Yes	(ii) No
IV.3.6 Other reason (specify)		

V. Use of Ration Card

V.1 ARE YOU USING OTHER'S CARD?	(I) YES {GO TO V.2)	(II) NO	
V.2 Whose card you are using?	(i) Land lord	(ii) Relatives	(iii) Others (specify)
V.3 Category of Card Holder	APL	BPL	

V.4 For which item?	How many times with BPL card	Reason of using others card	How many times with APL card	Reason of using others card
(i) Rice				
(ii) Wheat				
(iii) Sugar				
(iv) Kerosene				
(v) Edible Oil				
(vi) Other (specify)				

V.5 Did any body else use your card?	(i) Yes (go to V.6)	(ii) No	
V.6 Who are the users?	(i) Land lord	(ii) Relatives	(iii) Others (specify)
V.7 Category of the Users	APL	BPL	No Card

V.8 For which item?	How many times with BPL card	Reason of using others card	How many times with APL card	Reason of using others card
(i) Rice				
(ii) Wheat				
(iii) Sugar				
(iv) Kerosene				
(v) Edible Oil				
(vi) Other (specify)				

*(i) Allotted quota inadequate (2) The card holder did not want PDS rice/wheat/sugar/kerosene/ edible oil etc but others want (3)Any other ? (Specify).

VI. QUANTITY AND VALUE OF PURCHASE OF SELECTED COMMODITIES DURING THE LAST 30 DAYS* ENDED ON...

SL.NR.	ITEM	PURCHASED (CODE)	STD.UNIT	PURCHASE FROM					IF CODE 2,3,OR 4 IN COL. (3) REASON (CODE)
				PDS			Other sources		
				Type of shop(code)	Qty.	Value (Rs.)	Qty.	Value (Rs.)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Rice		Kg.						
2	Wheat		"						
3	Other cereals		"						
4	Pulse		"						
5	Sugar		"						
6	Edible oil		litre						
7	Kerose ne		litre						

* Enter the data according to their remembrance, avoid calculation at field.

Purchase code: Only from PDS-1, Only from other sources-2, from both-3, not puchased-4.

Type of shop: government-1, employer's shop-2, co-operative-3, private-4, others-5 (specify)

Reason: not entitled-1, not having ration/permit card-2, item not required-3, item not available in ration shop-4,quality not satisfactory –5, not available in sufficiently small quantity-6, credit purchase not possible-7, No body is free to go and bring ration -8, Time consuming-9 (specify time-) others-10 (specify).

VI1. Household Ration Entitlement and Actual Purchases during the Last Month

SL. NR	ITEM	UNIT	HOUSEHOLD ENTITLEMENT	ACTUAL PURCHASE	DURATION OF RATION SUPPLY	DURATION OF AVAILABILITY IN RATION SHOP	NR. OF INSTALLMENTS	REASON FOR THE DIFFERENCES
(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)
1	Rice	Kg						
2	Wheat	Kg						
3	Sugar	Kg						
4	Kerosene	Ltr						
5	Edible oil	Ltr						

Note: Col.6: Monthly-1, Fornightly-2, Weekly-3, Others-4 (specify)

Col.8: Lack of money to uplift bulk amount of ration-1, Poor Quality-2, Non-availability-3, Not necessary-4, Delay of information-5, Irregular income and stipulated time of allotting PDS ration 6, Irregular supply-8, Long distance to dealer shop -9 (specify K.M.) , Others-10(specify)

VIII. Quality Aspects.

VIII.1 HOW DO YOU FEEL ABOUT THE QUALITY OF CEREALS DISTRIBUTED?			
(i) Satisfactory		(ii) Not satisfactory (go to VIII.2)	
VIII.2 Specify the quality of grains?		(i) Grain adulterated	(ii) Rain soaked
(iii) Foul smell	(iv) Broken rice	(v) Grain hard to boil	(vi) Insect infected
(vii) So many husk, small stone & paddy		(viii) Other (specify)	

IX. Quantity Aspects

IX.1 WHETHER YOU ARE CAPABLE TO OFF TAKE THE ENTIRE ALLOTTED RATION (RICE, WHEAT) MONTHLIES?					
(i) Yes (go to IX.2)			(ii) No		
IX.2 Is that sufficient for your family?			(i) Yes		(ii) No (go to IX.3)
IX.3 (I) Which are the other sources from which you used to buy? Can you tell me the amount bought in the last month?					
(i) Source	Qty	Value	(ii) Source	Qty	Value
(iii) Source	Qty	Value	(iv) Source	Qty	Value
IX.3 (II) Reason for quantity being not sufficient			(i) Family size		
			(ii) Other (specify)		

IX.4 Are there any similarities you have found between the different sources of cereals (that you purchased & cereals provided by PDS? *

TYPES OF CEREALS	SOURCES	PURCHASE FOR CONSUMPTION	
		Quantity	Value
(i) A same cereal as PDS but price differs.			
(ii) Superior than PDS cereals & price differs.			
(iii) Inferior than PDS cereals & price differs.			

- Ask the name of the month, if in any specific month it is high or low?

X. Ration Collection.

X. 1 who collects ration?

(i) Head of the household	(ii) Other adults	(iii) Children in the family	(iv) Other (specify)
X.1 Normal time spent for collecting ration-		X.2 Reason for long waiting-	

XI. HOUSEHOLD CONSUMPTION OF CEREALS (IN QTY) DURING THE LAST 30 DAYS

SL .NO.	CEREALS	CONSUMPTION(KG) OUT OF			TOTAL CONSUMPTION	CONSUMPTION AT SEASONAL VARIATION
		Home grown stock	Purchase from			
			PDS	All Other		
1	Rice					
2	Wheat					
3						

* Please notes the reason if in any specific month the consumption is differ significantly.

XII. CAN YOU PURCHASE CEREALS ON CREDIT FROM EACH OF THE FOLLOWING SOURCES.

AGENCIES	PDS/FPS		TRADERS/MARKET		FARMERS		OTHERS (specify)	
Respond	(i) Yes	(ii) No	(i) Yes	(ii) No	(i) Yes	(ii) No	(i) Yes	(ii) No

XIII. HOUSEHOLD PURCHASE OF RATION BETWEEN OLD PDS PRICE & NEW PDS PRICE (Rs.).

SL.NR.	ITEM	UNIT	AFTER PRICE HIKING		BEFORE PRICE HIKING	
			Qty	Value	Qty	Value
1	Rice					
2	Wheat					
3	Edible Oil					
4	Sugar					
5	TOTAL (value)					

XIIIa. Other Impact of Price Hike

XIV. Natural calamities (Drought/ Flood /Cyclone).

Xv.1 Did any natural calamities occur in your localities?			(i) yes (go to x.2) (ii) no
XV.2 How do you manage that period?			
(i) Sharing the available grain even inadequate	(ii) Migrating to other places	(iii) Selling own assets	(iv) Other (specify)

XV. Do you have the following commodity?

NAME	YES	NUMBER	NO	NAME	YES	NUMBER	NO
Cycle				Bullock cart			
Two wheeler				Tractor			
Fan				Cow			
Freeze				Buffalo			
TV				Ox			
Clock				Sheep & goat etc			
Tape				Axe			
Radio				Spade			

XVI. Suggestion & Comments From Consumers.

(a) Ideal ration supply period	(i) Monthly	(ii) Fortnightly	(iii) Weekly	(iv) others (specify)
(b) Who should be allotted FPS?	(i) Co-operatives (iii) Panchayat		(ii) Private dealers (Pvt. Shops) (iv) Others	
(c) Who should distribute essential commodities?	(i) Public distribution system (ii) Private distribution system			(iii) Others
(d) Are you satisfied with weighting procedure of FPS?	(i) Yes		(ii) No, Why? (specify)	

XVI.2. Do you have any others comments about the functioning of PDS?

Signature of the Investigator

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CENTRE FOR DEVELOPMENT STUDIES
M.Phil Programme in Applied Economics, 1999-2000
PERFORMA OF SCHEDULE USE FOR COLLECTION OF DATA FROM DEALERS Of RATION SHOP.
Food Security in a Regional Perspective: A Study of Public Distribution System in Orissa, India.

Name of the investigator	Rathi kanta kumbhar		
Date of survey	Day	Month-November	Year-2000

I. 1dentification

1.1 Name of dealer:	1.2 Male / Female	1.3 District- Boudh
1.4 Locality	1.5 Developed-1/ Less developed-2	
1.6 Shop Nr.	1.7 Year of establishment	

II. Dealer & shop particulars

(a) Nature of ownership:- Proprietary/Partnership/ Others (specify)
(b) Servicemen/Educated unemployed (specify educational qualification)
(c) Previous business/Occupation of shop owner.
(d) Comparative monthly income, where it is more?
(e) Traditional/Consumer co-operative.
(f) In case of co-operatives; number of members.
(g) Area of the shop (may be number of building)
(h) How far away your shop from warehouse?
(i) Number of employees (Category-wise).

III. Merchandise Items

(i) Rationed items
(a) Rice (b) Wheat (c) Sugar (d) Kerosene (e) Other (specify)
(ii) Non-Rationed items
(a) Rice (b) Wheat (c) Sugar (d) Kerosene (e) Other (specify)

IV. Card details

(i) Total number of cards serviced (detail)
(a) Number of BPL cards (b) Number of APL cards
(ii) Name of the localities & Population covered.

v. Monthly expenses incurred in last month

(i) Employees salary
(ii) Rent
(iii) Storage (apart from shop's rent)
(iv) Haulage of goods from warehouse/wholesale depot towns to shops. (For all type ration).

(v) Other expenses such as:

a) Electricity
b) Insurance
c) Stationary
d) Loss in transit
e) Loss in storage
f) Interest

VI. Quality & Quantity

(i) Due have any quality measure? Yes/No
(ii) If yes please explain the procedure adopted for selecting the goods.
(iii) If no, how you manage if some time the qualities of ration products are poor?
(iv) Did you face any problem as far as the quantity of the ration is concern?

(a) Allotment is inadequate.
(b) Not able to off-take all allotment; (Specify Reason)
(c) Bag contains less than the specified quantity
(d) Quantity demanded by the other association/clubs are hampered to the consumer's share (if possible specify the reason)
(e) Others (specify)

VII. About Consumer

(i) Do you think that, the services provided by you to your customers (cardholders) are adequate? (Yes/No/To some extent)
(ii) If no or some extent, then, what prevents you to offering a better service to them?

(a) Non-availability of stocks in time from the government/Co-operative Godowns.
(b) Excessive paper work.
(c) Other factors (specify).

(iii) If no, What motivates you to continue?

(1) In anticipation of better prospects.
(2) Absence of alternative sources of livelihood.
(3) Traditional line of business.
(4) Other reason, (specify).

(iv) How do you rate the behavior of your consumers? (Pleasant/irritating/indifferent)
(v) If irritating, how do you tackle them?
(vi) How reactive consumers are if some time reaching of ration to the depot is late?

VIII. Suggestions.

Do you have any suggestions to offer for improving the policy of Public Distribution System?

Investigator Signature