

## **CHAPTER TWO**

### **REVIEW OF LITERATURE**

This chapter deals with the review of various important studies associated with food security. It is divided into seven sections. Section 2.1 incorporates the review of conceptual and measurement concerns of food security. Section 2.2 makes a review about various food policies of India. Review about the key issues related to availability, accessibility and absorption of food is analysed in Section 2.3. Section 2.4 represents the review of different issues related to Public Distribution System (PDS) in India. Studies related to household level food security have been reviewed in Section 2.5. The Section 2.6 offers a review of food security related studies in the context of the North East India. The chapter concludes with Section 2.7 which throws light on the research gaps identified by the present study.

#### **2.1 Food Security: Review of Conceptual and Measurement Concerns**

The concern with food security can be traced back to the world food crisis of 1972-74 and beyond that at least to the Universal Declaration of Human Rights in 1948 which recognized the right to food as a core element of an adequate standard of living (UN, 1948). The post 1970s has witnessed various definitions of food security and these have reflected the varying concerns of the academicians and policy makers. All the definitions of food security developed in the early seventies mainly highlighted about the importance of the physical availability of food stocks (Frankenberger and Maxwell, 1992). Thus the popular meaning of food security in the 1970s was interpreted as “availability at all times of adequate world supplies of basic foodstuff ..., to sustain a

steady expansion of food consumption.....and to offset fluctuations in production and prices” (UN, 1975). The interpretation of food security solely in terms of food availability persisted in the literatures till 1980s. However, Sen (1981) challenged the availability based definition of food security asserting that famines and food insecurity are not the results of shortage of food supply always rather these sometimes may be due to lack of economic access to food. The critical significance of access to food has been famously imprinted on the public mind by description of the Bengal famine, where people went hungry and starved, not because food was not available, but because they could not afford it (Sen, 1981). He linked the issue of access to a person’s ‘entitlements’. Broadly, entitlements refer to the bundle of goods and services a person can acquire, based on his or her endowments such as wealth and assets, skills, knowledge, status and so on. Thus, availability of food is important to food security but it is not enough; it should also be affordable and people should be able to access it. Access is tied up with people’s capacity to buy, their earnings, livelihoods and other socio-economic factors. The meaning of food security in 1980s thus reflected the dominance of Amartya Sen’s entitlement approach. Even FAO in its attempt to define food security in 1983 states that food security means ensuring of all people at all times have both physical and economic access to the basic food they need. Nutritious diet or knowledge of nutrition in the analysis of food security gained importance in the literatures of early 1990s. It was argued that mere physical food availability and economic and physical access to food was not enough for food security. Adequate availability and access to food does not necessarily mean that the food would be absorbed to ensure higher levels of nutrition. Food absorption by the human body is a major problem particularly in rural areas and urban slums. According to some scholars,

food absorption is influenced by some non-food factors such as medical attention, health services, basic education, sanitary arrangements, provision of clean water, eradication of infectious epidemics and so on (Dreze and Sen, 1989). Thus, Food security in real sense means physical and economic access to sufficient, safe and nutritious food (FAO, 1996). International Food Policy Research Institute (2002) defines food security as a situation where every person has access to sufficient food to sustain a healthy and productive life; where malnutrition is absent and where food originates from efficient, effective and low cost food systems that are compatible with sustainable use of natural resources. This definition involves three important dimensions of food security viz. availability, accessibility and utilization or absorption of food. Food availability means availability of sufficient quantity of food supplied through domestic production or imports. Accessibility of food means the economic capacity of the individuals to avail food, while utilization or absorption of food is ensured through consumption of adequate diet, safe drinking water, sanitation and health care.

In the context of India, Tyagi (1990) measured food security in terms physical and economic access to food. Physical access to food was measured by Tyagi (1990) in terms of two indices viz. (i) imports as a proportion of domestic food production and (ii) per capita availability of food grain. For measuring economic access to food, he used two criteria viz. (i) proportion of per capita income required to buy a unit of food and (ii) relative increase in per capita income at current prices and prices of items in the food basket. However in Indian context there is dearth of literatures discussing about the measurement aspect of food security under the combined shed of availability,

accessibility and absorption of food. Till date only Institute for Human Development (2008) and M S Swaminathan Research Foundation (2008) have attempted to analyse the status of food security across all its dimensions by constructing a composite Food Security Index (FSI). Institute for Human Development (2008) has constructed a food security index for the rural Chhattisgarh by following Max-Min approach adopted by UNDP (HDR, 2006). However the index does not have a reference period and no mention is made about the normative values of dimensional indicators. M.S Swaminathan Research Foundation (2008) tried to develop a FSI for rural India for two time periods viz. 1998-2000 and 2004-06. The FSI developed by M. S. Swaminathan Research Foundation (2008) mostly deals with the outcome indicators like percentage of anaemic ever-married women in the age group of 15 – 49 years, percentage of anaemic children in the age group of 6-35 months, percentage of women in the age group of 15-49 with chronic energy deficiency, percentage of children (0-35 months) who are suffering from stunting. However the problem with an outcome based FSI is that it is less likely to represent the status of food security of a state or region rather it reflects the probable effects of food security/food insecurity.

## **2.2 Food Policies in India: A Review**

Food policy declarations were absent in Indian context till 1943 and free market forces were allowed to determine the prices of food grains. The beginning of food policy in India could be traced back to the famous Bengal Famine in 1943. To tackle the problem of food deficit caused by Second World War in 1939 and Bengal Famine of 1943, the Govt. of India appointed the first Food grains Policy Committee to make recommendation both for policy and for administration. The Food grain Policy Committee recommended public procurement on a scale adequate to meet the demand

of public distribution along with private trade. In the initial years of policy recommendations, government activities were mainly confined to import of food grain and distributing them through ration shops rather than procuring them from the domestic market (Chopra, 1981). In January, 1965, Food Corporation of India (FCI) and Agricultural Price Commission (APC) were set up in order to secure a strategic and commanding position for the public sector in the food grain trade. The Government of India transferred functions of procurement, storage and the distribution of food grain to FCI. The APC was given the responsibility of recommending procurement prices based on the analysis of costs of cultivation. However the food grain crisis of 1965-66 in India resulting from two consecutive monsoon failures strongly hit the objective of national self-reliance in food grain production (Chopra, 1981). The response to this crisis eventually took the shape of a new agricultural strategy called Green Revolution with the use of high yielding seed varieties, chemical fertilizers, pesticides and agricultural extension effort. Green revolution was further complemented by remarkable public investment made in input subsidies, research and improvement in infrastructure such as irrigation (Sharma, 2004). All these have resulted in some sort of increase in domestic food production in India in the 1960s and 70s.

In course of time various other food policies like Targeted Public Distribution System (TPDS), Universal Public Distribution System (UPDS), Integrated Child Development Services (ICDS), Mid-Day Meals Scheme (MDMS), Antyodaya Anna Yojna (AAY), Food for Work Schemes were introduced by the Government of India to tackle the problem of food and nutritional security (Ramachandran, 2004; M. S. Swaminathan Research Foundation, 2008). A more recent development in the effort to achieve food and nutrition security in India has been the intervention of the Supreme

Court in the form of a series of directives to Central and State Governments to implement programmes for eliminating undernutrition and malnutrition within stipulated time periods (Ramachandran, 2004). The Right to Food Campaign, which has been closely associated with the litigation and subsequent actions, draws attention to the problem of food insecurity in India, that is, of the human right to food. This approach argues that in international law, the right to food has been recognised through various agreements and conventions such as the Universal Declaration of Human Rights (UDHR), the International Covenant on Economic, Social and Educational Rights (ICES) and specific conventions like the Convention on the Elimination of all forms of Discrimination Against Women (CEDAW), Convention on the Rights of the Child (CRC) and Genocide Prevention (Anand, 2004).

### **2.3 Availability, Accessibility and Absorption of Food in the context of India:**

Achievement of national food security has been one of the major goals of all the development policies in India during the post-independence period. This was to be achieved by attaining self-sufficiency in the production of food, raising the purchasing power of the poor through the endowment of land and non-land based economic activities and by generating employment opportunities so as to enable them to have adequate access to food. National self-sufficiency in food-grain has been a major achievement during post-Independence period in India. Having remained a severely food deficit economy over two decades after Independence, India managed to achieve self-sufficiency in food grain production at the macro or national level particularly due to green revolution (Krishnaji and Krishnan, 2000). The concern for food availability stems from production and related aspects that sustain a desired level of food

production. Food-grains are considered to be of paramount significance for household food and nutritional security, the reason being that cereals and pulses are staple foods and there are no perfect substitutes for them (Chand, 2007). Food-grains are also the cheapest source of energy compared to other foods and are indispensable for the food security of low income classes (Chand and Kumar, 2006). However since the early 1990s there has been a significant fall in food grain availability to a level of 445 gm per day by the year 2006-07 (Saxena, 2011). It has also been observed that during the period 1996-2008 as compared to the years 1986-97, the growth rate in food-grain production declined very sharply from nearly 3 percent to around 0.93 percent. Moreover, the growth in production was much less than the growth in population in the latter period, having a serious impact on per capita availability (Dev and Sharma, 2011). Vyas (2005) points out that increases in the foreign exchange reserves held, multiple sources of food-grain supplies and movement towards free trade have all reduced the urge to maintain food self-sufficiency. This is also reflected in the consistent failure to achieve plan targets on food-grain output levels in the last decade or so. This was also on account of the export of nearly seven million tonnes of food-grain per annum during the period 2002 to 2007. Export of food-grain at highly subsidized prices was preferred over undertaking widespread internal distribution of food-grain to the impoverished (Saxena, 2011). The sharp decline in food grain stocks with the FCI and the modest performance of domestic agriculture in terms of food-grain production has seriously questioned the food security facet of the country. Interestingly, instead of taking action to enhance food production and ensure procurement, government tends to rely upon import of food grain. Some scholars provide a justification for this on the grounds that in an increasingly open economy, the

market will take care of food availability. As against this, some critics have questioned whether this new policy stance suggests that India will no longer focus on domestic production to ensure food security but instead revert to a ‘ship to mouth existence’ (Shiva, 2006). These critics have argued that the volatility of international prices, the political implications of dependence on external sources for essential commodities and the uncertain nature of foreign exchange reserves as well as the opportunity costs in terms of livelihood insecurity may hamper the food availability prospect of India and hence India should not abandon the policy of food self-sufficiency (Vyas, 2005).

Apart from availability, a central aspect of food security is the ability of individuals to have access to available food stocks. Mere availability of food is not sufficient to ensure access to food for all. Economic access of a household to adequate food depends on its purchasing power including the implicit value of its own production, if any. Access to food is primarily a matter of purchasing power and it is therefore closely linked with the concern of access to productive assets and livelihood opportunities. Within the household as well as in the larger community, access is also characterized by gender inequality. Caste too plays a role in determining both physical and economic access to food (M S Swaminathan Research Foundation, 2008). One of the key indicators used by many scholars and commentators to measure access to food in India is that of food grain consumption. The NSSO data reveal that the per capita consumption of cereals has been declining since the early 1970s. Between 1972 – 73 and 2004 – 05, the share of cereals in total consumer expenditure declined from 41 percent to 18 percent in rural areas and 23 percent to 10 percent in urban areas. The per capita monthly consumption of cereals declined between 1993 – 94 and 2004 – 05 from 13.4 kg to 12.1 kg (9.7 per cent) in rural areas and from 10.6 kg to 9.9 kg (6.6 percent)



in urban areas (M S Swaminathan Research Foundation, 2008). Parthasarathy (1995) holds that creation of employment opportunities is important for ensuring economic access to food in India. However the expectations of increasing employment opportunities due to economic reforms have not materialized at the aggregate level (Dev, 2003). Scholars like Deaton and Dreze (2002) also emphasized upon the growth of real agricultural wages for raising the purchasing power of rural masses. This would certainly help to ensure more economic access to food and thus likely to improve the condition of food security in the rural context.

Along with efforts to enhance availability and access to food-grain, it is also necessary to address the issue of utilization of food (Tripathy, 2004). The indicators of utilization are outcome indicators that represent the health and nutrition status of the population. India houses a huge population of malnourished and several studies have established that high levels of malnutrition have a negative impact on productivity and economic growth. Sen (2003) and others point out that health and sanitation facilities are the key factors affecting the absorption or utilization of food. Some of the important non-food factors that affect under nutrition and malnutrition are access to health services, access to quick and effective medical attention, nutrition practices pertaining to dietary patterns, childcare, sanitary arrangements, provision of safe drinking water as well as water for other needs and eradication of infectious epidemics.

#### **2.4 Public Distribution System of India: Issues and concerns**

Rationing of essential commodities was operated in India through Fair Price Shops (FPS) systems and it was first introduced in Bombay Presidency in 1939. Around 1967-68, the name of the FPS scheme was changed and it was named as Public distribution

System (PDS). Initially, this system was designed to serve the urban consumers only under the strong assumption that farmers were subsistence oriented in rural area and hence they could meet their food requirements themselves (Tyagi, 1990).

During the first few decades of the working of PDS system in India, the main emphasis was on price stabilization and not much on poverty reduction. Since the sixth five year plan, PDS has got recognition as an instrument of improving household level food security and hence as anti-poverty tool. The coverage of PDS was also extended to the rural areas in general and to those in particular where incidence of poverty is very high (Dev, 1996). Mishra (2004) also holds that providing food security to the masses in the form of PDS that has evolved in the economy since the mid-sixties has been able to eliminate famines and also to bring a substantial measure of relief to consumers during years of acute food insecurity. However food problem in the normative sense still continues to exist as millions of the poor suffer from persistent hunger and malnutrition. It may be argued that for implementing any policy for poverty alleviation and hence improving food security, stabilizing food grain prices is likely to be more effective than augmenting food grain output.

There are many studies regarding the impact of PDS on the achievement of food security in India. One such study is made by Dev and Suryanarayana (1991) in terms of examining the share of total PDS consumption by the poor. The findings of the study indicate that PDS is pro rural in India for rice and coarse cereals and the share of PDS consumption by the rural poor is very minimal. This indirectly implies that the share of PDS consumption by the rural non-poor may be high. Radhakrishna et al. (1997) have attempted to evaluate the impact of PDS as a welfare measure by estimating the extent of income transfer through PDS to the poor. The study finds negligible welfare gain to

the poor due to PDS and also a less satisfactory nutritional impact of the PDS upon them. Tyagi (1990) has examined the consistency between share of the PDS and the level of poverty among the states. His study empirically found a negative correlation between the share of PDS and the level of poverty. It is seen from the study that during 1983-88, states with higher incidence of poverty got a low share in the distribution of food grains through the PDS while states with relatively low level of poverty received much higher share of food grain in PDS. It was further argued that one of the problems of the PDS was that the benefits accruing from the PDS was not reaching to certain vulnerable sections of the population due to their disadvantageous geographical location, relatively lower purchasing power and lack of proper communication and transport facilities (Jha and Srinivasan, 2001). Kaul (2013) examines the impact of food subsidies program on food consumption, and calories intake and calories from different food groups for poor households in India. The study found that there is a positive relationship between food subsidies and food consumption of different food groups. It has also suggested that quotas may be more effective in improving nutrition and food subsidy generates an income effect for the households.

The issue of cost-effectiveness vis-à-vis PDS has been raised by many scholars. Parikh (1994) views that the cost effectiveness of reaching the poorest 20 percent households through PDS programme is very small as for every rupee spent less than 22 paise reach the poor in all the states in exception with Goa, Daman and Diu where 28 paise reach the poor. Thus up to earlier 90s, it has been observed that PDS was not able to function well in meeting the objective of food security for the poor households. This has led the Government of India to introduce a Targeted Public Distribution System (TPDS) under which food-grains are being allocated to states on the basis of the

estimates of population living below poverty line. The rationale put forward by the Government of India for TPDS is that it will serve the food requirement of the impoverished effectively and efficiently by making food grain available to the states at the scale of 10 kg per month per family at specially subsidized prices to the population living below the poverty line (Economic Survey, 1997-98). However in course of time, some serious loopholes of TPDS have been identified by some scholars. Under TPDS, there is not only a case for excluding the rich from the TPDS but also there is a strong case for including a significant section of the population who are neither rich nor poor. Besides this, another problem persists with the identification of the targeted beneficiary (the poor masses). This is due to the fact that the poverty line is a methodologically developed one and may be unsuitable for purposes of programme implementation. For example, it will be easy to include a household just below the poverty line but very difficult to exclude another, which is just above the poverty line. The implementation of TPDS also generates the enforcement of additional costs like selection of beneficiaries, prevention of leakages, ensuring benefits to the intended beneficiaries etc. The fact that the percentage of the poor identified by the states is significantly higher than the estimated percentage of the poor as identified by the official poverty line, it could be said that the TPDS is a narrowly focused programme (Dev, 2000).

Targeting in general will increase errors of exclusion of the eligible and needy people while minimizing errors of inclusion. Besides, targeting involves some costs due to the distortion of information and incentives, costs of administration and costs associated with lowering the quality of welfare programmes as a result of targeting. Targeting typically reduces political support for a programme whose major benefits go to the poor and reduced support often results in lower allocations (Swaminathan and

Mishra, 2001). Patnaik (2006) has made a strong criticism of the use of the official poverty line as a criterion of targeting the beneficiaries under the TPDS. This study has demonstrated the increasing disconnect over time between the proportion of population below the official poverty line and the proportion of population unable to access the minimum calories per day (2400 and 2100 Kcal per capita in rural and urban areas respectively) since 1973-74 and subsequent periods. Patnaik's demonstration has raised serious questions about the rationale for the TPDS based on the official poverty line. This calls for the case of a universal PDS again. Swaminathan (2003) is of the view that the introduction of TPDS has been accompanied by a reduction in entitlements, a lowering in the off take of grain and large scale exclusion of nutritionally vulnerable persons from the BPL category. The study thus makes a strong case for giving up the TPDS and returning back to a universal PDS. Targeted Public Distribution System (TPDS) has not been that effective in meeting the needs of important food grain on the part of the impoverished. Universalisation of PDS instead of the TPDS will reduce PDS leakage and food security cannot be achieved without focusing on the issues of physical availability, distribution and stock management (Himangshu and Sen, 2011). The Government of Chhattisgarh brought reforms in PDS focusing on extension of coverage, improvement of delivery system and increasing transparency. This has improved the functioning of the ration shops. The striking feature of these reforms is the shifting of the management of ration shops from private dealers to community-based organizations like gram panchayats, self-help groups and co-operatives. It has been suggested that policy makers should adopt better policies so that fruits of PDS should be enjoyed by the poor and socio-economically handicapped people (Puri, 2012). Basu (2011) is on the opinion that simultaneous increase in price rise and

increase in food grain stocks was a matter of concern. So if grains are distributed at low prices ultimately it will be in the hands of traders and resold to Government by procurement window. Basu (2011) further opines that food insecurity in India is mainly because of poor rationing system. The Government delivers food grain to store owner and then instructs to distribute them to BPL families, but it hardly happens as many of the owners sell them in the open market at higher prices.

Agflation is quite a serious issue and has attracted focus of public and policymakers in recent times. To solve the problem of agflation, universalisation of PDS has been demanded by many people. But universalisation of PDS may not significantly help the rural households as most of them are from agriculture sector and hence may not depend on PDS or their food requirements. It has been found that very less proportion of card holders have their food consumption from PDS because of poor quality, high transaction cost and so on. So better PDS working and BPL friendly PDS should be adopted (Suryanarayana, 2008). Singh (2006) explained food problem in India on two aspects: quantitative aspects which manifest itself in the form of shortage of food grain and qualitative aspects which reflects the problem of malnutrition. PDS has emerged as an important strategy to control prices. An effective PDS requires a nexus between production, procurement, transportation, storage and distribution of the selected commodities. The study found that there are leakages in PDS programme in the form of; a) food may not reach the village level, b) fair price shop dealer may divert a part in the open market, and c) cardholder may sell the food in the open market at higher prices. All these things may lead to higher level of food insecurity.

The large scale diversion of grains from the PDS has constrained the effectiveness of the proposed National Food Security Act (NFSA) in fighting against food insecurity. There have been periodic estimations of the diversion of food grains from PDS to understand the dynamics of functioning of PDS and the effectiveness of initiatives taken from time to time to check the leakages of PDS food grain. The large scale diversion of grain from PDS to open market is an alarming issue and these leakages are mainly due to corrupt practices. In some states of India PDS is least functioning and in some states its functions are reviving. Hence it is unwise to abolish PDS in the entire nation. Appropriate measure in this regard should be the continuation of PDS in those states where it is performing well in the form of significant amount of purchase of PDS grain and less diversion of grain (Khera, 2011). Jha and Acharya (2013) have emphasized on the policy matters of financing reasonable food security in the country. It also suggests that corruption should be removed and efficiency should be brought in PDS. In order to bring efficiency in PDS various measures were suggested like computerization of record, stringent enforcement and establishment of the grievance redressal mechanism etc. Parikh (2013) suggests a universal scheme which would eliminate the problem of identifying between the rich and the poor and exclude the rich so as to provide food security to the poor. This study is in favour of cash transfers to the women of the household through Aadhar cards which would reduce diversion and may combat the problem of distribution Food Coupons and may also eliminate the problems of PDS operations.

Ghosh (2011) opines that Cash transfers to people are more effective in reducing poverty as compared to other poverty reduction programmes. Cash transfer is good for the people as they can have their own basket of goods according to their

needs. But sometimes it may so happen that cash transfers to consumers may threaten to rise in prices and make essential goods unaffordable for many of the poor. So it should be focused that primary causes of poverty are mainly due to asset inequality and absence of positive structural change that provides more productive employment opportunities to the people. Cash transfers offer many advantages over in-kind transfers as a tool to solve the problem of food insecurity. For instance, unlike PDS, the incentive to divert grain does not exist under a system of cash transfers, as the shopkeepers will be selling the grain at market price to all customers. It would be administratively simpler and more flexible than kind transfer system. Unlike grain, cash can be moved easily from a central disbursement point (say, a government office in a state capital) to individual consumers through an information technology (IT) network. This means that cash can bypass local government functionaries at various levels and to that extent, can reduce the scope for corruption. In other words, corruption would have to be monitored at fewer points for example, where the smart cards or food coupons are issued and the point of electronic disbursement (Kotwal et al, 2011). However, despite these advantages, the central government should not disband the PDS and put a system of cash transfers in its place. This decision should be left to the state governments that are responsible for delivering food subsidies. Many worthwhile initiatives in social protection such as employment guarantees, school feeding and cheap rice programmes, stem from enterprising state-level politicians finding ways to mobilise new constituencies in democratic politics. The National Food Security Bill must recognise this and promote flexibility and adaptability. A centralized prescribed approach to food subsidies risks the loss of sensible innovations in social protection and politics (Kotwal et al, 2011).



Government support for meeting basic food requirement is important for the well-being of the poor in Delhi. In this connection, SEWA (2009) has carried out a study for analyzing the perception of the masses over the preference between kind transfer and cash transfer. The study finds that most of the families availing the PDS tend to feel that they are not getting their full entitlements and are also frustrated at the loss of time and energy required to avail the benefits. Although many people support an alternative system of cash benefits, their support tends to be cautious, and they have many questions regarding whether this would work better than the present system. About 40 percent of the respondents, who opposed the cash benefit system, opposed it strongly and with conviction (SEWA, 2009). Hence it could be strongly suggested that Delhi Government run the cash benefit system as a pilot project in a few selected areas of Delhi before it decides whether to fully shift over from a commodities-based benefit system to a cash-based one. This would not only enable the Government itself to test what would be required to make such a system work, but would also be able to physically demonstrate to the card-holders that a cash based system can indeed work and would increase their well-being (SEWA, 2009). Agarwal (2011) has carried out a study in rural Orissa with a view to analyse the status of PDS on the ground and also to know people's preference between food and cash transfer. The study finds that the rural masses are mostly satisfied with the PDS though the respondents have strongly urged for the regular inclusion of kerosene and sugar along with rice and wheat under the PDS items.

## **2.5 Concerns related to Household Level Food Security: A Review**

Measuring household food insecurity is the subject of much debate, partly due to the difficulty of defining it (Wolfe and Frongillo, 2001). The concept of food insecurity as thought about in the United States includes not only the lack of availability, access, and utilization or use of food (e.g., food preparation and intra-household food distribution), but also perceptions (e.g., that food is insufficient, inadequate, unacceptable, uncertain, or unsustainable). For example, food insecurity has been defined in the United States as “the inability to acquire or consume an adequate quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so.” Food insecurity as experienced in other locations is likely to be somewhat different but will include similar components that go beyond availability and access (Wolfe and Frongillo, 2001).

Under impetus of USAID’s Food and Nutrition Technical Assistance (FANTA) project, a growing number of studies have used measures of food security based on people’s perception based experience of food security and hunger. Originating in qualitative interviews describing the hunger experience of households and individuals, the “hunger scales” offer a quantitative measure by combining answers to various specific questions capturing the different dimensions. Radimer et al. (1990) first proposed a conceptual framework of analyzing food security and hunger based on people’s perception by interviewing 32 women in urban and rural areas of the New York State. They identified a household and an individual dimension, interpreting hunger as a managed process, where women adopt coping strategies that differ across households. By analyzing the answers given to the qualitative interviews, they propose

three scales (household hunger, women hunger, child hunger) which contain four dimensions: food quantity and quality, a psychological (uncertainty/worry of not having enough food) and a social component (acceptability of the way in which food is acquired). This then leads to a definition of hunger as “the inability to acquire or consume an adequate quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so”. Based on the work of Radimer et al. (1990) the US Department of Agriculture (USDA) has developed a national household food insecurity scale, the Household Food Security Survey Measure (HFSSM), based on 18 items representing the range of their hunger experience. The HFSSM is part of the Current Population Survey (CPS) since 1998 and is annually administered to 45,000 households. Its external validity is the object of several validations, since the scale mainly reflects the status and perceptions of food insecurity of women in the United States, where the severity of hunger might be highly different from that of developing countries (Deitchler et al., 2010).

Validation studies of the Household Food Security Survey Measure in different developing countries led to the Household Food Insecurity Access Scale (HFIAS) in 2006. The main difference between the HFIAS and the HFSSM is the reduction of dimensions and items, and the elimination of the social component. For the latter it proved hard to successfully determine an appropriate cross cultural question that addressed the sensitive and highly cultural specific issue of what is socially acceptable (Coates et al., 2007). Questions about households’ coping strategies were also eliminated and the recall period in collecting information about food insecurity was reduced from the 12 months of the HFSSM to only 4 weeks in the HFIAS (Deitchler et al., 2010). Omotesho et al (2006) tried to assess the status and also to identify the

determinants of food security among rural households in Kwara State of Nigeria. For this purpose they have constructed a Household Level Food Security Index in the rural context in terms of the ratio between household's daily per capita calorie availability and household's daily per capita calorie requirement. They have taken 2260 kcal per capita per day as the household's daily per capita calorie requirement. Based on this, their study found that only one third of the total sample households are food secure and that farm size of the households, gross farm income, total non- farm income and household size have significantly influenced household level food security. The study recommended the need to assist farming households for diversifying their sources of income in order to enable them in meeting their minimum food requirement especially during the off-season.

Larger family size may cost a lot towards achieving food insecure for the rural households. Policy should be directed towards encouraging and creating non-farm jobs for rural households as this would help to reduce food insecurity among the respondents. Policy should also be directed towards measures leading to the release of the "educational-financing burden" from farm households as this would also help to improve food security among the respondents (Asogwa and Umeh, 2012). Rammohan et al (2011) have explored the factors affecting food security in the context of rural India on the basis of primary data collected from 800 randomly selected rural households from 8 strategically selected border districts. Their empirical study was to test whether households are under the category of chronic food insecurity, mildly food insecure or food secure. By using Probit and ordered Probit models the study has found strong evidence to show that poverty, farm income, religion and district heterogeneity can influence food security. Parasuraman and Rajaretnam (2011) have assessed the

relationships between agriculture, food security and nutrition for children, adolescents and married women of reproductive age by using the data generated from a baseline survey on a sample of 6,990 households covering six districts of Vidarbha. The study found that (i) overall under-nutrition amongst children, adolescents and married women in the study area is substantial and it does not differ significantly between different socio-economic groups, (ii) higher the food crops production, lower are under-nutrition levels, and (iii) the public distribution system contributes significantly to the food security of poor families and it must be extended to include families above the poverty line as well. Kumar et al (2012) have examined the trends in on food security in India with the latest available evidences in terms of availability, access and absorption, and have observed that all these dimensions are inter-related. The findings of the study have shed light on food management policies and their impact on food security. The study has empirically found a positive relationship between household income and nutritional intake which suggests that the anti-poverty programmes should be continued, broadened and enhanced to achieve and sustain a higher level of food security at household level. In this regard, it has also emphasized the strengthening of social safety net programmes (like MNREGS, ICDS, NFSM, Mid-Day Meal, PDS, etc.) in the future planning process of the country. Chinnakali et al (2014) has conceptualized four types of food security/food insecurity at household level in Indian context viz. food secure household, mildly food insecure household, moderately food-insecure household and severely food insecure household. A household is called 'food-secure' when the members rarely worried about not having enough food in the past four weeks. Mildly food-insecure households are those whose members did not worry about not having enough food but sometimes or often were unable to eat preferred foods. The case of

moderately food-insecurity is that where the household members sacrificed quality more frequently by eating a monotonous diet or undesirable foods. Severely food-insecure households, on the other hand, are those who had to cut back on meal-size or number of meals often, and/or experienced any of the three most severe conditions like running out of food or going under serious starvation or spending a whole day and night without food. By using this conceptual framework, the study examined the prevalence of food insecurity among households in an urban resettlement colony of South Delhi. It is found that there was a high prevalence of food insecurity among the marginalized section and suggested various short term and long term policies to be undertaken by the government. The short-term policies could include improving the poor environmental conditions, ensuring ample employment opportunities and strengthening the public food distribution system. Long-term intervention should focus more on inter-sectoral coordination, involvement of non-governmental organizations and ensuring women's empowerment.

## **2.6 Food Security related concerns in North-East India:**

Singh (2004) attempts to throw some light on the problems and prospects of PDS with special reference to North East India emphasising the rich-poor bias, inter-state variations in availability of food grains and food grain imports position respectively. The study has highlighted that due to political instability and interference, vested interested of political parties and uncertainty of monsoon, the PDS policy of the government tends to be somewhat fragmented and it is not reaching to the public as per social and economic justification. Ganguly (2006) holds that to make PDS really successful in achieving food security in the rural north-eastern states of India, the local

village councils and the other grass root level bodies should be actively associated with the programme. In the hilly and remote villages of the north-east, distribution of food grains need to be free for those households which are not self sufficient in food production. This may be the main criteria for selection of households for free supplies of food grain. But the types, varieties and quality of food grain to be provided must be in accordance with the concerned people's tastes, habits and preferences. Singh et al. (2006) states that the North Eastern region of India is food insecure predominantly because of low level of food grain availability resulting from several physical, socio-economic and technological constraints including remoteness and inaccessibility, physical and climatic variability, marginal lands, low risk bearing capacity of the cultivators, poor market infrastructure and non-availability of location specific, economic and viable technologies. Thus there is a need to enhance the productivity and production of crops under varying farming systems and cropping situations. In this regard, the development of proper technology would require utmost attention to realize the value of the produce and to enhance food availability for meeting the goal of higher level of food security in the north-eastern region. Giribabu (2013) states that underutilization, lack of conservation and management of the precious natural resources are primarily responsible on the part of the north-eastern states for not becoming self-sufficient in food production. The overall food production in this region has outpaced the population growth and the average food consumption has been increasing on one side and on the other hand, the production growth has been decelerating and stagnating which has adverse impact on food and nutritional security. If the north-east region has to become self-sufficient in terms of food grain production and the long term sustainability of the resources for utilization of the future generations

are the goals, a strategic plan has to be implemented despite of many constraints by meticulously redesigning the whole process of agricultural production and distribution.

Roy et al (2015), observed that non-availability of adequate quantity of quality seeds of improved varieties and lack of use of inputs like fertilizers, weed control and disease and pests protection chemicals are the major constraints in food grain production of the North Eastern region of India. To make this region food and nutritional secure, proper strategies will have to be evolved for raising the production of food grain. The program aims to improve rice-based cropping system in the selected states. There is the need for action oriented mega national program for the rain-fed and hilly ecosystems of the region with serious efforts from all line departments. Das Gupta (2004) focuses on the food production of tribal people in North Eastern region of India which is based on jhum cultivation. It highlights the need for strengthening the PDS among the jhumia households of the region. In order to provide food security among the jhumias the prices should be pegged at a level that bridges the gap between their requirement and production and to introduce food for work programme especially during the lean season. Sarma and Das (2004) focuses on the concept of food security i.e. consumption of nutritious food. Food security is affected by many factors like political, social and economic conditions and other factors like population growth, poverty, deforestation, climatic changes etc. It is suggested that in order to overcome the problem of food insecurity government, political parties, NGOs, business enterprises should come forward with concern policies and steps. De (2004) discusses the problems of food security in the state of Tripura. His study reveals that Tripura has not been able to attain food security mainly due to declining per capita food production. The measures



suggested to solve the problem are institutional changes, changes in the method of production and so on. Sarma (2006) throws light on the issue that in the North Eastern region the contribution of agriculture in the economy is huge compared to other two sectors, but interestingly the region is facing the problem of food scarcity. The reasons for this food crisis are various bureaucratic practices and low price paid to the primary producers. The author has suggested measures to bring efficient working of PDS like monitoring of fair price shops. Another important suggestion is that distribution of PDS items of per person quota should be based on social need not on income. Sarma and Pal (2006) made an attempt to highlight the trend of food production, food problem and the working of Public Distribution System in North – East India. According to their study, to make the delivery of PDS food-grains really effective, a very large number of government fair price shops situated all over the region have to be maintained and the working of these fair price shops have to be strictly and properly monitored. Public Distribution of food grains is maintained through a process of partial rationing. But the quota per person has been fixed without reference to the income basket to which the consumer belongs. This is a major loophole in PDS, which needs special attention. Enough information should be collected by the rationing authority so as to enable the system to switch over to income based rationing in terms of social need. Singh and Singh (2004) have attempted to figure out the role and working of PDS in ensuring food security to the people of Manipur. The study has found that Food and Civil Supplies Department, Government of Manipur, has undertaken a great role for the distribution of essential food items and other essential commodities under PDS in the state. Again, for strengthening PDS in hilly areas of the state, the government launched “Revamped PDS” programme and “specially subsidised PDS scheme”. The

Government of Manipur has distributed food-grains under PDS establishing storage at different areas of the state. The study thus found that the PDS in the state is taking a great role for the distribution of food grains and other essential commodities for available to the ultimate consumers. Sen Gupta (2006) has analysed the effectiveness of Targeted Public Distribution System in Silchar town of south Assam. The study is based on 70 sample households with which it first makes an attempt to examine geographical coverage of the PDS in the town and also investigates the errors of inclusion and exclusion so as to focus attention to coverage of the system in the town. The study found that 80 percent BPL category consumers have access to the TPDS and thereby enjoy the benefit of food subsidy. This category of people mainly purchases rice, sugar and kerosene oil from the PDS. However none of these households have purchase the entire requirement of rice from the PDS. The study reveals that only 33 percent of the BPL consumers buy their requirement of food-grains totally from the TPDS; indicating that the TPDS reaches only, an insignificant proportion of the BPL consumers. As far as the APL category of consumers is concerned, Sengupta (2006) observed that the error of inclusion extends up to 55 percent of the consumers. Out of these proportion of the households only 33 percent purchase rice from the PDS, implying that subsidy loss extends only to this proportion of the households. The remaining portion of the households possesses ration cards only for the purpose of purchasing sugar and kerosene oil. Out of all the consumers in this category, 45 percent of the households voluntarily opt out of the PDS, saving the subsidy bill of the government to the extent of their purchases from the open market. From this study, finally it could be concluded that the TPDS has not been totally successful mainly due to the lack of sincere effort in identifying the poor. It is evident from the study that

providing food security to the poor consumers of this region, by shifting from universal to targeted PDS, is an extremely difficult task and extreme poverty still excludes a good proportion of the needy consumers to be covered by TPDS. It is, therefore, pertinent to review the entire strategy of the TPDS again.

## **2.7 Research gaps**

Substantial research gaps have been emerged from the review of various food security related issues. The important research gaps which the present research work attempt to fill up are the following:

- I. Dearth of adequate methodology for analyzing the issue of food security under the combined shed of availability, accessibility and absorption dimension of food security.
- II. District level analysis of food security in rural Assam covering availability, accessibility and absorption dimension of food security is missing.
- III. Lack of research upon the effectiveness of PDS in rural Assam.
- IV. Analysis of household level food security in relation to the results from the analysis of food security at district level.

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