

# India's Hunger and Malnutrition Puzzle: Some Policy Concerns and Options

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Hunger, as understood in everyday life, is a state of unease or discomfort for an individual on account of not having enough food. It is associated with a set of symptoms that could vary in a range and intensity depending on the extent and the duration for which a person experiences food deprivation. Hunger has an obvious element of subjectivity that makes it difficult to assess its incidence accurately in a society. This is more so in a poor developing country, where hunger also poses some difficult policy challenges. In the popular public discourse in India, there is also a lack of clarity about the notion of hunger, malnutrition, and poverty that underpins the official data categorizing the people in one or the other of those categories. In fact, these terms are often interchangeably used making, for instance the activists, who are concerned about the magnitude and manifestations of the problem, believe that the policymakers are not responding appropriately to those concerns. While hunger refers to inadequacy of food or undernourishment, malnutrition refers to an imbalance of both macro and micronutrients, which could be (and not necessarily) because of inadequate or inappropriate intake and/or inefficient biological utilization due to physiological or environmental factors. Estimation of poverty in India involves the use of a minimum consumption expenditure level (poverty line), which was originally anchored in an average (food) energy adequacy norm. Thus, there is some overlap in the concepts, but they are indeed different and require a distinct policy focus.

To assess the incidence of hunger or undernourishment, typically, the approach is to compare the actual food intake to the required level. The required level or food adequacy can simply be defined in terms of frequency of 'square meals' in a day, especially in a situation where even one or two square meals a day are not seen as a normal occurrence. Alternately, it can be defined in terms of a set of recommended dietary allowances (RDA) for an average individual in a society. The allowances for food adequacy can cover macronutrients like proteins, carbohydrates and fats measured in terms of kilo calories of energy intake per day, with stipulation on how those calories are to be sourced from different food-types to ensure balanced intake of the macronutrients. The allowances can also cover the intake of vital micronutrients like vitamins and minerals essential for a healthy physical life. Both these approaches to food adequacy are in use to collect data on hunger or more generally food inadequacy in the country, even though one of them, as is shortly highlighted, may not be relevant any more. There are, however, several issues that complicate the approach.

First, the implication of not getting even two square meals on a regular basis, or not having food intake that meets the RDA on macronutrients may have some visible impact on a person's health and ability to sustain normal activity. The same is, however, not true for a person whose food intake does not meet the RDA on micronutrients. Micronutrient deficiency is less visible. It is often referred to as 'hidden hunger' and its incidence in the population is difficult to ascertain. It becomes visible only when a person faces a severe deficiency in the intake of a micronutrient resulting in health impairment.

The second issue follows from the first and relates to the duration of time for which a person's intake of square meals is erratic or, her food intake is less than the RDA, for her to be categorized as undernourished or malnourished. There is normally a good deal of inter-temporal variations

in food intake among the less well-off. Periods of low intake are compensated by higher consumption in others, though such fluctuations in intake may lead to higher food intake as well as raise average requirements. Generally, if on an average, the food energy intake of an individual is less than what is needed for a sedentary lifestyle for a year, then that individual is considered to be undernourished or facing hunger.

Third, if one defines hunger with respect to a set of norms (RDA), there is a problem arising from the fact that the required level of food varies significantly with age, sex, physical activity, climate and even topography of the habitation where a person resides. There are also significant differences between individuals in the way their bodies utilize food intake. Individuals adapt to fluctuation in food intake without adverse physiological effects and also differ in the extent of their adaptation due to differences in their metabolic rates and ability to build body reserves. In other words, the wide inter-individual variation in calorie and nutrient requirement, consistent with a normal functioning of the body, raises the possibility of overestimating the incidence of hunger if the assessment is made on the basis of food intake (see for instance, Dréze, Sen and Husain 2004, page 2).

Fourth, this opens up the possibility of looking at the symptoms of hunger as a means to assess the incidence of undernourishment, rather than making an assessment on the basis of food intake norms. Thus, anthropometric indicators like low weight for age (underweight), short height for age (stunted), low weight for height (wasted) or the composite Body Mass Index (BMI, i.e., the ratio of the weight in kilograms to the square of the height in meters) become relevant for measuring undernourishment or even malnourishment. By focusing on hunger symptoms in children, where the consequences of hunger and malnutrition are least desired, for both personal and societal reasons, the incidence of undernourishment or malnourishment in

the population can be more easily assessed. The use of anthropometric indicators potentially also helps in getting a sense of the intra-household inequalities in food intake and the consequence on health and productivity of individuals. But the question then is are these symptoms and the corresponding indicators reflective of body adaptation to undernourishment or, are they its symptoms. If these conditions are considered as a symptom of hunger, there is a need for intervention to address hunger. However, if they are an indication of body adaptation to hunger, it could be left as it is. Further, the medical evidence and the relevant literature are not conclusive on whether the adaptation to hunger is costless (see Dasgupta and Ray 1991, Osmani 1991). It becomes necessary then to consider public interventions to address chronic hunger, both visible and hidden (to the extent feasible), in any society on social, ethical and economic grounds. There is considerable literature that explores the linkage between hunger and malnutrition, morbidity/mortality and loss of work opportunity (Dasgupta and Ray 1988, Osmani 1993, Chambers et al 2013 and Spears 2012).

Finally, there is also the issue that surfaces every now and then about the appropriateness of using developed country anthropometric standards for measuring undernourishment or malnourishment in India, given the racial, climatic and cultural differences. Without going into the nuances of this debate, it is possible that more appropriate context specific benchmarking for India may yield lower incidence of malnourishment in the country than the levels currently estimated. However, even that is likely to be too high to tolerate for a country aspiring to be among the ranks of developed nations in the near future.

In the next section trends in undernourishment and malnourishment on different measures are analysed, followed by an assessment of the effectiveness of policy framework in the country to address the problem.

## I. Trends in Hunger and Malnutrition

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### Food Adequacy – Square Meals and Adequacy Perception

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As mentioned earlier, there are different measures of undernourishment and malnourishment on which data is being compiled in India. NSSO quinquennial surveys on consumer expenditure collect information on food adequacy among households in rural and urban areas. In the 38th (1983) and 50th (1993-94) rounds of consumer expenditure survey, household food adequacy is defined in terms of whether members of a household get two square meals a day or not. In the 61st round (2004-05), information on food adequacy is based on the perception of the investigator or the household. The investigator is asked to first make a 'perception' about food adequacy of the household, and then decide if she needs to enquire about food 'adequacy' from the household. The same methodology is used in the 66th round (2009-10) consumer expenditure survey. Despite this difference in data collection, an analysis of various rounds suggests that the trends in food adequacy can be compared across different surveys.

The question on food adequacy has three sub-components – food adequacy throughout the year, food adequacy for some months during the year, and inadequate food intake throughout the year. Further, in case of households which report food adequacy for some months during the year, information is collected for the months during which household members did not have adequate food intake. There is significant improvement in food adequacy over the years in both rural and urban India. The proportion of households reporting adequate food intake throughout the year in rural India increases from 81 per cent in 1983 to 99 per cent in 2009-10. In urban India this increase is

**Table 4.1 Households Reporting Adequate Food Intake throughout the Specified Year – All India**

(Percentage)

Year	Rural	Urban
1983	81.1	93.3
1993-94	94.5	98.1
2004-05	97.4	99.4
2009-10	98.9	99.6

Source NSS Report Nos 415, 512, 547.

**Table 4.2 Households Reporting Adequate Food Intake Only Some Months – All India**

Year	Rural	Urban
1983	16.2	5.6
1993-94	4.2	1.1
2004-05	2.0	0.4
2009-10	0.9	0.3

Source NSS Report Nos 415, 512, 547.

**Table 4.3 Months When Food Inadequacy Most Acute – All India**

Year	Rural	Urban
1993-94	May to October	July to September
2004-05	December to March	December to February
2009-10	January to March	December to February

Source NSS Report Nos 415, 512, 547.

**Table 4.4 Households Reporting Adequate Food Intake Among Lowest MPCE Class throughout Year in Selected States – 1993-94**

State	Rural	Urban
<b>States Lagging Behind</b>		
Assam	39.1	49.6
Bihar	76.8	83.0
Odisha	81.7	83.1
West Bengal	53.5	69.7
<b>Good Performing States</b>		
Haryana	100.0	100.0
Rajasthan	100.0	100.0
<b>All India</b>	<b>84.2</b>	<b>91.9</b>

Source NSS Report No 415.

from 93 per cent to almost 100 per cent (Table 4.1), during the same period.

As can be expected, with an improvement in food adequacy throughout the year, proportion of households not having adequate food for some months during the year shows a decline over the NSS survey rounds (Table 4.2). From 16 per cent of households reporting adequate food only for some months during the year in 1983, the proportion declines to less than one per cent in 2009-10.

Households that report adequate food intake only during some months also mention the months when they face food inadequacy. While the period of food inadequacy shows a decline over the years, since 2004-05 it is mostly concentrated during the Rabi crop season (Table 4.3). This implies that the Kharif crop output is insufficient to sustain these households during the period of Rabi crop cultivation. Kharif crop output in large parts of India is monsoon-dependent, and therefore necessitates intensification of irrigation network particularly in drought prone areas.

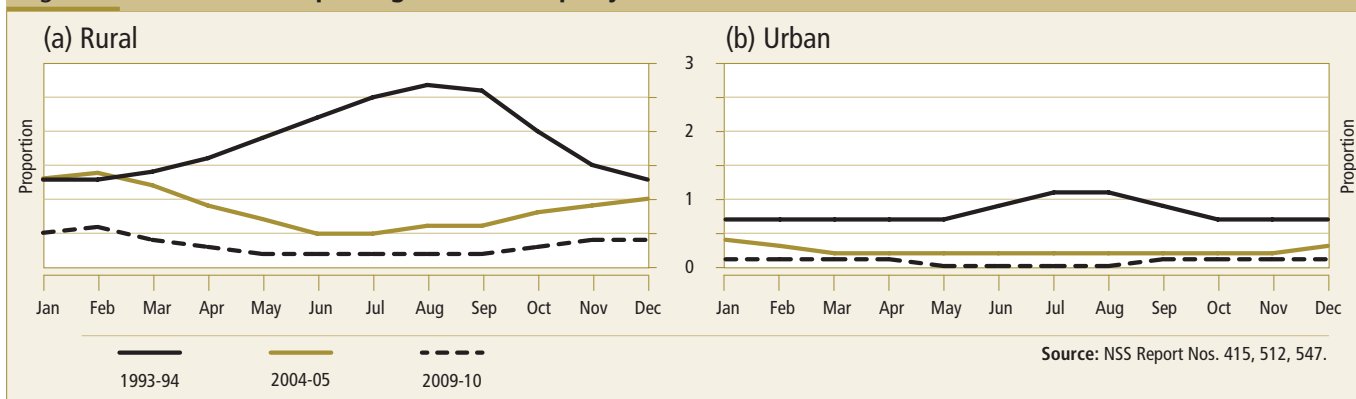
In both rural and urban India, not only are the proportion of households reporting food inadequacy declining, the seasonal fluctuation of proportion of households reporting food inadequacy, has stabilized. In other words, the monthly trend line showing proportion of households reporting food inadequacy has flattened over the years (Figures 4.1 and 4.2). Also, there is a seasonal shift in food inadequacy – the proportion of households reporting food inadequacy during the beginning of the year (coinciding with Rabi crop season) is higher than during the middle of the year.

At the state level, the proportion of households reporting food adequacy is the lowest in Assam, Bihar, Odisha, and West Bengal. Over the years, Assam and Bihar have improved the situation of food adequacy in both rural and urban areas. However, Odisha and West Bengal continue to lag behind, despite some

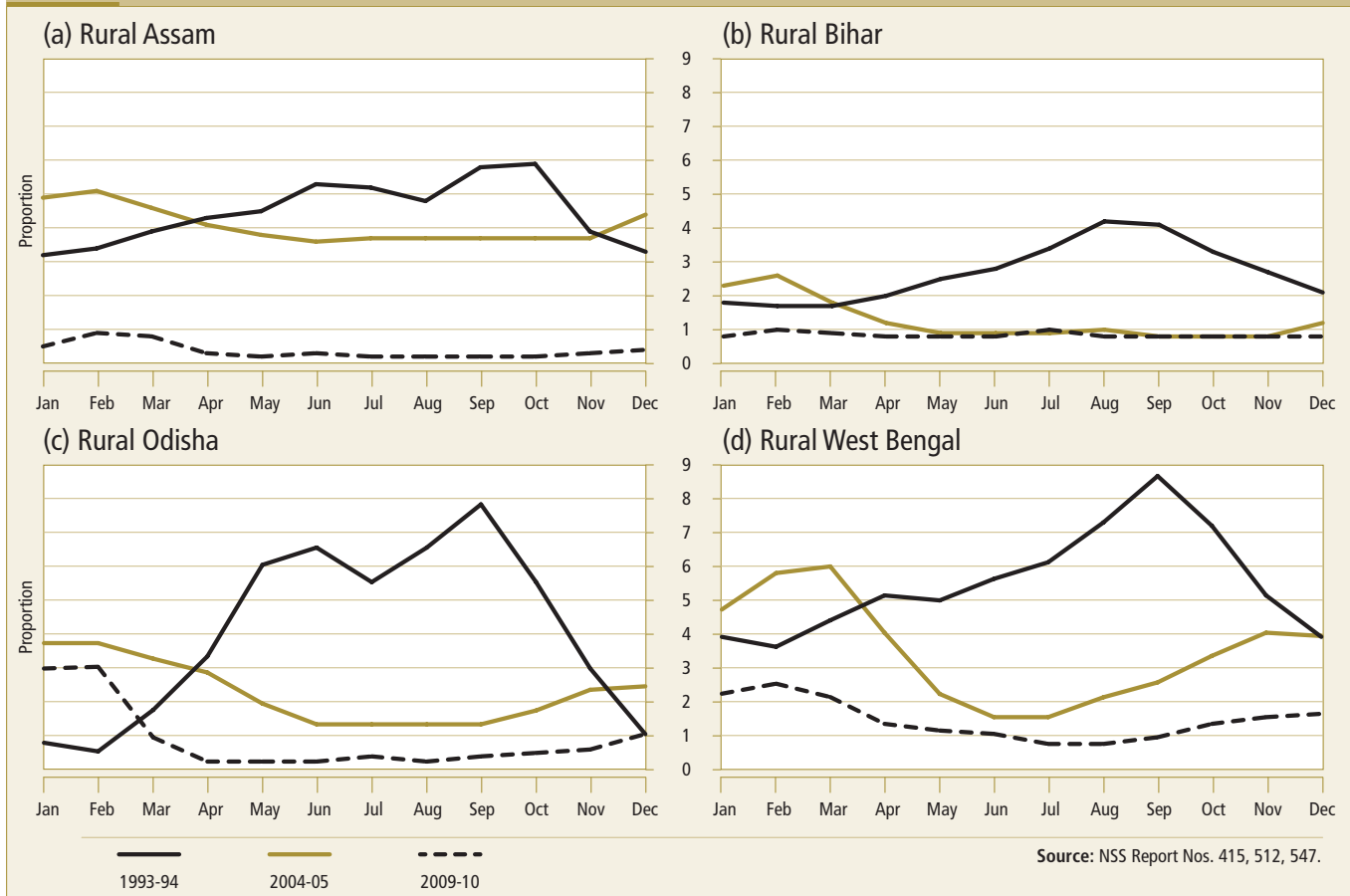
improvement. Difference in food adequacy across states is much less in urban areas as compared to rural areas. There are also variations in food adequacy within a state across Monthly Per Capita Consumption Expenditure (MPCE) classes (Table 4.4). In the better performing states, food adequacy can be observed among all households

even within the lowest MPCE class. As against that, almost half of the households in rural West Bengal and 60 per cent of households in rural Assam among the lowest MPCE class report food inadequacy in 1993-94. Clearly, food inadequacy is most pronounced among households belonging to lowest MPCE class, in

**Fig 4.1 Households Reporting Food Inadequacy in Different Months – All India**



**Fig 4.2 Households Reporting Food Inadequacy in Different Months – Selected States**



backward states like Assam, Bihar, Odisha and West Bengal. All the four states are in the Eastern region and high proportion of food inadequacy among rural households in these states merely reflects the overall economic backwardness of this region.

Like the national trend, there is also a shift in higher incidence of food inadequacy from the middle of the year to the beginning of the year in the four states of Assam, Bihar, Odisha, and West Bengal. At the same time, the proportion of households reporting food inadequacy in these four states is declining and monthly fluctuations in terms of incidence of food inadequacy is also reduced (Figures 4.3, 4.4, 4.5, 4.6), over this period.

It is also possible to analyse the food adequacy for households across occupational and social groups. The condition of food adequacy has improved in both rural and urban India among different types of households by occupation and so also among different social groups. For the country as a whole, food adequacy does not seem to be a problem for any social group or household by any type of occupation. At the state level, in the case of Odisha and West Bengal the problem of food inadequacy is much more pronounced among agriculture labour households and ST households. The proportion of agriculture labour households in rural Odisha, reporting not having adequate food in all the months during 2009-10 is more than 10 per cent, while it is around 7 per cent in rural West Bengal. Similarly, across social groups, the proportion of ST households not having adequate food in all the months during 2009-10, is more than 10 per cent in rural West Bengal and 9 per cent in rural Odisha. Coarse cereals have historically been the mainstay of diet for STs in India. However, over the years, excessive importance to only two types of crops – rice and wheat in the agricultural pricing policy, and in the PDS has resulted in a decline in the cultivation and availability of coarse cereals. This may have contributed to food insecurity among the tribals. Addressing the food adequacy needs of the tribal population requires

support for the cultivation and distribution of coarse cereals through an improved PDS network in the tribal areas. This also has the advantage of substitution of cereals by more nutritious coarse ones.

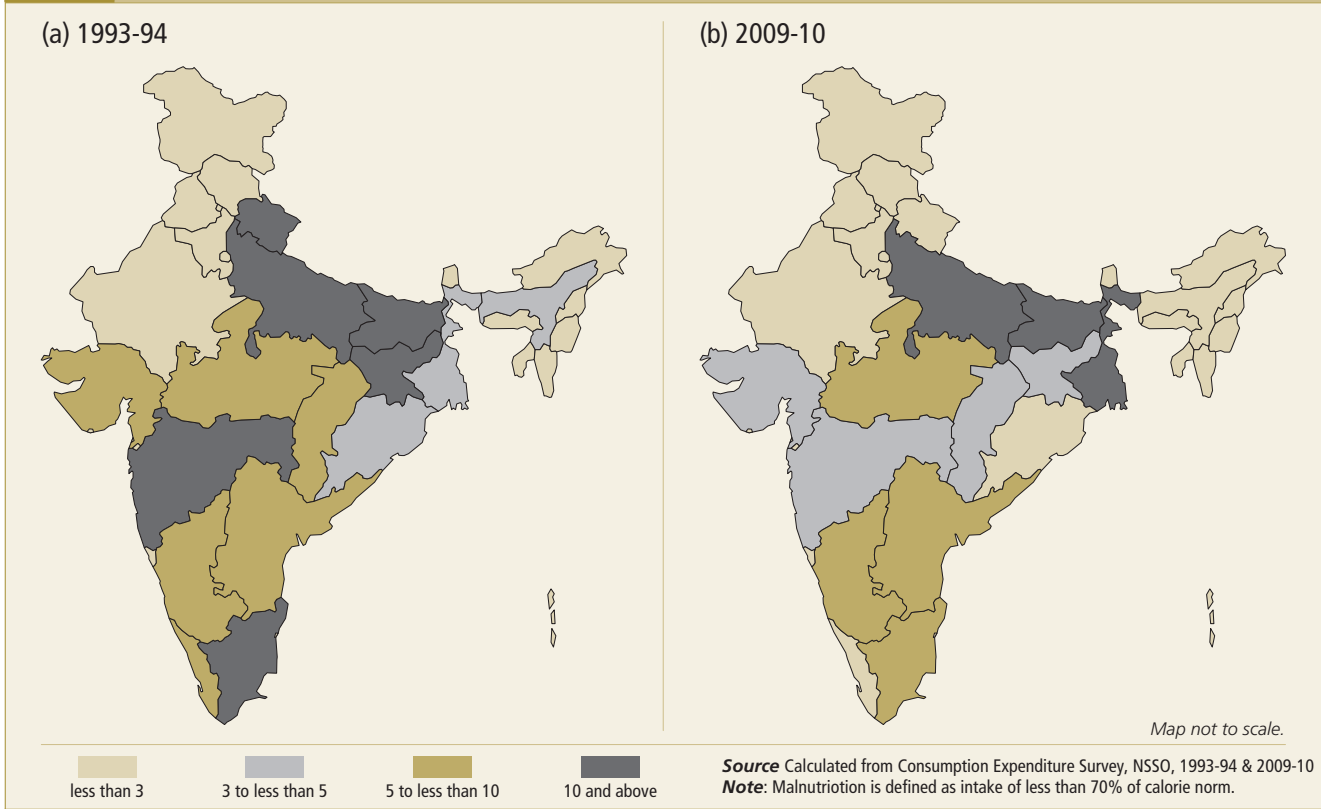
There are several shortcomings in the food adequacy approach followed by the NSSO. First, the notion of food adequacy is rather subjective, based on the perception of the households and/or the enumerators. Second, the incidence of food inadequacy or undernourishment is low, much lower than the incidence of poverty which is also estimated on the same data set, but measured objectively in terms of calorie intake. Third, household perception of food adequacy (which in most cases is simply a full stomach) is a reflection of mere undernourishment, it does not take into account the issue of malnutrition or, the absorption capacity of an individual (for both macro and micronutrients), which is vital for a healthy and productive life. It is, therefore, a crude measure of hunger or food security at the household level. As soon as the issue of nutrition balance, i.e., food adequacy relative to RDA, is brought into consideration the picture of hunger in terms of malnourishment changes significantly.

## Food Adequacy – Food Intake Norms

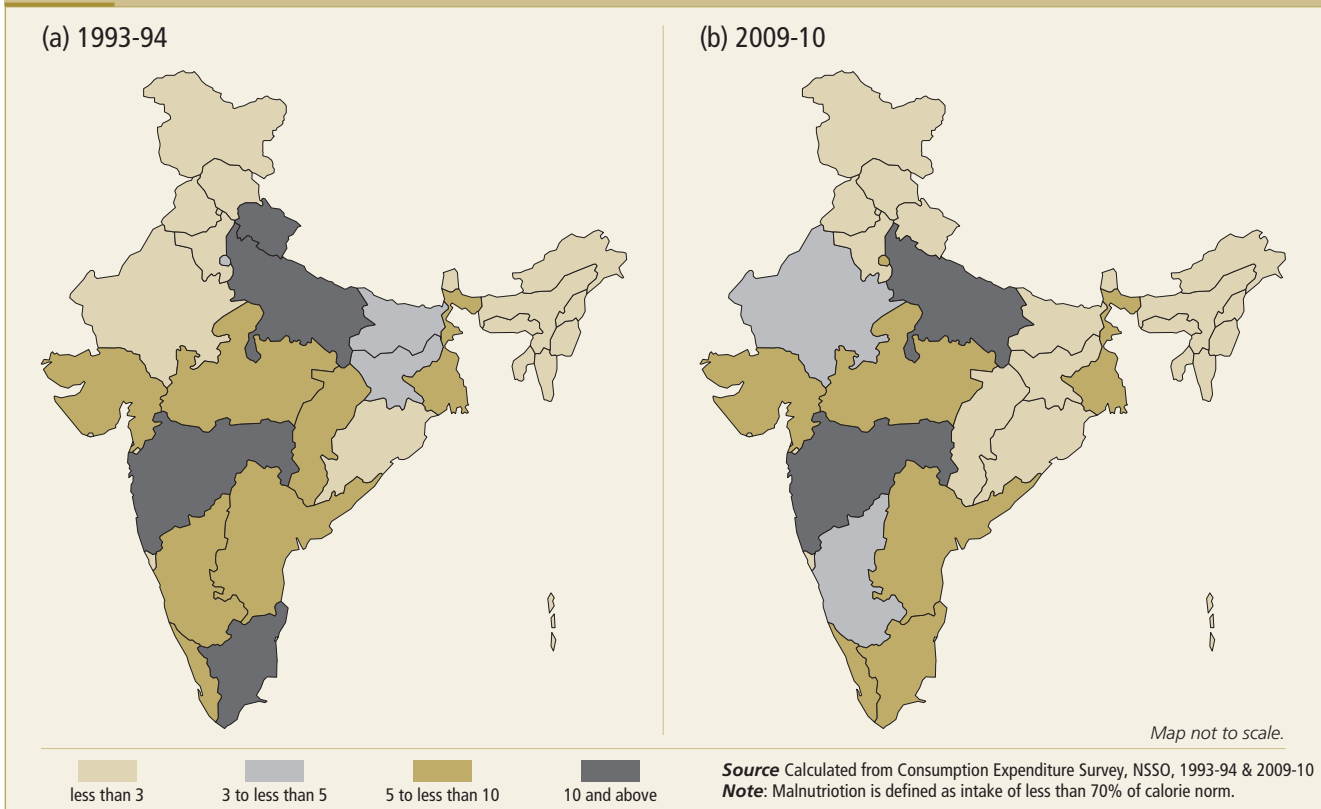
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Using the NSS consumer expenditure data, it is possible to estimate the proportion of households with food intake that meets the recommended average norm for food adequacy. The NSS survey collects information on consumption and expenditure related to a large number of food and non-food items. In order to capture intake of macro and micronutrient, the standard methodology used is to multiply the nutrient content of the food by its quantity consumed. This gives an estimate of the nutritional intake for the household as a whole. Using this standard methodology, and considering the RDA

**Fig 4.3 State's Share of Malnourished in the Total Malnourished in India (Rural)**



**Fig 4.4 State's Share of Malnourished in the Total Malnourished in India (Urban)**



norm of nutritional requirement of an adult male in sedentary work to be the minimum nutritional requirement of all individuals, Sharma and Meenakshi (2004) examine the nutrition deficiency in rural India between 1983 and 1999-2000. The study notes that diversification of food intake is not being accompanied by improvement of nutritional intake in rural India. In fact, between the two points of time, there is a decline in intake of most of the nutrients (macro as well as micro), except for fat and vitamin C. In case of fat, even though there is an improvement in 1999-2000, the average intake in rural India is lower than the RDA norm. There is thus an increase in the incidence of nutrition deprivation for both macro as well as micronutrients between 1983 and 2000.

NSSO defines malnutrition as the proportion of population with calorie intake of less than 70 per cent of the norm. A male in the age group of 20-39 years is considered as one consumer unit who requires 2700 kilo calories per day. Based on age and gender, each person is assigned a certain consumer unit, and the corresponding required calorie intake is calculated. If the actual consumption is less than 70 per cent of the required calorie intake, then that person is considered to be malnourished. Using this norm the food adequacy is analysed for 1993-94 and 2009-10 based on the respective NSS rounds. Figures 4.7 and 4.8 show the distribution of the malnourished at the state level. In 1993-94, Maharashtra, Bihar, Tamil Nadu, Uttar Pradesh, Andhra Pradesh and Madhya Pradesh contribute two-thirds to

the total malnourished in rural India. By 2009-10, except for Bihar, Uttar Pradesh and Madhya Pradesh, with deterioration in the incidence of malnourished and an increase in their share of malnourished in the total rural malnourished in the country, all the others are able to bring down the share of their malnourished. In the case of West Bengal, the incidence of malnourished more than doubles from over 7 to nearly 19 per cent and also in its share in the total rural malnourished.

In the urban areas Maharashtra, Tamil Nadu, Uttar Pradesh, Andhra Pradesh, Karnataka and Gujarat account for nearly two-thirds of the malnourished in the country. Here again for Uttar Pradesh there is a deterioration in the incidence of malnourished, with the result that its share in the total urban malnourished in the country increases. But in the case of Maharashtra and Tamil Nadu, there is decline in the incidence and in their share of urban malnourished in the country.

Two conclusions can be drawn from the limited analysis in this section so far. First, even though there is improvement in food adequacy over the years, nutritional improvement is not commensurate; in fact there is deterioration in some regions. In other words, ensuring full stomach is undoubtedly necessary for a hunger-free nation, but it is by no means sufficient for ensuring productive and healthy life for all. Second, while it is possible to say something about the nutritional intake for a household as a whole, the same cannot be said about the intra-household variation,

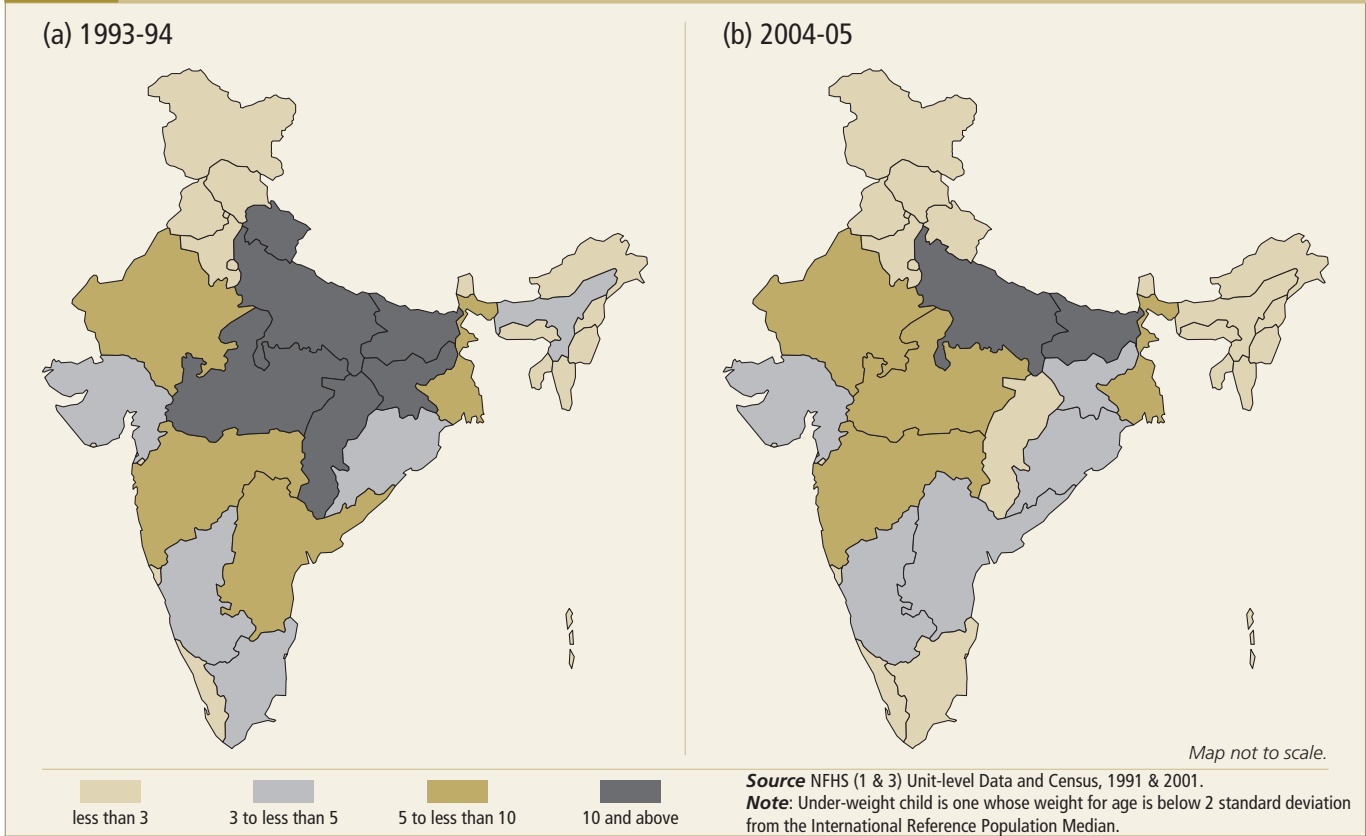
**Table 4.5 Child Nutrition Trends – NFHS and ICDS**

		Improvement in Child Malnutrition (1-47 Months), NFHS		
		Bad	Average	Good
Improvement in Child Malnutrition (0-5 Years) ICDS	Bad	Bihar, Haryana	Tripura	Andhra Pradesh, Delhi
	Average	Meghalaya	—	Punjab, Tamil, Uttar Pradesh
	Good	Gujarat, Rajasthan, Madhya Pradesh	Assam, Odisha, Himachal Pradesh, Goa	Jammu & Kashmir, West Bengal, Maharashtra, Karnataka

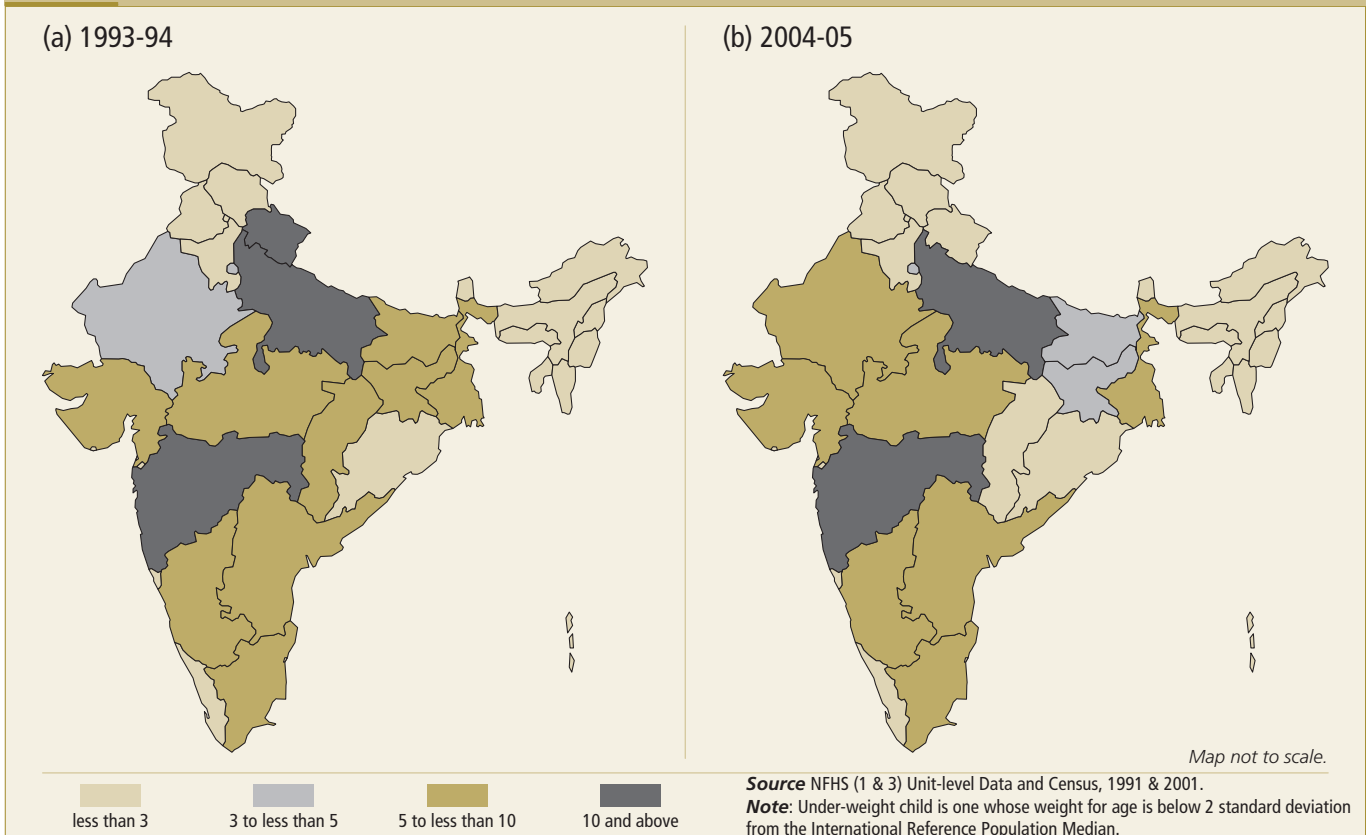
**Notes** ICDS Data for Bihar was incomplete, but since it was quite high in 2012 at 56 per cent, it was put in the category of bad as per both data sources. ICDS cover 2006 to 2012 and NFHS 1993-94 to 2004-05.



**Fig 4.5 State's Share of Underweight Children (0-3 yrs) to Total Underweight in India (Rural)**



**Fig 4.6 State's Share of Underweight Children (0-3 yrs) to Total Underweight in India (Urban)**



especially across gender and age, in food intake. There is therefore a need to look at other approaches that can potentially address these concerns.

## Food Adequacy – Anthropometric Norms

In looking at hunger symptoms as a means to assess the incidence of undernourishment and malnourishment, as indicated earlier, it is convenient to focus on children as they are an important vulnerable group. It can also be argued that in the absence of an adequate social protection floor in India, the growing number of the elderly is an equally important vulnerable group. However, there is an advantage in focusing on children from the point of data availability, as anthropometric assessment of their health and physical growth can be carried out in schools on a regular basis. That this is not being done regularly in most states is an issue to be addressed. Nevertheless, there are two data bases that provide some information on child malnutrition at state level in India, namely the NFHS and the Integrated Child Development Scheme (ICDS) data of the government. The NFHS is a large-scale, multi-round survey conducted on a representative sample of households throughout India. Information on ICDS published by the Ministry of Health and Family Welfare, Government of India is based on state level consolidated reports that in turn avail information primarily from Anganwadi centres. The ICDS programme service children in the age 0 to 5 years (or more accurately below 6 years). There are differences in scope, coverage, and the target population of these two databases. The other major problem in the analysis of child malnutrition for this report arises from the fact that while NFHS data is available only for three years – 1993-94, 1998-99 and 2004-05, ICDS data is available for selected years, starting with 2006. Thus, in building the aggregative picture using the two databases at the state level, it is possible to highlight only broad

trends. The HUNGaMA Survey Report (2011) provides a district level nutrition picture of children below 5 years for 100 rural districts in nine selected states, which has not been integrated in this analysis due to its limited coverage.

Figure 4.9 and 4.10 show underweight children in the age-group 0 to 3 years, for 1993-94 and 2004-05 based on the unit level NFHS data (sourced from an unpublished PhD thesis). An underweight child is one whose weight for age is below 2 standard deviation from the International Reference Median. In the rural areas in 1993-94, undivided Bihar, Madhya Pradesh and Uttar Pradesh have an incidence of underweight (malnourished) children of 63, 60 and 57 per cent, respectively. Together this accounts for just under half (47 per cent) of the underweight children in the country. By 2004-05, while the incidence declines in the case of Bihar and Uttar Pradesh, it rises for Madhya Pradesh. Along with the newly bifurcated states of Jharkhand, Chhattisgarh and Uttarakhand, the three states contribute over half (52 per cent) of the rural underweight children in the country in 2004-05. In the urban areas, in 1993-94, undivided Uttar Pradesh and Maharashtra contribute nearly 32 per cent of the underweight children in the country. By 2004-05, both experience a substantial decline in the incidence of underweight children, but they still account for nearly 29 per cent of the total underweight children in the country. Madhya Pradesh at 60 per cent in 2004-05 has the highest incidence of underweight children in the country.

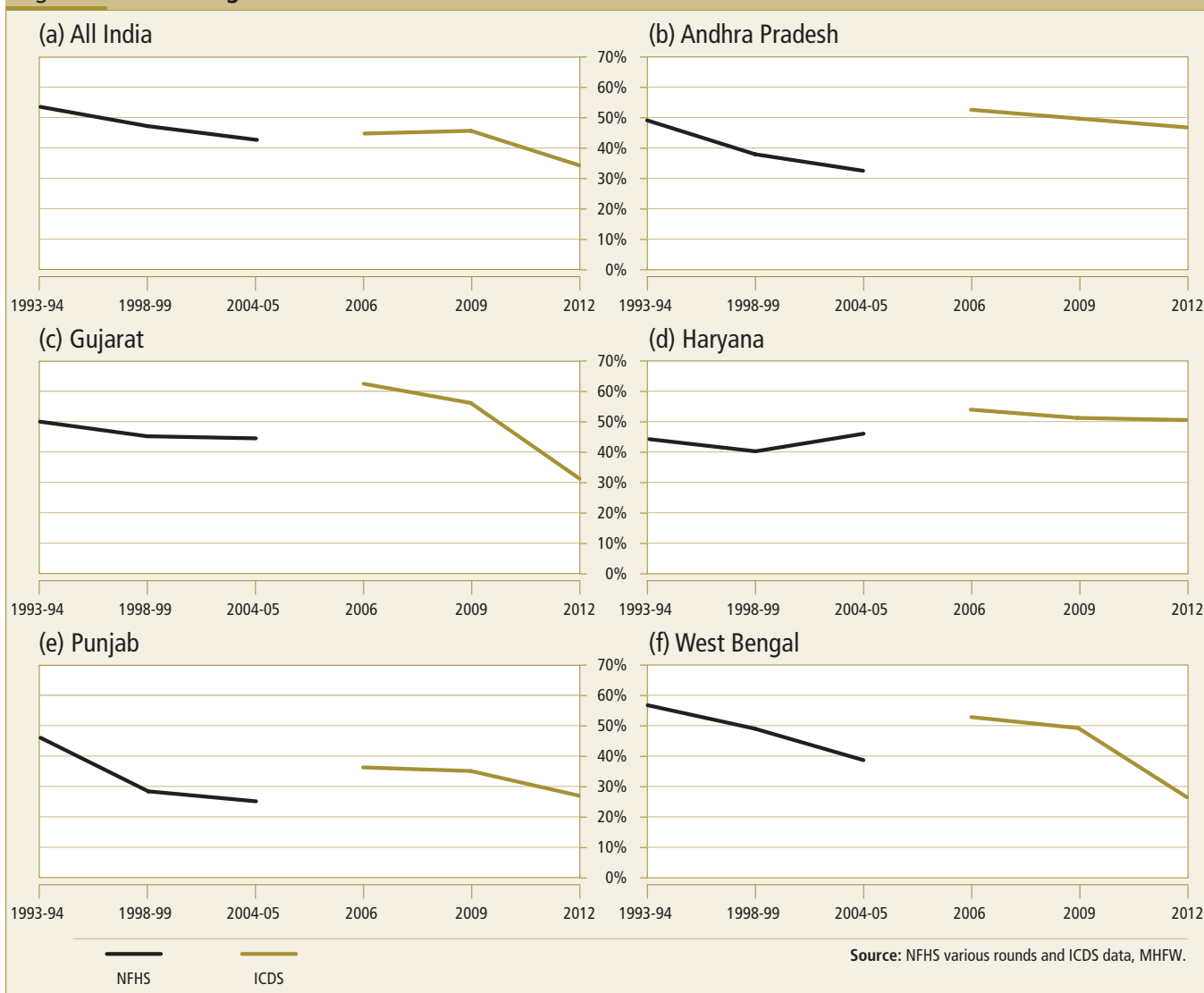
In order to get a more recent trend in the incidence of underweight children in the country, the NFHS and the ICDS data are considered together, recognising fully that these are incomparable data sets. For the ICDS data, the underweight children (0-5 years) captured in the moderately malnourished category of Grades I and II has been used for the years 2006, 2009 and 2012 (see Statistical Annexure). Table 4.5 identifies the performance of the states on the two data sets. Only Jammu and Kashmir,

West Bengal, Maharashtra and Karnataka seem to be doing well in the two time periods of 1993 to 2005 and 2006 to 2012.

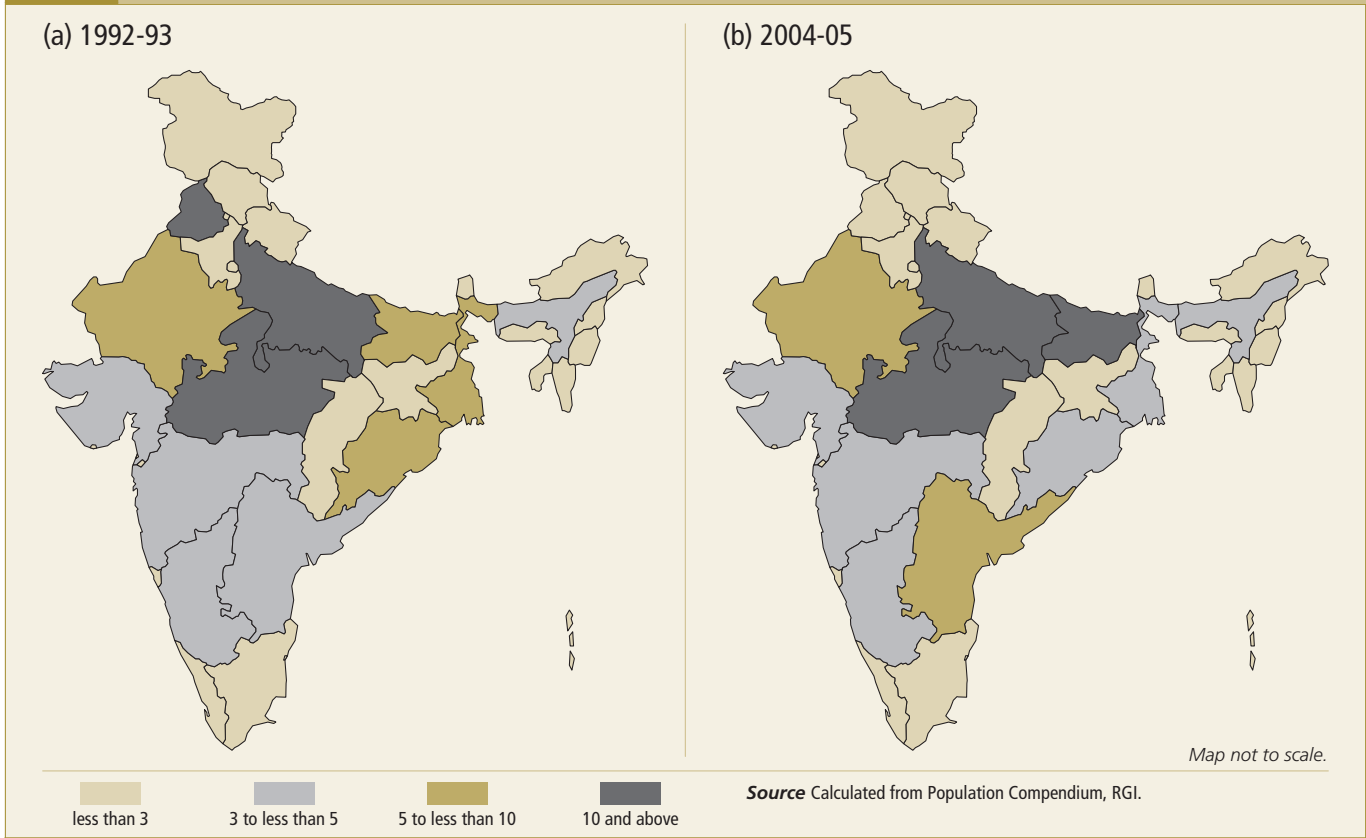
At the national level, while the incidence of child malnutrition (age up to 47 months) is 42.5 per cent as per NFHS in 2004-05, it is 44.5 per cent according to ICDS in 2006 (for children up to 5 years). To look at the trends in the incidence of underweight children over a longer period, NFHS data on underweight children for age group 0 to 47 months for 1993-94 and 2004-05, and for age group 0-35 months for 1998-99, and ICDS data for the age group 0-5 years for 2006, 2009 and 2012 has been plotted for all India and selected states. At

the all India level (Figure 4.11), it appears that ICDS is settling down after the first few years and seems to be working to deliver on its objectives, as shown by a sharp decline in the slope of the curve after 2009. Trends at the state level show faster pace of improvements as per NFHS data in some states like Andhra Pradesh and Punjab for part of the period (Figures 4.12 and 4.15, respectively). In the case of Gujarat (Figure 4.13) and West Bengal (Figure 4.16), ICDS seems to be performing better. In Gujarat, the reported improvement in the functioning of Anganwadi centres seems to be contributing to improvements in child nutrition. Haryana seems to be an outlier in this set with ICDS data showing only

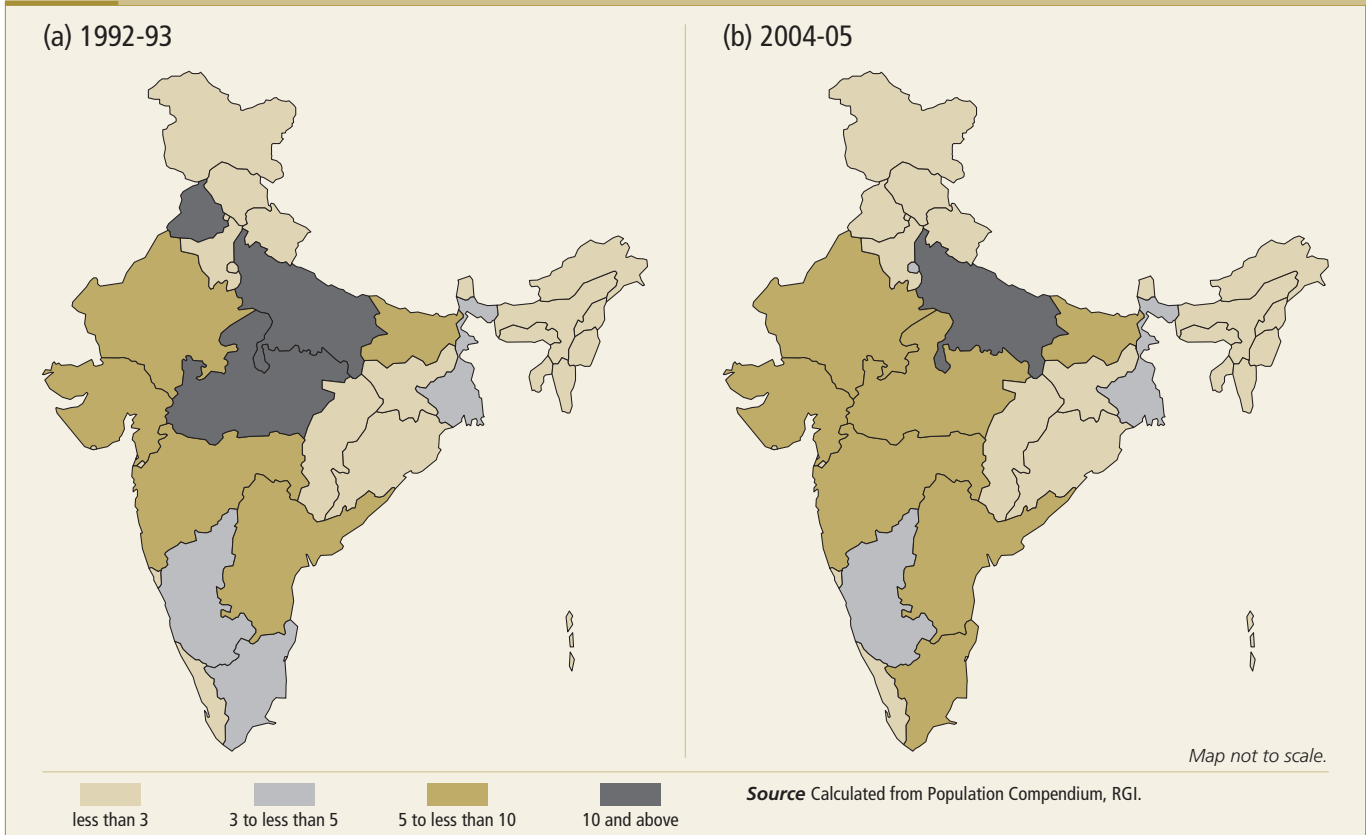
**Fig 4.7 Underweight Children NFHS and ICDS**



**Fig 4.8 State's Share of Mortality (0-4 yrs) in Total Mortality in India (Rural)**



**Fig 4.9 State's Share of Mortality (0-4 yrs) in Total Mortality in India (Urban)**



a marginal improvement in the nutrition status of children so far.

## Food Adequacy and Child Mortality

Prolonged periods of inadequate food intake and a poor diet, especially in combination with low birth weights and high rates of infection, can result in stunted and underweight children. The most extreme manifestation of persisting hunger and malnutrition is mortality. There is evidence to suggest that chronic food inadequacy, especially among the children, impairs their health through increased vulnerability to diseases, especially the communicable diseases in the case of India. This in turn

leads to a higher mortality rate (number of deaths per 1000 in the specified age group) for the children. Therefore, mortality rate is seen as an important symptom of hunger, undernourishment as well as malnourishment. It is obvious that not all child mortality can be likened with food inadequacy, though it may be an important contributor to the higher mortality rates in some areas as against others (See Box 4.1 for the normative basis of social policy on children.).

Using the child mortality rate for the age group 0 to 4 years (based on Sample Registration System, Registrar General of India (2009), and the latest available data (2006) being used as a proxy for 2011, Figures 4.17 and 4.18 show share of child mortality for different states in the total child mortality in the country. Since there

### Box 4.1: Child Rights and Social Policy

The 1959 UN Declaration of the Rights of the Child laid out child rights in terms of nutrition, free education, access to healthcare, and freedom from exploitation and discrimination. By the 1980s, children's rights were being seen to include a political and moral dimension; that is, the right of the child to influence decisions that affected them. These broader concerns were incorporated into the 1989 Convention on the Rights of the Child, and were divided into four categories: (a) Survival: adequate living conditions and adequate medical services; (b) Development: right to education, information, play and leisure; (c) Protection: prohibits all forms of exploitation and cruelty including separation from families and abuses of the Criminal Justice System; (d) Participation: freedom to express opinions and play an active role in society. The Convention on the Rights of the Child has a dual purpose: first, to extend the fundamental human rights recognized for adults to children so as to challenge assumptions about children based on their age, and the exclusion and exploitation to which this can give rise; and second, to call attention to children's particular status with regard to specific vulnerabilities, interests, and entitlements.

In India, since independence there has been a focus on childhood deprivation through various programmes on food security, education and health. The Constitution of India guarantees the Fundamental Rights to all children

in the country and allows the state to make special provisions for children. The Directive Principles of the State Policy recognises the need to secure the rights of children, protection from abuse and ensuring that children are provided opportunities and facilities to develop their capabilities. India has also adopted the National Charter for Children, 2003, to secure every child's inherent right to be a child and enjoy a healthy and happy childhood. In the year 2013 the Government of India adopted a new resolution on the National Policy for Children. It recognises that the children are a supremely important national asset and highlights the significance of a strong social safety net in caring for and nurturing of children. The policy outlines the importance of interventions at every stage of childhood and the National Commission for Protection of Child Rights and State Commissions for the Protection of Child Rights have been instituted to address issues of abuse.

There is, however, a long way to go in making the provisions of law and policies a reality. Many of the one billion of world's children who are severely deprived of one or more basic needs (food, water, sanitation, health, shelter, education, information and access to services) are living in India and their future has to be made secure.

*Source: Nakray (2014) Background Paper for IPPR 2014, UNICEF 2005, Ministry of Women and Child Development Government of India.*

is no data available for the two points of time for Chhattisgarh, Jharkhand and Uttarakhand, they are not accounted for in these figures. In rural areas, three states namely, Madhya Pradesh, Uttar Pradesh and Punjab contribute more than 10 per cent each to the total child mortality, with respective mortality rates of 49, 38, and 11. Though all these states experience a decline in the mortality rates, the share of Uttar Pradesh and Bihar in the total child mortality in the country increases substantially in 2011. Other states with high child mortality rate are Odisha: 41 and Assam: 34 in 1991, and Rajasthan: 22, Meghalaya: 21 and Odisha: 21 in 2011. In the urban areas, Madhya Pradesh with a child mortality rate of 24, Uttar Pradesh with 23 and Punjab with 13 – all contribute over 10 per cent each to the total child mortality in the country. By 2011, all three experience a decline in the child mortality rate, but Uttar Pradesh increases its share in the total child mortality in the country considerably. While Rajasthan has a high child mortality rate of 21 for 1991, Uttar Pradesh with a child mortality rate of 17 is followed by Bihar and Madhya Pradesh with 13 each in 2011.

International Food Policy Research Institute (IFPRI) has developed the Global Hunger Index which consists of three components namely, proportion of under-nourished population, proportion of under-weight children under five years of age, and under five mortality rate. It ranks India at 65 out of 79 countries for which this index was estimated (IFPRI 2012). The India State Hunger Index (IFPRI 2009) has been constructed for 17 major states using the same methodology as the Global Hunger Index. Out of these 17 major states, 12 states are in the 'alarming' category, and Madhya Pradesh is in the 'extremely alarming' category. The states of Odisha, West Bengal and Rajasthan are also in the alarming category. While Odisha and West Bengal fare poorly on food adequacy (NSS square meals/perception-based criterion), Rajasthan is a good performer in terms of NSS food adequacy criterion. Punjab is categorized as having 'serious' hunger problem, even though almost 100 per cent households in that state report adequate food. The Food and Agriculture Organisation (FAO) estimates the number of hungry people in India as being close to 200 million, the largest in

Table 4.6 Relationship: Poverty and Malnutrition – 1993-94

(a) Rural		Incidence of Poverty		
		Better	Medium	Poor
Malnutrition (less than 70% of calorie norm)	Better	Himachal Pradesh, Haryana, Punjab, Rajasthan, Jammu & Kashmir	Uttar Pradesh, West Bengal	Manipur, Meghalaya, Nagaland
	Medium	Karnataka, Gujarat, Andhra Pradesh, Delhi	Madhya Pradesh	Bihar, Odisha, Mizoram, Assam
	Poor	Kerala, Goa	Tamil Nadu, Maharashtra	Sikkim, Arunachal Pradesh, Tripura

(b) Urban		Incidence of Poverty		
		Better	Medium	Poor
Malnutrition (less than 70% of calorie norm)	Better	Jammu & Kashmir, Himachal Pradesh, Arunachal Pradesh, Mizoram, Nagaland	—	—
	Medium	West Bengal, Haryana, Punjab, Assam, Delhi, Tripura, Sikkim, Manipur, Meghalaya	Uttar Pradesh, Maharashtra, Rajasthan, Gujarat, Bihar	Madhya Pradesh, Odisha, Andhra Pradesh
	Poor	Kerala	Goa	Karnataka, Tamil, Nadu

Source NSS Consumer Expenditure Survey for rounds 1993-94 and 2009-10 and Lakdawala Poverty Estimates (Statistical Annexure).

any country in the world (FAO 2012). All these estimates, as can be seen, use a different basis of arriving at the number of hungry and none of them are comparable with the way India has been measuring the hungry, undernourished as well as malnourished persons.

## Poverty, Malnutrition and Economic Growth

In the case of undivided Bihar, Madhya Pradesh and Uttar Pradesh, along with Odisha, there has been deterioration over time, both in terms of poverty (HCR) and malnourishment (proportion of population not being able to access 70 per cent of the calorie RDA) in rural as well as urban areas. In 1993-94, these states account for 54 per cent of the poor and 34 per cent of the malnourished in rural areas, and 33 per cent of the poor and 22 per cent of the malnourished in urban areas. By 2009-10, they account for 65 per cent of the

poor and 51 per cent of the malnourished in rural areas and 42 per cent of the poor and 28 per cent of the malnourished in urban areas. Tables 4.6 and 4.7 summarise the transition between different poverty and malnutrition incidence range for the major states between 1993-94 and 2009-10. If in addition, malnourishment is seen in terms of the child mortality rate for the age group 0 to 4 years, these very states also experience an increase in their share in the total child mortality in the country from 53 per cent in rural areas and 35 per cent in urban areas in 1991, to 61 per cent in rural areas and 45 per cent in urban areas in 2011. Thus, there is a relationship between the two variables, poverty and malnourishment, howsoever the latter is measured. This comes out clearly in Figure 2.19 (a) and (b), which provides a scatter plot of underweight children in the age 0 to 3 years and the poverty HCR along with a linear trend line. In fact, the coefficient of correlation for the 2004-05 is significantly higher than for 1993-94. The slope of the trend line in 2004-05 is also more than in 1993-94 and the scatter plot is

Table 4.7 Relationship: Poverty and Malnutrition – 2009-10

(a) Rural		Incidence of Poverty		
		Better	Medium	Poor
Malnutrition (less than 70% of calorie norm)	Better	Sikkim, Punjab, Tripura, Himachal Pradesh, Jammu & Kashmir	Uttarakhand, Rajasthan	—
	Medium	Nagaland, Manipur, Andhra Pradesh, Karnataka, Mizoram, Gujrat, Haryana, Delhi	Maharashtra	Odisha, Uttar Pradesh
	Poor	Tamil Nadu, Kerala, Arunachal Pradesh, Goa, Meghalaya	West Bengal	Chhattisgarh, Bihar, Jharkhand, Madhya Pradesh

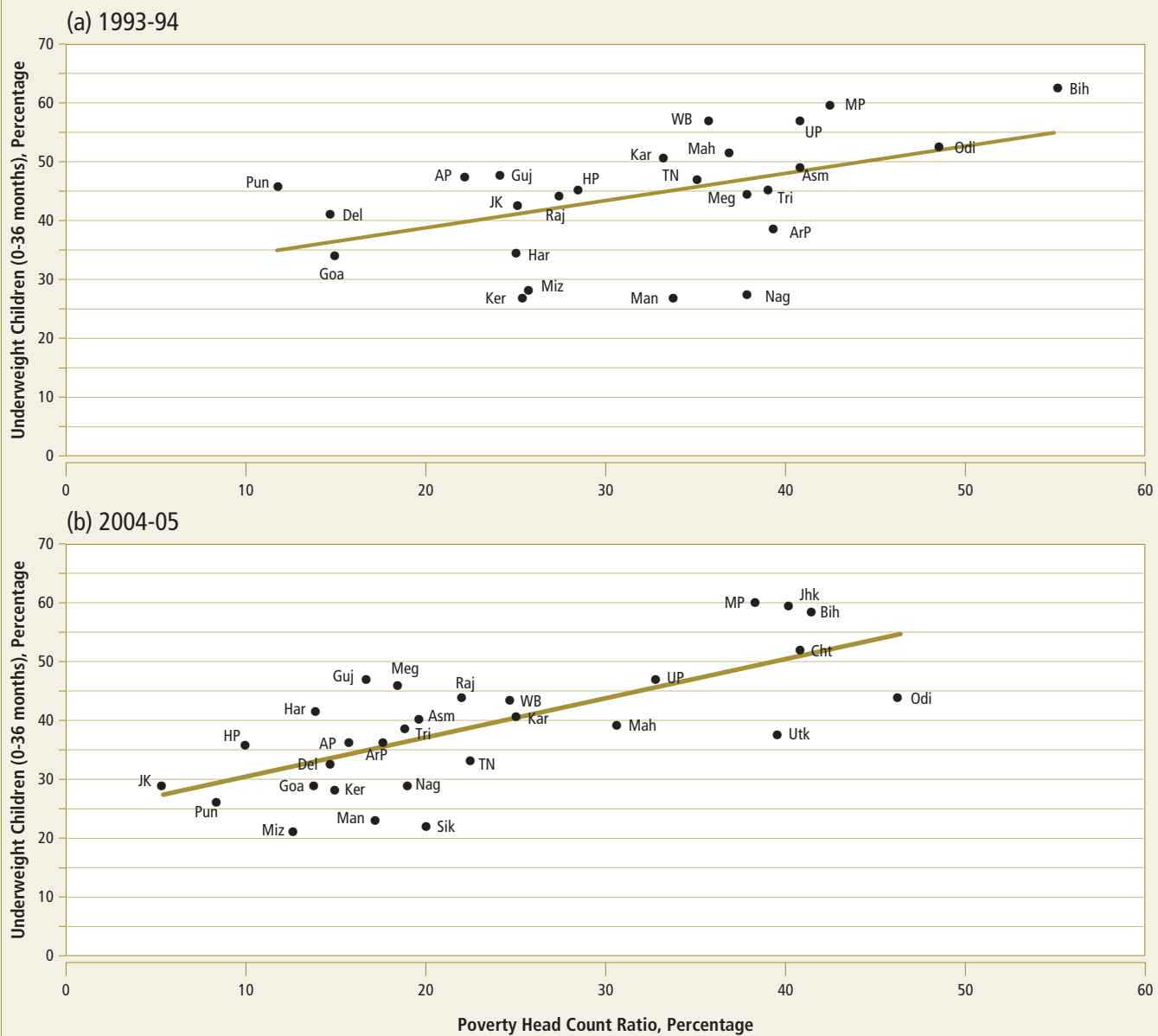
(b) Urban		Incidence of Poverty		
		Better	Medium	Poor
Malnutrition (less than 70% of calorie norm)	Better	Jammu & Kashmir, Himachal Pradesh, Mizoram, Sikkim, Tripura	—	—
	Medium	West Bengal, Maharashtra, Assam, Punjab, Nagaland	Rajasthan, Jharkhand, Andhra Pradesh, Tamil Nadu, Haryana, Karnataka	Chhattisgarh, Manipur, Uttarakhand, Odisha, Bihar, Gujarat
	Poor	Delhi, Kerala, Arunachal Pradesh, Goa	—	Madhya Pradesh, Uttar Pradesh, Meghalaya

Source NSS Consumer Expenditure Survey for rounds 1993-94 and 2009-10 and Lakdawala Poverty Estimates (Statistical Annexure).

getting closer to the origin. This has policy implication for addressing malnourishment. However, the relationship between malnourishment and economic growth, or malnourishment with agriculture growth, is not as obvious empirically. The Indian State Hunger Index Report (IFPRI 2009) also found very little association between incidence of hunger and economic growth. Viswanathan (2014, Background Paper for IPPR 2014) also points out that though economically better-off regions show

better values on the different indicators on undernutrition and malnourishment, the relationship with income is somewhat tenuous when the process of change is ongoing even at a very aggregate level.

Fig 4.10 Relationship – Poverty and Malnutrition



Source: NFHS rounds for 1993-94 and 2004-05 and Lakdawala Poverty estimates (Statistical Annexure).



## II. Policy Response to Hunger and Malnutrition: Assessment and Options

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It is indeed a matter of concern that in India despite having attained self-sufficiency in food production for nearly three decades and with mounting public food stocks at its command, there is still hunger, both undernourishment and widespread malnourishment. From the analysis in the preceding section it may appear that by bringing down poverty, hunger can be sustainably addressed. However, that may not be the case. There are several states where poverty HCR is low, but indicators on malnourishment are relatively high. It is well known that non-availability of foodgrain is not always the cause of hunger. Hunger can persist in situations where food availability does not decline or where there are adequate stocks available in the country. The problem of hunger is social, economic, and political. India's food production is enough to eradicate hunger, but the supplies are not evenly distributed and therein lies the crux of the hunger problem. What is true for India is also true for the world.

Sen (1977, 1981) explains this phenomenon through entitlement approach. A person's entitlement is the alternative sets of commodity bundles that a person can acquire through endowments (legal, physical) or exchange entitlement mapping. If a person is legally alienated from land, or a person loses physical ability to work, then it might lead to hunger and starvation even if there is overall growth in foodgrain production. Similarly, drop in the relative price of goods that the person produces, fall in real wages, and rise in relative prices of foodgrains, adversely affects the exchange entitlement mapping for the individual, resulting in hunger and starvation. Similarly, merely being

a food producer does not ensure access to food. Access to food can be achieved through legal and economic entitlement. Legal entitlement involves ownership right to the food produced. Economic entitlement can be ensured by creating employment opportunities, ensuring minimum wages, stabilizing food prices, and facilitating access to food through the PDS. Entitlements can be realized if there is availability of food. However, availability is only a necessary condition. Food production not only ensures food availability (supply side), but it also improves entitlement through employment creation and subsequent income generation (demand side). Decline in food production does not necessarily imply decline in entitlement provided there are alternative employment and livelihood opportunities (see also Dréze, Sen, and Husain 2004).

Shariff et al. (2004) have suggested four different types of food and nutrition insecurities. These are (a) Chronic food insecurity: caused due to energy deficit for a prolonged period of time. Policy interventions to eradicate chronic food insecurity calls for both demand side (purchasing power, social security) measures, and supply side interventions (agricultural policies, export-import policies, distribution policies); (b) Nutritional food insecurity: caused due to deficiency of micronutrients. Policies involve food fortification and their supply through PDS, providing micronutrients to children below 5 years of age through ICDS; (c) Absorption food insecurity: caused due to non-availability of potable water and poor sanitation. Policies involve providing basic infrastructure, and creating awareness. (d) Transitory food insecurity: caused due to natural calamities. Policies involve appropriate disaster management. Transitory food insecurity can also be caused when there is a decline in accessibility to food which might happen in case of abnormal price increases, or lack of physical accessibility in the event of natural calamity. If appropriate disaster management system is not put in place then transitory food insecurity can become a permanent phenomenon.

Thus, hunger can be a result of host of factors and these factors can be arranged in a sequence that runs from food self-sufficiency, food availability, food entitlement, and nutritional adequacy. Policy corrections can be made once the predominant source is identified. It could well be the case that more than one factor simultaneously impacts a situation, especially at the local level in a specific region, resulting in hunger which makes designing of policies quite complicated. India has been implementing several programmes that seek to address each of the above factors that impact hunger. The agriculture policy addresses the concerns of food self-sufficiency and availability, the poverty alleviation strategy and programmes that of food entitlements, and several specific programmes the issue of nutritional adequacy. Some of the interventions, particularly at the central level, have been reviewed from time to time and even redesigned, but with mixed results. A brief analysis for a select few follows.

## Agriculture Policy and Nutrition

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Even though the contribution of agriculture in GDP has declined over the years (14 per cent in the year 2011-12), it continues to be the principal source of livelihood for majority of the population (53 per cent of workers were employed in agriculture as per UPSS during the year 2009-10). Given this huge dependence on the sector, improving agriculture performance assumes importance for achieving inclusive growth, in general, and addressing the persisting problem of malnourishment, in particular. The linkage between agriculture and nutrition, at one level is obvious, yet at another level it is far too diffused to be pin-pointed for quick policy correctives. Dev (2014, Background Paper for IPPR 2014) examines three paths namely, the importance of agriculture for inclusive growth, the relevance of agriculture

diversification – across crops and regions, and the role of women in agriculture. These and some others issues that have policy consequences of importance for addressing malnutrition are discussed here.

During the Eleventh Five Year Plan (2007-12) average annual agricultural growth rate is 3.3 per cent, which is an improvement over the 1990s and the first half of the last decade, but well short of the targeted growth for the agricultural sector. Though agricultural growth variability is declining over the past few decades, especially so in the last decade, the ability to generate higher growth is severely constrained by the plateauing of growth in the erstwhile green revolution belt and due to existence of substantial yield gaps in the less-irrigated, non-green revolution areas. The extension of the green revolution to the eastern part of the country and the National Food Security Mission (NFSM) with its range of interventions can help reduce the yield gap and support agriculture diversification.

Rain-fed areas have a very diverse ecosystem, with about 34 varieties of crops (which include different kinds of millets) being grown as against only three to four varieties of crops in the irrigated regions (Government of India 2011c). The coarse cereals grown in this region need very less water and other external inputs and for several centuries have provided food and nutritional support to the local people. Cultivation of coarse cereals does not involve chemical fertilizers and harmful pesticides, and therefore represents low carbon farming. It also provides sufficient fodder, which helps farmers to maintain livestock. Rain-fed agriculture supports an estimated 40 per cent of population (484 million) and has a large share of cropped area under rice (42 per cent), pulses (77 per cent), oilseeds (66 per cent) and coarse cereals (85 per cent). Despite lack of policy support, coarse cereals grown in rain-fed areas have shown significant growth and the incremental productivity contribution of coarse cereals over the last decade exceeded that of rice. It indicates

the potential of rain-fed agriculture to contribute to national food security (Government of India 2011c). During the period 1998-99 to 2008-09, the compound annual growth rate of coarse cereals is 3.2 per cent, which is much higher than that of paddy (1.5 per cent) and wheat (0.5 per cent). Even with substantial increase in irrigation facilities, 40 per cent of additional demand for food grains by 2020 is to be met from rain-fed agriculture (Government of India 2011c). Therefore, it is imperative that rain-fed agriculture be given the due policy attention to ensure livelihood security for the population residing in that area and also contribute to the national food and nutritional security.

A focus on reducing the yield gap of a water-intensive crop like paddy in rain-fed areas can have adverse environmental consequences. Already, excessive focus on paddy and wheat production through price incentives and input subsidies has resulted in ground water depletion, soil salinity, and plateauing of crop productivity in erstwhile green revolution areas. Between 2002 and 2008, it is estimated that 26 cubic miles of ground water has already disappeared from underground aquifers in the areas covering Punjab, Haryana, Rajasthan, and Delhi (Government of India 2012). Fertilizer subsidies have shot up from 2.3 per cent of agriculture GDP from the beginning of Tenth Five Year Plan to 5 per cent by the end of Eleventh Plan. There is a need to move towards an investment driven regime, which ensures higher yield along with conservation of natural resources, rather than a regime which is largely subsidy driven. For instance, increasing fertilizer subsidy (which currently stands at 5 per cent of agricultural GDP) has led to its overuse causing problems of soil degradation, imbalance in soil nutrients and ground water depletion, particularly in the green revolution areas of Punjab, Haryana and western Uttar Pradesh.

Land being an exhaustible means of production, environment friendly sustainable agriculture practices are perhaps the only alternative left. This calls

for an integrated system of farming which is location specific and integrates natural resources, inputs used and farm output (crop and non-crop) in a coordinated manner so that the net return to farming households is positive and high enough to incentivize them to continue with environmentally sustainable agriculture. As a first step in this direction, it is very important to revamp the State Agricultural Universities by increasing their funding, and giving them academic autonomy to carry out region-specific research and demonstrate the best practices to the farmers. The decline in public expenditure on agricultural research, education, and extension as a proportion of total public expenditure on agriculture from 6.7 per cent during 1974 to 1990 to 5.7 per cent during 1991 to 2005 needs correction. Further, there is a need for improvement of qualitative inputs, as well as coverage of agricultural extension, with one officer for every 500 farmers as against one for every 2000 farmers in 2005 (Desai et al. 2011).

India's agriculture pricing policy is credited for creating food self-sufficiency in the country. From ensuring national food security, it now needs to focus on bringing about nutrition security at the household level. Price policy needs to balance the needs of producers against those of consumers. A minimum support price (MSP) policy has long been in favour of cereals like rice and wheat. Some corrections have been made in recent years by increasing MSP for protein-rich crops like pulses. As a result, production of pulses has increased. Similar incentives need to be given for other nutrient-rich foods, including coarse cereals, fruits, vegetables, milk, meat, and fish, to increase supply. At the same time, there has to be access to these foods at reasonable prices for consumers to increase consumption.

An important area that needs urgent investment relates to construction of warehouses and cold storage facilities to prevent wastage of produce and augment supplies. According to the Planning Commission estimates, there are less than 300 registered warehouses in the country.

This is grossly inadequate in a country with expanding production and rising demand in the wake of implementation of food security ordinance. Similarly, there is considerable shortage of cold storage facilities, which is one of the reasons why despite being the second largest producer of fruits and vegetables in the world, only 6 to 7 per cent of fruits and vegetables produced in the country are processed (Government of India 2012).

In terms of institutional reforms, there is a need for tenancy reforms (legalizing it and keeping proper records) so that small landholders can lease out their land in order to take up non-farm employment without fear of losing their land. Consolidation of small plots of land into single farming unit can generate economies of scale, thereby increasing returns to cultivation. Setting up of public land bank is a step in that direction. With 83 per cent of farmers operating on less than 2 hectare of land, farming-producers organisations can consolidate farming units, and attain economies of scale by (a) pooling of resources, (b) sharing common storage and marketing facilities, and (c) sharing cost of transportation. Agriculture market is another institution that is vital for promoting agricultural growth and ensuring good returns to farmers. Policy reforms undertaken in agriculture marketing in the last decade have not been implemented uniformly. Infrastructure related to agricultural marketing is not developing in keeping with growing needs (Chand 2012). Between 1991 and 2008, the increase in the number of regulated markets is only 22 per cent, while increase in agricultural production is 70 per cent. There is an urgent need to encourage organised retailing, cooperative marketing societies and private investment in marketing infrastructure. Such institutional reforms, most of which have been reflected in the Twelfth Five Year Plan, can raise productivity, particularly in areas where there is predominance of resource poor farmers.

Apart from crop agriculture, livestock management assumes great significance in

ensuring agricultural growth and livelihood opportunities in the agrarian economy. Not only is the growth rate of livestock sector higher than that of crop sector, the long term trend suggests that variability of livestock output is less than that of crop output (BIRTHAL et al. 2012). Livestock acts as a cushion against vulnerability for rural households that are primarily dependent on crop agriculture.

Agriculture is fundamental to India's inclusive and sustainable economic transformation. It has to therefore play a more significant role in promoting nutrition security. At the same time, there is a need for and scope to address specific concerns on hunger in all its dimensions in the country. The usual determinants of hunger like feeding practices, mother's education, access to Anganwadi services, immunisation rates and the lack of hygiene and sanitation that emerge as critical factors have to be addressed. Some major central government initiatives covering these issues are analysed in the remaining part of this Chapter.

## Public Distribution System

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PDS, since its inception in the 1960s, has been an important means to improve food availability and nutritional security for the population, particularly the economically deprived ones. The programme operates through a network of more than half a million fair price shops and there is a demarcation in terms of procurement and distribution functions between the central and state governments. While the central government is responsible for procurement, storage, transportation and bulk allocation of foodgrains, state governments are responsible for distribution of foodgrains to the consumers through the network of fair price shops (FPSs). The state governments are also responsible for identification of families below poverty line, issue of ration cards, supervision and monitoring of the functioning of FPSs. Until 1997, the

programme was universal and was perhaps one of the most important social security programmes of the government. With the introduction of targeted public distribution and the consequent segregation of the population into below BPL, above poverty line (APL), and since 2001, Antyodaya Anna Yojana (AAY) for the extremely poor, it is often argued that food security achieved over the years has been compromised on account of several factors.

First, it is pointed out that the BPL identification of households is faulty, resulting in widespread exclusion of the households targeted under the scheme. The problem of wrong exclusion has become more pronounced as compared to the wrong inclusion (Swaminathan and Misra 2001). Apart from the said identification problem that compromises the intended objectives of the targeted public distribution system, changing material condition of households owing to favourable and unfavourable economic circumstances makes the task of identification of beneficiaries even more complicated. This can happen within a small span of time and hence targeting can fail in reaching out to the ones who need the most at that point of time. Often, the coping strategy to deal with short term fluctuations can have long term implications in terms of deterioration of asset base, health and educational outcomes, which can impact future incomes. It appears that universalisation of PDS is a better option, instead of targeting. Some states like Kerala, Tamil Nadu, Andhra Pradesh and Himachal Pradesh have nearly universalized the scheme through complementary state level initiatives in order to overcome identification problem. Some other states like Chhattisgarh, Madhya Pradesh, and Rajasthan have introduced state BPL cards and have thus expanded the BPL coverage. In these states, the government agencies are also procuring foodgrains. Massive build-up of buffer stocks with the Food Corporation of India (FCI) is also cited as a reason for universalisation or near universalization of the PDS.

Second, it is suggested that to address the household nutritional security, it is necessary to include pulses and edible oils in the basket of subsidized food items. Chhattisgarh has, for instance, introduced chana dal in District Bastar on an experimental basis (Khera 2011a). Third, low off-take from fair price shops is a concern that needs to be addressed to make progress in addressing both undernourishment and malnourishment. Part of the problem lies in lack of timely availability of foodgrains for beneficiaries to make purchases. It is important to maintain a fixed time-period for foodgrains to be available in the designated FPSs. For instance, in Rajasthan, foodgrains are available in FPSs between 15th and 22nd day of every month (Khera 2011a). Another reason for low off-take from FPSs is the insistence on a single off-take every month, which is not only a violation of Supreme Court order on the issue for AAY card holders, but is also insensitive to the practical difficulties of the targeted family in making a onetime purchase. These aspects of the lack of off-take can be addressed by constituting vigilance committees to oversee the functioning of FPSs.

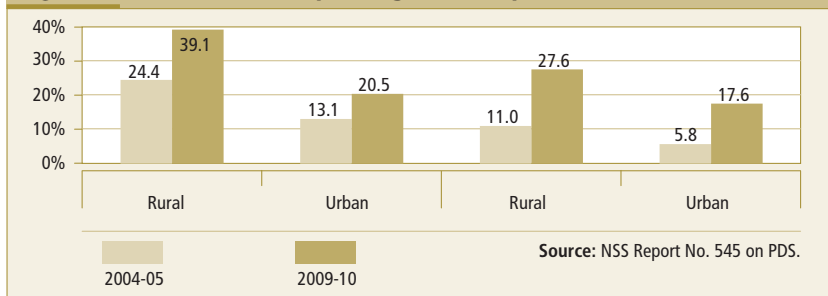
Fourth, there is slowdown in PDS demand due to the narrowing down of open market prices vis-à-vis APL prices. This leads to abundance of supply (much more than what the PDS or the market can absorb at the prevailing prices. As a result the government faces the twin problem of surplus stock (and rising minimum support prices (MSP) has only added to this problem) on one hand, and low off-take of foodgrains, on the other. While there is a case to revisit the public food procurement and distribution policies as pointed out earlier, it is interesting to note that during the second half of the last decade (as food prices on an average hardened with periodic spikes in food inflation), there is a considerable increase in the proportion of households reporting consumption of foodgrains (rice and wheat) from the PDS. The increase is particularly noticeable in case of wheat where proportion of households reporting consumption from

PDS increases by threefold in urban areas and more than twofold in rural areas (Figure 4.11). It also means that the share of PDS in total quantity consumed for households increases in both rural and urban India. Here too, though the share of consumption from PDS is higher in case of rice, the increase during the second half of the last decade is much sharper in the case of wheat (Figure 4.12).

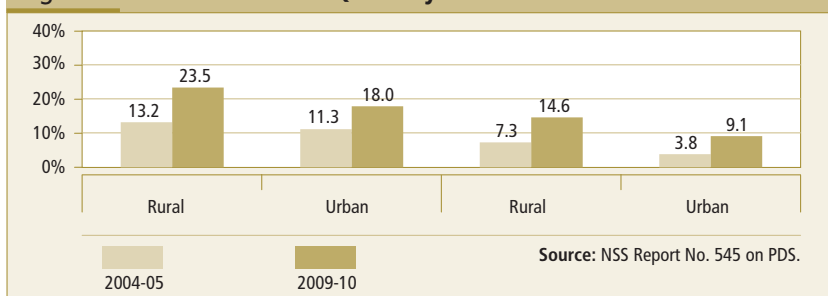
Finally, the most important criticism against PDS relates to the issue of corruption and leakages in the system. Jha and Ramaswami (2010) estimate that the breakdown of the total costs of the food subsidy delivered through PDS can be expressed in percentage terms as follows – 43 per cent are the illegal diversion costs, 28 per cent are the excess costs, 19 per cent income transfer to the non-poor and only 10 per cent is the transfer to the poor. A major part of the illegal diversion occurs at the shopkeepers' end, as the commission they receive from the government is extremely low. In order to compensate for their low earnings shopkeepers have a tendency to divert grains to the open market and offer the card holders low

quality grains. There are several solutions that have been suggested to address some of these concerns. For instance, Kotwal et al. (2011), suggest that the PDS be dismantled and instead food coupons or conditional cash transfers be introduced. This allows for the shopkeepers to get market price for their commodities and so the incentive to cheat diminishes substantially. Also, this gives the consumers an opportunity of grain selection, whereby they can purchase coarse cereals from local markets instead of rice and wheat from the FPSs. It is also suggested that the amount of money given to the beneficiaries through conditional cash transfers should not be a fixed amount, but linked to prices of foodgrains. Linking cash transfers to general price indices is going to be a challenge in India, as foodgrain prices can vary considerably across regions. It may not even be desirable as potentially it can have a perverse effect on inflation and inflationary expectations. To ensure that the cash transferred is utilized for purchase of foodgrains and not wasted, it has been suggested that the cash be transferred to the bank accounts of the adult female member of a household. As noted earlier in Box 3.3, this can have an unintended consequence of an increase in violence directed at women by men who may seek a control over that money.

**Fig 4.11 Households Reporting Consumption From PDS – All India**



**Fig 4.12 Share of PDS in Quantity Consumed – All India**



Chander (2014, Background Paper for IPPR 2014), using an equivalent income transfer as a measure of welfare gain shows that a price subsidy on a limited amount of a good may be regressive in the sense that the welfare gains for the relatively poorer may be smaller. The equivalent income transfer is the amount of money that if given to a consumer who can purchase goods at market prices, makes her just as well-off as she is by availing the price subsidy. In applying the analysis to the National Food Security Act (NFSA), which provides for food security to the poor, he argues that the price subsidy under the NFSA is equivalent to a direct income transfer and that the gains for the relatively poorer segments of the population are smaller under certain circumstances. Thus, replacing the price subsidy with revenue neutral direct

unconditional income transfers is beneficial to the more poor, relatively more (see also Box 4.3 on NFSA).

Unique Identification Authority of India's (UIDAI's) Aadhaar platform has the potential of resolving most of the problems associated with leakages and corruption in the PDS, once fully implemented. To begin with, linking each PDS beneficiary listed in the ration card to their Aadhaar number can eliminate duplicate and ghost identities that currently 'benefit' from the scheme. The savings thus made can be passed on to the genuine but excluded poor residents. Moreover, linking UID numbers to ration card holders can facilitate provision of benefits to each individual as against the present system of household-based entitlements. Further, Aadhaar-enabled Management Information System (MIS) can streamline the PDS process – from delivery at railway yards, FCI godowns,

unloading at FPS points, to actual purchase by the beneficiary. The entire transaction with the help of MIS can be monitored centrally for a state. This can ensure transparency and eliminate leakage. Most importantly, an Aadhaar-based PDS system can bring about 'PDS portability'. It enables any beneficiary to collect entitlements from any FPS in the state as the UID ensures portability of identity. The government replenishes FPSs based on authentication of off-take on real-time information. The information about how many beneficiaries have collected entitlements through the MIS can also reduce storage and transportation costs. Ultimately, Aadhaar can help in converting the present supply-led static PDS to a dynamic demand-led distribution system (Khond 2012).

#### **Box 4.2: Food Corporation of India and Public Distribution System – Some Numbers**

PDS facilitates the supply of foodgrains to the poor at subsidized prices. The foodgrains are procured and stored for the central government by the FCI, whose annual purchase of paddy and wheat in 2011-12 is more than 51 million tonnes, or close to one-fifth of total production in the country. The sale of foodgrains at subsidized prices to the poor takes place through half a million fair price shops around the country. The 2010-11 financial outlay at Rs 88,000 crore means that the central government subsidy is close to 0.9 per cent of the country's GDP. FCI employs more than 55,000 regular employees and 170,000 casual labourers. For the last two decades, procurement is consistently larger than the sales. In 2010, FCI stocks at 60 million tonnes are much higher than the normal requirement. The cost of maintaining the buffers is crippling. Share of subsidies allocated to storage alone triples in a short span of four years—1997-98 to 2001-02—reaching one-third of the total food subsidy. The carrying cost of buffer stock rises from 21.3 per cent of the total value of the stock to 75 per cent between 1999-2000 and 2003-04.

Despite the huge expenditure, it is an irony that hunger woes may have even increased. Part of the problem

is to do with the huge inefficiency of the system. An important indicator of PDS efficiency is the diversion ratio or the leakage. It reflects the proportion of grain that does not reach the beneficiary. Calculation of diversion ratio is done by comparing the data on off-take of foodgrains from FCI by various state governments (published by Department of Food and Civil Supplies) with NSSO data on consumer expenditure on PDS wheat and rice. Other than storage and transit losses, the general practice is to attribute the leakages to illegal sale of foodgrains in open market by corrupt intermediaries. Periodic estimation of diversion ratio yields disturbingly high values. In 2004-05, the diversion ratio is estimated at 54 per cent, i.e., more than half of the procured grains being diverted to open market instead of FPSs. This figure drops to 41 per cent in 2009-10.

Clearly, FCI needs to be reconfigured as an independent regulatory institution and a new regulatory space created in the food sector. Also, under the FCI Act multiple Executive Committees, Boards of Management and state-FCIs have been supported. These parallel governance structures give shape to a meandering bureaucracy rather than a streamlined decision making and efficient service provider.

*Source: Goel (2014), Background Paper for IPPR 2014.*

## Mid-Day Meal Scheme

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The Mid-Day Meal Scheme (MDMS) is a flagship programme of the Government of India, initiated in 1995 (in 2408 select Blocks) with the objective of enhancing enrolment, retention and attendance at the primary school level, and also to simultaneously improve nutritional levels among children studying in government and government-aided schools. It is expected to improve their learning ability. Since 1997-98 it has been universalized, and from 2008-09 onwards even the upper primary school level has been brought under this programme. Initially, only dry rations were being distributed under the programme, but from 2002 provision for cooked mid-day meal in schools has been made under the direction of the Supreme Court. Under this scheme, for children studying at primary level, 450 calories and 8-12 grams of protein are provided per day. In case of upper primary students, the provision has been fixed at a minimum of 700 calories and 20 grams of protein per day. A freshly cooked meal offers a better range of nutrients and packaged food is costlier, per rupee nutrient yield.

Dreze and Goyal (2003) observed that while MDMS has many flaws, it supports improved school attendance, and to a large extent eliminates classroom hunger in the schools investigated. One of the important indirect benefits of MDMS is in undermining caste prejudice, thereby contributing to strengthening of cohesion and equity in the society. Also, it has become convenient for poorer parents (mothers in particular) who have to go out to work. One of the important drawbacks of this programme is the lack of infrastructure like storage facility, cooking shed and utensils. This leads to poor hygiene conditions, which occasionally are seen to blowup into serious health hazards. Lack of support staff for implementing this scheme is another area of major concern. In some places teachers and students have to often spend a considerable amount of time preparing meals, rather than focusing on

school curricula (Khera 2006). There are also considerable variations across states in terms of adequacy of meals being served. In a survey covering 17 states (48 districts – two blocks from each district), it is reported that about one-fifth of the beneficiaries in Bihar, Rajasthan and West Bengal indicate that they do not get adequate meals at school. In Uttar Pradesh, this proportion is lower at around 10 per cent (Government of India, 2010).

In terms of corrective measures there is a need for a substantial increase in financial allocation to this programme given its potential impact. Adequate nutrition in the form of pulses and vegetables can be introduced in the school meals. Increasing financial allocation can also support appointment of staff for procurement, cooking, distribution of cooked meals, and maintaining proper cleanliness and hygiene. At the state level, designated officers need to be put in place exclusively for this programme. There is a case for encouraging the civil society and private participation in setting up centralized cooking facilities at block headquarters. This is being done in Churu district of Rajasthan and Vishakhapatnam in Andhra Pradesh in a PPP mode (Government of India, 2010). It can significantly reduce hurdles and difficulties in supervising the programmes for cleanliness, hygiene and maintaining the nutritional standards. At the same time, prevent the teaching and studying time of teachers and students from being compromised.

## Total Sanitation Campaign

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With more than 600 million people (WHO and UNICEF 2013) defecating openly, India is the largest open lavatory in the world. Sanitation is not only important for ensuring a healthy life, but access to toilet facilities, especially for the women, gives a sense of dignity and privacy. A mere provision of toilet facilities is not enough, it has to be used and for this awareness



has to be created through campaigns and information dissemination at the grassroots level.

Total Sanitation Campaign (TSC) was initiated by the Government of India in 1999 with the objective to eradicate the practice of open defecation. Under TSC, the concept of sanitation goes beyond eradication of open defecation to include personal hygiene, home sanitation, safe water, garbage disposal, excreta disposal and waste water disposal. TSC gives more emphasis on information, education and communication (IEC) in order to create awareness among the rural people, thereby generate demand for sanitary facilities. In that sense TSC is a demand driven approach. The programme is implemented with a focus on community-led and people-centred initiatives with financial incentives being provided to BPL households for construction and usage of individual household latrines (IHHL). Assistance is also extended for construction of school toilet units, Anganwadi toilets and Community Sanitary Complexes (CSC), apart from undertaking activities under solid and liquid waste management. The TSC has been renamed as 'Nirmal Bharat Abhiyan' (NBA) with a target of an open-defecation-free rural India by 2022.

Even though sanitation programmes have been in place since the mid-1980s, the impact has been rather unsatisfactory, with 60 per cent of open defecation in the world occurring in India. There is a very strong correlation between open defecation and child under-nourishment and stunting. Spears (2012) noted that height of Indian children correlated with their and their neighbours' access to toilet, and due to persistence of large scale open defecation Indian children are widely exposed to faecally transmitted infections. Due to faecally transmitted infections small intestine gets affected, reducing the capacity of the body to absorb nutrients. In addition, faecally transmitted infection is also the major cause of diarrhoea, which is responsible for 2,12,000 deaths of under-five children during 2011 (Chambers 2013).

Impact of poor sanitation is not restricted to health outcomes alone. It has implications on educational outcomes as sick children do not attend schools. Further, inadequate sanitation and lack of separate toilet facilities for girls reduces school attendance among girls, and therefore is a major constraint towards removal of gender disparity in education. Economic loss due to poor sanitation is also quite substantial. A World Bank study puts it at Rs 2.4 trillion in a year, which is roughly 6.4 per cent of GDP in 2006. Out of this annual loss of Rs 2.4 trillion, Rs 1.3 trillion is on account of premature death, diarrhoea being the largest contributor. In this context, the study estimates that comprehensive sanitation and hygiene interventions can avert up to 45 per cent of health-related economic losses.

Research on TSC highlights reduced stunting among children in districts where the campaign is being implemented (Spears, 2012). However, in a study conducted in 6 states (Andhra Pradesh, Chhattisgarh, Maharashtra, Tamil Nadu, Uttar Pradesh, and West Bengal) by UNICEF in Nirmal Gram Puraskar Villages it is observed that 30 per cent of toilets constructed under TSC are being used for storing, bathing and washing purposes, the practice of open defecation continues. In terms of performance across states, Haryana and Himachal Pradesh have done far better than most of the other states. The primary reasons for their good performance is better utilization of funds. Both Haryana and Himachal Pradesh have utilized 70 per cent of funds approved under IEC (IAMR 2011). In both these states, the approach adopted is of Community-led Total Sanitation (CLTS). The outcome of CLTS is encouraging and has led to construction of toilets even without subsidies, improvement in health and hygiene and financial savings in terms of reduced health cost (Gupta and Pal 2008). Experience from successful states indicate the important role being played by awareness campaigns, and therefore improving awareness through mass media in addition to interactions with women in

particular, can contribute substantially to increased demand for sanitation.

## National Rural Health Mission

National Rural Health Mission (NRHM) has been launched in April 2005 with the objective of providing accessible, affordable, and reliable healthcare facilities to the rural population, particularly to the poor and the vulnerable sections. Though the programme is in operation throughout the country, it has special focus on eight Empowered Action Group States (EAGS) namely Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh, Uttar

Pradesh, Uttarakhand, Odisha, Rajasthan; eight north-eastern states; two north-Indian states namely, Himachal Pradesh, and Jammu & Kashmir. Decentralized village and district-level health planning is at the core of this programme. The most important cadre in this programme is the Accredited Social Health Activists (ASHA), which is to facilitate access to healthcare services to the rural population. Realizing the collective importance of different health and family welfare programmes as well as disease control measures for the over-arching objective of population stabilization within a reasonable time-frame, different programmes have been brought under NRHM. A funnel type approach is adopted to ensure the integration of funds for all the

### Box 4.3: National Food Security Act, 2013

The NFSA ordinance signed by the President of India aims to provide food and nutritional security to almost 67 per cent of the country's population who are now entitled for five kg of food grains per month at highly subsidized prices of Rs 3, Rs 2, Re 1 per kilogram for rice, wheat and coarse grains, respectively. Identification of beneficiary households is to be done by the state governments. In addition, there are special provisions for nutritional security for children (6 months to 14 years) and pregnant and lactating women. From procurement to final delivery of entitlements, the responsibilities are well specified and divided among the central government, state government and local authorities. Further, there are provisions for social audits and vigilance committees to ensure that benefits reach the actual beneficiaries.

It is estimated that for a financial year, food grain requirement is going to be 61 million tonnes, with an approximate financial cost of Rs 1,24,724 crore (at 2013 prices). These costs are enormous, and are going to rise on account of an increase in the MSPs, which is required to incentivise the farmers to increase production. In the last three years (2010-11 to, 2012-13), cost of production of wheat and paddy is rising on an average by 15 per cent annually. This is likely to continue thereby increasing the direct cost of food subsidy (other direct costs being storage and distribution). There has been no change in the issue price of foodgrains for a while, despite rising cost of procurement, storage, and distribution. This is adding

to the food subsidy burden. As a proportion of agriculture gross domestic product, food subsidy is increasing from 3.6 per cent in 2001-02 to 5.1 per cent in 2011-12. Apart from incentivizing farmers, implementation of NFSA requires revamping of storage and distribution infrastructure and employment of additional manpower at every level.

The success of NFSA to a large extent depends on availability of food grains. Given limited government finances, there is often a trade-off between providing subsidies or making investment in infrastructure, research and development. Unfortunately, lobbying and political pressure ensures that subsidies continue to grow. As a result investment in agriculture has been declining especially in the 1990s, but is now showing signs of a reversal. Public investment in agriculture as a percentage of agriculture gross domestic is increasing, from 1.8 per cent in 2000-01 to 3.4 per cent in 2010-11. At the same time, input subsidies are increasing from 8.9 per cent in 2000-01 to 17.2 per cent in 2009-10 (Gulati et al 2012). From the perspective of a farmer the net return is important. With dwindling net return from crop cultivation, farmers in several parts of the country are diversifying into high value crops. States like Gujarat and Himachal Pradesh are taking a lead in this regard. High agricultural growth in Gujarat during the last decade (almost averaging 9 per cent per annum) is made possible by active state intervention in agriculture investment and infrastructure support. Compared to this, Punjab which lives on the success of technological innovation for three decades is starting to

national level schemes flow to the District Health Mission through the State Health Society. Thus, under the decentralization scheme the district is supposed to be the hub around which all health and family welfare services are supposed to be planned and managed.

In order to reduce high maternal and neonatal mortality in rural areas, Janani Suraksha Yojana (JSY), which is an intervention within the purview of NRHM, has been initiated with the objective of increasing institutional deliveries for BPL households. It is expected to reduce maternal and neonatal mortality. As per NFHS-3 (2004-05), the proportion of institutional deliveries in rural areas is only 39 per cent. Since the implementation

of JSY, the proportion of institutional deliveries almost doubled (Delivery Monitoring Unit Report of NRHM). However, elsewhere the Comptroller and Auditor General of India in a evaluation study notes that despite majority of pregnant women getting registered with health centres, very few end up actually using the centres for delivery.

Successful implementation of NRHM is crucially dependent on availability of health infrastructure. Even though there is a marked increase in number of Primary Health Centres (PHCs) and up-gradation of Community Health Centres (CHCs), facilities at these centres remain unsatisfactory. Non-availability of physical infrastructure and manpower has not

lose ground. The politics of subsidy (power and MSP) results in crop diversification in favour of paddy, which is causing groundwater depletion and ultimately low agricultural growth (on an average less than 2 per cent per annum during the last decade). A continuation of the approach to agricultural subsidies is likely to result in changes in the cropping pattern and environmentally unsustainable agricultural practices in certain regions. This is going to ultimately inhibit agricultural growth. Moreover, in the event of lack of agricultural diversification, food items like pulses and edible oils have to be continuously imported, with consequences for India's current account balance.

In the past decade, increase in subsidies is not seen to have helped agriculture grow rapidly, but subsidy driven agricultural growth is a vital element for meeting the objectives of NFSA. Moreover, farmers are not only food producers, they are consumers as well. If, as consumers, they get access to food grains at vastly subsidized rates, there is a possibility of perverse incentives impacting the production of foodgrains, in which case shortage of foodgrains can well jeopardize the implementation of NFSB. There is also the possibility of NFSA increasing the inflationary pressure in the economy. The Expert Committee under C. Rangarajan, formed to consider the suggestions of National Advisory Council on the National Food Security Bill, in its report states that a larger procurement has the danger of distorting food prices in the open markets. Presently, almost one-third of paddy and wheat produced is being procured for the central pool. NFSA necessitates increase in the proportion of central procurement, thereby

creating shortage in the open market which is likely to impact cereal prices. These are real concerns that may not have been given adequate consideration.

In addition there are certain administrative issues as well that deserve mention. Apart from Punjab, Haryana, Western Uttar Pradesh, and Andhra Pradesh, none of the states have adequately equipped procurement centres and storage facilities. Storage capacity at present is heavily concentrated in the northern zone which accounts for 58 per cent of total storage capacity in the country. The southern and western zones have 20 per cent and 13 per cent respectively. Eastern zone has only seven per cent of total storage capacity in the country (Government of India 2013a). Therefore, procurement and storage in states like West Bengal, Bihar, Odisha and Assam, which are self-sufficient/surplus in paddy production remains a huge challenge for the implementation of NFSA. Second, over-stocking seems to have become a perennial problem with FCI resulting in large scale wastage of grains. As against a capacity of roughly 49 million tonnes for covered and plinth storage facility, the estimated stock with FCI is 80.5 million tonnes as of July 2012. With the coming into effect of NFSA, this problem is going to aggravate. Third, in order to manage such huge stock of food grains, manpower requirement is quite large, with restrictions on appointment of contract labour by ministry of labour and employment, the cost of managing stocks are likely to go up manifold (Gulati et al. 2012).

*Source: Based on cited sources.*

only led to poor health outcomes, but has also rendered services of ASHA workers ineffective. In order to counter manpower shortage in rural areas, some states like Rajasthan and Chhattisgarh have developed attractive incentives for doctors with rural background in order to motivate them to work in rural areas. Flexibility to the states in designing their own interventions has provided an opportunity to them to maximize the outreach of this programme. Several states have taken innovative steps in this context. Initiatives like gram panchayat headquarter-level clinics at sub-centres in West Bengal, Muskaan programme at the ICDS centre in Bihar, the Mamta Abhiyaan in Gujarat, the boat clinics and mobile medical units in Assam have all helped to increase outreach of public health service (Sinha 2009). Thus, despite certain shortcomings in NRHM, it has started making an impact in rural healthcare facilities. Retraining and updating skills of ASHA workers is essential to upgrade the quality of services and a fuller utilization of existing health facilities. Scarcity of drugs remains an area of concern. Free supply of generic drugs, at least to BPL category persons, can help in improving the utilization of the health facilities and improve the credibility of the public health system in rural areas. It is necessary to closely monitor all aspects of NRHM and towards that end the Programme Evaluation Report suggests setting up of district- and block-level quality assurance teams to streamline health quality protocols for different health institutions. They can also help in identifying programme and policy gaps for corrections, with a view to improving the quality of health services in the rural areas (Government of India, 2011a).

## Integrated Child Development Scheme

The Government of India launched ICDS with the primary goal of achieving nutritional security of children, pregnant

women, and lactating mothers. The programme initiated on a pilot basis in 33 Community Development Blocks in 1975, has been universalized as per the Supreme Court order in November 2001. The programme aims at achieving its objective through a comprehensive set of six services which are (a) Supplementary nutrition programme (SNP); (b) Non-formal pre-school education (PSE); (c) Immunisation; (d) Health check-up (e) Referral services; and (f) Nutrition and Health Education (NHE).

As of March 2009, more than 73 million children in the age group of 6 months to 6 years and about 16 million pregnant and lactating mothers have been provided with supplementary nutritional benefits. In addition, a little over 34 million children (aged 3-6 years) receive pre-school education services under ICDS. The services are provided through a network of community-level Anganwadi centres (AWC) – presently around 1.1 million in number. The services include immunisation, health check-up and referral, child growth monitoring, nutrition and health education for women, supplementary feeding for children and pregnant and lactating mothers, and pre-school education for children aged 3-6 years (Government of India 2011b).

Despite the detailed planning, the outreach of this programme remains low with close to 40 per cent of eligible beneficiaries still outside its purview and only one-third of eligible children receiving food from AWCs (Government of India 2011b). Low spread of AWCs is cited as one of the reasons for this low coverage. As against an estimated requirement of 1.7 million AWCs, there are approximately 0.6 million AWCs across the country (Sinha 2006). Provision of supplementary nutrition is an important component of this programme. However, despite low awareness about food entitlement, proportion of beneficiaries is higher, implying that the beneficiaries may not be getting as per their actual entitlements.

The implementation of ICDS leaves much to be desired in many states, largely due to the fact that it receives very low priority in the political and local development agenda. Tamil Nadu, where it is otherwise, has done much better than many other states in bringing down hunger and malnutrition. It ensured the required public policy attention, the necessary budget allocations and the infrastructure in place to combat hunger and malnutrition. In fact in Tamil Nadu, the priority to tackle hunger and malnutrition is embedded in the political discourse ever since the initiation of school meals through public contribution in 1956. Therefore, successive governments have had to give priority to fighting hunger and malnutrition, regardless of the political party in power. More than 70,000 feeding centres operate every day in the state,

providing a hot mid-day meal to around 8 million persons (Rajivan 2006).

Community participation can potentially expand the outreach of ICDS and also improve the quality of service delivery. The Mitandin programme in Chhattisgarh where a health volunteer is chosen for every hamlet, provided training, and asked to deliver as per the norms mentioned in ICDS seem to be working well. The health volunteer is selected by the community and approved by the panchayat. The health volunteer is also required to coordinate with ANMs and Anganwadi workers. There is also a case for further improvement in coordination and convergence of health-related schemes at the grassroots level to improve effectiveness in tackling child malnutrition and hunger (see Box 4.4).

#### **Box 4.4: Political Accountability and Administrative Convergence Model for Hunger Eradication**

In India virtually all public programmes at the central and state level have aspects that directly or indirectly address the poverty and hunger issue. In the absence of convergence and synergy among the various interventions, resources get thinly spread across different programmes. With high overhead (administrative) costs, it leaves very little to spend on the actual developmental or programme activity. Attempts to bring about convergence across programmes, purely at an administrative level, suffer from 'turf-issues' with no line department or public agency wanting to play second fiddle to other or, allow a curtailment in the scope of their influence and discretion.

For the central sector or centrally sponsored schemes directed at poverty alleviation or, with specific focus on addressing hunger and malnutrition, which now involves considerable resources, an alternative administrative arrangement for programme convergence and results can be evolved. The proposed arrangement requires identifying a few young Ministers of State in the Union Cabinet and assigning to them the states of their respective constituency, with an explicit responsibility for ensuring convergence in at least those central schemes that are focused on hunger and malnutrition eradication. Since it involves a few social sector ministries, senior nodal

officers of the schemes (of the rank of Joint Secretary or above) included in this convergence exercise, from the same ministry as the minister, can be assigned to help the minister in the said task. It is likely to involve five-six ministers, one each for the focused state, which can be selected on the basis of some relevant indicators. The identified ministers need to be given the charge of this assignment right at the beginning of their tenure, with an implicit understanding of achieving certain performance benchmark by the end of their five-year term.

The incentive for the selected ministers is to perform, deliver and rise in the party hierarchy with spin-offs of getting involved in local development issues of their states and constituencies. The party in power gets a structured framework to train young ministers and get to know their capacity to shoulder higher responsibility. At the same time, the selected ministers have something worthwhile to do and to show in terms of their performance. If they are shifted around in the cabinet, they could take this responsibility to the new ministry where they are transferred to. The state governments could also have a similar model at the district level. It is very likely that such a model raises the level of political engagement on the development issues and programme results. The inherent incentives are going to help in toning up of the administrative machinery and making the politician more accountable for their public work.

India's strategy to address hunger and malnutrition must address the structural and sector-specific concerns, both in the short and in the longer term. Government is implementing several measures to ensure nutrition security on an immediate basis. At the same time, it needs to retain a focus on the longer term changes needed to create an inclusive society with healthy and productive people. Policies to tackle hunger need dovetailing of the longer-term perspective, in the form of empowering of the poor and improving their entitlements through investment in human capital, with the social protection measures that address the immediate needs of the hungry and the malnourished. Given that undernourished are mainly in rural areas and likely to be engaged primarily in agriculture, it is important to improve the agricultural pathways to nutritional security. Further access to a diverse food basket alone may not overcome malnutrition significantly. There is scope for well implemented government programmes so that access to sanitation, potable water and health facilities in a timely manner helps in the consolidation of the gains from improved entitlements to food and nourishment. As

Viswanathan (2014, Background Paper for IPPR 2014) points out social and cultural aspects that govern intra-household distribution of consumption, determine the status of women, which has implications for feeding and healthcare practices for infants and children. This has to be addressed in the short term mainly by creating awareness and demonstrating the impact of best practices, and in the longer term by educating and empowering girls.

In India, virtually all public programmes at the central and state level have some element of poverty and hunger eradication. Therefore, it is important that at the state and district-level there is an integrated and a coordinated approach to the implementation of the public programmes. In regions where there is a large burden of hunger, the focus has to be on involving the local community in service delivery and oversight. Synergy and convergence between different programmes at the grassroots level can ensure a more holistic and result driven approach to eradication of hunger on a sustainable basis.