Food Security and Food Production

Food Security and Food Production:

Institutional Challenges in Governance Domain

Edited by

C. Sheela Reddy

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LIST OF ABBREVIATIONS

AAY	:	Antyodaya Anna Yojana
APL	:	Above Poverty Line
AWC	:	AnganWadi Centre
BC	:	Backward Caste
BJP	:	Bharatiya Janata Party
BP	:	Blood Pressure
BPL	:	Below Poverty Line
BRAI	:	Biotechnology Regulatory Authority of India
CACP	:	Commission for Agriculture Cost and Prices
CAG	:	Comptroller and Auditor General
CAP	:	Cover and Plinth
CBD	:	Convention on Biological Diversity
CCD	:	Colony Collapse Disorder
CIA	:	Chemical Intensive Agriculture
CIPHET	:	Central Institute of Post-Harvest Engineering and Technology
CO2	:	Carbon dioxide
CPI	:	Communist Party of India
DDS	:	Deccan Development Society
DDT	:	DichloroDiphenylTrichloroethane
DoAC	:	Department of Agriculture and Cooperation
DORB	:	De-Oiled Rice Bran
EPA	:	Environmental Protection Agency
ESG	:	Environment Support Group

ETC	:	Action Group on Erosion, Technology and Concentration
FCI	:	Food Corporation of India
FDA	:	Functional Data Analysis
FDI	:	Foreign Direct Investments
FICCI	:	Federation of Indian Chambers of Commerce and Industry
FSA	:	Food Security Act
GDP	:	Gross Domestic Product
GFSI	:	Global Food Security Index
GHI	:	Global Hunger Index
GM	:	Genetically Modified
GMC	:	Genetically Modified Crops
HT	:	Herbicide Tolerance
HYV	:	High Yielding Varieties
IAASTD	:	International Assessment of Agricultural Knowledge, Science and Technology for Development
IARI	:	Indian Agricultural Research Institute
ICAR	:	Indian Council of Agricultural Research (ICAR),
ICDS	:	Integrated Child Development Services
IFOAM	:	International Federation of Organic Agriculture Movements
IFPRI	:	International Food Policy Research Institute
INCRA	:	National Institute of Colonisation and Agrarian Reform
INSIMP	:	Initiative for Nutritional Security through Intensive Millets Promotion
IPCC	:	Intergovernmental Panel on Climate Change
ISHI	:	India State Hunger Index
IUCN	:	International Union for Conservation of Nature (IUCN)

KBB	:	Karnataka Biodiversity Board
KBBE	:	Knowledge-Based Bio-Economy
LANSA	:	Leveraging Agriculture for Nutrition in South Asia
LEISA	:	Low External Input Sustainable Agriculture
MDG	:	Millennium Development Goals
MDM	:	Mid-Day Meals
MGNREGA	:	Mahatma Gandhi Rural Employment Guarantee Act
MINI	:	Millet Network of India
MoEF	:	Ministry of Environment and Forests
MSP	:	Minimum Support Price
MSSRF	:	MS Swaminathan Research Foundation
MT	:	Million Tons
NAMAs	:	Nationally Appropriate Mitigation Actions
NAP	:	National Agriculture Policy
NAPAs	:	National Adaptation Plans of Action
NBA	:	National Biodiversity Authority
NDC	:	National Development Council
NFHS	:	National Family Health Survey
NFSM	:	National Food Security Mission
NHRM	:	National Rural Health Mission
N-P-K	:	Nitrogen, Phosphate and Potash
NSFB	:	National Food Security Bill
NSS	:	National Sample Survey
NTC	:	Normally Traded Commodities
PDS	:	Public Distribution System
PUCL	:	People's Union for Civil Liberties
R&D	:	Research and development

RBI	:	Reserve Bank of India
RPF	:	Relative Price of Food
S&T	:	Science & Technology
SC	:	Scheduled Caste
SECC	:	Socio-Economic Caste Census
SHGs	:	Self Help Groups
SRI	:	Systems of Rice Intensification
ST	:	Scheduled Tribe
TNC	:	Trans National Corporation
TPDS	:	Targeted Public Distribution System
UAS	:	University of Agricultural Sciences
UC	:	Upper Caste
UK	:	United Kingdom
UNCTAD	:	United Nations Conference on Trade and Development
UNEP	:	United Nations Environment Programme
UNFCC	:	United Nations Framework Convention on Climate Change.
UP	:	Uttar Pradesh
UPA	:	United Progressive Alliance
UPDS	:	Universal Public Distribution System
USD	:	US Dollars
UV	:	Ultraviolet
WFP	:	World Food Programme
WHO	:	World Health Organization

A COMMENTARY

Putting together this discussion on food security has been a learning experience. In recent times, food security has been a hot topic in India and discussed intensively. Human beings, unlike non-human life, were for centuries concerned with food security, building agriculture and agricultural societies from a foraging and food-collecting life.

In earlier times, human societies were concerned about production, and after so many years we are still talking about food security. Now, it is more about quantity and distribution, and food security is seen as more of a management issue, while also being projected as a productivity issue. There are many other dimensions to this problem, which have been untouched, under debated and less understood. The participants in the Food Security and Food Production—Institutional Challenges in the Governance Domain seminar presented and shared their perspectives, ideas and opinions, testing and contextualizing them. However, in my view it was also about getting down to the issue of governance. Has the governance of our societies failed to ensure food security, after so many years of emancipation? What role has governance played in undermining the food security of traditional agricultural societies? Did governance as a system have a role in pushing agrarian societies into industrial societies, and the world into a food-insecure era?

With the Indian polity seizing the issue of food security, especially before, during and after the enactment of the Food Security Bill, governance becomes either an enabling factor or a stumbling block. In an era of globalization and the free trade of goods between countries (notional though it might be), the role of governance becomes crucial. Governance seems to have been the least discussed factor in the whole debate on food security. Of course, governance cannot be discussed in isolation.

The World Food Summit defines food security as the condition when: “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” The summit goes on to say that: “the four pillars of food security are availability, access, utilization and

stability. The nutritional dimension is integral to the concept of food security." The four pillars can be explained as:

- Availability—Food of an adequate quality/nutritional value is physically available to people.
- Access—Individuals can afford to purchase nutritious food supplies.
- Utilization—People have the ability to access an adequate diet along with clean water, adequate sanitation and other non-food inputs to food security.
- Stability—The assurance that people will have access to food at all times, including during crises.

India's major concern is that more than a billion people have to be fed, producing sufficient, quality food. Increasingly, scientists are seeing the environment as perhaps the missing, underpinning fifth pillar. However, an important cross-cutting factor determining food security—the foundation of the country's food system—is often overlooked. While the above four pillars certainly provide a useful framework for understanding food security, there is also a vital governance dimension of food security that underlies these pillars. This can be termed the "institutional foundation" of food security. Undermining the institutional foundation of the food system creates a strain on food security in two ways. Firstly, the basic systemic conditions needed to produce food are challenged (e.g. capacity building, policies, schemes and projects). Secondly, the problem of producing side effects that are not sustainable cannot be ruled out (e.g. subsidies and debts).

The institutional challenges in ensuring food security have been under-explored. As food security is dependent on its ecological foundation, competition for water, land, human and financial resources and the suitability of the existing institutional system in ensuring food security need the attention of policy makers and planners. Institutions, through policies, schemes and programmes, need to address the following issues that impinge on the ecological foundation of food security:

- competition for water
- competition for land
- conventional agricultural practices

- traditional agricultural practices
- deforestation and pesticide contamination
- climate change.

While there is a lot of discussion on entitlements and rights in relation to food security, there is lesser attention to the public institutions that are likely to play critical roles in ensuring food security. The discussion in the seminar centred on the following sub themes.

(1) Food related policies and institutions—The issue of food security is comprehensive in nature and has to be viewed in the context of policies and institutions related to land, water, agriculture and environment. The policies/factors that impact food security need discussion and deliberation.

(2) Biodiversity strategy—Food security has a number of dimensions that extend beyond the production, availability and demand for food. It exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for active and healthy lives, and for which a good biodiversity strategy is crucial.

(3) Planning and governance frameworks—Food security has three components: availability, access and absorption (nutrition). The performance, challenges and policies in food security in terms of availability, access and absorption need proper planning and governance frameworks.

The lively and democratic debate in the seminar has brought out various perspectives and necessary work around food security, identifying the gaps, issues and challenges before governance systems that are tasked with the goal of achieving food security for the majority, if not universally.

This edited volume provides theoretical and practical intellectual insights on the issues outlined. It is a worthy contribution to the academic body of knowledge and a useful anthology to the scholars, researchers and students of policy science, politics, public administration, rural development, economics, development studies and regional studies.

C. Sheela Reddy

BRIEF ABOUT PAPERS

Rajeswari Raina states that:

> If food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life … then food crisis is when access to food is hindered due to changes in any of these factors or causal relationships.

The big question is—does the National Food Security Act respond to such hindrances? She goes on to say that:

> There are is a need for rigorous analysis of the institutions and concepts that inform different paradigms of food security, demonstrating flawed problem statements and delusionary readings of causal relationships, and explaining scientifically, socially and ecologically, the evidence from alternatives.

For the past few decades, production of food has been equated with food security, as if more production alone would ensure food production.

Raina emphasizes the need for a willingness to step out of the current policy framework to identify and modify or reform the institutions or rules that distort or disrupt the "secure bridges between agriculture, health and the environment." She concludes: "There are several options to initiate institutional reforms; new institutions and rules framing a new national food, agriculture and nutrition policy."

Swati Narayan touches upon the emotional slogan of food justice, questioning the frameworks that ignore the rights of many sections of people to food. She says that the crucial food distribution priorities are universal access, child nutrition and gender empowerment, and social inclusion. The food production/resilience priorities could be increasing agroecological sustainability, agricultural production, reducing wastage and climate-proof agriculture. Referring to "rights resurgence," she shares that a global movement for food justice merges the priorities of food distribution and food production.

P. V. Sateesh argues that the major reason for India's acute hunger and malnutrition can be attributed to the systematic marginalisation of millet in the Indian food and farming systems. He highlights the importance of millet in encompassing social, health and ecological environments in achieving food sovereignty and addressing food security. He pleads for a change in the discourse on agricultural productivity from "how much does an acre of land produce to how much nutrition is an acre of land is producing."

Alluding to this kind of discussion, S. C. Roy analyzes food security versus food sovereignty. He points out that food security is a short-term policy, but food sovereignty is long-term. He wants India to follow the sui-generis policy of food sovereignty.

Bhargavi Rao raises concerns about the loss of biodiversity, which is threatening food security. She feels that it is imperative to realize the connection between loss of biodiversity, biopiracy and food security. Preserving our commons and protecting our biodiversity from biopiracy constitute the need of the hour for food security. A wide range of crop genetic resources is very crucial for future food security. Loss of agricultural biodiversity increases the risk of relying on a limited number of staple food crops.

Neha Saigal expresses concern for the impact of climate change on food production. She says that in the wake of depleting natural resources and impending climate change, Indian institutions have to shed the business-as-usual approach while promoting agricultural models. She underlines the fact that increasing biodiversity can be a key strategy. Agriculture needs a winning solution that mitigates the negative impacts of climate change and also makes food security and sustainable livelihoods productive and achievable.

Dipa Sinha is disappointed with the content of the National Food Security Act, even while agreeing that it has the potential to "address acute hunger and improve the PDS, particularly in states where it has not been doing well." The act takes us forward as far as the PDS and maternity entitlements are concerned, but is miles away with regard to adequately addressing all aspects of food security, such as ensuring sufficient production, protecting farmers' livelihoods, meeting nutritional requirements and reaching out to the most vulnerable sections such as the urban homeless, migrants, the aged and the disabled.

Sunkari Satyam is of the opinion that the current policy processes underestimate the value of policy frameworks. He wants governance reforms to be integrated with minimum support prices, buffer stocks, a public distribution system, and a consumption pattern of food grains (especially rice and wheat), which should properly institutionalize cereals and non-cereal food for proper availability. In a multi-cultural society with socio-economic inequalities like India, any policy needs appropriate governance instruments to meet the needy or reach the society targeted. Policy making and good governance are significant governmental tools that have to be given priority.

Ajitesh Chatterjee brings out an argument for a social policy intervention approach. As per his conclusion, Indian programmes and policies have problems in implementation and monitoring. Pooja Singh and Vinay Lohiya maintain that inefficient warehousing is a major problem, expressing the need for policies that stimulate more private investment in the agricultural sector through incentives, tax concessions or other supplementary benefits.

Shyamli Singh elaborates on the link between climate change and food production, even while looking forward to administrative and policy measures that strengthen the resilience of farmers and rural people to help them adapt to the impact of climate change. She discusses the challenges with respect to climate change and presents evidence-based actions and necessary interventions to achieving food security.

Archana Sinha looks at the empirical evidence on the social dynamics and determinants of food and nutritional security. Based on this evidence, she concludes that the overall performance of food and nutrition security programmes would improve at the macro as well as micro levels, if they are demand-driven. She adds that specific initiatives are needed to increase the scale of the programmes to reduce food insecurity, malnutrition and poverty.

Jayakumar C. forcefully argues for food quality as an inherent concern of food security, stating that: “Agricultural production issues cannot be considered separately from environmental issues.” Jayakumar wants food security policies that take a new, technological and developmental agroecological approach to provide for the agricultural needs of the present and future generations without depleting our natural resource base. Given that there is an increasing global realization of the limits of

chemical-based agriculture,Jayakumar observes the need for farming that does not harm the planet and its people.

D. Narasimha Reddy highlights that: “All hunger programmes have inefficiencies, leakages and corruption, undermining their effectiveness,” bringing the discussion into the spheres of policy and administration. Systems of production and distribution have not been focused upon, even while the National Food Security Act provides a framework for addressing the problems of all kinds of nutrition, including hunger. D. Narasimha Reddy raises some interesting questions and concerns with regard to the National Food Security Act. He also lists possible threats to the act in the future.

INTRODUCTION

C. SHEELA REDDY

The world produces enough food for everyone, but not everyone has enough food. Food security for all is a basic need and fundamental necessity, and ensuring it is the primary responsibility of a government. The National Food Security Act (NFSA) 2013, hailed as groundbreaking and game changing, is considered a conscious policy and long overdue social welfare measure. Various developing countries have launched successful food security programmes, such as Brazil's Zero Hunger programme and Mexico's Progresa Oportunidades. Drawing inspiration from the Brazilian programme, Egypt also launched a US $2 billion programme for a food-insecure population. With NFSA, India is also one of those few countries of the world giving food security to their people. The landmark legislation legally binds the Indian government to the provision of very cheap grain for two-thirds of households, school meals to all children in government schools, universal infant feeding and near-universal maternity entitlements. However**,** the passage of food security law in 2013 became a moment of intense national debate both inside and outside Parliament, including the principal question of whether the state should provide food as a component of its duties for social protection at all. Public opinion in India still remains deeply divided about the merits of this law.

A Commission for Agriculture Cost and Prices (CACP) study showed that in its first year the food security law will cost the exchequer Rs 2.41 lakh crores—two and half times the budgetary allocation. Some dismiss this cost as inconsequential. However, it is argued that money alone cannot be a deciding factor when the welfare of the people from the poor strata of the society is the issue at stake. There can be hundreds of reasons for not doing anything but one reason is enough for launching a welfare scheme

that takes care of the life of the citizens. The food security programme of India, the largest in the world if fully operationalized, will amount to an annual expenditure of about Rs 1,25,000 crore, covering more than 67% of the country's population.

The Green Revolution, initiated in the late 1960s, was a historic watershed that transformed the food security situation in India. Though India was a food deficit economy over the two decades after independence, the subsequent national self-sufficiency in food grain has been a major achievement at the macro or national level. Despite the achievement of macro-level food security and the discernible improvement in per capita consumption, India is still home to a fifth of the world's undernourished population. The liberalization of the economy and its impact on agriculture, the establishment of the WTO and the agreement on agriculture, climate change and its impact on food production and prices, the introduction of a targeted public distribution system, the Right to Food campaign and the National Food Security Act are important issues that need to be analysed and understood in the context of the debate on food security in India.

Food Security—a Conceptual Understanding

Food security is a multi-dimensional concept and extends beyond the production, availability and demand for food. It is also about understanding food insecurity. The extent and nature of food insecurity can be broadly categorised into: chronic food insecurity, nutritional insecurity, food insecurity caused by lack of food absorption, and transitory food insecurity.

Chronic food insecurity is long-term or persistent and occurs when people are unable to meet their minimum food requirements over a sustained period. There are several factors, both on the supply side and the demand side, that may cause chronic food insecurity. The most important supply side determinants of food insecurity are the level of domestic food production, the importing of food and the distribution of food. The determinants of the demand side are population growth, purchasing power, product prices/subsidies and the extent and effectiveness of supportive social programmes and schemes such as the Integrated Child Development services (ICDS), the Midday Meal Scheme, Food for Work Programmes (FWP) and rural wage employment programmes.

Food security is a constituent part of the broader concept of nutritional security. A household can be said to be nutritionally secure if it is able to ensure a healthy life for all its members at all times (adequate in terms of quality, quantity and being culturally acceptable), and when it is not at undue risk of losing such access (ACC/SCN 1991, 6). Nutritional security thus requires that household members have access not only to food, but also to other requirements for a healthy life, such as health care, a hygienic environment and knowledge of personal hygiene. Food security is a necessary but insufficient condition for ensuring nutritional security.

Food absorption in the body is a major problem in rural areas as well as urban slums. In the words of Amartya Sen and Jean Drèze: "the capability to be nourished (for the body to absorb food) depends crucially on other characteristics of a person that are influenced by such non-food factors as medical attention, health services, basic education, sanitary arrangements, provision of clean water, eradication of infectious epidemics and so on" (Singh n.d.). The inability to absorb the food intake or where the body is incapable of absorbing the nutrients can be termed absorption food insecurity.

Transitory food insecurity is short-term and temporary and occurs when there is a sudden drop in the ability to produce or access enough food to maintain a good nutritional status. It results from short-term shocks and fluctuations in food availability and food access, including year-to-year variations in domestic food production, food prices and household incomes. Transitory food insecurity is relatively unpredictable and can emerge suddenly. This makes planning and programming more difficult and requires different capacities and types of intervention, including an early warning capacity and safety net programmes.

It is also important to understand how hunger, malnutrition and poverty are related to food insecurity.

Hunger is an uncomfortable or painful sensation caused by insufficient food energy consumption. Scientifically, hunger is referred to as food deprivation. All hungry people are food insecure but not all food insecure people are hungry, as there are other causes of food insecurity, including those due to the poor intake of micronutrients.

Malnutrition results from deficiencies, excesses or imbalances in the consumption of macro- and/or micronutrients. It may be an outcome of food insecurity, or it may relate to non-food factors, such as inadequate

care practices for children, insufficient health services and an unhealthy environment.

Poverty is undoubtedly a cause of hunger. The lack of adequate and proper nutrition is also an underlying cause of poverty: "Poverty encompasses different dimensions of deprivation that relate to human capabilities including consumption and food security, health, education, rights, voice, security, dignity and decent work" (Food Security Information for Action 2008). Economic growth alone will not take care of the problem of food security. A combination of income growth supported by direct nutrition interventions and investment in health, water and education is needed.

The food and nutrition security systems must also address the three issues of availability, access and absorption. The availability of food at the household level depends upon food production, and the operation of a resource-poor consumer-friendly Public Distribution System (PDS) operated with homegrown grain stocks or imports. Access to food depends on livelihoods and purchasing power. Absorption of food is influenced by access to clean drinking water, environmental hygiene and primary healthcare.

The Indian economy is now one of the fastest-growing in the world. More than three quarters of the population live in households with per capita calorie consumption below 2,100 per day in urban areas and 2,400 per day in rural areas—numbers that are often cited as "minimum requirements" in India. The undernutrition levels in India remain higher than for most countries of Sub-Saharan Africa, though the latter are currently much poorer than India, growing much more slowly and with much higher levels of infant and child mortality.

Nutritionists suggest that people need 1,600 kilocalories daily to keep the body functioning with almost no activity, so if a person does nothing except lie down all day they still need 1,600 kilocalories to sustain their body metabolism. If they eat less than that, they are starving. Ahmad et al. (in Deaton & Drèze 2009), using household survey data from 1999, estimated that 17% of people in India survive on less than 1,600 kilocalories a day, which they classify as the condition of being "ultra-hungry." If these trends continue, the stark truth is that one in five or six people will grapple with starvation as an element of daily living. Even if a person consumes enough calories, this does not guarantee the adequate intake of essential micronutrients. Micronutrient malnutrition—often called "hidden hunger"—can lead to mental impairment, poor health and

productivity, or even death. Hidden hunger arises from micronutrient malnutrition, caused by deficiencies of iron, iodine, zinc and vitamins. It can coexist with the adequate or even excessive consumption of dietary energy from macronutrients, such as fats and carbohydrates, and therefore with obesity in a person or a community.

Indian food security in comparison

India moved from 65 to 63 in the Global Hunger Index (GHI) in 2013, a marginal improvement since 2012, but it continues to languish far behind other emerging economies. The index is prepared by the International Food Policy Research Institute (IFPRI), along with Welthungerhilfe and Concern Worldwide. The score for the country improved slightly from 22.9 in 2012 to 21.3 in 2013. India improved its position further in 2014, climbing to 55th position among 76 emerging economies from 63rd position in 2013. The 2013 report states that India continues to trail behind countries like Thailand, China, Ghana, Iraq, Sri Lanka, Nepal, Pakistan and Bangladesh on the index. The level of hunger in India remained at "alarming levels," and the report notes that it is one of the three countries outside Sub-Saharan Africa to fall into this category (the other two being Haiti and East Timor). It further notes that India continues to record a high prevalence of children under five being underweight at more than 40%. In comparison to India, other emerging economies with high growth trajectories have done much better jobs at pulling people out of hunger. China improved its ranking by 57.69% during 1990–2012, but India showed only a 34% improvement in the same period. Brazil, by comparison, had a much better score to begin with, and by 2012 entered the select block of nations doing the best to fight hunger.

The GHI ranks countries on a 100-point scale. Zero is the best score (no hunger) and 100 is the worst. A lower GHI score implies a better nutritional standard and a higher rank for the country. The GHI highlights successes and failures in hunger reduction and provides insights into the drivers of hunger. To reflect the multi-dimensional nature of hunger, the GHI combines three equally weighted indicators: undernourishment, underweight children and child mortality in one index number. The countries that have achieved the best progress on this front include Venezuela, Mexico, Cuba, Ghana, Thailand and Vietnam, all with a 55% or more increase in their GHI scores. The UN Food and Agricultural Organization states that 17% of Indians are still too undernourished to lead productive lives. In fact, one-quarter of the world's undernourished people

live in India—more than in all of Sub-Saharan Africa. More distressingly, one-third of the world's malnourished children live in India. According to UNICEF, 47% of Indian children are underweight and 46% of those under three years old are too small for their age. Undernourishment is often an invisible problem, jeopardising children's survival, health, growth and development. According to the 2014 Global Hunger Index, the hunger status in India has improved from "alarming" to "serious." Still, more than 190 million people continue to starve, which is quite deplorable.

Food production or distribution

Farming output has been setting new records in recent years, having increased from 188.7 million tons in 2005–6 to an estimated 238.5 million tons for 2013–14. India needs between 204 and 208.6 million tons of food per year. In the current situation, despite population growth, food production is clearly not the main issue. The most disturbing and disheartening fact is that a high proportion of the food that India produces never reaches consumers. The number of hungry people in India has increased by 65 million—more than the population of France. According to a survey by Bhook (an organization working towards reducing hunger), in 2013, 20 crore Indians sleep hungry on any given night, and about 7 million children died in 2012 because of hunger/malnutrition.

In India, along with steps to achieve adequate food production, initiatives were taken to get foodstuffs to areas facing shortages at affordable costs through the public distribution system—the world's most extensive and dispersed food-based safety net, with half a million retail outlets, even penetrating the deep interiors of rural India. For food-insecure families, the Indian government has an impressive range of schemes—the largest in the world—for food transfers and livelihood security. However, N. C. Saxena (in Mander 2012) observes that food grain production per year per head has fallen from 208 kg in 1996–7 to 186 kg in 2009–10. He also finds that per capita food grain production has dropped 11% from 1996–7 to 2009–10. This, coupled with India's average exports of nearly 7 million tons of cereals per year, has further reduced the per capita availability by 15% between 1991 and 2008.

Food wastage

The Food and Agriculture Organisation of the United Nations estimates that one-third of food produced annually for human consumption

worldwide is lost or wasted. In India, where millions of people in a country of 1.2 billion go without food every day, the question of hunger is less about insufficient food production but of excessive food loss and food wastage. There is also a meaningful difference between the concepts of food loss and food waste. Whereas the former captures losses in the food supply chain that occur from harvesting through processing, food waste addresses losses that occur during distribution and consumption.

The biggest contributors to food losses are the lack of refrigerated transport and the lack of high quality cold storage facilities for food manufacturers and food sellers. The food is wasted due to the absence of modern food distribution chains, poor transportation facilities, and the erratic electricity supply. A study by the Indian Institute of Management in Kolkata estimates that cold-storage facilities are available for only 10% of perishable food products, leaving about 335 million tons of products at risk. The lack of refrigerated transport and storage facilities means food can't stay fresh when on the road for many hours. Estimates show that this logistical problem has resulted in US $8.3 billion worth of food being thrown away every year.

The Emerson food wastage and cold storage report cites studies that have pegged the value of fruit, vegetables and grain wastage in India at Rs 44,000 crore annually. Fruit and vegetables account for the largest portion of that wastage, and 18% of India's fruit and vegetable production—valued at Rs 13,300 crore—is wasted annually. According to data from the Central Institute of Post-Harvest Engineering and Technology (CIPHET), Punjab (Bhosale 2013): "India wastes fruit and vegetables worth Rs 13,300 crore every year." Currently, India has 6,300 cold storage facilities unevenly spread across the country, with an installed capacity of 30.11 million metric tons. Studies have shown this to be half the amount of cold storage facilities that India actually needs (61 million metric tons). In order to reach that target, the report says an investment of more than Rs 55,000 crore is needed by 2015–16 just to keep up with growing fruit and vegetables production levels.

It is not only perishable food that is squandered. An estimated 19 million tons of wheat—equivalent to Australia's entire annual crop—is eaten by insects or rats owing to inadequate storage and poor management at the government-run Food Corp of India (FCI). Food-price inflation since 2008–9 has been consistently above 10% (except for 2010–11, when it was "only" 6.2%); the poor, whose grocery bills typically account for 31% of the household budget, have suffered the most. Statistics suggest that

food spoilage, and not production, is the issue. India produced an estimated 263 million tons of food last year (2013), of which 33 million tons were excess output. The government has instead tried to end shortages by increasing production, without considering that up to half of the food will be lost. India will not have enough arable land, irrigation or energy to provide enough nutritious food to India's future 1.7 billion people if 35–40% is left to rot.

Prices—a factor

The situation of malnutrition and food insecurity is further exacerbated by the utter failure of the Central Government to control the relentless price rise of essential commodities. The prices of rice, wheat, edible oil and salt have increased by 12–20%, and in the cases of some vegetables by over 100%. The prices of commonly used dals (pulses) like Arhar have doubled and are sold at between 80 to 100 rupees a kilo. Sugar is a better commodity in the market today at thirty rupees a kilo. India may be the world's largest milk producer and grower of the second-largest quantity of fruits and vegetables (after China), but it is also the world's biggest waster of food. As a result, fruit and vegetable prices are twice what they would otherwise be, and milk costs 50% more than it should. High prices have led to increasing food insecurity because families are forced to cut down on their food intake. In particular, poor women and female children are the worst affected.

Food security for a household is defined by the Food and Agricultural Organisation as: "access by all members at all times to enough food for an active, healthy life." According to this definition, a large majority of people in India are food insecure.

All these factors point towards the need for an inclusive universal PDS that includes several items at affordable prices linked to the capacity to pay for the majority of Indian people. It has been conclusively shown through evidence backed by NSS data that the targeting system started in 1996 has excluded large numbers of the poor. For example, over half of the agricultural labourers, Dalit and tribal communities are excluded from the BPL category.

Nutrition programmes like the ICDS and the midday meal scheme are hostages to budgetary considerations instead of being recognized as constituting a statutory right. It is necessary to include all food and nutrition schemes of the Central Government in the proposed food security