

FOOD SECURITY IN INDIA: SUSTAINABILITY, CHALLENGES AND OPPORTUNITIES

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Agricultural research preparedness needs support of strategic framework and supporting policies for maintaining long-term food security, Government policies regarding agricultural pricing, agricultural marketing, land use and investment in subsidies in agriculture need to be reoriented and repositioned to meet the food demand in future. Policy institutions have initiated the proceedings in this direction by deliberating various critical issues among stakeholders. It is hoped that these endeavors will take care of India's concern for national and household nutritional and food security, reducing poverty at a rapid rate, and achieving accelerated growth of agricultural sector, and in turn of the whole economy.

India is a proud nation having attained food security for its 1.3 billion populations despite several odds and challenges. According to Food and Agriculture Organization of United Nations, food security is a situation when all people at all times have sufficient food to meet their dietary and nutritional needs to lead a healthy and productive life. In this sense, food security necessary includes nutritional security. Soon after independence, especially in post-Green Revolution era, India strived for 'Food for All' by developing technological interventions, supporting policies and strategies and a vast network of public distribution system. These initiatives enabled the country to increase the production of food grains by 5-fold, horticultural crops by 6-fold, fish by 12-fold, milk by 8-fold, and eggs by 27-fold since 1950-51. Such steep enhancements improved per capita availability of major food commodities and made a visible impact on national food and nutritional security. Food security also implies food affordability, that is, an individual's capacity to purchase proper, safe, healthy and nutritious food to meet one's dietary needs. Realising the wide-spread poverty as a major threat to food security, Government of India launched several social welfare schemes which ensure food to poor and 'poorest of poor' sections of the society. However, to sustain food security in future, India faces several challenges of varied nature.

Bumper Harvests, Soaring Stocks:

The Indian Council of Agricultural Research, through its vast network, provided leadership to ensure national food and nutritional security by promoting interdisciplinary, system-based, knowledge-intensive and problem-solving research. As a result, India could harvest more than 252 million tonnes of food grains in 2015-16 crop years despite deficient rainfall and its consequences (as per third advance estimate). The estimate includes rice production (103.36 million tonnes, wheat production (94.04 million tonnes) and production of coarse cereals (37.78 million tonnes). Output of pulses and oilseeds are estimated at 17.06 and 25.9 million tonnes respectively. The impressive production figures are mainly attributed to preparedness for facing drought-like conditions and other natural calamities. In addition, various schemes launched by Ministry



of Agriculture and Farmers Welfare recently also contributed significantly by providing and facilitating technical support, agricultural inputs, agricultural credit, marketing support and other interventions for raising productivity and expansion of area under major crops. Schemes such as Pradhan Mantri Fasal Bima Yojana, Pradhan Mantri Krishi Sinchai Yojana, e-NAM, Paramparagat Krishi Vikas Yojana and Kisan Credit Card Yojana are playing a very important role in technological and financial empowerment of small and marginal farmers who are major contributors to national food security. Of the total land holdings in the country, 85 per cent are in marginal and small farm categories of less than two hectares. The small farms though operating only on 44 per cent of land under cultivation, are the main providers of food and nutritional security to the nation. It has been empirically demonstrated that where appropriate institutional alternatives are adopted, small holders are as competitive as large farms. No wonder, with their best contribution, Indian food grain stocks are soaring and surpassing food grains stocking norms. Country had more than 27.50 million tonnes food grains (rice and wheat) in the Central Pool Stock as on December 2016. According to Food Corporation of India, the quantity is more than sufficient to feed the nation and also meet emergencies, if any.

As far as nutritional security is concerned, India has made good progress in fruit and vegetable cultivation by integrating production technologies, input management and policy support. Now, India ranks second in the fruits and vegetable production in the world, after China. During 2014-15, country produced 86.60 million tonnes of fruits and 169.47 million tonnes of vegetables which significantly raised per capita availability and nutritional status of population. India is the global leader in milk production, accounting for 18.5 per cent of world production and achieved an annual out-put of 146.3 million tonnes during 2014-15. The per capita availability of milk has increased from 146 grams per day in 1990-91 to 322 grams per day by 2014-15, which is more than the world average of 294 grams per day (2013). Both egg and fish production, have also registered an increasing trend over the years.

Mission for Millions:

Government of India launched a strategic mission in 2007 for augmenting and sustaining

food grains production to maintain long term food security. Implemented as National Food Security Mission, it envisaged to increase the production of rice, wheat and pulses to the tune of 10 million tonnes, 08 million tonnes and 02 million tonnes respectively during the 11th Five Year Plan period (2007-2012). The mission was implemented in 371 districts of 17 states with an outlay of Rs. 4882.48 crore. Active involvement of all stakeholders with promotion and extension of improved technologies resulted in significant expansion of area and productivity. Overall production of selected crops increased more than the targets. The success story prompted Government to continue the mission during 12th plan period (2012-2017) with revised target of raising the food grains production by 25 million tonnes. Coarse cereals, sugarcane, jute and cotton were included in the mission which now covers all districts of all the states. However, pulses are being given top priority and major allocations due to widening demand and supply gap. Large scale technology demonstrations at farmer's fields are being conducted across the country to promote improved production technologies and improved varieties.

National Food Security Mission provides technology support and financial assistance to farmers for specific activities having potential to raise the productivity. Seed mini-kits are provided free of cost for introduction and popularisation of latest released/pre-released varieties. In addition, seeds of approved varieties are provided at subsidized rates. Panchayats and Zila Parishads play a central role in identification of beneficiaries. Financial assistance is provided for purchase of specific farm implements/machinery for raising and harvesting of specific crops. To support farmers, assistance is provided for purchase of micronutrients, fertilizers, plant protection chemicals and other inputs considered necessary for enhancing the productivity. Mission provides assistance for conducting training of farmers under the Farmers Field School program for imparting first hand information on scientific practices of production and input management. Assistance is also provided to improve irrigation facilities in fields for better productivity.

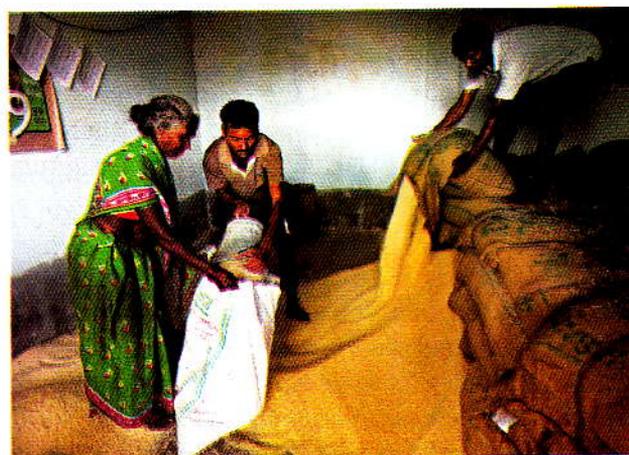
Food for All:

Vastness of the country having many geographically challenged places and the economic

disparities pose a big challenge in ensuring physical and economic access to all sections of the society, especially the poor ones. But Government of India worked in a dedicated manner to realize the vision of 'Food for All' and launched strategic schemes/ programs to provide food to weaker sections of the society at affordable prices near their households. As a response to the food shortages at the time, Government of India launched well structured Public Distribution System (PDS) during 1960s, which relied mainly on procurement of food grains by Food Corporation of India and their distribution through fair price shops. By the 1970s, PDS had evolved into a universal scheme for the distribution of subsidized food and currently it, is the largest distribution network of its kind in the world. In the 1990s, Government revamped the PDS to improve access of food grains to people in hilly and inaccessible areas and to target the poor. The PDS, in its new 'avatar' is Targeted PDS (TPDS), operates through a multi-level process in which the Centre and States share responsibilities. States such as Chattisgarh and Madhya Pradesh have implemented IT measures to streamline TPDS, through digitization of ration cards, the use of GPS tracking of delivery and SMS based monitoring by beneficiaries. TPDS provides 35 kilogram of food grains to each poor households at subsidized rates. Centre has made special efforts to deliver food grains to remote areas, such as hilly tracts of north-east region and Himalayan areas. Under a special provision, Government of India releases extra food grains, beyond the allocated state quota, to provide relief to states suffering from natural calamities.

While implementing TPDS, Government realized the plight of 'poorest of poor' who are not able to afford food even on subsidized prices. Hence, to ensure their food security, a special scheme, 'Antyoday Ann Yojana' was launched in the year 2000 targeting families having monthly income of less than Rs. 250/-only. Such families were identified and issued a special 'Antyoday Card' which entitles the family to get 35 kilogram of food grains per month (wheat @ Rs. 2/- per kilo and rice @ Rs. 3/- per kilo) from the fair price shop. The scheme is a great success ensuring food security for the 'poorest of poor'.

Moving further, Government has notified the National Food Security Act, 2013 to provide food



and nutritional security to its people as a legal right. However, the Act does not disturb the structure and provisions of the Antyoday Ann Yojana. The Act also has a special focus on the nutritional support to women and children. It provides meals to pregnant women, lactating mothers (upto six month of child birth) and children upto 14 years of age. Nutritional meals are provided to this target group as per the prescribed nutritional standards. So far, the Act has been implemented in 32 States and Union Territories, and out of these, Chandigarh and Puducherry are implementing the Act through cash transfer of food subsidy to the beneficiaries.

Taking an innovative step, Government of India launched an unique 'Mid Day Meal Scheme' in 1995 with a view to encourage enrollment and attendance in primary schools along with improvement in nutritional levels of the children. Initially, the scheme was implemented in 240 blocks of the country, but the overwhelming success and popularity of the scheme prompted Government to cover all blocks by the year 1997-98. Simultaneously, the coverage was also extended to upper-primary schools and the nutritional standards of the meals were also improvised. Now, the meals of students of upper-primary classes have been standardized as 25 to 30 grams pulses, 65 to 75 grams vegetables and a moderate quantity of oil (7.5 gram). The scheme is ensuring nutritional security of 11-12 crore school children along with educational benefits. Government of India is also operating an Integrated Child Development Scheme (ICDS) since 1975 to provide a sound base for overall development of children which includes nutritional security. Target groups of this scheme include children in the age group of 0 to 6 years, pregnant women and lactating

mothers. Services such as health, nutrition and early learning are provided at the village level through Anganwadi Centres across the country. The scheme is providing nutritional support to more than 3.40 crore children and 70 lakh women especially in rural areas.

Challenges and Opportunities:

Indian food and nutritional security is being challenged by many social, economic and environmental factors such as increase in the population, increasing urbanization and increasing demand of food due to rising income. In addition, dietary preferences such as high demand for livestock products and consumption of more processed foods are also creating pressure on the food supply system. The population of India is projected to be 1.65 billion by 2050 with an average income of Rs. 401839/cap, up from the level of Rs. 53331/cap in 2010-11, with 50 per cent people residing in the urban areas. Various studies indicate the demand for food grains will grow by about 50 per cent in 2050, if the growth rate in national GDP sustains at 7 per cent per annum. At the same time, the demand for fruits, vegetables and animal products will be more spectacular (100-300 per cent) due to higher incomes and increased availability of these commodities. It is projected that by 2050, the calorie consumption will reach 3000 kcal/cap, with rise in the share of animal-based calories from the current level of 8 per cent to 16 per cent. To sustain food and nutritional security in this scenario, India will have to raise its food grain productivity from 25000/kcal/ha/day in 2005 to about 46000 kcal/ha/day by 2050. Considering many other factors, it is estimated that the country will require nearly 450 million tonnes of food grains by 2050 to sustain the food security. Corresponding increases in pulses, edible oils, fruits, vegetables, milk, meat and eggs are also indicated. The Indian Council of Agricultural Research has formulated a strategic framework as 'Vision 2050' to promote excellence in agricultural research, education and extension for sustained food and nutritional security. The research initiatives will aim at: zero net land degradation, 20 per cent increase in total food supply-chain efficiency; reducing losses and wastages from field to fork; 20 per cent increase in water and nutrient efficiency in agriculture; more nutrition and crop per drop; and enhancing food safety. However, we will have to address various challenges to attain

these goals.

Challenge of Climate Change:

Global climate change is one of the most impacting challenges to long-term food security as it could lead to dramatic scarcity of fresh water in the northern and peninsular regions of the country. Various estimates suggest that India will experience an increase of 2.2 - 2.9 degree Celsius in average temperature by 2050 affecting overall production of rabi and kharif crops with simultaneous loss in milk, fish and meat production. Rain-fed agriculture which covers 60 per cent of all the cultivated land in the country will be particularly hard hit. Except for the states of Andhra Pradesh, Tamil Nadu and Karnataka, where yield of rain-fed rice is likely to go up by 10-15 per cent, rice yields will go down by 15-17 per cent in Punjab and Haryana and by 6-18 per cent in all other regions. To address this critical issue, ICAR has launched a nationwide project NICRA (National Innovations in Climate Resilient Agriculture), which provides strategic support to farmers and empowers them to adopt climate smart agricultural practices. Scientists have developed new varieties of various major crops, which are tolerant to climatic stresses and perform well under adverse weather conditions. Integrated farming models are being popularized in which livestock are integrated in the cropping patterns as livestock has always acted as insurance during environmental stresses and is more dependable than crops. But it would require technological innovations to make them adapt to climate extremes.

Declining and degrading land resources also pose a serious threat to food security as the availability of per capita land is declining sharply due to increase in population (0.13 ha land/cap in 2010-11 to 0.09 ha/per cap). Further, in some cases, agricultural land is being diverted to other uses such as infrastructure development, urbanization, and industrialization negatively affecting to agricultural production. Land is getting polluted with toxic waste waters and there is a large scale of degradation due to water and air erosions. Growing water scarcity and degradation in its quality are other factors which are creating numerous water management challenges in both reverse and ground water across the country. Biodiversity of plants and livestock, which is very crucial for sustaining long-term productivity, is under threat. The rate of extinction is alarming, as

only four crops provide about 60 per cent of global food, causing declines in genetic diversity among cultivated species. Pandemic pest and diseases in animal population increase the production risks and present a major challenge for ensuring food security in the country.

Way Forward:

The power and potential of science and innovation promises hopes for sustainable food and nutritional security through enhanced production and productivity of crops and livestock including fisheries. Genetic enhancement of plants/animals/fish is considered to be a major option to sustain the food security by increasing productivity. Biotechnological advances in agriculture may improve soil productivity and may provide a safety net to food production through employment of environment friendly tools for insect and pest management. Mechanization of agriculture and food production systems may enhance the overall productivity to save labour and cut down the production cost. Currently, India is lagging behind in food processing sector and consequently, high losses are being registered across supply chains. Therefore, to sustain food security a substantial increase in food processing sector is suggested by

increasing investment, infrastructure and facilities. The issue of energy development and management in agriculture sector requires urgent attention as it is crucial to both food production and processing. A core program in the efforts to secure national food security is the promotion of gene revolution aiming at lowering the net production costs, raising the yields and net farm incomes, reducing the use of pesticides and herbicides, and thereby lowering the consumer prices. Agricultural research preparedness needs support of strategic framework and supporting policies for maintaining long-term food security. Government policies regarding agricultural pricing, agricultural marketing, land use and investment in subsidies in agriculture need to be reoriented and repositioned to meet the food demand in future. Policy institutions have initiated the proceedings in this direction by deliberating various critical issues among stakeholders. It is hoped that these endeavors will take care of India's concern for national and household nutritional and food security, reducing poverty at a rapid rate, and achieving accelerated growth of agricultural sector, and in turn of the whole economy.

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Clean Consumer Fora and Clean Market Scheme to Launch from 2017-18

The Department of Consumer Affairs has decided to launch two schemes, namely, Clean Consumer Fora and Clean Market from 2017-18, as a lot of emphasis is being given for setting up of permanent mechanism through new programmes or schemes for sustainability of Swachhta under Swachh Bharat Mission. The salient features of the schemes are as under:

Clean Consumer Fora : A number of consumers visit the Consumer Fora every day in connection with their complaints. There should be adequate facilities for the consumers in each Consumer Forum, including adequate toilets, especially for the differently-abled. Under the scheme, financial assistance will be provided for construction/upgradation of toilets, at least three toilets- one for men, one for women and one for differently-abled, for the use of the consumers visiting the Consumer Fora in connection with their complaints.

Clean Market: Unhygienic conditions at market places pose health hazards to the consumers. Under the scheme, the Voluntary Consumer Organizations (VCO) will be associated and asked to adopt a market place where they can carry out awareness activities on Swachhta and also cleanliness of the market place including provision of sanitation facilities for consumers and street vendors, in association with the market association and local authorities. Financial assistance will be provided to a VCO in each State/UT.