

Chapter 8

Agriculture and Food Management

With the shadow of the El Niño looming over the Indian monsoon, there are legitimate concerns about its likely impact on agricultural production and consequently prices of food products. What is significant is that over the last decade Indian agriculture has become more robust with record production of foodgrains and oilseeds. Increased procurement, consequently, has added huge stocks of foodgrains in the granaries. India is one of the world's top producers of rice, wheat, milk, fruits, and vegetables. However, given that India is still home to a quarter of all undernourished people in the world and since on an average almost half the total expenditure of about half the households is on food, increasing the efficiency of the farm-to-fork value chain is crucial for eliminating poverty and malnutrition.

OVERVIEW OF THE AGRI SECTOR

8.2 As a concomitant of growth, the share of agriculture and allied (hereinafter referred as agri) sector in gross domestic product (GDP) declined to 15.2 per cent during the Eleventh Plan and further to 13.9 per cent in 2013-14 (provisional estimates—PE). While it still accounts for about 54.6 per cent of total employment (Census 2011), there has been a decline in the absolute number of cultivators, which is unprecedented, from 127.3 million (Census 2001) to 118.7 million (Census 2011). This is indicative of a shift from farm to non-farm employment, causing real farm wages to rise by over 7 per cent annually in recent years.

8.3 The resilience of Indian agriculture is evident in that this sector last posted negative growth in 2002-03 and has registered a remarkable average growth rate of 4.1 per cent during the Eleventh Five Year Plan (2007-08 to 2011-12). As per the PE for 2013-14, growth rate of agri GDP was 1.4 per cent and 4.7 per cent respectively during the first two years of the Twelfth Plan period (Table 8.1).

8.4 In addition, a structural change in the composition of agriculture, showing diversification into horticulture, livestock, and fisheries, is noticeable. The horticulture sector contributed 30.4 per cent of agri GDP, while the livestock sector contributed over 4.1 per cent of the total GDP in 2012-13.

A resilient agriculture with increasing contribution from horticulture and livestock is evident.

Sl. No.	Item	2009-10	2010-11	2011-12	2012-13	2013-14
1	Growth in agri GDP	0.8	8.6	5	1.4	4.7*
	Share in total GDP	14.6	14.6	14.4	13.9	13.9*
	Of which, Agriculture	12.3	12.4	12.3	11.8	NA
2	Share in total GCF	7.3	6.3	7.0	7.1	NA
	Of which, Agriculture	6.7	5.8	6.5	6.5	NA
3	GCF as per cent of agri GDP	20.1	18.5	20.8	21.2	NA
	Of which, Private sector	16.7	15.7	18.0	18.1	NA
4	Agri exports (incl marine products) as per cent of total exports	8.2	8.0	10.1	11.8	11.9(P)

Source: Central Statistics Office (CSO) and Directorate General of Commercial Intelligence and Statistics (DGCI&S).

Notes: *Quarterly Estimates of GDP as of 30 May 2014; NA - Not Available; GCF-gross capital formation; P- provisional.

8.5 Agriculture being a state subject, the primary responsibility for increasing agricultural production and productivity, exploiting untapped potential, and enhancing incomes of the farming community, rests with state governments. Their efforts are supplemented by many centrally sponsored and central sector schemes.

Area, Production, and Productivity

8.6 Substantial progress in acreage and production are recorded for 2013-14. As per the 3rd Advance Estimates (3rd AE) the acreage under foodgrains has increased to about 126.2 million ha; and to 28.2 million ha under oilseeds. Record production of foodgrains at 264.4 million tonnes (mt) and oilseeds at 32.4 mt is estimated (Table 8.2).

(Area: Million ha; Prod: Million tonnes; Yield: kg/ha)

Group/Commodity	Area	Production	Yield
Foodgrains^a	126.2 (4.47)	264.4 (2.88)	2095 (-1.55)
Rice	43.9 (2.57)	106.3 (1.05)	2419 (-1.75)
Wheat	31.3 (4.33)	95.8 (2.46)	3059 (-1.86)
Coarse cereals	25.5 (2.98)	42.7 (6.64)	1672 (2.83)
Maize	9.3 (6.90)	24.2 (8.52)	2602 (1.40)
Bajra	7.9 (8.22)	9.2 (5.75)	1161 (-3.09)
Pulses	25.4 (9.01)	19.6 (7.10)	770 (-2.41)
Gram	10.2 (20.00)	9.9 (12.50)	974 (-5.98)
Tur	3.9 (0.00)	3.4 (13.33)	857 (10.44)
Oilseeds	28.2 (6.42)	32.4 (4.85)	1149 (-1.63)
Groundnut	5.5 (17.02)	9.5 (102.10)	1723 (73.17)
Rapeseed and mustard	6.5 (1.56)	7.8 (-2.50)	1208 (-4.28)
Cotton ^b	11.7 (-2.50)	36.5 (6.73)	529 (8.85)
Sugarcane	5.0 (0.00)	348 (2.11)	70 (0.00)

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation (DAC).

Notes: ^a 3rd Advance Estimates; ^a - Includes cereals, coarse cereals and pulses; ^b - million bales of 170 kgs each; Figures in brackets indicate per cent change over 2012-13.

8.7 After achieving the goal of increasing foodgrains production by 20 million tonnes, new targets have been set under the National Food Security Mission (NFSM), to produce additional 25 million tonnes of foodgrains by 2016-17: 10 million tonnes of rice, 8 million tonnes of wheat, 4 million tonnes of pulses, and 3 million tonnes of coarse cereals. Focus is on cropping systems and on small and

Table 8.1 : Agri sector: Key Indicators (per cent at 2004-05 prices)

Record production of Foodgrains and Oilseeds.

Table 8.2 : Area, Production and Yield of Major Crops in 2013-14*, with Per Cent Change over 2012-13

Crop	A - Growth rate of area, P - Growth rate of production, Y - Growth rate of Yield (% per annum)								
	(Base: TE 1981-82=100)			(Base: TE 1993-94=100)			2000-01 to 2013-14*		
	1980-81 to 1989-90	1990-91 to 1999-2000	2000-01 to 2013-14*	A	P	Y	A	P	Y
Rice	0.41	3.62	3.19	0.68	2.02	1.34	0.00	1.82	1.82
Wheat	0.46	3.57	3.10	1.72	3.57	1.83	1.35	2.65	1.29
Coarse cereals	-1.34	0.40	1.62	-2.12	-0.02	1.82	0.25	2.96	2.70
Pulses	-0.09	1.52	1.61	-0.60	0.59	0.93	1.59	3.72	2.10
Sugarcane	1.44	2.70	1.24	-0.07	2.73	1.05	1.34	2.10	0.75
Nine oilseeds	1.51	5.20	2.43	0.86	1.63	1.15	2.35	4.71	2.31
Cotton	-1.25	2.80	4.10	2.71	2.29	-0.41	3.22	13.53	9.99

Source: Department of Agriculture and Cooperation.

Note: * As per 2nd AE; Nine oilseeds include groundnut, castorseed, sesamum, rapeseed & mustard, linseed, nigerseed, safflower, sunflower, and soyabean.

TE : Triennium Ending

marginal farmers through development of farmer producer organizations (FPOs) and creating value chain and providing market linkages. Funding under Rashtriya Krishi Vikas Yojana (RKVY) during the Twelfth Plan will be through production growth (35 per cent), infrastructure and assets (35 per cent), sub-schemes (20 per cent), and 10 per cent flexi-fund. Bringing Green Revolution to Eastern India (BGREI), a major sub-scheme with an allocation of ₹ 1000 crore in 2013-14, increased paddy production in implementing states by 7 per cent in 2012-13 over 2011-12.

8.8 Given the limitations in expanding agricultural land, improvements in yield levels hold the key for long-term output growth. However, in the case of most of the major crops, higher production in 2013-14 has been achieved by expanding acreage, rather than productivity. Groundnut has shown the largest jump in yield; while productivity increases are significant in the case of cotton and tur, as they have been achieved against declining/stagnant acreage (Table 8.2). The compound growth rate of area, production, and productivity during 2000-01 to 2013-14 has been higher than in the previous two decades for coarse cereals, pulses, oilseeds, and cotton, while it has largely declined for rice and wheat (Table 8.3).

8.9 The Integrated Scheme of Oilseeds, Pulses, Oil Palm, and Maize (ISOPOM) has resulted in record production of pulses (19.6 mt), oilseeds (32.4 mt) and maize (24.2 mt) in 2013-14 (3rd AE), through area expansion and productivity increase. The Technology Mission on Oilseeds and Oil Palm (TMO & OP), introduced in the Twelfth Plan, aims to increase domestic production of edible oilseeds/oil, which is 50 per cent short of the domestic demand, through several focused and integrated interventions. The area, production, and yield figures for the last five years (Appendices 1.9 to 1.15) testify to the continued robustness of Indian agriculture.

CLIMATE CHANGE AND ITS IMPACT

8.10 With 60 per cent of total foodgrains and oilseeds produced being grown in the kharif season, and with just 35 per cent of total arable area being irrigated, Indian agriculture is still heavily dependent on rainfall. Significant warming of temperatures, lower mean rainfalls and higher rainfall variability have been recorded by the Indian Meteorological Department (IMD) over successive

Table 8.3 : Compound Growth Rates of Area, Production, and Yield of Principal Crops during 1980-81 to 1989-90, 1990-91 to 1999-2000 (Base : TE 1981-82=100), and for 2000-01 to 2013-14 (Base: TE 1993-94=100)

The incidence of higher temperatures and higher rainfall variability with lower mean rainfalls is increasing over the years.

Box 8.1 : Enigma of El Niño ('the little boy') and the Indian Monsoon

El Niño effect occurs when surface temperatures in the Pacific Ocean continuously rise above average for several months, which in turn adversely affects weather in many parts of the world. On an average it occurs every 3-5 years, often begins to form during June-August, and typically lasts 9-12 months. The event gains significance in India since its effect is felt around August, during the SW monsoon. While the majority of drought years in India coincide with the occurrence of the El Niño, the reverse link is not that strong. While in the previous ten El Niño years India suffered a rainfall deficit of 10 per cent or more only in six; in 1997, when the impact of El Niño was reported to be the worst, India had 2 per cent higher than normal rainfall.

In the past decade, the El Niño occurred in 2002, 2004, 2006, and 2009. While 2002-03 was the only year that India showed negative agri sector growth with average rainfall dropping 20 per cent below normal, 2009-10 experienced the most severe drought in nearly 40 years with total rainfall being 23 per cent below normal. A comparison of the changes in kharif and rabi production during the last four occurrences of El Niño reveals that the impact was more in the kharif season (Figure 1).

The Extended Range Forecast System (ERFS provided by the IMD) seasonal forecast for this monsoon season indicates the probability of lower rainfall in the rainfed regions of central, south, and north-west India, which may affect crops like rice, soybean, cotton, maize, jowar, groundnut, and sugarcane.

The fifth South Asian Climate Outlook Forum (SASCOF-5) session forecast monsoon deficit rainfall mainly in the southern peninsula and central India.

Source: IMD, Indian Council of Agricultural Research, Agricultural Statistics at a Glance, 2013

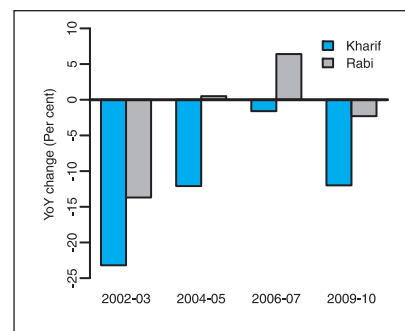


Figure 1 : Year-on-Year Change in Kharif and Rabi Production (Foodgrains and Oilseeds) in 2002-03, 2004-05, 2006-07, and 2009-10 (per cent)

plan periods. Three of the 5 years of the Eleventh Plan period had annual rainfall less than 95 per cent of the long period average (LPA), as compared to 5 in the previous 15 years (Twelfth Five Year Plan, Vol. II: 2-3). The LPA of the season rainfall over the country as a whole for the period 1951-2000 is 89 cm.

8.11 The south-west (SW) monsoon (from June to September) accounts for nearly 75 per cent of total annual rainfall in India and thus substantially affects agricultural performance. In 2013, the actual season rainfall over the country was 106 per cent of LPA. The second long-range forecast for the SW monsoon season released by the IMD on 9 June, indicates that the monsoon rainfall is likely to be 93 per cent of the LPA (model error \pm 4 per cent), with 71 per cent probability of sub-normal /deficient rainfall and 70 per cent occurrence of El Niño. Box 8.1 outlines the relationship between El Niño and the Indian monsoon.

8.12 Rainfall distribution data can aid in gauging the likelihood of an El Niño occurrence. Significantly, the number of divisions reporting deficient/scanty rainfall cumulative from 1 June is higher this year than in the previous five years with (-) 44 per cent rainfall departure. Further, 80 per cent of districts had deficient rainfall/ no rain in this period (Table 8.4).

8.13 Reservoir capacities monitored by the Central Water Commission (CWC) reflect a better status of water availability. The total live storage in 85 important reservoirs across the country, with capacity at full reservoir level (FRL) of 154.88 billion cubic meters (BCM) and accounting for about 73 per cent of total reservoir capacity,

Category	11.6.2014	12.6.2013	13.6.2012	08.6.2011	09.6.2010	10.6.2009
Number of Subdivisions						
Excess/normal	8	30	23	3	11	2
Deficient/scanty	28	6	8	19	19	18
No rain	0	0	5	14	6	16
Rainfall departure from normal (%)	-44	23	-42	17	-6	-39
Per Cent Distribution of Districts						
Excess/normal	20	62	15	48	33	25
Deficient/scanty	50	32	63	34	39	47
No rain	30	6	22	18	28	28

Source: IMD, Weekly Report dated 11.06.2014.

Notes: Excess: +20% or more; Normal: +19% to -19%; Deficient: -20% to -59%; Scanty: -60% to -99%; No rain: -100%.

Table 8.4 : Category-wise Rainfall Distribution in Subdivisions and Districts and All India Rainfall Departure from Normal 2009-14 (cumulative rainfall since 1 June)

was 39.320 BCM (25 per cent of storage capacity at FRL) as on 12 June 2014. This is 20 per cent more than last year's storage position and 17 per cent more than the average of the last 10 years. Only two reservoirs have no live storage as against nine last year.

8.14 Occurrence of El Niño is associated with deficit rainfall in the states of Maharashtra, Gujarat, Rajasthan, Karnataka, Jharkhand, and Bihar. Against the backdrop of the IMD's forecast on El Niño, the delayed onset of the monsoon coupled with uneven distribution may affect crop growth, especially of kharif pulses and oilseeds, and the exact quantum of yield losses depends upon the duration and intensity of stress.

8.15 The government has in place contingency measures in about 500 districts. Further, the National Mission for Sustainable Agriculture (NMSA) is one of the eight missions of the National Action Plan on Climate Change, whose focus is on encouraging judicious utilization of common resources through a community-based approach. The Rain-fed Area Development Programme (RADP), which adopts a holistic approach to enhance farmers' incomes in rainfed areas, was implemented in 22 states in 2013-14 and will be substantially upscaled during the Twelfth Plan.

8.16 Other initiatives include the National Initiative on Climate Resilient Agriculture (NICRA) under the Indian Council of Agricultural Research (ICAR) to enhance resilience of Indian agriculture to climate change and vulnerability through strategic research and technology demonstration, capacity building, and sponsored/competitive grants. The Earth System Science Organization (ESSO) issues agro-meteorological advisories in 12 languages to 600 districts, which are currently subscribed to by over 4.8 million farmers, while Gramin Krishi Mausam Sewa has initiated these advisory services at block level.

DRIVERS OF GROWTH

8.17 A singular characteristic of Indian agriculture is the predominance of small and marginal farms (1.16 ha in 2010-11). However, empirical studies indicate that small size of land holdings are not a deterrent to increasing productivity, which is determined by focused research and investments, access to modern inputs, appropriate technology, and innovative marketing systems to aggregate and market the output efficiently and effectively.

Contingency measures are in place to tackle the deficient SW monsoon coupled with 70 per cent chance of an El Niño occurrence.

Gross Capital Formation

8.18 Robustness of the agri sector can be attributed to the steady increase in GCF (both public and private) from 16.1 per cent of its GDP in 2007-08 to 21.2 per cent in 2012-13 (2004-05 prices). However, public expenditure (comprising public investments and input subsidies) has been ceding its share in total GCF of the agri sector to the private sector and was 14.7 per cent in 2012-13. As a percentage of agri GDP also private investment has been rising and was 18.1 per cent in 2012-13 (Table 8.1). The quality of public GCF, which is largely directed towards subsidies, is also of concern. The largest increase in private GCF was in labour-saving machines such as irrigation and water-saving equipment (Twelfth Five Year Plan, Vol. II: 8), evidently a result of the declining rural workforce and rising real wages.

More than 85 per cent of investment in the agri sector is by the private sector.

Agricultural Research and Education

8.19 Maintaining sustainable growth in agriculture requires continual research in developing innovative technologies for conservation and management of limited natural resources. The ICAR has developed new crop varieties with specific traits that improve yield and nutritional quality along with tolerance/resistance to various biotic and abiotic stresses besides matching crop production and protection technologies for target agro-ecologies. For different agro-ecological niches, 104 varieties of various crops were released. To make quality seeds available to farmers, 11,835 tonnes of breeder seeds of recommended varieties of different field crops was produced. Adoption of improved varieties and crop management techniques has resulted in record production of cereals, pulses, and other crops in recent years.

Seeds

8.20 Seed quality accounts for 20-25 per cent of crop productivity. As hybrid seeds in cross-pollinated crops give higher yields, greater emphasis was placed on their production; thus, their availability has been higher than the requirement. Certified/quality seeds account for about 30 per cent of total seeds used, though there are significant variations across crops and states. Under the central-sector Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds (DPQS) Scheme the availability of certified seeds has increased to 328.58 lakh quintals while requirement was 315.18 lakh quintals in 2012-13.

Agricultural research has released new varieties of breeder seeds. Policy focus is on creating a seed bank.

8.21 Important policy initiatives under the amended New Policy on Seed Development (NPSD) include permitting 100 per cent foreign direct investment (FDI) under the automatic route and simplifying the procedure for inclusion of new varieties in the Organisation for Economic Cooperation and Development (OECD) Seeds Scheme. The thrust is also on creating a seed bank. A Seed Rolling Plan for the period up to 2016-17 is in place for all the states since 2013-14 for identification of good varieties for the seed chain, and agencies responsible for production of seeds at every level.

Fertilizers

8.22 Increased fertilizer usage has played a significant role in improving agricultural productivity. Urea, which is the main source

of nitrogen (N), constitutes around 50 per cent of total fertilizer consumption. India meets 80 per cent of urea requirement through indigenous production, but is largely import dependent for its potassic (K) and phosphatic (P) fertilizer requirements.

8.23 A modified New Pricing Scheme (NPS)-III for existing urea units, notified to address under-recoveries of existing urea units due to freezing of fixed cost at 2002-03 rates will be implemented for one year from 2 April 2014. It provides for the grant of minimum fixed cost of ₹ 2300 per metric tonne (MT) or actual fixed cost prevailing during 2012-13, whichever is lower. Further, there is provision for grant of special compensation of ₹ 150 per MT to protect efficient units that have converted to gas and are more than 30 years old.

8.24 Given the constraints in availability of gas, which is the preferred feedstock for production of nitrogenous fertilizers, and the dependence on imports for P and K fertilizers, Indian companies are being encouraged to establish joint ventures (JVs) abroad for production facilities with buyback arrangements and to enter into long-term agreement for supply of fertilizers and fertilizer inputs to India. Six JVs have been set up by Indian private/cooperative-sector entities.

8.25 The objective of shifting from a product-based subsidy (PBS) to nutrient-based subsidy (NBS) regime in 2010 was to address NPK nutrient imbalances and lack of secondary and micronutrients, through use of fertilizers on specific soil-moisture conditions and crop needs. A comparison of the production, imports, and consumption of NPK fertilizers between 2009-10 and 2012-13 (Table 8.5) shows that availability as well as consumption has been skewed towards N or urea since the roll out of the NBS in 2010 (Appendix 1.19).

	(thousand tonnes of nutrients)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Nitrogenous fertilizers (N)					
Availability	15347	16650	17499	16995	16258
Consumption	15580	16558	17300	16820	NA
Phosphatic fertilizers (P)					
Availability	7077	8025	8531	6338	5302
Consumption	7274	8050	7914	6653	NA
Potassic fertilizers (K)					
Imports	2945	4069	3335	1559	1926
Consumption	3632	3514	2576	2061	NA
All fertilizers (NPK)					
Availability	25369	28744	29365	24892	23526
Consumption	26486	28122	27790	25536	NA

Source: Department of Fertilizers.

8.26 The pricing of subsidized fertilizers is also probably responsible for higher usage of straight fertilizers and skewed usage of nutrients (Report of Working Group on Fertilizer Industry for the Twelfth Plan: 8). While NPK ratios were higher than the recommended national 4:2:1 NPK balance in 2009-10, the situation has drastically worsened (Table 8.6). Indiscriminate use of NPK has led to imbalanced use of soil nutrients, especially in Haryana and Punjab, leading to deterioration in soil quality and declining growth in land productivity in these states.

Table 8.5 : Availability (Production and Imports) and Consumption of Fertilizers

Pricing of subsidised fertilizers has skewed the usage of nutrients.

	2009-10	2010-11	2012-13
Bihar	5.3 : 1.5 : 1	5.8 : 1.9 : 1	12.3 : 3.6 : 1
Haryana	15.9 : 5.5 : 1	20.4 : 6 : 1	61.4 : 18.7 : 1
Punjab	18.4 : 5.9 : 1	19.1 : 5.4 : 1	61.9 : 19.3 : 1
All India	4.3 : 2 : 1	5.0 : 2.4 : 1	8.2 : 3.2 : 1

Source: Agricultural Statistics at a Glance, 2013; Report of Working Group on Fertilizer Industry for the Twelfth Plan, Planning Commission

Note: Calculated from state-wise fertilizer consumption data.

8.27 The NBS roll out was flawed since urea was kept out of its ambit (Twelfth Five Year Plan, Vol. II: 14), which has defeated the objective of balanced use of nutrients. While urea consumption has increased from 59 per cent to 66 per cent of total consumption in 2012-13 over 2010-11, per hectare consumption of fertilizer has declined from 140 kg to 128 kg over the same period. Current trends in agricultural output reveal that the marginal productivity of soil in relation to the application of fertilizers is declining.

8.28 Under the NBS, as of March 2014, farmers pay 61 to 75 per cent of the delivered cost of P and K fertilizers and the rest is subsidised by the centre. Fertilizer subsidy was ₹ 67,971 crore in 2013-14 (revised estimates—RE), an increase of 11 per cent over 2009-10. While the quantum of fertilizer subsidy is increasing, subsidy as a percentage of GDP has been declining since 2010 (Figure 8.1).

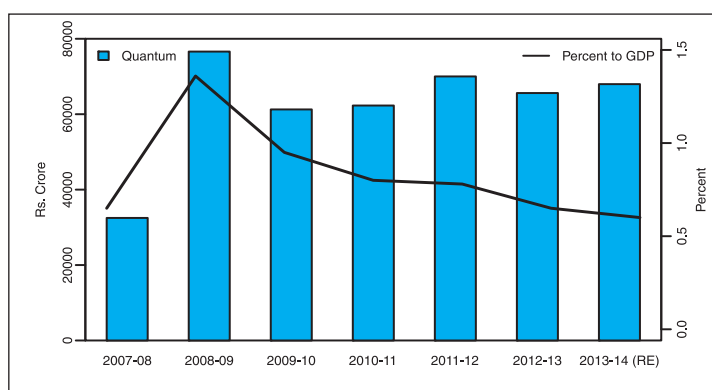


Table 8.6 : NPK Ratios: All India, Bihar, Punjab, and Haryana (2009-10 and 2012-13)

NBS needs to be reviewed to prevent wasteful and suboptimal use of resources.

Figure 8.1 : Fertilizer Subsidy: Quantum and as Percentage of GDP (at current prices) 2007-08 to 2013-14 (RE)

Source: CSO

Mechanization and Technology

8.29 Mechanization is one of the main drivers of agricultural sector growth. Farm power availability and average foodgrain yield have a direct relationship. The per capita annual availability of electricity has increased from 112.7 KWH in 2008-09 to 142.4 KWH in 2011-12. Although India is one of the top countries in agricultural production, the current level of farm mechanization, which varies across states, averages around 25 per cent as against more than 90 per cent in developed countries. According to the ICAR, the economic benefit of adoption of improved implements is about ₹ 80,000 crore per annum, which is only a small fraction of the potential. It has resulted in generating employment to rural youth and artisans for the production, operation, and maintenance of machines. Due to significant and continuous reduction of agricultural workforce, higher levels of farm mechanization are necessary for sustaining productivity and profitability.

Despite being among the top countries in agricultural production, India's level of mechanization averages only 25 per cent as compared to more than 90 per cent in developed countries.

8.30 The main challenges for farm mechanization are, first, a highly diverse agriculture with different soil and climatic zones, requiring customized farm machinery and equipment and, second, largely small land holdings with limited resources. A dedicated Sub-Mission on Agricultural Mechanization has been initiated in the Twelfth Plan, with focus on spreading farm mechanization to small and marginal farmers and regions that have low farm power availability.

Irrigation

8.31 Water is the most critical input for agriculture. Currently 63 million ha, or 45 per cent of net cropped area, is irrigated. Under the Accelerated Irrigation Benefit Programme (AIBP), ₹ 64,228 crore of central loan assistance (CLA)/grant had been released up to 31 December 2013. An irrigation potential of 8054.61 thousand ha is estimated to have been created by states from major/medium/minor irrigation projects under the AIBP till March 2012.

8.32 The cropping pattern adopted in the Punjab - Haryana region, considered the 'rice bowl of India', has resulted in alarming reduction in the water table, which is not sustainable in the long run. Therefore, a Crop Diversification programme, targeted at promoting technological innovation and encouraging farmers to choose crop alternatives in the states of Punjab and Haryana and in western UP to counter the problems of stagnating yields and overexploitation of water resources, was budgeted with ₹ 500 crore in 2013-14.

Credit

8.33 Agricultural credit is an important input for improving agricultural production and productivity and mitigating farmer distress. For improving agricultural credit flow and bringing down the rate of interest on farm loans, (i) Agricultural credit flow target for 2013-14 was fixed at ₹ 7,00,000 crore and achievement was ₹ 7,30,765 crore, as against ₹ 6,07,375 crore in 2012-13; (ii) Farmers could avail of crop loans up to a principal amount of ₹ 3,00,000 at 7 per cent rate of interest. The effective rate of interest for farmers who promptly repay their loans was 4 per cent per annum during 2013-14; (iii) Farmers were granted post-harvest loans against negotiable warehouse receipts (NWRs) at commercial rates. To encourage storage of produce in warehouses against NWRs, the benefit of interest subvention was extended to small and marginal farmers with kisan credit cards (KCC) for a further period of up to six months post-harvest on the same rate as crop loan.

Insurance

8.34 Various crop insurance schemes are implemented as part of risk management and risk mitigation in agriculture. The central-sector National Crop Insurance Programme (NCIP) that replaced the National Agricultural Insurance Scheme (NAIS) from 1 November 2013 has three components: Pilot Modified National Agricultural Insurance Scheme (MNAIS), Pilot Weather Based Crop Insurance Scheme (WBCIS), and Pilot Coconut Palm Insurance Scheme (CPIS). The NCIP is approved for full-fledged implementation from Rabi 2013-14, with modifications like making the insurance unit for major crops the village panchayat or

Overexploitation of water resources is leading to alarming reduction in the water table in the 'rice bowl of India'.

Enhanced agricultural credit flows are exceeding the targets.

Modified insurance scheme is expected to have greater coverage.

equivalent unit and undertaking individual farm-level assessment of losses in case of localized calamities like hailstorm and landslide to benefit the farmer.

8.35 The Agriculture Insurance Company (AIC) implemented MNAIS and WBCIS in many districts (Table 8.7), and also developed crop insurance products for risk mitigation of various crops, namely coffee, rubber plantation, bio-fuel plants, grapes, mango, and potato; Rabi Weather Insurance and Varsha Bima/Rainfall Insurance.

Agricultural Extension

8.36 To ensure last-mile connectivity, extension services need to be geared to address emerging technological and knowledge needs. Therefore, the existing extension and IT schemes from the Eleventh Plan were strengthened, expanded, and scaled up appropriately and implemented as components of the Sub Mission on Agricultural Extension (SMAE) under the National Mission on Agricultural Extension and Technology (NMAET). Greater role has been envisaged for the states in implementation and monitoring. The schemes subsumed under the SMAE include: District-level Agriculture Technology Management Agencies (ATMAs) that have been set up in 639 rural districts of 28 states and 3 union territories (UT) across the country—these have benefited 28.5 million farmers, 25.6 per cent of whom were women; Mass Media and Kisan Call Centre schemes, Central-sector Establishment of Agri-Clinics and Agri-Business Centres (ACABC) Scheme; SMS portal for farmers.

8.37 To assess, refine, and demonstrate agricultural technologies/products the ICAR has created a mechanism for technology application at district level by establishing a network of Krishi Vigyan Kendras (KVK) under the Plan Scheme 'Continuation, Strengthening and Establishment of New KVKs'. So far, 637 KVKs have been sanctioned and during 2013-14, 102.41 lakh farmers and other stakeholders have benefited.

PRICE POLICY FOR AGRICULTURAL PRODUCE

8.38 Government's price policy for major agricultural commodities has twin objectives: ensure remunerative prices to growers for their produce to encourage higher investment and production, and safeguard the interests of consumers by ensuring supplies at reasonable prices. Towards these ends, the Commission for Agricultural Costs and Prices (CACP) recommends minimum support prices (MSP) based on certain economic criteria. Subsequently, the centre announces MSPs for 24 major agricultural commodities, including sugarcane, before each season, taking into account the views of state governments and the ministries/departments concerned. There have been substantial increases in the MSPs in the last few years, especially for pulses, oilseeds, and cotton (Figure 8.2).

8.39 The pricing of sugarcane, however, is governed by the statutory provisions of the Sugarcane (Control) Order 1966 issued under the Essential Commodities (EC) Act 1955. Fair and remunerative prices (FRP) are recommended, taking into account the cost of production of sugarcane, recovery rates, and pricing of sugar and its by-products, namely molasses, bagasse, and press mud. MSPs/FRP are uni-

	Kharif 2013		Rabi 2013-14	
	Districts	States	Districts	States
MNAIS	29	13	127	12
WBCIS	112	13	123	14

Source: Department of Financial Services

Table 8.7 : MNAIS and WBCIS implemented in districts/states during Kharif 2013 and Rabi 2013-14 (Number)

Outreach of strengthened extension schemes has benefited more than 28 million farmers, one-fourth of whom were women.

Substantial increases in MSPs and FRP are seen in the last few years.

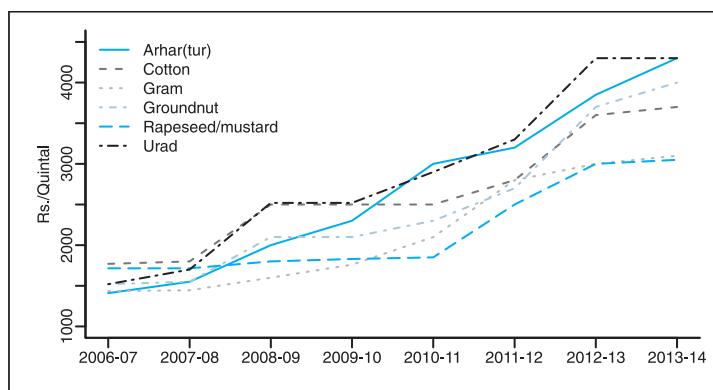


Figure 8.2 : Minimum Support Prices of Select Agricultural Crops 2007-08 to 2013-14 (₹ per quintal)

Source : DAC

directional upwards; at most, they have been kept constant in a few years. MSPs/FRP fixed for 2013-14 are higher than MSPs of 2009-10 by 27 per cent (wheat) to 90 per cent (groundnut) (Table 8.8).

Crops	2013-14	2009-10	Per cent Change
Paddy (common)	1310	1000	31
Wheat	1400	1100	27
Maize	1310	840	56
Jowar (hybrid)	1500	840	79
Arhar(tur)	4300	2300	87
Urad	4300	2520	71
Gram	3100	1760	76
Groundnut in shell	4000	2100	90
Rapeseed/mustard	3050	1830	67
Sunflower	3700	2215	67
Soyabean (black)	2500	1350	85
Cotton (medium staple)	3700	2500	48
Sugarcane (FRP)	210	129.84	62

Table 8.8 : MSP/FRP of Select Crops (₹ per quintal) in 2013-14 and 2009-10 and Per cent Change

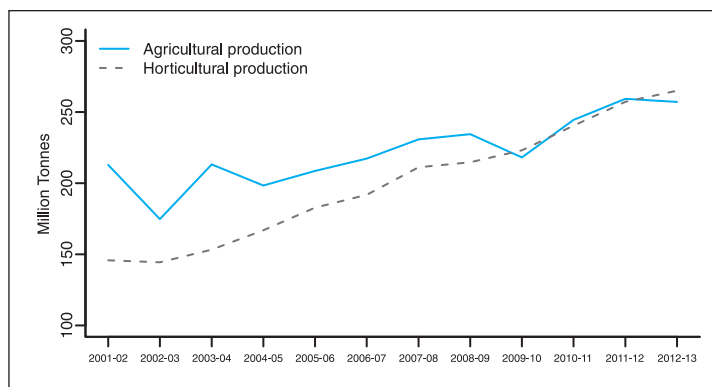
Source : DAC

Note : Inclusive of bonus wherever applicable.

8.40 Arbitrary fixation of cane prices by state governments over and above the FRP fixed by the centre has been adversely affecting the sugar mills. The Rangarajan Committee recommendation to link sugarcane prices with sugar prices has not yet been accepted by all states concerned. Owing to excess opening stock and good production this year, sugar prices were subdued leading to huge cane price arrears. To facilitate clearance of arrears of previous sugar seasons and timely settlement of cane price for the current sugar season to sugarcane farmers, the centre notified a Scheme for Extending Financial assistance to Sugar Undertakings (SEFASU-2014) envisaging interest free bank loans worth ₹ 6600 crore as additional working capital to sugar mills on 3 January 2014. In addition, incentive of ₹ 3300 per ton for raw sugar production targeted for the export market was given for February and March 2014, which was reduced to ₹ 2277 per ton for April and May 2014 and restored to ₹ 3300 per ton for June and July 2014; sugar mills were to utilise it for making payments to farmers.

HORTICULTURE

8.41 Horticulture sector comprising a wide array of crops from fruits and vegetables to nuts, spices, medicinal plants, flowers, and plantation crops, provides many opportunities for income generation. Globally India is the second largest producer of fruits and vegetables; the largest producer of mango, banana, coconut, cashew, papaya, and pomegranate; and the largest producer and exporter of spices. Horticulture production, estimated at 265 million tonnes, exceeded the production of foodgrains and oilseeds in 2012-13 (Figure 8.3), owing to an 8.6 per cent increase in productivity of horticulture crops between 2008-09 and 2012-13.



For the first time in 2012-13, horticulture production exceeded the combined production of foodgrains and oilseeds.

Figure 8.3 : Production of Agricultural (Foodgrains and Oilseeds) and Horticultural Crops 2001-02 to 2012-13

Source: DAC

8.42 All erstwhile schemes (National Horticulture Mission [NHM], Horticulture Mission for North East and Himalayas [HMNEH], National Horticulture Board [NHB], Coconut Development Board [CDB], Central Institute for Horticulture and National Bamboo Mission [NBM]) have been subsumed under the Mission for Integrated Development of Horticulture (MIDH) during the Twelfth Plan. Capacity building of farmers by organizing them into farmer producer organizations (FPO)/ farmer producer companies (FPC) is an added feature of the MIDH (Box 8.2).

ANIMAL HUSBANDRY, DAIRYING, AND FISHERIES

8.43 Indian agricultural system is a model of sustainable agriculture, as it is predominantly a mixed crop-livestock farming

Box 8.2 : 2014 : Year of Farmer Producer Organizations (FPOs)

All major centrally sponsored schemes of the Ministry of Agriculture have incorporated special provisions for promotion and development of FPOs, which are identified as one of the key strategies for achieving inclusive agricultural growth during the Twelfth Plan.

The Small Farmers' Agribusiness Consortium (SFAC) has been nominated as a central procurement agency for undertaking price support operations under MSP for pulses and oilseeds. The SFAC will operate only through FPOs at the farm gate. Member-based FPOs would act as aggregators and provide greater bargaining power to producers, especially smallholders, and enable their integration in the value chain, generating higher incomes and employment.

A National Policy and Process Guidelines for FPOs, issued in March 2013, laid the framework for mobilization of FPOs with a dedicated source of funding from the RKVY. The Equity Grant and Credit Guarantee Fund Scheme for FPCs was launched on 1 January 2014, enabling access up to ₹ 10 lakh grant to double member equity and also collateral-free loans up to ₹ 1 crore from banks, which in turn can seek 85 per cent cover from the Credit Guarantee Fund.

With 2014 being observed as the Year of FPOs, for which the SFAC is the nodal organization, conferences, seminars, and workshops are being organized to increase awareness about FPOs.

Source: SFAC

system, with the livestock segment supplementing farm incomes by providing employment, draught animals, and manure.

Dairy and Poultry

8.44 India ranks first in milk production, accounting for 17 per cent of world production. During 2012-13, milk production peaked at 132.43 mt, thus becoming an important secondary source of income for 70 million rural households engaged in dairying and for 70 per cent of the workforce that comprised women. The average year-on-year growth rate of milk at 4.04 per cent vis-à-vis the world average of 2.2 per cent shows sustained growth in availability of milk and milk products for the growing population.

8.45 A comprehensive new scheme National Programme on Bovine Breeding and Dairy Development was launched with the objective of enhancing milk production and productivity in a sustainable manner. The National Dairy Plan Phase-I, launched in March 2012 with the objectives of improving productivity of milch animals, strengthening and expanding village-level infrastructure for milk procurement, and providing producers greater access to the market in the dairy sector continues. The number of milch animals increased from 62 million in 2000 to 83.15 million in 2012, thus adding to the improved milch herd of the country.

8.46 Government's focus, besides framing conducive policies for commercial poultry production, is on strengthening the family poultry system, which addresses livelihood issues. Egg production was around 69.73 billion in 2013, while poultry meat production is estimated at 2.68 mt (Appendix 1.20).

Fisheries

8.47 Fisheries is an important source of livelihood and fish, are an important source of protein. There are 14.4 million fishermen in the country. India ranks second in world fish production, contributing about 5.4 per cent of global fish production. It is also a major producer of fish through aquaculture. Total fish production during 2013-14 is estimated at 9.45 mt with 6.10 mt coming from the inland sector and 3.35 mt from the marine sector. The sector contributes about 1 per cent to overall GDP and represents 4.6 per cent of agri GDP.

Livestock Health

8.48 To effectively tackle the issue of livestock health and strengthen efforts to manage animal diseases of a trans-boundary nature in a comprehensive manner, the centrally sponsored Livestock Health and Disease Control (LH&DC) Scheme was launched in the Twelfth Plan with modification of existing components and inclusion of new ones. The implementation of various animal disease control programmes has seen overall reduction in incidence of animal diseases in the country, which augurs well for public health. The National Livestock Mission (NLM) has been formulated encompassing seven centrally sponsored and seven central-sector schemes, with the objective of sustainable development of the livestock sector. The Mission is designed to cover all the activities required to ensure quantitative and qualitative improvements in livestock production systems and capacity building of all stakeholders.

Globally, India ranks first in milk production with an average y-o-y growth rate of over 4 per cent.

Fisheries and the livestock sector are important secondary sources of income for rural households, contributing over 1 per cent and 4.1 per cent respectively to total GDP.

DOMESTIC AGRICULTURAL MARKETING

8.49 Organized marketing of agricultural commodities has been promoted through a network of regulated markets, whose basic objective is to ensure reasonable prices to both farmers and consumers by creating a conducive market environment for fair play of supply and demand. The number of regulated markets has grown from 286 in 1950 to 7114 as on 31 March 2014; besides which there are 22,759 rural periodical markets. The average area served by a market is 114.45 sq. km while the average area served by a regulated market is 462.08 sq. km, varying from 118.78 sq. km in Punjab to 11,214 sq. km in Meghalaya. The National Commission on Agriculture (2004) recommended a norm of one market within a radius of 5 km (or 80 sq. km). The low market spread creates problems of market access.

8.50 The problem of intermittent surges in food prices has persisted in India despite various reform measures undertaken. The high costs of intermediation have a cascading effect on prices. The Committee on Agricultural Reforms (2013) recommended, inter alia, a barrier-free national market for the benefit of farmers and consumers. Box 8.3 underlines the urgency of agricultural marketing reforms.

Need for holistic reform of the 'farm-to-fork' supply chain to solve the persistent food inflation.

Box 8.3 : Need for Reforms in Agricultural Marketing

There has been limited success in establishing efficient agricultural marketing practices in India. The monopoly of government-regulated wholesale markets has prevented development of a competitive marketing system in the country. In the context of liberalization of trade in agricultural commodities and for the domestic farming community to reap the benefits of new global market access opportunities, there is a need to integrate and strengthen the internal agricultural marketing system.

Various committees and task forces of the government recommended that control over agricultural markets by the state be eased to facilitate greater participation of the private sector, particularly to stimulate massive investments required for the development of agricultural marketing. The model Agricultural Produce Marketing (Development and Regulation) [APM(DR)] Act of 2003 was circulated to all states for adoption. The reforms have largely focused on addressing some of the concerns within the existing framework of state Agricultural Produce Marketing Committees (APMC). They have however failed to address monopolistic and uncompetitive practices in inter-state trading of agricultural products. The Committee on Agricultural Reforms (2013) noted that, 'By and large, the APMCs have emerged as some sort of Government sponsored monopolies in supply of marketing services/ facilities, with all drawbacks and inefficiency associated with a monopoly'.

Thus, the APMC Act has not achieved the basic objective of setting up a network of physical markets. There are some successful initiatives in direct marketing, such as Apni Mandi in Punjab, Uzhavar Sandhai in Tamil Nadu, Shetkari Bazaar in Maharashtra, Hadaspur Vegetable Market in Pune, Rythu Bazar in Andhra Pradesh, Krushak Bazaar in Odisha, and Kisan Mandi in Rajasthan.

Some measures that would facilitate the creation of a barrier-free national market are:

- (i) Permit sale and purchase of all perishable commodities such as fruits and vegetables, milk and fish in any market. This could later be extended to all agricultural produce.
- (ii) Exempt market fee on fruits and vegetables and reduce the high incidence of commission charges on agricultural/ horticultural produce.
- (iii) Taking a cue from the success of direct marketing efforts of states, the APMC/other market infrastructure may be used to organize farmers markets. FPOs/self-help groups (SHGs) can be encouraged to organize farmers markets near urban centres, malls, etc. that have large open spaces. These could be organized every day or on weekends, depending on the concentration of footfalls.
- (iv) Include 'facilitating organization of farmers markets' under the permitted list of corporate social responsibility (CSR) activities under Companies Act 2013, to encourage companies engaged in agri-allied activities, food processing etc to take up this activity under CSR and also help in setting up supply chain infrastructure. This would be similar to the e-Choupal initiative of ITC Ltd., but under CSR.
- (v) All the above facilitators can also tie-up a link to the commodity exchanges' platform to disseminate spot and futures prices of agricultural commodities.

Commodity Futures Market

8.51 Opening up of the commodity futures market was an important initiative taken with the aim of improving domestic market efficiency. The commodity futures market facilitates the price discovery process and provides a platform for price risk management in commodities. The Forward Markets Commission (FMC), the regulator for the commodity futures market, was brought under the administrative control of the Ministry of Finance in September 2013. Currently, only 46 of the 113 commodities that are notified for futures trading are actively traded in 6 National Exchanges and 11 Commodity Specific Exchanges. Futures trading in agricultural commodities constituted 15.8 per cent of the total turnover in 2013-14, with food items (refined soya oil, soyabean, chana, rapeseed/mustard seed, and coriander) contributing 55.56 per cent, and non-food items (castor seed and cotton) 17.46 per cent. The total volume of trade declined by 39 per cent and that of agri trade by about 18 per cent in 2013-14 over 2012-13 (Figure 8.4).

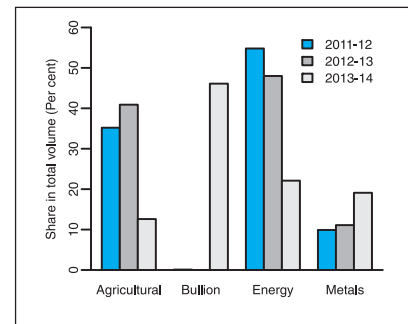
8.52 Information asymmetry is a major market barrier. In order to benefit all stakeholders in the agriculture supply chain, and especially to enable farmers to take rational and informed decisions about cropping pattern and marketing strategies, the FMC is implementing the Price Dissemination Scheme. Under this, the futures and spot prices of National Exchanges and the spot prices of AGMARKNET from around 1700 mandis are run on real-time basis on price tickers/boards installed in 267 APMCs, KVKs, and other locations where farmer footfall is high. To increase awareness amongst farmers and other stakeholders and for them to benefit from the price discovery mechanism, there is need to install them in all markets, including farmers markets.

8.53 However, an on-off policy with respect to futures trading - of sudden ban imposition and lifting - has been followed that leads to non-transparency and uncertainty in the market and has hampered the development of this platform as a means of price discovery for the benefit of farmers and other stakeholders. Prices of successive months' futures contracts signal future price trends, thus facilitating the government to take pre-emptive action, whenever required. They help farmers take decision about cropping pattern and investment intensity of cultivation and improve their bargaining capacity. They also help manufacturers to hedge their requirement of raw materials as also their finished products. In fact, procurement agencies can use this platform to their benefit by hedging their future requirements on a regular basis, as per the provisions of the NFSA 2013. Importantly, being a leading producer and consumer of major agricultural commodities, India can be a global price setter, rather than a price taker. However, in the case of rice and wheat, where the MSP mechanism is effective, the traded volumes are low. Consequently, in contrast to global commodity markets, the domestic market is not enabled to be a price setter.

Warehousing Development and Regulatory Authority (WDRA)

8.54 Another important initiative aimed at not only helping farmers avail of better credit facilities and avoid distress sales but

Commodity futures market, as a messenger of future price trends, help governments take pre-emptive action whenever the situation warrants.



Source: FMC

Figure 8.4 : Group wise Share in Total Volume of Trade in Exchanges (%) - 2011-12 to 2013-14

Despite being a leading producer and consumer of major agricultural commodities, India has not taken on the role of a global price setter.

also at safeguarding financial institutions by mitigating risks inherent in credit extension to farmers, is the introduction of NWRs as a tradable receipt. The WDRA, as the authority for registering and accrediting warehouses intending to issue NWRs, has approved 40 agricultural commodities including cereals, pulses, oilseeds, and spices for issuing NWRs. So far, 302 warehouses have been accredited, of which 271 warehouses of the Central Warehousing Corporation, State Warehousing Corporations, and private organizations with 10.55 lakh MT storage capacity have been registered.

8.55 In order to improve the quality of warehousing and delivery aspects, the FMC directed all commodity exchanges to register with the WDRA. However, in the case of rice and wheat, farmers are reportedly not using NWRs as they find it more profitable and convenient to sell their produce at MSP to the guarantor, that is the procurement agencies. In addition, even in areas where procurement agencies have fewer operations, the NWRs are not gaining ground. An open competitive market is an essential condition for both these initiatives to operate successfully.

Food Processing

8.56 With the decline in farm employment, additional employment opportunities have to be created in the non-farm and manufacturing sectors, especially in agro-based rural industries. Incentivizing and developing downstream market linkages, in the form of agro industries, is crucial for growth of agriculture. During the last five years ending 2012-13, the sector has been growing faster than the agriculture sector, at an average annual growth rate of around 8.4 per cent. The role of the private sector is crucial as its large investments can bring in economies of scale in operations.

8.57 Even though India is the largest producer of several agricultural commodities, there are high levels of losses in the supply chain. A study conducted by the Central Institute of Post-Harvest Engineering and Technology (CIPHET) in 2010 put the losses in the range of 0.8 per cent to 18 per cent and attributed them to several factors including non-availability of facilities for aggregation, packaging, storage, transportation, and cold chain and low level of processing of agricultural produce. In an emerging country like India, where growth with equity is a primary policy thrust, the development of the food-processing sector will address several concerns such as disguised unemployment in agriculture, rural poverty, food security, food inflation, improved nutrition, and prevention of wastage of food. Towards this end, the government is supporting creation of modern enabling infrastructure and efficient processing facilities. These initiatives include setting up of (i) mega food parks, (ii) cold chain, value addition and preservation infrastructure, (iii) new and modernization of existing abattoirs.

Trade Policy

8.58 India, with a large and diverse agriculture, is among the world's leading producers of rice, wheat, milk, sugarcane, fruits, and vegetables. Therefore, changes in its balance sheets for key commodities will have a potentially large impact on world markets.

Both futures trading and NWRs would be successful only under competitive market conditions.

Large-scale private investments are essential for developing the agro-processing sector, which is the next growth vehicle.

Long-term stable trade policy is necessary for improving agricultural productivity.

However, India has largely been an autarkic nation and a hesitant participant in global trade.

8.59 The basic customs duty (BCD) in some agri products was reduced/removed to encourage domestic manufacture of value added products, to generate employment, and to make exports competitive. To combat undervaluation and protect the interests of domestic farmers and industry, the BCD of some agri products was raised (Box 8.4).

8.60 Generally an ad hoc trade policy has been followed for agricultural commodities, more often as a knee-jerk reaction to the domestic price situation, which puts the domestic as well as international market under great uncertainty, and the farmer, being at the bottom of the pyramid, is severely impacted. It also leads to erosion of confidence in India being a trustworthy supplier in the international market. A stable and long-term trade policy with respect to agricultural products is essential for increasing productivity. Significantly, some policy changes were made in recent years: exports of rice and wheat were permitted since 2011; and since February 2013 processed and/or value added agricultural products were exempted from export restrictions/bans even if their base produce is subject to an export ban. These will benefit farmers, incentivize the development of the agro-processing sector, and enhance farm productivity.

MEASURABLE OUTCOMES

8.61 All efforts at promoting agriculture through various schemes, subsidies, and programmes have resulted in record production of foodgrains this year. However, the levels of productivity, availability, and exports of agri products are more significant for the economy.

Productivity Levels

8.62 It is heartening that India ranks first in productivity of grapes, banana, cassava, peas, and papaya. Despite efforts, the productivity levels of Indian agriculture are still way below global standards (Table 8.9).

8.63 In the livestock sector also, despite India being the top producer of milk, bovine productivity is only 1538 kg per year as

Crop/commodity	World average (TE 2011-12)	India (TE 2012)	Country with highest yield (TE 2012)
Cereals			
Paddy	4397	3514	6661 (China)
Wheat	3094	3000	7360 (UK)
Maize (corn)	5097	2321	8858 (USA)
Pulses			
Chickpeas (gram)	917	912	1663 (Ethiopia)
Pigeon peas (tur)	786	681	1320 (Myanmar)
Oilseeds			
Groundnut	1626	1212	4069 (USA)
Rapeseed/mustard	1855	1163	3588 (UK)
Cotton	769	517	1920 (Australia)
Sugarcane	70470	69227	125587 (Peru)

Sources: Agricultural Statistics at a Glance 2013; Kharif and Rabi Price Policy Reports, CACP.

Note: TE-Triennium ending.

Box 8.4 : Tax-related Measures in Agriculture/Agro-processing/Plantation Sectors 2013-14

BCD on de-hulled oat grain reduced from 30 per cent to 15 per cent; on hazel nuts reduced from 30 per cent to 10 per cent; on broken cashew kernels, whole cashew kernels and others fixed as under: broken cashew kernels [0801 32 10] at ₹ 60 per kg or 45 per cent, whichever is higher; whole cashew kernels [0801 32 20] and others [0801 32 90] at ₹ 75 per kg or 45 per cent, whichever is higher; on import of raw and white/ refined sugar increased from 10 per cent to 15 per cent; on refined edible oils increased from 7.5 per cent to 10 per cent.

Export duty of 10 per cent on de-oiled rice bran oil cake withdrawn.

Import of sugar beet seeds allowed at a concessional BCD of 5 per cent.

Non-ad valorem rate of BCD on natural rubber increased from ₹ 20 per kg to ₹ 30 per kg.

Source: Department of Revenue.

Technological innovation is a must for increasing agricultural productivity.

Table 8.9 : India's Productivity vis-a-vis World Average and Country with Highest Yield for Major Crops (kg/ha)

compared to the world average of 2238 kg per year. This is mainly due to low genetic potential for milk production of nondescript bovines and poor levels of nutrition. Without new technology and quality inputs, growth acceleration will be difficult to achieve at these productivity levels.

Net availability and per capita availability

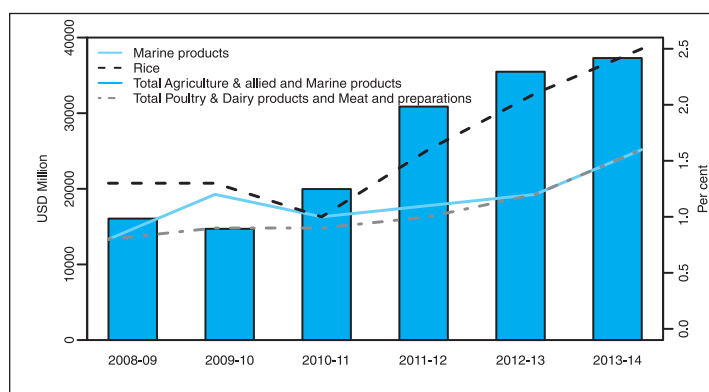
8.63 The net availability of foodgrains has increased in 2013 at 229.1 million tonnes showing a 15 per cent increase over last year. The per capita net availability of foodgrains spurted to 186.4 kg per year from 164.3 kg per year, and the net availability of edible oils also increased from 12.7 kg per year to 15.8 kg per year over the same period (Appendices 1.16 to 1.18). The per capita availability of milk at 295 g per day is higher than the world average, while that of eggs is around 55 eggs per year. The per capita availability of fruits rose from 114 grams per day in 2001-02 to 172 grams per day in 2011-12; while that of vegetables increased from 236 grams per day to 350 gram per day over the same period.

8.64 These performances gain significance as the agri sector is the source of livelihood and food security for a vast majority of low-income and vulnerable sections of the population. To improve nutritional status a pilot programme on nutri-farms for introducing new crop varieties rich in micro-nutrients such as iron-rich bajra, protein-rich maize, and zinc-rich wheat was implemented as a sub-scheme of the RKVY in 2013-14 in the 100 districts of nine states most affected by malnutrition, with an outlay of Rs 200 crore.

Agri exports

8.65 In recent years, products like rice and maize, cotton, meat, guar gum, and cotton have replaced traditional agri exports. Agri exports (including marine) grew by 5.1 per cent in 2013-14 over 2012-13 to US\$ 37,292 million, of which exports of marine products alone increased by 44.8 per cent over the same period.

8.66 Since the opening up of exports of rice in 2011, there has been a surge in its share in total exports from US\$ 2575 million in 2010-11 to US\$ 7742 million in 2013-14. Exports of total dairy, poultry, meat, and marine products have doubled their share in agri exports between 2008-09 and 2013-14 (Figure 8.5).



Source: DGCIS

Note: *includes agri and allied and marine products

Substantial improvements in per capita availability levels are required to wipe out malnutrition.

Significant growth in agricultural exports, by 132 per cent in 2013-14 over 2008-09, is observed.

Figure 8.5 : Total Agri Exports* and Exports of Rice, Total Poultry, and Dairy Pds and Meat and Preparations as percentage of Agri Exports (2008-09 to 2013-14)

FOOD MANAGEMENT

8.67 The principal policy objective of food management is to ensure food security, particularly for the vulnerable, through timely and efficient procurement and distribution of foodgrains. This involves procurement of foodgrains from farmers at remunerative prices, building up and maintenance of buffer stocks, storage, movement, and distribution of foodgrains to consumers at affordable prices, and stability of foodgrains' prices. The price instruments used are MSP and central issue price (CIP).

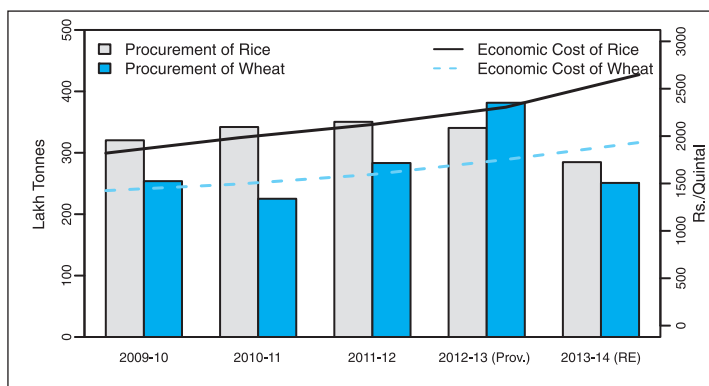
Procurement

8.68 The nodal agency that undertakes open-ended procurement, distribution, and storage of foodgrains is the Food Corporation of India (FCI) with other central and state agencies. Coarse grains are procured by state governments and their agencies. The National Agricultural Cooperative Marketing Federation of India Limited (NAFED), National Cooperative Consumers' Federation of India Limited (NCCF), CWC, and SFAC are the central nodal agencies that undertake procurement of oilseeds and pulses under the Price Support Scheme (PSS) when the market rates of these commodities fall below MSP. However, procurement operations are found to be successful largely for rice and wheat and that too only in a few states like Punjab, Haryana, Andhra Pradesh, and Madhya Pradesh.

8.69 To enhance efficiency in procurement and public distribution and to extend the benefits of MSP to local farmers, the Decentralized Procurement Scheme (DCP) is adopted by some state governments. For paddy it has been adopted by West Bengal, Madhya Pradesh, Chhattisgarh, Uttarakhand, Andaman and Nicobar Islands, Odisha, Tamil Nadu, Gujarat, Karnataka, Kerala, and Bihar; and by Andhra Pradesh in KMS 2013-14 in 10 districts. Gujarat, Madhya Pradesh, Uttarakhand and Bihar have DCP for wheat, and Rajasthan has adopted it only in Alwar district since RMS 2013-14.

Economic Cost of Foodgrains to the FCI

8.70 The economic cost of foodgrains that comprises MSP (and central bonus if applicable), procurement incidentals and the cost of distribution, has risen significantly in the last few years owing not only due to increases in MSPs, but also due to increased procurement and incidentals; thus indicating that the FCI suffers from diseconomies of scale (Figure 8.6).



Source: Department of Food and Public Distribution (DFPD)

Procurement policy is effective only for rice and wheat and only in a few states.

FCI operations are suffering from diseconomies of scale.

Figure 8.6 : Procurement and Economic Cost of Rice and Wheat 2009-10 to 2013-14

8.71 Higher procurement leads to stocks that exceed the buffer norm (Table 8.10), which the FCI is forced to carry over to the next year. This suboptimal management of stocks leads to wastage of economic resources. With the passing of the National Food Security Act 2013 (Box 8.5), the operations of the FCI need to be streamlined.

Suboptimal management of food stocks leads to wastage of economic resources.

Commodity	Stocks as on 1 June		Buffer norms	
	2013	2014#	As on 1 April	As on 1 July
Rice	33.31	20.65	14.20	11.80
Unmilled paddy in terms of rice		7.61		
Wheat	44.39	41.58	7.00	20.10
Total	77.70	69.84	21.20	31.90

Table 8.10 : Stocks and Buffer Norms of Foodgrains (mt)

Source: DFPD.

Note: # Since September, 2013, the FCI gives separate figures for rice and unmilled paddy lying with the FCI and state agencies in terms of rice

Storage Capacity

8.72 Storage capacity, both covered and cover and plinth (CAP), of state agencies for storage of central stocks of foodgrains, increased from 34.14 mt as on 31.12.2012 to 36.68 mt as on 31 December 2013. Total storage capacity of the FCI and state agencies is 74.35 mt. Construction of godowns with a total capacity of 20.4 mt was approved in 19 states under the Private Entrepreneurs Guarantee (PEG) Scheme. By end of 2013-14, 12.00 mt capacity had been created under this scheme, which will address the shortage of covered godown space to some extent.

Box 8.5 : The National Food Security Act

The NFSA was notified on 10 September 2013, with the objective of providing food and nutritional security, by ensuring access to adequate quantity of quality food at affordable prices. It provides for coverage of up to 75 per cent of the rural population and up to 50 per cent of the urban population. It stipulates an entitlement of 5 kg of foodgrains per person per month for priority households and 35 kg per household per month for Antyodaya Anna Yojana (AAY) households at subsidized prices of ₹ 3 per kg of rice, ₹ 2 per kg of wheat, and ₹ 1 per kg of coarse grains. The states/UTs are to complete identification of eligible households under the NFSA by July 2014. So far 11 states, Rajasthan, Haryana, Himachal Pradesh, Bihar, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Chandigarh, and the NCT of Delhi, have implemented the NFSA and revised monthly TPDS allocations of foodgrains have been made to these states/UTs. The remaining states/UTs have been given allocation under the TPDS as per earlier norms.

The Act also has special focus on nutritional support to women and children. Pregnant women and lactating mothers during pregnancy and six months after the childbirth will also be entitled to maternity benefit of not less than ₹ 6000. Children up to 14 years of age will be entitled to nutritious meals or take-home rations as per prescribed nutritional standards. In case of non-supply of entitled foodgrains or meals, the beneficiaries will receive a food security allowance. The Act also contains provisions for setting up of grievance redressal mechanisms at district and state levels. Separate provisions have been made in the Act for ensuring transparency and accountability. The Act also contains measures for reforms in the TPDS, to be undertaken progressively by central and state governments. These reforms, inter alia, include doorstep delivery of foodgrains to TPDS outlets, application of information and communication technology tools, and diversification of commodities distributed under the PDS over a period of time. Based on the provisions of the Act, the foodgrain requirement for the TPDS and other schemes is estimated at 614.3 lakh tonnes. The average annual procurement of wheat and rice has been 617.8 lakh tonnes during 2008-09 to 2012-13, i.e. 33.2 per cent of average annual production. The estimated annual food subsidy for implementation of the Act at 2014-15 costs is about ₹ 1,31,066 crore.

Source: DFPD

Allocation and Offtake of Foodgrains

8.73 With the implementation of the NFSA, coverage under the Targeted Public Distribution System (TPDS) has increased from 36 per cent to about two-thirds of the population (Box 8.5). During 2013-14, while 44.5 mt of foodgrains were allocated under TPDS, 5.0 mt were allocated under other welfare schemes (OWS). Additional allocations were made to offload surplus foodgrains to states/UTs in order to control prices in the open market. All states/UTs were allocated 50 lakh tonnes of foodgrains in September 2013 for lifting by 31 March 2014 for distribution to additional BPL families at BPL issue price. Besides 14.58 lakh tonnes of foodgrains was allocated to states for festivals, calamity relief, etc.

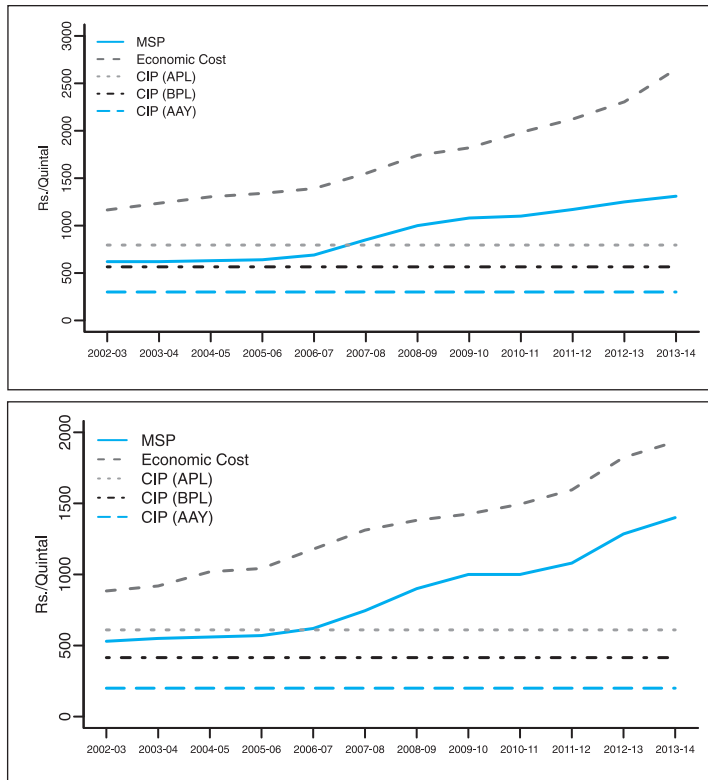


Figure 8.7(a) : MSP, Economic Cost, and Central Issue Prices for Rice from 2002-03 to 2013-14 (₹ per quintal)

Figure 8.7(b) : MSP, Economic Cost, and Central Issue Prices for Wheat from 2002-03 to 2013-14 (₹ per quintal)

Source: DFPD

8.74 The core concern regarding the PDS is the fixing of CIPs. Historically, CIPs were aligned to market price. The CIPs have remained unchanged since 2000 for BPL and AAY households and July 2002 for APL families, although economic costs have increased by more than 127 per cent (for rice) and 119 per cent (for wheat) in 2013-14 over 2002-03 [Figures 8.7 (a) and (b)]. This divergence has led to leakages, added to the subsidy bill, and fuelled inflationary pressures.

Open Market Sale Scheme (Domestic)

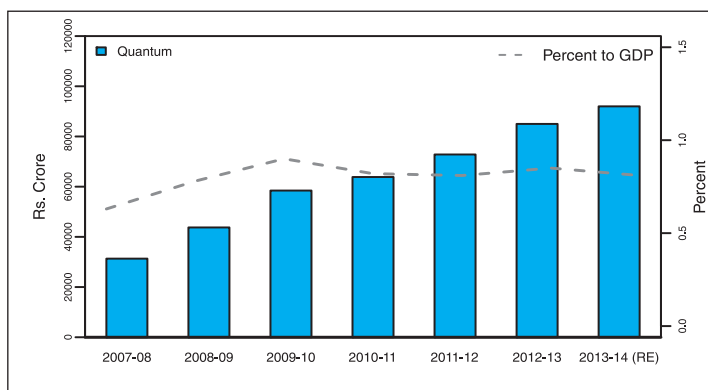
8.75 The FCI on behalf of the centre undertakes sale of wheat and rice at predetermined prices/reserve prices from time to time to enhance market supply of foodgrains so as to moderate open market prices and offload surplus stocks. Under the Open Market Sale Scheme (Domestic) [OMSS (D)] during 2013-14, 95 lakh tonnes of wheat was allocated for tender sale to bulk consumers/small private traders and 5 lakh tonnes for retail sale through states/UTs/cooperatives at a reserve price of ₹ 1500 per quintal for Punjab and

Haryana; and at reserve price plus freight from Ludhiana to other state capitals. Five lakh tonnes of rice was also allocated for retail sale through states/UTs. Against these allocations, 57.97 lakh tonnes of wheat was sold to bulk consumers/traders through tenders. There has generally been a muted response to the OMSS, because the prices are set higher than the MSP, which seems incongruent during periods of high food inflation.

FOOD SUBSIDY

8.76 In fulfilling its obligation towards provision of minimum nutritional support to the poor through subsidized foodgrains and ensuring price stability in different states, the government incurs food subsidy. The difference between the economic cost and CIP is the consumer subsidy, which is reimbursed to the FCI. The food subsidy has increased substantially in the past few years (Figure 8.8). Food subsidy was ₹ 92,000 crore in 2013-14 (RE).

8.77 While foodgrains are central to the issue of food security, the diversifying demand patterns from cereals to protein-rich items also need to be taken into account. As per the Key Indicators of Household Consumer Expenditure in India, 2011-12 (National Sample Survey Office, 2013), expenditure on cereals between 1993-94 and 2011-12 declined from 24.2 per cent of total consumption expenditure to 12 per cent in rural areas and from 14 per cent to 7.3 per cent in urban areas.



Source: DFPD

OUTLOOK AND CHALLENGES

8.78 While the continued robustness of Indian agriculture is significant in the context of food security and climate change, some major concerns remain. Growth rates of productivity are far below global standards; productivity levels of rice and wheat have declined after the green revolution of the 1980s. Another issue is soil degradation due to declining fertilizer-use efficiency. While urea needs to be brought under the purview of the NBS policy, the recommendation of the Task Force for Direct Transfer of Subsidy under the chairmanship of Nandan Nilekani, for phased shifting to direct transfer of fertilizer subsidy to farmers, merits consideration on priority.

8.79 On domestic and international marketing, the plethora of government interventions that were used to build a marketing set up have actually served as barriers to trade. Removing market distortions will create greater competition in markets, promote efficiency and growth, and facilitate the creation of a national

Food and Nutritional security concerns need to take account of changing consumption patterns.

Figure 8.8 : Food Subsidy: Quantum and as percentage of GDP (at current prices) 2007-08 to 2013-14 (RE)

agriculture market. Thus, while the agricultural market is by itself not fully malleable to becoming a perfectly competitive structure, it can asymptotically approach it. Since agriculture provides the backward linkage to agro-based industries and services, it has to be viewed holistically as a seamless farm-to-fork value chain, comprising farming, wholesaling, warehousing, logistics, processing, and retailing including exports. For establishing a national common market, some reforms are needed:

- (i) Examine the APMC Act, EC Act, Land Tenancy Act, and any such legally created structures whose provisions are restrictive and create barriers to free trade.
- (ii) Rigorously pursue alternate marketing initiatives, like direct marketing and contract farming.
- (iii) Examine inclusion of agri related taxes under the General Goods and Services Tax (GST).
- (iv) Establish stable trade policy based on tariff interventions instead of non-tariff trade barriers.
- (v) Develop and initiate competition in the agro-processing sector. Incentivize the private sector to scale up investments.

8.80 Strengthening the agri sector is crucial for poverty alleviation, ensuring food security, increasing employment opportunities, and enhancing rural incomes. Further, with 10.4 per cent of total households in rural areas being headed by a woman (Census 2011), it is essential to formulate policies, and package technologies and services keeping in view the productive role played by women in all facets of the agri sector. Experience from BRICS (Brazil, Russia, India, China, and South Africa) countries indicates that a 1 per cent growth in agriculture is at least two to three times more effective in reducing poverty than the same growth emanating from non-agriculture sectors.

8.81 Currently, India is in an anomalous situation of being largely self-sufficient with large stocks of foodgrains on the one hand and registering high food inflation on the other, which is largely due to the government becoming the single largest buyer. In this scenario of bumper production and stocks, a paradigm shift in the role of the government in all aspects of foodgrain production and distribution is necessary.

8.82 With the FCI suffering from diseconomies of scale, adoption of the DCP needs to be expanded to all states. This would save transport costs, transit losses, and other leakages and simultaneously increase food availability, reduce food prices in the open market, and ultimately reduce the food subsidy. The continued emphasis on procurement and distribution of rice and wheat is contrary to the ground reality that shows changing preference functions of consumers. A shift to a direct cash transfer system or food stamps would anchor our food policy to the requirements of the people and would additionally reduce the fiscal deficit.

8.83 On a positive note, there appears to be no cause for alarm on the El Niño front as India is well placed on foodgrains availability, with record domestic production and huge stocks in the central pool. The Food and Agriculture Organisation (FAO) in its 'Cereal Supply and Demand Brief' of June 2014, has also forecast a comfortable global scenario for 2014-15 with high stocks-to-use ratios of cereals and stable prices.

Major challenges include: low productivity levels; soil degradation due to declining fertilizer - use efficiency; market distortions that prevent the creation of a national common market; changing role of government in production and distribution in the current scenario of bumper production and stocks; phased shifting to direct transfer of fertilizer and food subsidies.

There appears to be no cause for alarm on the El Niño impact as India is well placed on foodgrains availability, with record domestic production and huge stocks in the central pool.
