Trends and Trajectory of Indian Agriculture

1

Raka Saxena, Sonia Chauhan, Dilip K. Ghosh, Rohit Kumar, Dilip Kumar, and Anup Das

Abstract

The Government of India made several attempts to evolve appropriate agricultural policies. The approach to agricultural reforms was largely production-centric, but concerns related to farmers' distress and low incomes emerged in the recent decade. Realizing those, the Government constituted a committee for Doubling of Farmers' Income (DFI) by 2022–2023. This chapter studies the detailed trajectory of Indian agriculture in terms of changes in macroeconomic indicators, particularly agricultural growth, employment, agricultural trade, changes in agrarian structure, cropping pattern, production profile, and changes in consumption pattern during various growth phases. The crop sector contributed the maximum to agricultural growth. Livestock and fisheries sectors have grown at an appreciable growth. The number of marginal and small holdings and the area under such holdings have increased while the number of semi-medium, medium, and large holdings and the area under such holdings has reduced. There is a clear consumption shift from food grains toward high-value products like fruits and vegetables, livestock, and fisheries. This manifests in increasing area coverage and production in respect of these sectors and reflects in the

R. Saxena (✉) · S. Chauhan · D. Kumar
ICAR-National Institute of Agricultural Economics and Policy Research, New Delhi, India
e-mail: raka.saxena@icar.gov.in

D. K. Ghosh
ICAR-National Institute of Biotic Stress Management, Raipur, India

R. Kumar
Department of Dairy Business Management, Sanjay Gandhi Institute of Dairy Technology, Bihar Animal Sciences University, Patna, India

A. Das
ICAR Research Complex for Eastern Region, Patna, Bihar, India

P. K. Ghosh et al. (eds.), *Trajectory of 75 years of Indian Agriculture after Independence*, https://doi.org/10.1007/978-981-19-7997-2_1

increasing value share of these items over time. The exports of agricultural commodities have jumped significantly. The country needs to handle the challenges related to climate uncertainties and other productivity barriers.

Keywords

Agricultural growth · Employment · Agrarian structure · Cropping pattern · Consumption pattern · Exports

1.1 Chronology of Policy Reforms in Agriculture

Agriculture has been a significant component of the Indian economy and supports the mainstay of the majority of the rural population in India. Though the share of agriculture and allied in total gross value added (GVA) has declined from 60% in 1950–1951 to 20% in 2019–2020, the agricultural output has been consistently increasing. India is one of the largest producers of rice, wheat, pulses, sugarcane, cotton, groundnuts, fruits, vegetables, milk, and fisheries. This sector provides employment to a sizable population in India. Realizing the importance of agriculture, the Government of India made several attempts to evolve appropriate agricultural policies for producers' and consumers' welfare. To start with, the Royal Commission was set up in 1928 to examine the conditions of the agricultural and rural economy and recommend measures for agricultural improvement in India. The first Food Grains Policy Committee was set up in 1943 to tackle the ill effects of the Second World War on the availability, supply, distribution, and prices of food products. Severe food shortages were faced due to partition and lower productivity immediately after attaining independence. With the aim to provide food to all, the government appointed Foodgrain Policy Committee in 1947 to study the food distribution aspects. The main feature of this policy was the gradual withdrawal of control and restrictions on the food grains movement. Subsequently, to examine food problems and their solutions, various other committees like Maitra Committee (1950), Mehta Committee (1957), and Venkatappaiah Committee (1966) were constituted. The recommendations of these committees were vital in the formulation of agricultural policies for the distribution of food grains, minimum support prices, subsidies, public storage, procurement, and trade protection measures (Government of India 2018).

The first comprehensive agricultural policy in the country was brought out by the National Commission on Agriculture (1976) with a major emphasis on agricultural production along with natural resource management including land, water, and soil conservation. The outcomes were realized in the suggestion/initiation of various development schemes to improve the condition of natural resources and the income of farmers. Another committee chaired by Shri Bhanu Pratap Singh in 1990 made recommendations covering all major sectors of the agricultural economy and provided the base for the first draft of agricultural policy resolution, which resulted in the first ever comprehensive National Agricultural Policy introduced in 2000 (Government of India 2018). Further, the National Commission on Farmers (NCF)

was set up in 2004 and studied the major concerns pertaining to Indian farming and the farmers, largely emphasizing agricultural production, productivity, food availability, and sustainability and also addressed other major agricultural dimensions related to land reforms, irrigation, infrastructure, along with agricultural research and development.

The approach to agricultural reforms was largely production-centric, but several concerns related to farmers' distress and low incomes emerged in the recent decade. Realizing those, the government constituted a committee for Doubling of Farmers' Income (DFI) by 2022–2023; the agenda focused on holistic solutions and suggested the major reforms required in the agriculture sector. DFI Committee also considered and suggested the market reforms in a big way and also focused on the allied sectors like animal husbandry, poultry, fisheries, and secondary agriculture.

Considering this chronology, this chapter studies the detailed trajectory of Indian agriculture in terms of changes in macroeconomic indicators, particularly agricultural growth, employment, agricultural trade, changes in agrarian structure, cropping pattern, production profile, and changes in consumption pattern during various growth phases. For analyzing the changes, the entire period during the last 75 years has been classified into four broad phases: pre-green revolution phase (1950–1951 to 1966–1967), green revolution phase (1967–1968 to 1987–1988), diversification and economic reforms phase (1988–1989 to 2009–2010), and market and income reforms (2010–2011 to 2019–2020).[1] We followed a systematic approach and identified the structural breaks using the Bai-Perron methodology.[2] The breaks were identified in the GVA of agriculture at 2011–2012 prices. The analysis of selected parameters (for continuous series) has been done according to the identified structural breaks.

1.2 What Comprises Indian Agriculture?

Agriculture and its allied sectors play an important role in the Indian economy. Agriculture and allied sector consists of four broad subsectors, namely crop sector, livestock, forestry, and fisheries. The crop sector contributes the maximum output value realized from agricultural and allied activities. Livestock and fisheries sectors are growing appreciably and are categorized as high-growth sectors. India is the land of diverse agroecologies and covers various typologies, namely arid, coastal, hilly, mountainous, irrigated, and rainfed. These diverse typologies allow the country to

[1] Chand and Shinoj (2012) delineated six phases in agricultural development, namely pre-green revolution period (1950–1951 to 1966–1967), early green revolution period (1968–1969 to 1975–1976), period of wider technology dissemination (1975–1976 to 1988–1989), period of diversification (1988–1989 to 1995–1996), post-reform period (1995–1996 to 2004–2005), and period of recovery (2004–2005 to 2010–2011).

[2] The models for a structural break can integrate the structural changes in selected variables through the model parameters. Bai and Perron (1998) provide the standard framework for the structural breaks model in which some, but not all, of the model parameters, are allowed to break at m possible break points (Bai and Perron 1998).

produce a number of major and minor agri-based commodities. Box 1.1 provides the total production of all major agri-commodities in India. Currently, the country produces approximately 1.2 billion tonnes of agricultural produce. However, the commodities vary in terms of their importance for food, feed and fodder, and clothing, along with being used as raw and intermediate products for industry. Being the largest sector in agriculture, the crop sector holds a large number of contributors. Field crops include cereals, pulses, oilseeds, sugars, and fibers. Among the cereals, paddy and wheat are the major staple crops and comprise the maximum share. Recently, the Government of India accorded greater emphasis on the cultivation of coarse cereals/millets owing to their nutritional benefits. Gram, pigeon pea, black gram, and green gram are the most important pulses. The country attained an appreciable increase in the production of pulses, and the total pulse production increased from 16–17 million tonnes (2014–15) to around 24–25 million tonnes (2019–20).

Box 1.1 Volumes of Different Commodities Produced in India, TE 2019–2020 (000′ Tonnes)

Cereals								
Paddy 116035		Wheat 103775	Sorghum 4350	Pearl millet 9412	Barley 1712	Maize 28411	Finger millet 1660	Small millets 381
Pulses								
Gram 10798.6	Pigeon pea 3832.3		Black gram 2877.9	Green gram 2328	Lentil 1318			
								Oilseeds
Soybean 11809	Linseed 131	Sesamum 701	Groundnut 8644	Rapeseed and mustard 8936	Castor seed 1535	Niger seed 52	Safflower 41	Sunflower 217
Sugar and jaggery								
Sugarcane 385,274								
Fibers								
Cotton 32,304		Jute 9511	Mesta 399					
Indigo, dyes and tanning material, drugs and narcotics								
Tea 915		Coffee 311	Cocoa 23					
Condiments and spices								
Cardamom 24		Dry chilies 1692	Black pepper 58	Ginger 1817	Turmeric 999	Areca nut 1110	Garlic 2986	Coriander 668
Fennel 134		Cumin 767	Ajwain 26	Fenugreek 193	Tamarind 193	Nutmeg 15	Cloves 1	
Fruits								
Banana 31288	Cashew Nut 754	Mango 21155	Grapes 3047	Papaya 5940	Apple 2486	Mosambi 3524	Lemon 3439	Orange 5827
Walnut 295	Litchi 711	Pineapple 1716	Sapota 1047	Almonds 12	Jack fruit 1778	Watermelon 2399	Muskmelon 1198	Pear 303
Guava 4223	Gooseberry 1095	Passion fruit 73		Peach 113	Pomegranate 2791	Strawberry 6	Other fruits 2295	Plum 87
Vegetables								
Potato 50,021	Sweet potato 1266	Tapioca 5329	Onion 24,057	Cabbage 9145	Cauliflower 8897	Okra 6209	Tomato 19,980	Green peas 5611

(continued)

Box 1.1 (continued)

Radish 3129	Beans 2301	Bitter gourd 1203	Bottle gourd 2933	Capsicum 452	Carrot 1790	Cucumber 100	Pumpkin 1936	
Other Crops								
Rubber 685,667		Mushroom 293						
Livestock								
Milk group 176,467		Meat 7733	Eggs 104 (billion nos.)	Wool 4242 (million kg)				
Fisheries								
Inland fish 8806		Marine fish 3675						

Source: Directorate of Economic and Statistics, Government of India.

Major oilseeds include soybean, rapeseed and mustard, groundnut, and coconut. The country has been in deficit in the production of oilseeds, and the major chunk of edible oil requirement in the country is met through imports. Our imports of palm oil have reached the level of approximately ten million tonnes. A number of steps have been taken by the Government of India to boost the productivity and production of domestic oilseeds in the country. The country is also the leading producer of sugarcane. The recent sugar policy aims at enhancing sugar exports and also aims to diversify its usage for strengthening domestic producers and sugar mills. A number of fruits and vegetables are grown under diverse agroclimatic environments. Horticultural output is increasing at an encouraging pace leading to greater participation of the country at the international level. Livestock and fisheries are the high-growth sectors. To provide a boost, the Government has created a separate ministry to focus on these sectors. The outputs have increased manifolds since independence, and we are now the largest exporter of bovine meat and crustaceans. Subsequent chapters delve more into the technological and other growth aspects of each of these subsectors.

1.3 Phases in Indian Agriculture

Several efforts have been made since independence to evolve appropriate agricultural policies impacting the agricultural systems in India. Given the food deficiency that prevailed and continued since independence, the growth strategy was largely production-centric. The agricultural sector received the much-needed attention that helped the nation achieve high levels of production for achieving food security. To have a more systematic portrait, we delineated the growth phases in agriculture and identified the structural breaks (Fig. 1.1).

To realize the goal of self-sufficiency in the agricultural sector, the Green Revolution was initiated in 1966–1967, which led to appreciable productivity

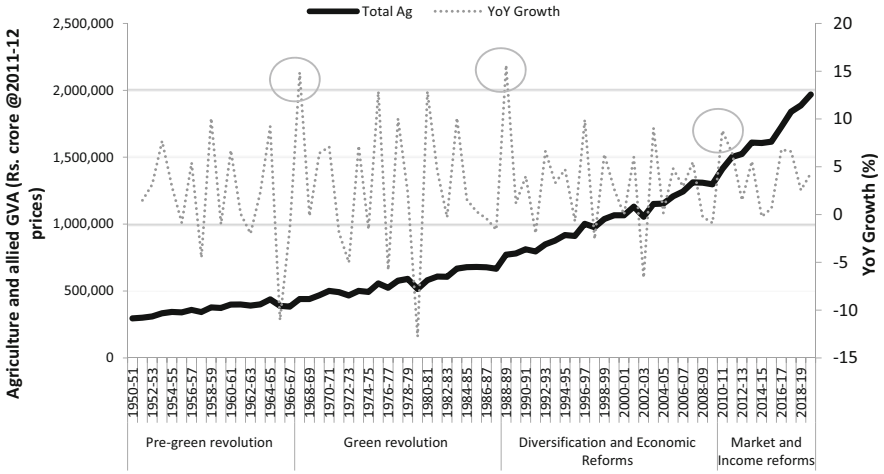

Fig. 1.1 Various phases in the growth of Indian agriculture. Source: Central Statistics Office, MoSPI

growth in major grains, mainly rice and wheat. The adoption of improved HYV seeds coupled with efficient irrigation, other inputs, and price support led to an increase in productivity, making it possible to feed the growing human population. This led to a considerable rise in agricultural production, making India self-sufficient in food grains. During the decade of the 1980s, efforts were made to spur agricultural growth in low productivity and stagnant states and regions, and special packages were launched to disseminate improved agricultural technology in underdeveloped states. The strategy focused on improved crop varieties and technologies suitable for dry-land regions to improve agricultural productivity. The productivity enhancements were realized through an increase in public investment in agriculture, research & development, and infrastructure. Agricultural research, extension, input supply, credit, marketing, price support, and the spread of technology were the prime concern of policymakers (Rao 1996).

Expansion of area was the main source of growth during the 1950s and 1960s; productivity became the main source of growth in agricultural production afterward. This phase also witnessed agrarian reforms, a number of institutional reforms, and the strengthening of agricultural credit institutions. Land reforms were important in increasing agricultural production during this phase. For price support to boost the adoption of improved technology, Agricultural Price Commission was set up in 1964, and an agricultural price policy was formulated to ensure minimum support prices to the farmers for selected agricultural commodities.

The second phase in Indian agriculture resulted in the attainment of self-sufficiency in food grains. Meanwhile, the Operation Flood Program launched by the Government of India with international cooperation in different phases resulted in enhanced milk output. A 'National Milk Grid' was formed that connected milk producers throughout the country along with the consumers. This led the country to

become the highest milk producer in the world. Indian agriculture witnessed diversification toward nonfood grains output like milk, fishery, poultry, vegetables, fruits, etc. which accelerated growth in agricultural GDP during the 1980s (Chand 2003). The Blue Revolution concentrates mainly on enhancing the production and productivity of aquaculture and fisheries both from the inland and marine sources to meet the food and nutritional security of the nation. Economic reforms initiated in 1991 focused on deregulation, reduced government participation in economic activities, and liberalization. Opening up the economy for agricultural trade was a significant development and impacted agriculture. The country signed a number of multilateral trade agreements to boost our agricultural exports. The comprehensive e New Agricultural Policy was launched in 2000, aiming at 4% per annum growth in agriculture while meeting sustainability and equity goals. The recent phase focuses on various reforms for enhancing farmers' income in the country.

1.4 Agricultural Growth

This section presents the trends and growth in Gross Value Added (GVA) across various subsectors at 2011–2012 prices. The contribution of the agricultural and allied sectors to the overall GVA has changed intensely over the years. The contribution of the agricultural sector has declined from approximately 56% in pre-green revolution phase to about 16% in the recent phase, which was mainly dominated by several market and income reforms. The share of the service sector has enhanced drastically during this growth trajectory. Though the share of agriculture has declined, the growth momentum has picked up. The recent phase has witnessed an appreciable growth of over 3.5% per annum (Table 1.1).

During the recent phase, livestock and fisheries registered a growth of 1.54, 7.48, and 8.56% per annum, respectively (Fig. 1.2). The fisheries sector is growing at an appreciable and sustainable rate and is ahead among all sub-sectors. The livestock sector is likely to emerge as an engine of growth in the agricultural sector and can be relied upon for risk mitigation and minimizing losses to the farmers. The studies show that livestock is the best insurance against agrarian distress as the sector is the source of sustained income and generates income more frequently than the crop sector (Fig. 1.3).

1.5 Cropping Pattern

Corresponding to the growth trajectory, the cropping pattern has gone significant changes over time. Table 1.2 provides insight into the area share of different crop categories to gross cropped area (GCA) over time. The area under cereals has increased over time; paddy and wheat have been the principal cereals and accounted for more than one-third share of GCA. The Government of India places a lot of emphasis on the promotion of coarse cereals, which are now emerging as important for assured health benefits and are termed as nutri-cereals. A lot of emphasis is also

Table 1.1 Trends in GVA across sectors

Sector	Pre-green Revolution 1950–1951 to 1966–1967	Green Revolution 1967–1968 to 1987–1988	Diversification and Economic Reforms 1988–1989 to 2009–2010	Market and Income Reforms 2010–2011 to 2019–2020
Average GVA@2011–2012 prices (Rs billion)				
Agriculture and allied	3631	5585	10,328	16,691
Agriculture	2956	4589	8683	14,367
Industry	960	2401	8314	21,314
Services	2287	5452	21,868	64,999
Share (%)				
Agriculture and allied	55.89	43.12	25.83	16.20
Agriculture	45.51	35.43	21.72	13.95
Industry	14.78	18.53	20.80	20.69
Services	35.21	42.09	54.70	63.10
GVA growth (% p.a.)				
Agriculture and allied	2.02	2.30	2.70	3.55
Agriculture	2.00	2.52	2.77	3.24
Industry	6.33	4.88	6.25	6.21
Services	4.87	4.70	7.45	7.52

being accorded to pulses and oilseeds for attaining self-sufficiency in both subsectors. There is a clear shift from food grains toward fruits and vegetables. Because of the shift in demand pattern, the farmers have also responded to market signals and gradually shifted the production mix to meet the growing demand for these commodities, as indicated by the increasing value share of these items over time. Increasing demand for high-value commodities like fruits and vegetables in coming years could be tapped by a shift in policy focus as well as an investment toward allied sectors for improving productivity, quality, and efficiency (Fig. 1.4).

1.6 Dependence on Agriculture and Agrarian Structure

The dependence on agriculture can be assured from the fact that how many workers in the form of cultivators and agricultural laborers are employed in agriculture. Such data on agricultural workers are available in the population census on decadal bases. Besides, the National Sample Survey Office (NSSO) conducts surveys on employment and unemployment on a quinquennial basis. Table 1.3 presents the data on agricultural workers in the economy since 1951. Except for 1971, a continuous increase has been noticed in total workers engaged in agriculture. However, the number of cultivators declined between 2001 and 2011. The number of agricultural

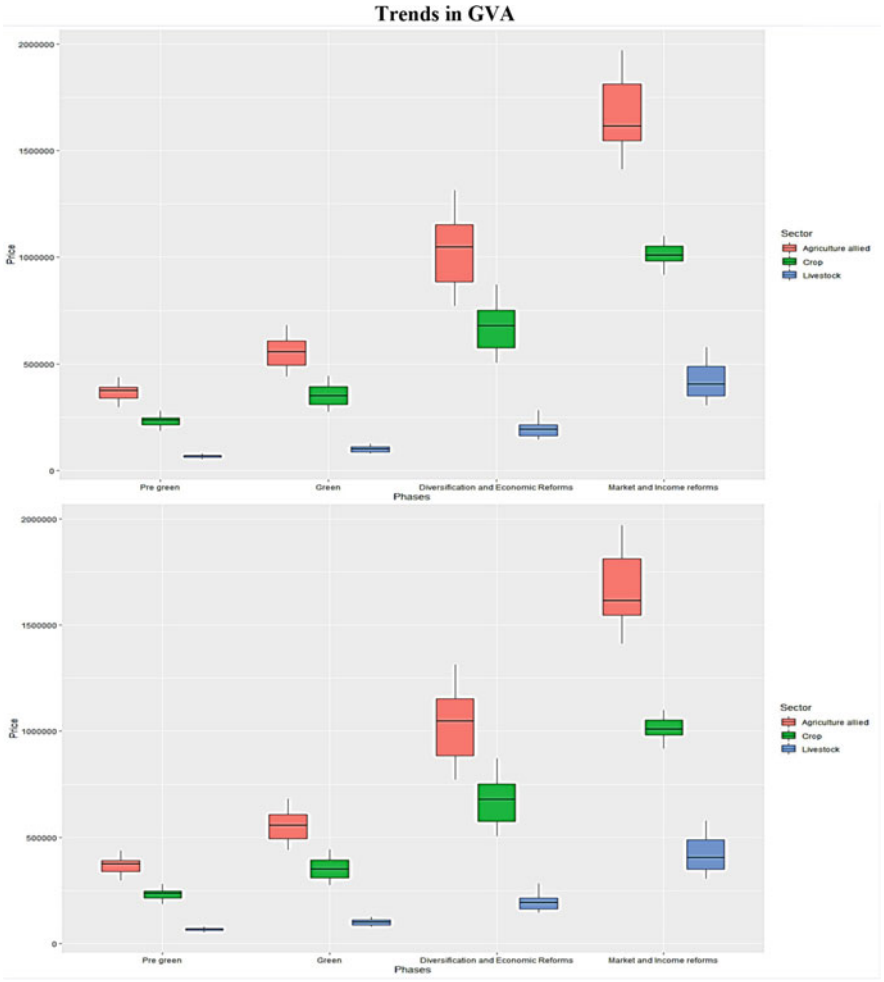

Fig. 1.2 Growth rates in GDP across subsectors at 2004–2005 prices. Source: Central Statistics Office, Ministry of Statistics and Programme Implementation, Govt. of India

laborers increased from 107 million to 144 million. The data indicate that the interest of the farming community in agriculture is declining, and consequently, the self-employed workers in agriculture are leaving the industry. This reported shift is good, provided the workers, who left the sector, are productively and gainfully employed in alternate sectors/industries.

The agrarian structure in India has also undergone significant change in India. The average land holding has witnessed a continuous decline since independence, and it declined from 2.69 hectares in 1960–1961 to 1.08 in 2015–2016. The total number of operational holdings in the country increased from 71.011 million in 1970–1971 to 146.45 million in 2015–2016. Small and marginal farm holders now

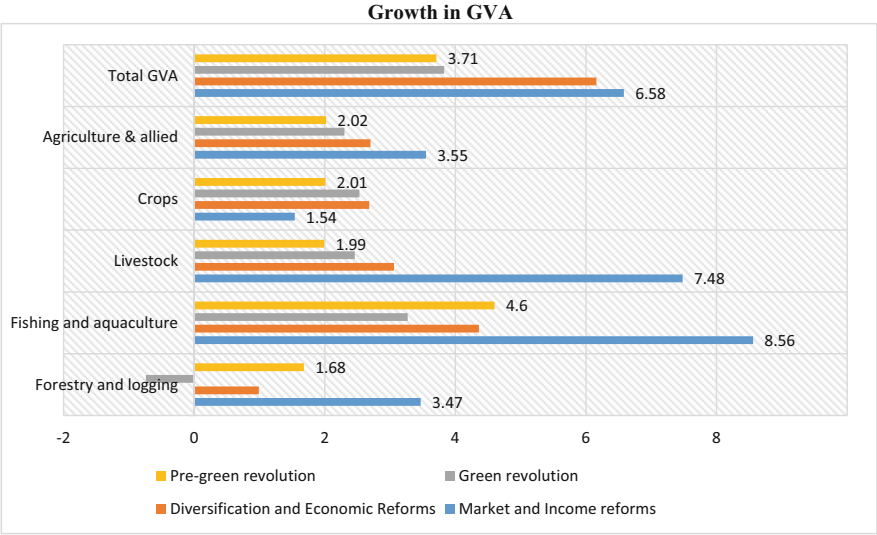

Fig. 1.3 Growth rates in GDP across subsectors. Source: Central Statistics Office, MoSPI, Govt. of India

Table 1.2 Area shares of crop categories to gross cropped area (GCA)

Crops	Pre-green revolution period	Green revolution period	Diversification and economic reforms	Market and income reforms
Paddy and wheat	30.44	35.12	36.84	37.48
Pulses	15.19	13.39	12.04	13.38
Oilseeds	8.60	9.72	18.51	17.55
Sugar	1.49	1.69	2.17	2.49

Source: Agricultural Statistics at a Glance, Various issues

cultivate 47% of total operated land and constitute 86% of the total number of landholdings. Fragmented and scattered holdings (as is the case of most of the marginal and small farms in India) do not allow better utilization of farm resources and technology adoption by the farmers; as a result, it reduces productivity. Moreover, this also hinders the diversification process, which is considered a key in enhancing the income of farmers. However, studies have also reported that small farms are more efficient in terms of technology adoption and better resource use productivity. A study by Chand et al. (2011) indicates that the smaller the holding size, the higher the use of inputs, crop intensity, and coverage under HYVs, reflecting technology. The study concluded that agriculture productivity in marginal and smallholdings was found to be much higher than the average productivity for all size categories; however, per capita output is low in smallholdings despite higher productivity due to lower per capita availability of land (Table 1.4).

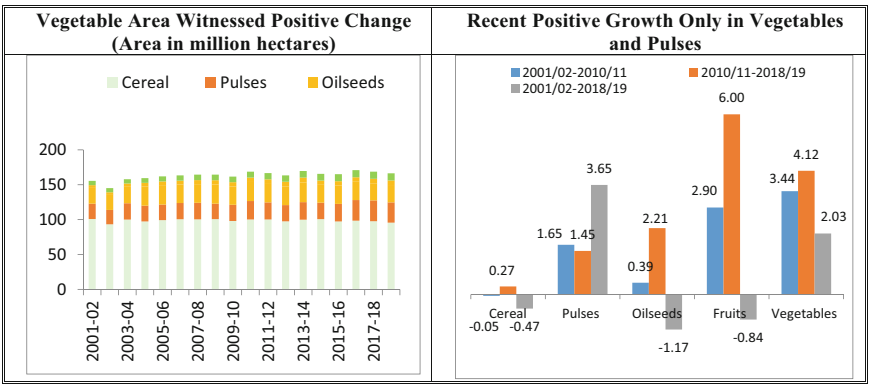

Fig. 1.4 Recent changes in cropping pattern. Source: Agricultural Statistics at a Glance, Various issues

1.7 Domestic Marketing and Trade

The bulk of the agricultural produce was marketed through the traditional spot markets. The Agriculture Produce Marketing Committee (APMC) was established to regulate agricultural marketing and promote efficient trade. The Government of India established the Agricultural Prices Commission (APC) in 1964 to create a stable and remunerative price environment. Agricultural price policy in India started with the basic intention of incentivizing Indian farmers to adopt the improved package of technology effectively. The model Agricultural Produce Marketing (Development and Regulation) Act, 2003 was formulated and shared with all the states for implementation. Only a few states could completely modify the existing Acts and implement the amendments. Newer marketing platforms were also created, such as eNAM.

Contrary to the overall trade, India has always been a net exporter in the case of agriculture despite the initial phases of attaining self-sufficiency in most of the commodities. The exports of agricultural commodities picked up after 1970–1971; however, a kick start was attained only after 1994–1995 with the launch of global trade reforms and trade integration with the establishment of the World Trade Organization. Over the last 25 years since India's liberalization, foreign trade has expanded multifold and seen significant structural shifts in product mix as well as geographic spread. Liberalization in trade policies related to easing several trade restrictions, reduction in tariff levels across different products, and other trade reforms have assisted the growth of foreign trade, especially in the first two decades post-liberalization. India's exports increased from Rs. 0.32 lakh crores in 1990–1991 to Rs. 23.08 lakh crores in 2018–2019, and imports also enhanced from Rs. 0.43 lakh crores in 1990–1991 to Rs. 35.95 lakh crore in 2018–2019 (Table 1.5). The composition of exports has gone substantial changes post-liberalization. India's

Table 1.3 Workers in the agricultural sector

Year	Total workers	Agricultural workers			Share in total workers (%)		
		Cultivators	Agricultural laborers	Total	Share of cultivators in total workers	Share of agriculture labor to total worker	Share of agriculture workers in total worker
1951	139.5	69.9	27.3	97.2	50.11	19.57	69.68
1961	188.7	99.6	31.5	131.1	52.78	16.69	69.48
1971	180.4	78.2	47.5	125.7	43.35	26.33	69.68
1981	244.6	92.5	55.5	148	37.82	22.69	60.51
1991	314.1	110.7	74.6	185.3	35.24	23.75	58.99
2001	402.2	127.3	106.8	234.1	31.65	26.55	58.20
2011	481.9	118.8	144.3	263.1	24.65	29.94	54.60

Source: Census of India, Various issues

Table 1.4 Changing the agrarian structure: number and size of holdings

	Below 1.0	1.0–2.0	2.0–4.0	4.0–10.0	Above 10.0	All
Number of holdings (thousands)						
1960–1961	19,900	10,900	9200	6600	2300	48,900
1970–1971	35,682	13,432	10,681	7932	2766	70,493
1976–1977	50,122	16,072	12,455	8068	2166	88,883
1980–1981	56,147	17,922	13,252	7916	1918	97,155
1985–1986	63,389	20,092	13,923	7580	1654	106,637
1990–1991	71,179	21,643	14,261	7092	1404	115,580
1995–1996	76,222	22,814	14,067	6868	1230	120,822
2001–2001	83,694	23,930	14,127	6375	1096	129,222
2005–2006	64,316	18,776	11,218	5336	1003	100,650
2006–2007	92,826	24,779	13,896	5875	973	138,348
2010–2011	92,688	24,746	13,869	5854	953	138,110
2015–2016	100,251	25,809	13,993	5561	838	146,454
Average holding size (hectares)						
1960–1961	0.44	1.47	2.85	6.08	17.57	2.69
1970–1971	0.41	1.44	2.81	6.08	18.10	2.30
1976–1977	0.39	1.41	2.77	6.04	17.57	2.00
1980–1981	0.39	1.44	2.78	6.02	17.41	1.84
1985–1986	0.39	1.43	2.77	5.96	17.21	1.69
1990–1991	0.39	1.43	2.76	5.90	17.33	1.57
1995–1996	0.40	1.42	2.73	5.84	17.21	1.41
2001–2001	0.40	1.42	2.72	5.81	17.12	1.33
2005–2006	0.38	1.38	2.68	5.74	17.08	1.23
2006–2007	0.42	1.42	2.72	5.78	15.57	1.30
2010–2011	0.39	1.42	2.71	5.76	17.38	1.15
2015–2016	0.38	1.40	2.69	5.72	17.07	1.08

Source: Agricultural Census, Various Years

export basket is now diversified, with nontraditional items and differential products also gaining importance. Agricultural exports and imports have also increased considerably during the last 25 years. Since the year 2005–2006, there can be seen marked surge both in the export and import of agricultural commodities. The absolute agricultural trade has expanded, and also the share of agricultural exports has increased in recent years (Fig. 1.5).

Table 1.5 Patterns and contribution of agricultural trade from India

Years	Agriculture exports (Rs. crore)	Total exports (Rs. crore)	Agriculture exports to total exports (%)	Agriculture imports (Rs. crore)	Total imports (Rs. crore)	Agriculture imports to total imports (%)	Net trade (Rs crore)	Net agricultural trade (Rs crore)
1965–1966	335	806	42	536	1394	38.43	–589	–201
1970–1971	565	1535	37	604	1642	36.80	–107	–39
1975–1976	1686	4042	42	2142	5265	40.68	–1223	–457
1980–1981	2376	6683	36	2300	12,549	18.32	–5866	76
1985–1986	3271	10,895	30	3889	19,657	19.78	–8763	–618
1990–1991	6013	32,527	18.49	1206	43,171	2.79	–10,644	4807
1995–1996	20,398	106,353	19.18	5890	122,678	4.8	–16,325	14,508
2000–2001	28,657	201,356	14.23	12,086	228,307	5.29	–26,950	16,571
2005–2006	45,711	456,418	10.78	15,978	660,409	3.26	–203,991	29,733
2010–2011	113,047	1,136,964	10.28	51,074	1,683,467	3.41	–546,503	61,973
2015–2016	215,396	1,716,378	12.55	140,289	2,490,298	5.63	–773,920	75,107
2017–2018	251,563	1,956,514	12.86	152,095	3,001,033	5.07	–1,044,514	99,469
2018–2019	274,571	2,307,726	11.90	137,019	3,594,674	3.81	–12,869	137,551

Source: Agricultural Statistics at a Glance, (various issues)

Recent Marketing Reforms

In order to revive the Indian economy, the Centre government has announced the Atma Nirbhar Bharat Abhiyan. It includes the announcement of Rs 1 lakh crore fund to finance agriculture infrastructure projects at the farm gate and produce aggregation points. Also, Rs 500 crore has been allocated to extend Operation Greens, which comprises Tomatoes, Onion, and Potatoes (TOP) to ALL fruits and vegetables (TOTAL). Apart from it, the government has also shown the intention to usher in agricultural marketing reforms. These reforms relate to amending the Essential Commodities Act (ECA), 1955, bringing Central legislation to allow farmers to sell their products to anyone outside the APMC mandi yard and creating a legal framework for contract farming.

1.8 Shift in Consumption Pattern

India is a country with around 1.38 billion population (almost 17% of the world) with changing food habits. The agricultural systems and policies in the initial phases largely catered to meeting the basic objective of reducing hunger and poverty. Breakthroughs in production technology for enhancing the food grain yield, named the Green Revolution, led to self-sufficiency in food production. Rising income further facilitated consumption diversification leading to greater demand for the consumption of high-value products. The nutrition transition is reported to be an important consequence of economic and structural transformation. Economic growth, changes in tastes and preferences, and urbanization has resulted in changing consumption pattern away from traditional food commodities to processed and high-value commodities (Murty 2000; Meenakshi 1996; Rao 2000) (Fig. 1.6).

There is a clear consumption shift from food grains toward high-value products like fruits and vegetables, livestock, and fisheries. This is manifest in increasing area coverage and production in respect of these sectors and reflected in the increasing value share of these items over time. The increasing demand for high-value commodities like fruits and vegetables, livestock products, and fisheries can be tapped better by a shift in policy to focus on what would constitute the growth drivers in the coming years. This potential can be better harvested by reorienting the policy to enhance investments in these allied sectors for improving productivity, quality, and efficiency. Over the past two decades, the share of food in total expenditure (as explained by the monthly per capita expenditure, MPCE) has fallen in rural India, signaling a clear shift in expenditure behavior. An increasing trend toward nonfood expenditure is clearly visible, and one would expect the trend to continue in the near future. The physical consumption quantities display a consistent decline in cereals in both rural and urban India, and the trend holds true for pulses as well. Around 15% of the household expenditure budget has shifted toward nonfood

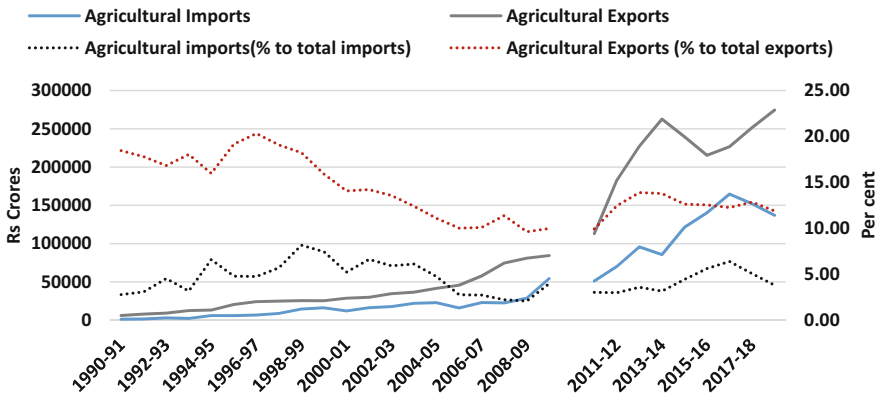

Fig. 1.5 Contribution of agricultural trade to total. (Source: Central Statistics Office, MoSPI)

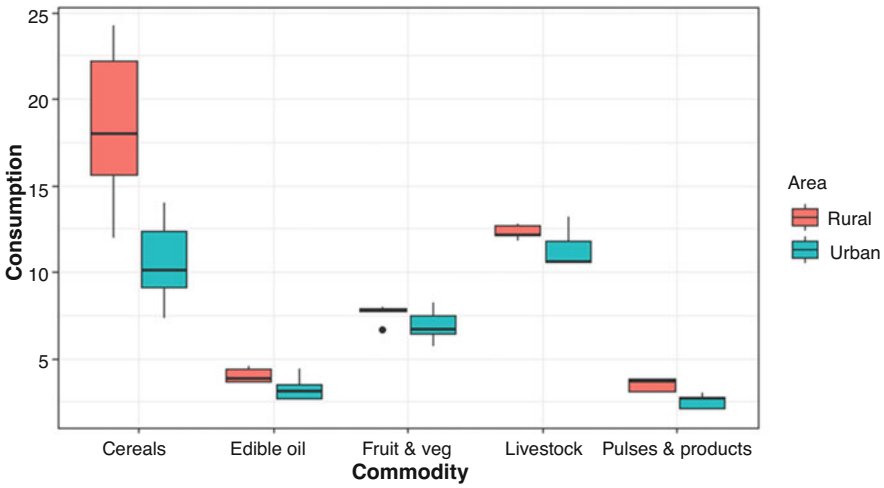

Fig. 1.6 Consumption pattern of food items in India. (Source: NSSO Rounds on Household Consumer Expenditure Survey, Govt of India)

expenditure. While expenditures on fuel, light, and other items have also registered consistent and marginal improvements, doubling expenditure on durable goods can be appreciated as it reflects household welfare. More than 9% increase in expenditure on other goods and services also indicates an increasing preference toward nonfood items than food items (Table 1.6).

Table 1.6 Trends and patterns in consumption

Item group	Share in total consumption expenditure (%)									
	Rural					Urban				
	1993–1994	1999–2000	2004–2005	2009–2010	2011–2012	1993–1994	1999–2000	2004–2005	2009–2010	2011–2012
Consumption pattern of major items (per person per month)										
Cereals (kg)	13.4	12.72	12.12	11.35	11.22	10.6	10.42	9.94	9.37	9.28
Pulses (kg)	0.76	0.84	0.71	0.65	0.78	0.86	1.00	0.82	0.79	0.90
Milk (liter)	3.94	3.79	3.87	4.12	4.33	4.89	5.10	5.11	5.36	5.42
Egg (number)	0.64	1.09	1.01	1.73	1.94	1.48	2.06	1.72	2.67	3.18
Fish (kg)	0.18	0.21	0.20	0.27	0.27	0.20	0.22	0.21	0.24	0.25
Mutton (kg)	0.06	0.07	0.05	0.05	0.05	0.11	0.10	0.07	0.09	0.08
Chicken (kg)	0.02	0.04	0.05	0.12	0.18	0.03	0.60	0.85	0.18	0.24
Consumption expenditure on major categories (MPCE value shares)										
Cereals	24.2	22.2	18.0	15.6	12.0	14.0	12.4	10.1	9.1	7.3
Pulses and products	3.8	3.8	3.1	3.7	3.1	3.0	2.8	2.1	2.7	2.1
Milk and products	9.5	8.8	8.5	8.6	9.1	9.8	8.7	7.9	7.8	7.8
Edible oil	4.4	3.7	4.6	3.7	3.8	4.4	3.1	3.5	2.6	2.7
Egg, fish, and meat	3.3	3.3	3.3	3.5	3.6	3.4	3.1	2.7	2.7	2.8
Vegetables	6.0	6.2	6.1	6.2	4.8	5.5	5.1	4.5	4.3	3.4
Fruits and nuts	1.7	1.7	1.9	1.6	1.9	2.7	2.4	2.2	2.1	2.3
Sugar	3.1	2.4	2.4	2.4	1.8	2.4	1.6	1.5	1.5	1.2
Salt and spices	2.7	3.0	2.5	2.4	2.4	2.0	2.2	1.7	1.5	1.7
Beverages, etc.	4.2	4.2	4.5	5.6	5.8	7.2	6.4	6.2	6.3	7.1
Food (total)	**63.2**	**59.4**	**55.0**	**53.6**	**48.6**	**54.7**	**48.1**	**42.5**	**40.7**	**38.5**
Nonfood (total)	**36.8**	**40.6**	**45.0**	**46.4**	**51.4**	**45.3**	**51.9**	**57.5**	**59.3**	**61.5**
Total expenditure	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: MOSPI, Various Reports

Box 1.2 Projected Demand of Major Food Commodities (Million Tonnes)

Commodities	2030*	2050**
Cereals	284	359
Pulses	26.6	46
Edible oils	21.3	39
Vegetables	192	342
Fruits	103	305
Milk	170.4	401
Sugar	39.2	58
Meat	9.2	14
Egg	5.8	10
Fish	11.1	22

Source: *Kumar et al. (2016) for projected demand in 2030, **NCAP Vision 2050 for projected demand in 2050.

Owing to the increasing population pressure over the years, demand for food is naturally expected to increase in the coming years. Various studies have projected the demand for food grains under alternative assumptions of income growth, distribution of income, and future dynamics of rural and urban populations. Box 1.2 presents the projected national demand for major food commodities for the years 2030 and 2050, as estimated in different studies. Substantial increases in the consumption of high-value food commodities like fruits, vegetables, milk, meat, fish, and eggs have been projected. It is encouraging to note that the outputs have risen more than the projections because of technological improvements and better logistics. The rising food demand needs to be accompanied by increasing demand for its safety and quality owing to the rising health consciousness of the masses. The major challenge lies in developing technologies, practices, varieties, and breeds that are high-yielding as well as safe for human health.

1.9 Conclusions

The growth trajectory of the agricultural sector has moved through different phases and evidenced varied growth patterns along with changes in other related sectors. The crop sector contributed the maximum to agricultural growth, and overall growth in agriculture was largely determined by growth in the crop sector. Livestock and fisheries sectors have grown at an appreciable growth. Fisheries growth has outpaced growth in other sectors. Since independence, food grains production enhanced by six times, fish by 19 times, milk 12 times, and eggs 67 times since 1950–1951, thus making a visible impact on national food and nutritional security. However, the

interest of the farming community in agriculture is declining, and consequently, the agricultural workers who are self-employed in agriculture are leaving the industry. This reported shift is good, provided the workers, who left the sector, are productively and gainfully employed in alternate sectors/industries. Trends in components of nonfood items remain more or less equal in rural and urban domains. Rather, while food and nonfood expenditure are converging in the rural sphere, urban India shows a clear divergence, with a sharp fall in food expenses and a corresponding increase in nonfood expenses.

The country is the largest producer of pulses in the world and the second-largest producer of paddy and wheat. India is also an important producer of commercial crops like cotton, sugarcane, and tobacco. There is a need to sustain the enhanced outputs and maximize land productivity. In many cases, the crop productivity in India is much lower than in other producing nations. We need to ensure that the maximum potential of any crop variety is harvested at the farmers' field. Significant yield gaps exist across various crops in different states, as well as within states. Bridging these yield gaps will not only increase production but also help to improve the efficiency of land and labor, reduce production costs, and add to food security. Improving the crop yields is also important from the perspective of releasing land for other productive uses, by diversifying into high value activities and commodities, and to allow farmers to scale up integrated farming practices.

The Government is placing a strong emphasis on neglected sectors. India suffers from a huge deficit of edible oils and has emerged as the major importer of food oil in the world. As against the domestic requirement of about 23 million tonnes of vegetable oils, the country's domestic output from both primary and secondary sources is about 8.5 million tonnes. The oilseeds output is 32 million tonnes, far short of the requirement and potential. The yields can be optimized, and there is scope to increase the net sown area by improving both cultivable wasteland and fallow. The gross sown area can be increased through intensive cropping.

The number of marginal and small holdings in the country and the area under such holdings have increased, while the number of semi-medium, medium, and large holdings and the area under such holdings has reduced. The area under nonfood crops as a proportion of the total cropped area is increasing, but still, there is a dominance of food crops. This shift in the allocation of the area from food crops to nonfood crops reflect a change from subsistence cropping to commercial cropping. Furthermore, the area under fruits, vegetables, and oilseeds is gradually increasing. This is because the consumption pattern is shifting from cereals to noncereals. Policy reforms are continuously facilitating the growth of agriculture and will help sustain its growth trajectory.

References

Bai J, Perron P (1998) Estimating and testing linear models with multiple structural changes. Econometrica 66:47–78

Chand R (2003) Government intervention in Foodgrain Markets in the Changing Context, policy paper 19. National Centre for Agricultural Economics and Policy Research, New Delhi

Chand R, Shinoj P (2012) Temporal and spatial variations in agricultural growth and its determinants. Econ Polit Wkly 47(26–27):55–64

Chand R, Prasanna PAL, Singh A (2011) Farm size and productivity: understanding the strengths of smallholders, and improving their livelihoods. Econ Polit Wkly 46(26 & 27):5–11

Government of India (2018) Report of the committee on doubling farmers' income, volume I march of agriculture since Independence and growth trends. Department of Agriculture, cooperation and farmers' welfare, Ministry of Agriculture & farmers' welfare, New Delhi

Meenakshi JV (1996) How important are changes in taste? A state-level analysis of food demand. Econ Polit Wkly 31:3265–3269

Murty KN (2000) Changes in taste and demand pattern for cereals: implication for food security in semi-arid tropical India. Agric Econ Res Rev 13(1):25–51

Rao CH (2000) Declining demand for foodgrains in rural India: causes and implications. Econ Polit Wkly 35:201–206

Rao VM (1996) Agricultural development with a human face. Econ Polit Wkly 31(26):A-50–A-62