Agriculture in Meeting Aspirations of Rising India

PRESIDENTIAL ADDRESS

at

INDIAN ASSOCIATION OF SOCIAL SCIENCE INSTITUTIONS

24th INTERNATIONAL IASSI ANNUAL CONFERENCE

10-12 October 2025 | Doon University, Dehradun, India

By

RAMESH CHAND

Member, NITI Aayog

10 October 2025 | Dehradun

PROFESSOR RAMESH CHAND

Professor Ramesh Chand is Member of National Institution for Transforming India, NITI Aayog, the apex think-tank of Government of India. In addition, he is also member of the Integrated Partnership Board (IPB) of the CGIAR and member of the Policy Advisory Council (PAC) of the Australian Center for International Agricultural Research (ACIAR). In the past, he was Member of the Fifteenth Finance Commission of Government of India, Member of Board of Trustees of International Maize and Wheat Improvement Center (CIMMYT), Mexico and Member of Global Future Council on the Future of Food Security and Agriculture, World Economic Forum for 2016-18 term.

Prof. Chand has a Ph.D. in Agricultural Economics from Indian Agricultural Research Institute (IARI), New Delhi, India. He has been actively involved in policy research and formulation in the areas of agriculture and allied sectors, food security, nutrition, science policy, impact analysis, food systems etc. and has worked in senior academic positions at National Institute of Agricultural Economics and Policy Research, New Delhi, Institute of Economic Growth and Punjab Agricultural University. He was Visiting Professor at University of Wollongong, NSW Australia and at Institute of Developing Economies, Chiba Shi, Japan. He has also been Consultant with international organizations such as FAO, UNDP, ESCAP, UNCTAD, Commonwealth and World Bank.

Prof. Chand has authored seven books and published more than 100 research papers in reputed national and international journals in the areas of agriculture growth and development, demand and supply, food policy, farmers' issues, agricultural markets and trade. In recognition of his contributions, Prof. Ramesh Chand has received several national and international awards.

Agriculture in Meeting Aspirations of Rising India

Ramesh Chand[1]

India is steadfastly pursuing the vision of **"Viksit Bharat" by 2047**—a developed India that meets the aspirations of its people and stands as a leading global economic power. This national goal is now being increasingly embraced and internalized by all States and Union Territories. A growing number of States have initiated the preparation of their own State Vision Documents and sectoral growth plans, aligning their developmental priorities with the national mission. These collective efforts towards achieving **"Viksit States"** form the building blocks of India's larger ambition of realizing a $30 trillion economy by 2047.

The Viksit Bharat has two major components one, to raise per capita income to a level to match category of developed country and two, inclusive development or *"Sabka Vikaas"*. Economic growth is the pathway to raise per capita income, while gainful employment is the pathway for inclusive development.

According to the World Bank a country is classified into high income group when its per capita gross national income (GNI) is US $ 14006 or more (refer to FY 2024-25) which is close to Rs. 12 lakhs. This category broadly corresponds to developed country category. The same source i.e. World Bank, reports per capita GNI of India in year 2024 at $2650 while NSO reports per capita GNI for financial year 2024-25 (PE) at Rs. 2.31

1. Member, NITI Aayog
Presidential Address, 24th Annual Conference of Indian Association of Social Science Institutions (IASSI), 10-12 October, 2025, Doon University, Dehradun.

lakh or US$ 2735[2]. These figures imply that PCI in India is required to increase at the rate of 7.35 for next 23 years (2024 to 2047), at constant prices of year 2024-25, to reach the per capita income status of developed country. To achieve 7.35 per cent growth rate in PCI, total economy needs to grow at a rate close to 8 per cent.[3]

This seems to be quite high but international experience shows that many developing countries, reached high income level by achieving sustained growth above 7 per cent over a period of three decades. More recently, China experienced 10 per cent growth over a period of nearly four decades (1979–2017). India has achieved more than 7 per cent growth in gross value added (GVA) in half of the years during the last two decades. These achievements point to prospects of moving to a growth trajectory to make India high income country. However, this requires concerted efforts in various sectors of the economy.

Agriculture would need to play significant role in this journey for two reasons. One, agriculture and allied sectors (crops, livestock, forestry and fishing) is the second largest sector of Indian economy[4] after financial, real estate and professional services, at current prices. It constituted 19.73 per cent of national income (GVA)[5] at current prices and 16.38 per cent at 2011-12 prices. Growth in non-agriculture activities alone cannot raise per capita income to level of high-income nation without strong contribution (high growth) of agriculture sector. Two, 46 per cent of India's total workforce and 64 per cent of female workforce is engaged in agriculture as their main economic activity. Thus, agriculture is the main source of livelihood for nearly half of India's population and most significant among various economic activities for inclusive growth (Chand, 2025). In this background, the paper presents the historical

2 MOSPI, Provisional Estimates of Annual Gross Domestic Product for 2024-25, 30th May, 2025.

3 India's population is projected to increase at annual rate of 0.6 per cent in next 25 years, though there is small variation in the growth rate projection by various agencies.

4 Refer to 8 sectors in which economy is classified in the system of National Accounts.

5 Based on Provisional Estimates of Annual Gros Domestic Product for 2024-25, of NSO, MOSPI.

growth story of Indian agriculture and explores how best agriculture can help India and its people to meet their aspirations of Viksit Bharat.

1. Performance of Agriculture Sector

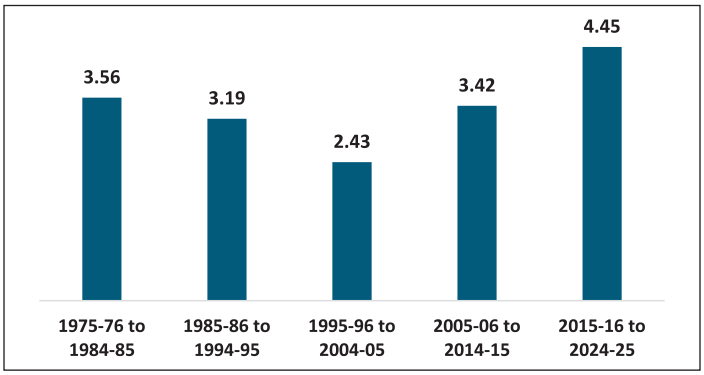
Growth rate in GVA is considered most appropriate indicator of overall performance of a sector. Average annual growth rates during various decades in the last 50 years for GVA agriculture and allied activities (GVA AA) are presented in figure 1. The sector experienced impressive annual growth of 3.56 per cent from mid 1970s to mid-1980s when green revolution technology was spreading over larger area and white revolution also took off. The subsequent two decades, 1985-86 to 1994-95 and 1995-96 to 2004-05 witnessed deceleration in growth which brought down annual growth below 2.43%.

The series, representing income of agriculture sector, experienced a break around the year 2004-05, with significant acceleration in growth afterwards. What is more remarkable is that the acceleration in growth rate of GVA AA further accelerated after year 2014-15, which is well documented in the literature (Chand & Singh, 2023; Chand & Singh, 2024). The updated estimate till 2024-25 shows that this acceleration in income of agricultural sector raised annual growth during 2015-16 to 2024-25 to historically highest level of 4.45 per cent (Fig. 1). India's agriculture sector did not achieve this level of growth in any decadal period since 1950-51.

Further, this growth rate is not only historically highest, it is also the highest growth in the last decade among major agricultural countries (Table 1). According to FAO data on country-wise GDP, agriculture sector in India achieved average growth rate of 3 per cent during 2006-2015, which was same as growth in world agriculture. China topped with 4.3 per cent annual growth in this decade. In the next decade, i.e. 2015 to 2024 growth in world agriculture decelerated, but India's growth accelerated to 4.42 per cent. With this growth, India surpassed China, whose growth rate decelerated to 4.1 per cent.

Fig. 1

Growth rates in GVA agriculture and allied activities in various decades (at 2011-12 prices)



Source: National Accounts Statistics 2025 and Press Note, NSO, MOSPI, GOI.

Table 1

Average annual growth rates (%) in GVA agriculture and allied sectors, US$ 2015 prices, 2006 to 2024

Country	*AAGR (2006-2015)*	*AAGR (2015-2024)*	*Share (%) in World GVA agri and allied 2024*
China	4.29	4.10	31.49
India	3.01	4.42	13.75
United States of America	1.56	1.74	6.58
Indonesia	4.00	2.82	3.98
Brazil	3.22	3.59	3.00
Pakistan	2.37	2.74	1.72
Russian Federation	1.19	1.84	1.68
Mexico	1.83	1.69	1.62
Iran (Islamic Republic of)	1.66	2.35	1.35
France	1.72	-0.20	1.25
Türkiye	3.10	1.60	1.24
Viet Nam	3.49	3.23	1.19
Bangladesh	5.72	3.38	1.03
Thailand	0.79	1.67	1.01
Italy	0.34	-0.83	0.98
World	2.94	2.88	100.00

Source: Estimates based on FAO-STAT database.

Note: The countries have been arranged in descending order of their shares of agri and allied sector in total GDP.

2. Rise in Resilience

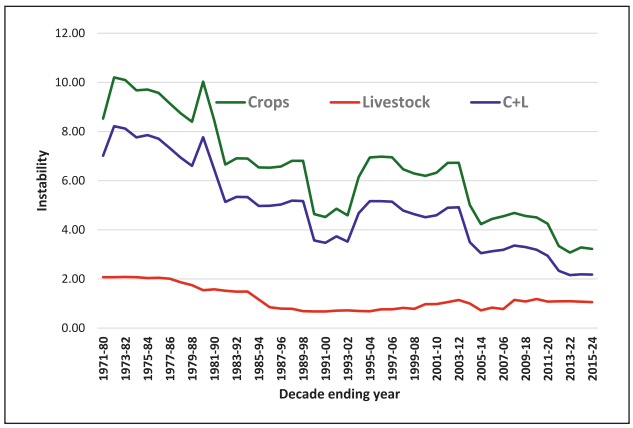
The achievement in growth in GVA was accompanied by many other positive accomplishments. One, agriculture sector acquired resilience despite rising severity of climate events. This was captured by an index of Instability based on standard deviation in annual rate of change over a ten years period. If average annual rate of change remains same year after year the SD or instability in the series is zero. The more the variation in year-on-year rate of change, higher is the standard deviation or instability.

The instability in growth of GVA AA reached a peak during the 1980s (Fig. 2). After that it kept falling except for a brief period when it showed an increase. Instability in the recent years is one third of peak level of 1980s.

Another way to look at instability and resilience is to compare the frequency of sector income facing negative growth. Agriculture income did not witness a single year with negative growth in the recent ten years (2015-16 to 2024-25). Compared to this, agriculture sector witnessed decline in real income in three out of ten years in the decade 2004-05 to 2014-15 and 40 per cent of the time in the decade before 2004-05. Also, agriculture sector defied Covid which failed to cause adverse effect on agriculture unlike non agriculture sector.

Fig. 2

Moving average of decadal instability in GVAAA



Source: National Accounts Statistics 2025, NSO, MOSPI, GOI.

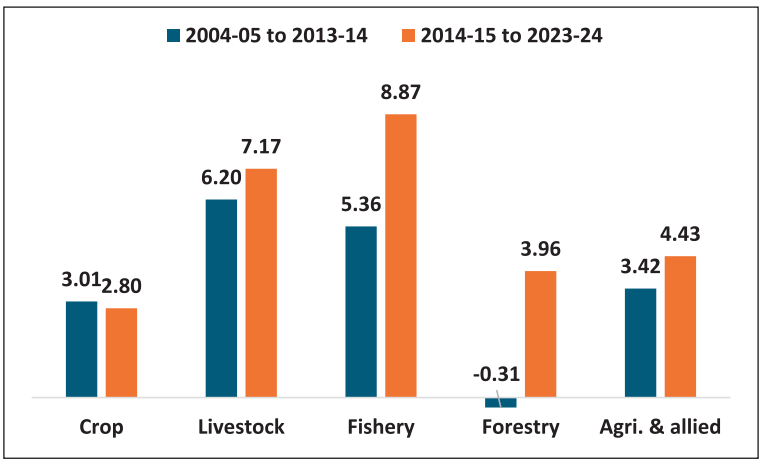
3. Performance at Disaggregate Level

Agriculture comprises four major sub sectors viz. crop, livestock, fishery and forestry. These subsectors are quite diverse especially the crop sector which is broadly divided in two groups, namely, field crops and horticulture crops. Field crops include cereals, pulses, oilseeds, fodder crops and some commercial crops like sugarcane, cotton, jute etc. while horticultural crops mainly include fruits and vegetables, plantation crops, condiments and spices, drug and narcotics and other crops not included in previous groups, or others which are included in horticulture group in some classifications.

Performance of sub sectors is examined by looking at their growth in GVA the data on which was available till 2023-24. Their average annual rates of change during the last two decades covering period 2004-5 to 2023-14 and 2014-15 to 2023-24 are presented in Fig. 3.

Fig. 3

Average annual growth rate of GVA of various sub-sectors of agriculture and allied sector



Source: National Accounts Statistics 2025 and previous issues. NSO, MOSPI, GOI.

There is very wide variation in growth experienced in various sub-sectors of agriculture and allied activities. During the decade of 2004-05 to 2013-14, GVA of crop sector recorded 3 per cent growth, which

decelerated to 2.80 per cent during 2014-15 to 2023-24. In contrast, livestock and fisheries witnessed very high acceleration in their growth. Even during 2004-05 to 2013-14, growth of livestock was more than double the growth of crop sector. The gap widened in the next decade. Growth in forestry was negative during 2004-05 to 2013-14, but it witnessed a jump close to 4 per cent in the decade after 2014-15. Fisheries sector witnessed close to 9 per cent growth, which is more than 3 times the growth in crop sector. This differential performance of various sub-sectors changed the composition of agriculture in a big way.

Within crop sector there was clear differentiation in growth of field crops and horticulture crops. This is examined by looking at growth in value of output of various commodities in crop sector as the data on value added at individual crop level is not available at macro level. Therefore, the performance of various groups of commodities under crop sector is studied by looking at growth rate in value of output at 2011-12 prices.

Table 2

Average annual growth rate in value of output of crop groups at 2011-12 prices

Crop group	*Growth rate (%) 2014-15 to 2023-24*
Fodder and grasses	7.39
Condiments and spices	6.72
Fruits	3.68
Pulses	3.55
Sugarcane	3.19
Vegetables	2.77
Oilseeds	2.47
Cereals	2.36
Drugs and narcotics	0.60
Cotton and Jute	-0.28
Not included elsewhere	-0.42
Crops total	2.46

Source: Estimates based on National Accounts data on value of output from agriculture and allied sectors.

Within the crop sector, highest growth is observed in the case of fodder and grasses. Their output followed annual increase exceeding 7 per cent in last 10 years. This is consistent with growth in livestock. Condiments and spices also exhibit close to 7 per cent growth. The growth in output of total crop sector was 2.46 per cent. Output of cotton and other crop products not mentioned in the Table 2 showed decline during 2014-15 to 2023-24. Output of fruits witnessed 3.68 per cent annual growth in the last decade. Among major food groups, lowest growth was achieved in the case of cereals.

It emerged from Fig.3 and Table 2 that high value products followed much higher growth compared to average or low value products, like cereals, oil seeds and common vegetables.

4. Changing Composition of Agriculture

Face of agriculture is changing and this change is mainly driven by changes in consumer preferences and requirements, possible uses of produce, along with new sources of demand. Factors like technological breakthroughs and changes on supply side also affect rise in importance of a commodity. The combined effect of all these and other related factors is reflected in composition of aggregate output. This is presented in Tables 3 and 4. Table 3 shows changes in shares of various subsectors in total agriculture and allied sectors and table 4 shows changes in share of various crop groups in aggregate value of crop sector.

Among sub-sectors, share of crops in total agriculture declined from 64 per cent to 54 per cent between triennium ending 2014-15 and 2023-24. This shows that importance of crop sector in total agriculture followed a decline of 1 percentage point each year. In the same period share of livestock increased by close to 8 percentage points and fishing and aquaculture increased by 2.2 percentage points. It seems in next 5 years, share of crops in total agriculture income will reduce to less than half.

Within crop sector, share of field crops followed a decline despite strong support for MSP of these crops. Their share fell from 52.3% during TE 2013-14 to 49.0% in TE 2023-24. The major gainers are fruits

and condiments prices. The share of fruit increased by about 20 per cent while share of condiments and spices more than doubled. These changes are largely driven by diversification in domestic and overseas demand for India's agrifood commodities.

Table 3

Changes in composition of GVA in agriculture and allied sectors between Trienniums ending 2013-14 and 2023-24, at current prices

Sub sector	*TE 2014-15*	*TE 2023-24*	*Change*
Crops	63.75	54.33	-9.42
Livestock	22.86	30.77	7.91
Forestry and logging	8.22	7.46	-0.76
Fishing and aquaculture	5.17	7.44	2.26
All: Agriculture and allied sectors	100	100	na

Source: Same as in Table 2.

Table 4

Changes in composition (share %) of VOP in crop groups between Trienniums ending 2013-14 and 2023-24, at current prices

Year	*TE 2013-14*	*TE 2023-24*	*Change over the decade*
Cereals	28.13	26.29	-1.84
Pulses	4.51	5.10	0.59
Oilseeds	8.71	8.90	0.20
Sugarcane	4.96	4.13	-0.83
Cotton and Jute	5.97	4.53	-1.44
Fruits	16.09	19.24	3.15
Vegetables	9.59	9.83	0.24
Drugs and narcotics	3.62	2.74	-0.88
Condiments and spices	3.71	7.83	4.12
Fodder and grass	4.18	4.90	0.71
Not included elsewhere	10.52	6.51	-4.01
Crop total	100	100	0.00

Source: Same as in Table 2.

5. Growth in Producers' Income

Gross value added in agriculture and allied sectors is a measure of income of sector which gets distributed over labour, capital and producers. There is lot of interest to know the growth in net income from agriculture sector received by farmers. This income is arrived at by deducting estimates of consumption of capital, compensation to employees and taxes and adding subsidies to the sector from GVA AA (NAS, 2025). This income is termed as Operating surplus/mixed income in NAS publications. The data and information are reported at current prices. The results for period 2014-15 to 2023-24 are presented in Table 5. The table also presents changes in income in the said period for manufacturing and total economy.[6] This is useful in comparing growth in income of agriculture producers with producers in manufacturing sector and total economy.

During the last ten years, the income of producers (farmers income from agriculture) has experienced more than 10 per cent annual growth, which is higher than the growth achieved in manufacturing sector and rest of the economy. In these ten years, the income of agricultural producer has risen by 126% i.e. 26 per cent more than doubling of farmers income from agriculture.

There is lot of talk about doubling of farmers' income after the Prime Minister gave a call for doubling farmers income when India completes 75 years of Independence. This goal refers to the year 2022-23 from the base of 2015-16. The annual series on producers' income in agriculture and allied sector, published by NSO, shows 108 percent increase in producers' income in those 7 years at current prices. The increase in income of producers from crop plus livestock sectors is 107 per cent. Thus, even when allied activities like fishery and forestry are excluded, the growth in producers' income from agriculture remains the same. Important revelations from this macro data are:

6 Estimates of producers' income are also separately available for households, public sector and corporate sector. The corporate and public sector account for tiny share of income of agriculture.

i. Income of agricultural producers increased at faster rate than income of agricultural labour.

ii. Income of agriculture producers increased at a higher rate than value of agricultural produce, which is possible only if cost of production increased at a lower rate than increase in production – this could be due to faster increase in output prices as compared to input prices or other reasons like adoption of cost reducing technology, irrigation etc.

iii. Income of agricultural producers witnessed much higher increase than producers in Industry and non-agricultural economy.

iv. Value of output of non-agricultural economy increased at a higher rate than output of agriculture, but reverse is witnessed in the case of net income.

Table 5

Macro level indicators of growth in output, input and income of producers in agriculture, manufacturing and non-agriculture (Rs crore)

Particulars	*Sector*	*2014-15*	*2023-24*	*Rate of Change %*
Gross output	Agri & allied	2730186	6176353	9.49
	Manufacturing	8501463	19350303	9.57
	Total	24449014	57362300	9.94
Intermediate consumption	Agri & allied	636574	1298486	8.24
	Manufacturing	6623094	15428707	9.85
	Total	12944736	29949412	9.77
Gross value Added	Agri & allied	2093612	4877867	9.85
	Manufacturing	1878369	3921596	8.52
	Total	11504278	27412888	10.13
Compensation of employee	Agri & allied	317719	703253	9.23
	Manufacturing	470119	1069073	9.56
	Total	3845649	9906470	11.09
Operating Surplus/ Mixed Income (Income of Producers)	Agri & allied	1707918	4062266	10.11
	Manufacturing	1072863	2147633	8.02
	Total	6343803	14213772	9.38

Source: Estimates based on National Accounts Statistics, 2025.

6. Drivers of Growth: Prices, Irrigation, and Innovative Initiatives

It is well established in the literature that prices play a very significant role in incentivizing farmers to adopt modern technology, use improved seed and make investments in land, irrigation, farming machinery and other farming assets. All these factors contribute to increase in productivity and production and hence towards growth. However, role of non-price factors is equally important and it is important to maintain balance between the two set of factors affecting agriculture sector.

Index of agricultural prices relative to non-agricultural prices (with base 2011-12=100) which can be termed as indicator of terms of trade for agriculture vis-a-vis non agriculture, showed fluctuations with overall gradual increase. For instance, terms of trade for agriculture declined during early 1980s and increased thereafter till 2000. There was again a decline followed by increase in the first decade of 2000. The overall trend increased by 10 percentage points in favour of agriculture over three decades between 1980-81 and 2008-09. After this, agriculture prices followed accelerated increase which continued till 2020-21. In just 12 years terms of trade for agriculture show increase of 41.3 percentage points.

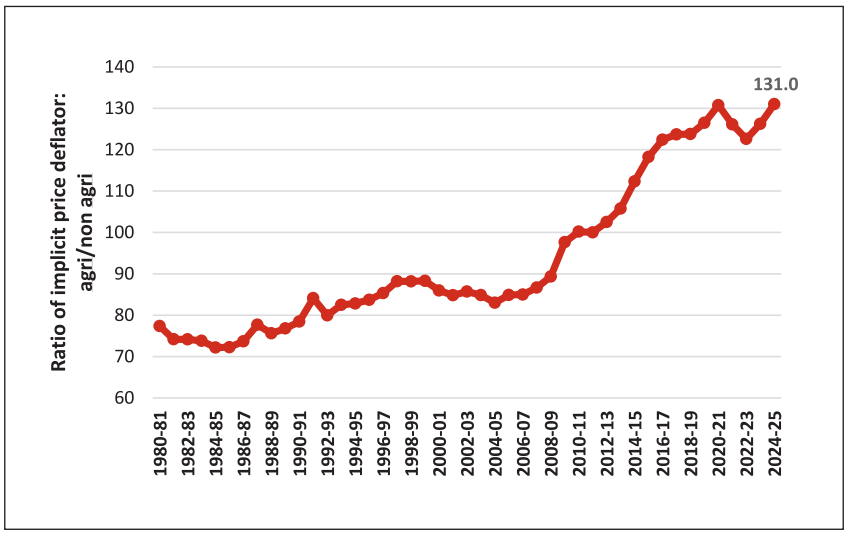
The major force underlying this increase around 2008-09 was a very sharp increase in international prices, which is referred to as global food crisis or global food prices crisis. The reasons for this are well documented in the literature including a paper by this author (Chand, 2010). Post-2006-07, food prices show 2 – 3 episodes of price rise, which certainly have an effect on domestic prices. This was followed by decision of the Central government to accept long pending demand of farmers to raise and fix MSP based on new criterion of cost rather than the terms of reference followed by CACP. In 2018-19, the present government adopted new formula for MSP which ensures at least 50 per cent margin over cost of production popularly known as A2+ FL. This includes 50% margin for the producers over all costs paid by the farmers including cost of

home-produced inputs and family labour. This further led to acceleration in movement of terms of trade for agriculture. Between 2008-09 and 2020-21, implicit price deflator for agriculture increased by more than 40 percentage points compared to increase in implicit price deflated for non-agriculture. After that, there was some moderation in the terms of trade for 2 years, but they again turned back to level of 2020-21.

Exactly similar change in terms of trade for agriculture is visible from wholesale price index (WPI) of agriculture and non-agriculture commodities. WPI agriculture almost doubled between 2011-12 and 2024-25 whereas WPI non-agriculture increased by 42 per cent in the same period, with base 2011-12. This shows that during the last 13 years, wholesale agriculture prices which represent the prices received by agricultural producer doubled (96%) whereas non-agricultural prices increased by 45 per cent. In real terms, agriculture prices deflated by non-agricultural wholesale prices, gained by 2.4 per cent a year for 13 years.

Fig. 4

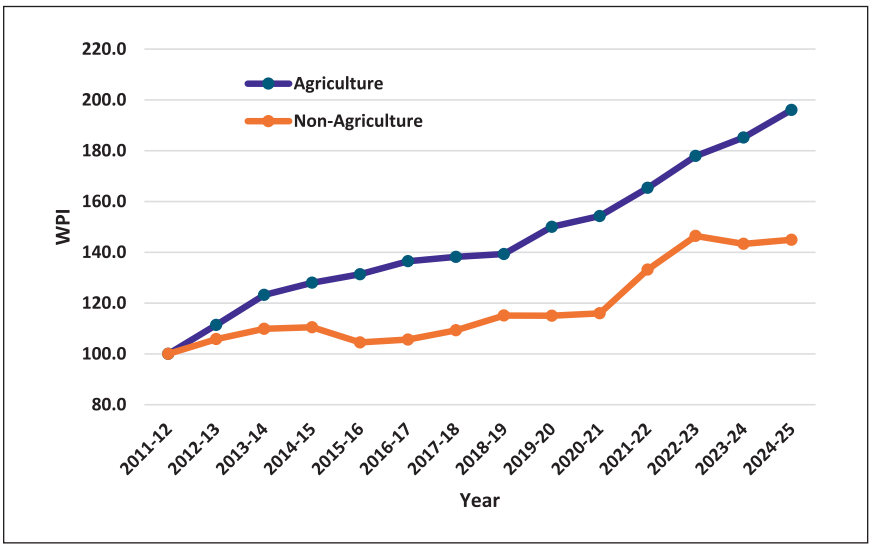
Agri prices in relation to non-agri prices (base 2011-12=100)



Source: Same as in Table 2.

Fig. 5

Trends in WPI of agriculture v/s non agriculture sector (base 2011-12=100)



Source: Office of the Economic Adviser, Ministry of Commerce and Industry, GOI.

The price trends for agriculture and non-agriculture presented above provided clear evidence of farm prices turning more and more favourable towards agriculture during the last one and a half decade. This has been a major driving force for growth of agriculture sector. This was accompanied by positive changes in non-price factors affecting agriculture performance, especially after 2014-15. For instance, area under public irrigation in the country which experienced decline from 17.3 million hectare (mh) in 1991-92 to 15.3 mh in 2015-16 witnessed steady increase thereafter. Gross irrigated area under all sources of irrigation increased from 98 mh to 122 mh in the same period. It helped in raising productivity, crop shift towards higher value crops and crop intensity. Shift in crop pattern towards fruits and vegetables and other high value crops contributed in a big way to growth in crop sector.

Two other factors which exerted positive influence on growth of agriculture include expansion of institutional credit, increase in farmers covered under crop insurance. Pradhan Mantri Fasal Bima Yojana

(PMFBY) provides crop insurance, offering security against uncertainties of nature. Its coverage has increased from 3.4 crore in 2018-19 to 4.1 crore farmers in 2024-25. Farmers are provided easy and ready access to institutional credit with interest subvention. Coverage of Kisan Credit Card has increased to 7.75 crore in 2024. Agricultural financing through banks and cooperatives increased from 29.4% of value of agricultural output in 2013-14 to 41.7% in 2023-24.

Effect of agricultural R&D in pushing growth is manifest in many ways. The most significant one is subsumed in increase in crop, livestock and fish productivity per unit of area/livestock and other inputs. Its exact quantification requires more sophisticated analysis like share in TFP growth.

Some other factors launched during last ten years which played important role in improving agriculture performance are: equipping farmers with modern tools like drones, mobile apps, and data-driven insights on weather and markets. Platforms like e-NAM (National Agriculture Market) allows farmers to have better deal, increased competition and fair prices. As of mid-2025, 1,522 mandis have been integrated on the e-NAM platform. At the same time, programmes promoting organic farming, natural farming, and bio inputs are being promoted for sustainable, nature friendly and chemical free healthy foods.

Schemes like Mission on Integrated Development of Horticulture, Rashtriya Gokul Mission, National Livestock Mission, Dairy Development and others, and Pardhan Mantri Matsya Sampada Yojana have helped to accelerate growth of these activities which is much higher than field crops. Dairy production, for instance, has increased from 146 million tonnes in 2014–15 to over 239 million tonnes in 2023–24, giving India the rank of world's largest milk producer. Fruit and vegetable production in the same period has increased from 280.7 million ton in 2013-14 to 367.72 million tons in 2023-24 while fish production has increased by 104% in the last years. India is now the largest producer of milk and biggest exporter of rice in the world with about 1/3 share in world exports. Such achievements are result of growth miracle witnessed in agriculture in last

decade resulting from favorable policies, hard labour of our farmers and interactions between the two.

What sets the approach of present government at the Centre apart is the way farmers are linked with the nation's growth story. Through the PM-KUSUM scheme, cultivators are encouraged to adopt solar pumps, becoming not only food providers but also energy producers—from *Annadata to Urjadata*. Farmer Producer Organisations (FPOs) bring small farmers together, giving them greater bargaining power and collective strength in markets. Self Help Groups, Agri Start-ups, Agri Infrastructure Fund combined with other initiatives ensure that farmers are not only beneficiaries of schemes but active partners in Bharat's progress.

Women farmers are being encouraged to play a bigger role in agriculture, processing, and marketing. This has boosted household incomes and created inclusive models of rural growth. A notable initiative in this direction is Namo Drone Didi, launched to empower women-led SHGs with drone technology for agricultural services.

7. Employment

India started Periodic Labour Force Survey (PLFS) in the year 2017-18 which is not strictly comparable with estimates of earlier surveys. The PLFS data is now available on annual-basis for detailed analysis of changes in labour market. Broad changes in workforce based in agriculture and allied activities and manufacture sector are presented in Panel A and Panel B of Table 6. This shows that workforce in the country has increased at unprecedented scale with an annual growth close to 5 per cent. This is said to be the result of demographic changes experienced by India. However, we find that much of it is because of increase in female workforce, which showed an annual increase of 12.2 per cent between 2017-18 and 2023-24. This is more than 3 times the growth in male workforce in the country. About 72 per cent of this increase in female workforce has been absorbed in agriculture sector. This increase has led to new trends in sectoral composition of labour force and workforce. As any economy grows,

share of agriculture in employment is expected to witness a decline as workforce is expected to move to more remunerative non-agricultural activities. However, PLFS data shows that share of agriculture in total employment has increased over last 6 years from 44.1 per cent to 46.1 per cent. Conversely, the share of manufacturing in employment which is expected to increase, showed a slight decline. However, these numbers do not reveal the full story of changing employment in India. Based on these numbers, some researchers infer that employment in manufacturing is not growing and structure of workforce is showing unhealthy trend in rise of agriculture share. To understand the full story, there is a need to look at changes in workforce share of male and increase in absolute employment in manufacturing. The further desegregation of total workforce in male and female reveal interesting changes as under:

- The increase in share of agriculture in total workforce is solely due to increase in female workforce as the share of male showed a decline from 40 per cent in 2017-18 to 36 per cent in 2023-24.
- Total employment in manufacturing has increased by about 4 per cent per year which is much higher than the growth in population in the country.
- There is a big increase in feminization of agriculture and overall workforce. Women now constitute 48.7 per cent of total workforce in agriculture and 35 per cent of total workforce in all sectors. This share in 2017-18 was 30 per cent in agriculture and 23 per cent in overall workforce.
- Women are fast catching up with men in participation in non-household activities as their WPR has increased from 16.5 per cent to 30.7 per cent in last 6 years.

The underlying changes in India's workforce is undergoing profound changes in terms of number and gender composition. This has reversed the old trend of falling share of agriculture in workforce. It looks like share of agriculture in employment will witness an increase for some more time as more women will join workforce, especially in rural areas. This has

implications for framing suitable development strategy in agriculture to absorb more labour and to make farm employment more female-friendly. It is also important to point out that rise in India's workforce is much higher than that simply implied by demographic changes.

Table 6

Growth rates and share change of workforce among sector and gender

Sector	*A*				
	Workforce (Million)		*Annual Growth*	*Share in workforce (%)*	
	2017-18	*2023-24*	*%*	*2017-18*	*2023-24*
Agri & allied	201.2	280.6	5.70	44.1	46.1
Manufacturing	55.3	69.7	3.93	12.1	11.4
Total	455.8	609.1	4.95	100.0	100.0
Sector	*Female Workers (Million)*		*Annual Growth*		*Share %*
	2017-18	*2023-24*	*%*	*2017-18*	*2023-24*
Agri & allied	60.41	136.58	14.56	56.99	64.36
Manufacturing	13.2	24.5	10.85	12.46	11.55
Total	106.0	212.2	12.26	100.0	100.0

	B	
Worker participation rate %	*2017-18*	*2023-24*
Female	16.51	30.72
Male	52.1	56.3
Difference (%)	35.6	25.6

Source: Estimates based on NSO-PLFS data

8. Demand and Supply Prospects

Demand comes from two sources viz. domestic and overseas (export). The general factors that affect demand for agri-food include (i) population (ii) income (iii) urbanization (iv) taste and preferences (v) changes in lifestyle (vi) nature of economic activities and (vii) automation and mechanization. Demand for agri-food consists mainly of food and its preparations taken

at home or outside. A part of food also goes for livestock feed and industrial uses. Changes in household food demand and dietary pattern in last decade or so are presented in Table 7. The Table shows per capita household consumption of important food items for combined (rural + urban) population in India. This should not be taken as total consumption by the household as the quantity of food consumed away from home is not fully captured in these figures. Among all food groups, household consumption showed 14.4 per cent decline in cereal intake and 7.4 per cent decline in intake of sugar and sugar products over 11 years period since 2011-12.

It is important to mention that decline in intake of cereal and sugar and its products is purely because of changes in consumer preferences without effect of availability. However, pulses represent different story. There is decline in its intake also but this is not due to preference but due to availability – India has shortage of pulses and a part of it met through imports, which are not adequate to meet underlying demand. All other food groups show increase of varying degree. Highest increase is observed in case of dry-fruits, whose intake per capita increased more than 3 times between 2011-12 and 2022-23. This is followed by intake of eggs, whose consumption became 3 times. Intake of meat also doubled. Among animal food the increase is lowest (36 per cent) in fish though its production is increasing much more rapidly than other animal food.

Fruit and vegetable intake increased by 64 per cent, while intake of spices shows 78 per cent increase. Per capita direct intake of edible oil at household level showed modest increase of 38 per cent. However, much of it is not captured due to its invisible quantity in several foods. Per capita intake of milk and milk products shows small increase, only 15 per cent, which seems to be anomaly in the face of 59.0 per cent increase in its per capita production between 2011-12 to 2022-23.

Overall dietary pattern in India is undergoing profound changes, largely towards horticulture produce and livestock produce. These changes have strong implication for production strategy and policies for promotion

of agriculture. These changes also indicate that domestic demand-side factors strongly support diversification of agriculture towards livestock and horticulture. The demand-side changes also seem to be the reason for much higher growth in horticulture and livestock as compared to cereals, which enjoys strong price support of the government.

Table 7

Changing trends of food consumption during 2011-12 to 2022-23.

Commodity	*Per capita intake (Kg/ month)*		
	2011-12	*2022-23*	*Change %*
Cereals	10.72	9.18	-14.4
Pulses	0.82	0.78	-4.9
Fruits & vegetables	5.42	8.91	64.4
Dry fruits	0.07	0.24	242.9
Edible oils	0.66	0.91	37.9
Sugar & products	0.81	0.75	-7.4
Spices	0.27	0.48	77.8
Milk & products	4.78	5.50	15.1
Animal Food	0.47	0.96	104.3
Eggs	0.07	0.21	200.0
Meat	0.21	0.49	133.3
Fish	0.19	0.26	36.8

Source: Estimates based on NSO-HCES survey data.

On supply-side, agri-food sector is experiencing more than 4 per cent annual growth for more than a decade now. In order to visualize future of agriculture, there is a need to understand the growth in demand and supply. Aggregate demand for food can be estimated by using parameters like growth in population, growth in income and elasticity of food demand with respect to growth in income.

Medium-term prospects of growth in demand and supply and resulting surplus for the country are presented in Table 8. Using these estimates, total demand for food is expected to increase in the range of 2.5-3.0 per cent per year in next 10 years or so. The Table assumes 3 scenarios for growth in domestic supply. These are: business as usual

with 3.3 per cent growth, downside scenario with 2.5 per cent growth, and upside scenario based on growth of last decade, which is 4.4 per cent. Juxtaposing supply scenario on demand scenario shows that India at aggregate food-level is not likely to face food shortage in the medium term. If current growth scenario continues then domestic production will exceed domestic demand by 12 per cent under business-as-usual scenario by 2035. India is expected to have 20 cent aggregate surplus if current growth rate is maintained. Under downside growth scenario, the surplus is expected to recede but country is projected to remain self-sufficient at aggregate level.

Table 8

Emerging Scenario of food demand and supply

Parameter	*Estimates*
1.Growth in population	0.85 – 0.65
2. Growth in per capita expenditure	5.5 – 6.0
3. Income elasticity of food	0.45 – 0.40
4. Growth rate in aggregate demand	2.8 – 3.0
5. Growth rate in Output:	
a. BAU – Last 25 years	3.3
b. Recent 10 years	4.4
c. Downside scenario	2.5
6. **Projections 2035: Surplus as per cent of domestic output**	
a. BAU scenario	12
b. Recent trend	20
c. Downside scenario	Export falls

Source: Author's estimates.

9. Conclusions

India's agriculture has witnessed unprecedented achievements during the decade 2014–15 to 2024–25, recording the highest-ever growth in both output and farm income in the country's history. The growth rate of agricultural GDP during this period stands out as the highest among all major agricultural economies of the world. This remarkable performance

has been driven by a strong policy thrust, innovative initiatives, and institutional strengthening that is transforming rural and agrarian landscape.

Targeted interventions—ranging from price support and risk management to infrastructure creation, digital access, and improved market linkages—have systematically eased the challenges farmers face in agri- value chains. These efforts have incentivized producers to enhance productivity, efficiency, and diversification. Importantly, the nature of growth in this decade has been qualitatively superior, marked by demand-led diversification towards high-value crops, horticulture, livestock, and allied sectors. This has broadened the geographical and structural base of growth in Indian agriculture, making it more inclusive and regionally balanced.

Another significant feature of this period is the enhanced stability and resilience of agricultural output, even amid climatic shocks and global disruptions. This resilience reflects not only technological progress but also the cumulative impact of better risk management systems, improved irrigation, and diversification of income sources.

Interestingly, India's agriculture has also defied the conventional trend observed in rapidly growing economies, where the share of agriculture in employment declines with rise in per capita income. In India's case, the sector has absorbed a large part of the expanding workforce, particularly women, in response to demographic changes and rising female participation rates. This underscores agriculture's enduring role as a social and economic stabilizer.

Looking ahead, medium-term projections point to a growing agri-food surplus at the aggregate level. Managing this surplus will call for enhanced competitiveness and efficiency across production systems and value chains to strengthen India's position in global markets. Alternatively, a part of this surplus could be diverted towards industrial and non-agricultural uses, unlocking new avenues for value addition.

The evolving scenario also opens a historic opportunity: India can now transition towards more sustainable and climate-resilient agricultural practices, even if this entails a modest trade-off with production growth. With rising productivity and surplus levels, the country has the policy and economic space to prioritize environmental sustainability, resource conservation, and long-term food security.

At the same time, large variations in agricultural development across States highlight the vast untapped potential, which could be effectively harnessed. Bridging these gaps through state-level policy innovation, investment in rural infrastructure, and technology dissemination will be crucial. The underlying trends clearly suggest that the sector is poised for a higher growth trajectory, provided the current favourable policy environment and institutional momentum continue.

Sustained agricultural progress will thus play a pivotal role in realizing the national vision of "Viksit Bharat @2047", enabling the emergence of Viksit States and ensuring that India's development remains inclusive, resilient, and farmer-centric.

Disclaimer: Views are personal.

Acknowledgements: I acknowledge the assistance provided by Dr. Jaspal Singh, Consultant NITI Aayog in arranging data set and indicators used in the paper.

References

Chand, R. (2010). Understanding the nature and causes of food inflation. *Economic and Political Weekly,*45(9), 10-13.

Chand, R., & Pararrurathu, S. (2012). Temporal and spatial variations in agricultural growth and its determinants. *Economic and Political Weekly, 47*(26/27), 55–64.

Chand, R., & Singh, J. (2023). From Green Revolution to Amrit Kaal. *NITI Aayog working paper* (Working paper-02/2023). National

Institution for Transforming India, Government of India, New Delhi. https://www.niti.gov.in/sites/default/files/2023-07/Aggricultrue_Amritkal.pdf

Chand, R., & Singh, J. (2024). Performance of agriculture sector 2014–24: Implications for short-and medium-term strategy. *Economic and Political Weekly, 59*(39), 70-73.

Chand, R. (2025). Reimagining agriculture for growth, poverty, nutrition, and sustainability. *Agricultural Economics, 56*(3), 485-492. https://doi.org/10.1111/agec.70015