# AGRICULTURE FOR VIKSIT BHARAT:

## STRATEGIES FOR SUSTAINABLE GROWTH AND TRANSFORMATION

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JULY 2026

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WORKING PAPER

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## Abstract

India's vision of becoming a developed nation (Viksit Bharat) by 2047 requires sustained economic growth of around 8 per cent annually. Agriculture will play a central role in this journey, given its contribution to national income, employment, and inclusive development.

The paper highlights the strong performance of Indian agriculture over the past decade. Between 2015–16 and 2024–25, the sector achieved an average annual growth rate of 4.45 per cent—the highest recorded for any decade—while becoming more resilient, with lower volatility and no negative growth years.

High-value sectors such as livestock and fisheries have grown faster than crops, while diversification towards horticulture, spices, and fodder has accelerated. These shifts reflect changing consumer demand for fruits, vegetables, animal products, and processed foods. Farmers' incomes have also more than doubled at current prices during the past decade.

The paper identifies both price incentives and non-price factors as key drivers of growth but cautions against excessive reliance on MSP-led expansion due to potential fiscal and market distortions. Looking ahead, slower growth in domestic food demand may lead to rising surpluses, requiring greater emphasis on exports, agro-processing, bio-based industries, and efficient value chains.

To sustain agricultural growth above 4 per cent and support the Viksit Bharat vision, the paper calls for higher investment in infrastructure, research and development, market reforms, farmer aggregation, and sustainability. Addressing challenges related to water, soil health, climate change, and smallholder viability will be essential for building a resilient, competitive, and sustainable agri-food system.


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***Keywords:*** *Inclusive growth, diversification, surplus, government intervention, bioeconomy, competitiveness.*

***JEL classification:*** *J11, Q11, Q13, Q15, Q18, Q28*



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## Acknowledgment

Work on this paper was initiated at NITI Aayog during the tenure of the first author as Member, NITI Aayog, and was completed at ICRIER. The key findings were presented at several seminars and benefited from valuable comments and suggestions received from experts during these events. The authors are grateful to ICRIER for supporting the publication of this work.

# Agriculture for Viksit Bharat: Strategies for Sustainable Growth and Transformation*

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India is seriously pursuing the goal of making the country "*Viksit* Bharat" by the year 2047 to meet aspirations of its people and to make the country global economic power. This goal is getting increasingly adopted and owned by all the States and UTs. The same is evident from the serious efforts being made by various states in preparing State level visions and plans to accelerate growth of various sectors of economy which add up towards the target of $30 trillion national economy by 2047. The goal of Viksit Bharat has two major components, one, to raise per capita income to such level as to enter category of developed country and two, inclusive development or *Sabka Vikaas*. Economic growth is the pathway to raise per capita income, and, remunerative employment is the pathway for inclusive development.

According to the World Bank a country is classified as high income when its per capita gross national income is US $ 14006 or more (refer to FY 2024-25) which is close to Rs. 12 lakh for exchange rate of year 2024-25. This category broadly corresponds to developed country category. The same source ie World Bank, reports per capita GNI of India in year 2024 at $2650 while NSO reports per capita GNI for financial year 2024-25 (PE) at Rs. 2.31 lakh or US$ 2735[1]. These figures imply that PCI in India is required to increase at the annual rate of 7.35 per cent for next 23 years (2024 to 2047), at 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.[2] 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 GVA in half of the years during the last two decades. These achievements points to possibilities of moving on a growth trajectory to make India high income country. However, this requires concerted efforts in all sectors of the economy.

Agriculture would need to play significant role in this journey for two reasons. One, agriculture and allied activities (crops, livestock, forestry and fishing) constitute the second largest sector of Indian economy[3] after financial, real estate and professional services, at current prices. It constituted

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* DSE Public Policy Conference, November 19, 2025 at DSE. Paper presented in the session on Transforming Indian Agriculture.
24th Annual Conference of Indian Association of Social Sciences Institutes (IASSI), 10-12 October, 2025, Doon University, Dehradun. Presidential Address.
Dr. VKRV Rao Memorial Lecture, Viksit Bharat and Viksit Pradesh, What Role for Agriculture, 20 Jan, 2026, ISEC Bangalore.

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

2 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.

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

17.94 per cent of national income (GVA)[4] at current prices and 14.41 per cent at 2011-12 prices. Without robust agricultural growth, it would be difficult for the non-agricultural sectors alone to drive per capita income to high-income level. Two, 44.6 per cent of India's total workforce was engaged in agriculture as their main activity in year 2024-25. 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, 2024a). In this background the paper explores how best agriculture can help India and its people to meet their aspirations of making India a developed nation.

The paper is organized into nine sections. The first section analyses the performance of agriculture and allied sectors at national level using growth in GVA, output and farmers income and resilience as indicators of performance. It also includes discussion on state wise growth pattern. The second section examines the changes in composition of total agriculture and allied sector and changes in share of various crops in total crop sector to observe the direction of diversification taking place in the sector. This is followed by discussion on drivers of growth in Section 3. Section 4 presents trend in availability of total food and its linkage with prevalence of undernourishment. Fifth Section discuss viability of marginal and small holdings who constitutes more than 85 per cent of total farm holdings. Sixth Section is focused on employment. It analyses and discuss change in total and female workforce in agriculture and total economy using PLFS data during 2017-18 to 2023-24. Changes in consumption basket and food demand and supply prospects are discussed in seventh Section. Eighth section navigates into medium and long term prospects of agriculture sector in contributing to goal of $30 trillion economy, meeting aspirations of new India, employment, future sources of growth, sustainable resource use, future of small holders, export promotion, likely changes in structure of economy and policy reforms needed in the sector. The final section presents the conclusions and way forward.

## 1. Performance of Agriculture Sector

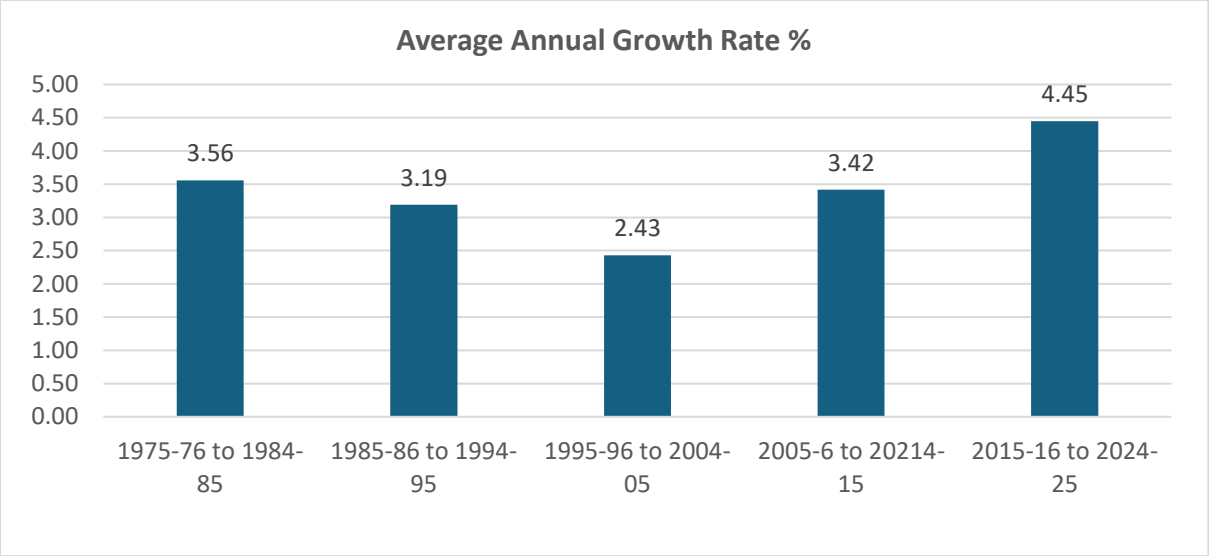
Growth rate in gross value added (GVA) is considered most appropriate indicator of overall performance of a sector. Average annual growth rates during various decades in the last 50 years for GVA agriculture and allied activities (GVA AA) are presented in Fig 1. The sector experienced impressive growth rate of 3.56 per cent per year 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 rate to below 2.43%.

The series, representing income of agriculture sector, showed a break with the past around year 2004-05, with significant acceleration in growth rate. 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, 2023 and 2024b). The updated estimate till 2024-25 shows that this acceleration in income of agricultural sector

[4] PE for year 2024-25 based on the Press Note on GDP for 2025-26, 7 Jan, 2026, NSO, MOSPI.

raised annual growth rate during 2015-16 to 2024-25 to historically highest level of 4.45 per cent (Figure1). India's agriculture sector did not achieve this level of growth in any ten years period in the past since 1950-51. Further, this growth rate is not only historically highest, it is also the globally highest among major agricultural countries (Table 1).

**Figure 1: Growth rates in GVA agriculture and allied sectors in various decades since 1975-76, at 2011-12 prices**




*Source of basic data: 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, in major countries**

| 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: Author calculation using data from FAO Stat.*

## 1.1 Rise in Resilience

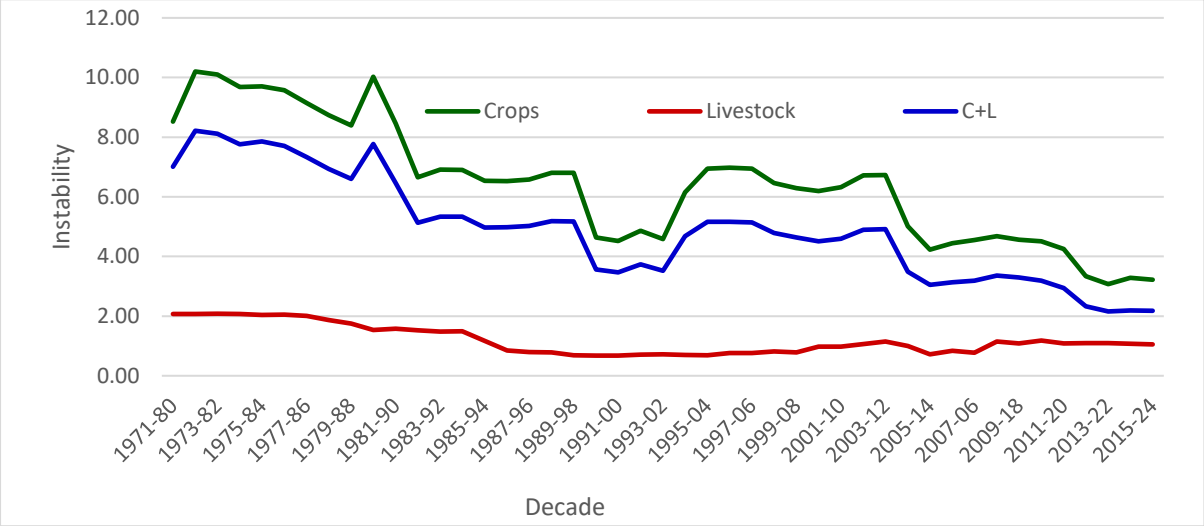
The acceleration in growth has been accompanied by a marked improvement in the sector's resilience. A useful measure of resilience is the instability index, defined as the standard deviation of year-to-year growth rates over a given period.

If the annual growth rate remains constant, the instability index is zero; greater fluctuations in growth lead to higher instability. The data show that instability in agricultural growth peaked during the 1980s but has declined steadily since then. In recent years, instability has fallen to about one-third of its peak level in the 1980s, indicating a much more stable growth trajectory (Figure2).

Another indicator of resilience is the frequency of negative growth years. During the most recent decade (2015–16 to 2024–25), agriculture did not experience a single year of negative real income growth. In contrast, agricultural income contracted in three out of ten years during 2004–05 to 2014–15 and in nearly 40% of the years in the preceding decade.

The sector's resilience was also evident during the COVID-19 pandemic, when agriculture continued to grow even as several non-agricultural sectors experienced sharp contraction.

**Figure 2: Moving average of decadal instability in GVAAA at 2011-12 prices**




*Source: Same as Fig 1.*

## 1.2 Growth in Producers' Income

Gross value added in agriculture and allied sectors provides a measure of sectoral income, which gets distributed over labour, capital and producers. For policy purposes, however, the focus is on the net income from agriculture sector accruing to agricultural producers (farmers). This income is derived from GVA by deducting consumption of capital, compensation to employees and taxes and adding subsidies, as per the National Accounts Statistics (NAS, 2025). This income in NAS terminology is termed as Operating surplus/mixed income.

These estimates are available at current prices. Table 2 presents the basic data and derived estimates for the period 2014-15 to 2023-24, along with comparable trends for manufacturing and total economy.[5] This is useful in an assessment of relative income growth across sectors.

Over the past decade, producers' income in agriculture and allied sectors has grown at an annual rate exceeding 10 per cent – outpacing both manufacturing sector and broader economy. In cumulative terms, agricultural producers' income increased by 138 per cent at currents prices between 2014-15 and 2023-24 ie more than doubling of farmers income from agriculture over the period.

This trend is particularly relevant in the context of the goal of doubling farmers' income, articulated for the period 2015–16 to 2022–23. Official data from the National Statistical Office (NSO) indicate that producers' income in agriculture and allied sectors increased by about 108 per cent over these seven years at current prices. Notably, income from crops and livestock alone (excluding fisheries and forestry) grew by 107 per cent, suggesting that the observed gains are broad-based within the core agricultural sector.

A longer-term comparison further reinforces this trend. Between 2014–15 and 2023–24, income accruing to agricultural producers increased by 138 per cent, compared to 100 per cent for manufacturing and 124 per cent for the overall economy.

Several important insights emerge from this evidence:

- Faster income growth relative to output: Producers' income grew faster than the value of agricultural output, implying an improvement in net returns. This likely reflects favourable output–input price dynamics, alongside gains from technologies, improved irrigation, and diversification.
- Relative sectoral advantage: Income growth of agricultural producers exceeded that of producers in manufacturing and the overall non-agricultural economy, indicating a period of income convergence.
- Divergence within agriculture: Producers' income increased at a faster rate than that of agricultural labour, suggesting differential gains within the sector.
- Output–income divergence across sectors: While non-agricultural output expanded faster than agricultural output, the reverse holds for net producer income, pointing to differing cost structures and value realization dynamics.

Taken together, these trends indicate that the past decade has been particularly favourable for the growth of agricultural producers' income, marking a significant shift in the income dynamics of the sector.

[5] 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.

**Table 2: Macro level indicators of growth in output, input and income of producers in agriculture, manufacturing and non-agriculture (Rs '000 crore)**

| Particulars | Sector | 2014-15 | 2023-24 | Rate of growth % | Increase between 2023-24 and 2014-15 % |
|---|---|---|---|---|---|
| **Gross output** | Agri & allied | 2730 | 6176 | 9.49 | 126 |
| | Manufacturing | 8501 | 19350 | 9.57 | 128 |
| | Total | 24449 | 57362 | 9.94 | 135 |
| **Intermediate consumption** | Agri & allied | 637 | 1298 | 8.24 | 104 |
| | Manufacturing | 6623 | 15429 | 9.85 | 133 |
| | Total | 12945 | 29949 | 9.77 | 131 |
| **Gross value Added** | Agri & allied | 2094 | 4878 | 9.85 | 133 |
| | Manufacturing | 1878 | 3922 | 8.52 | 109 |
| | Total | 11504 | 27413 | 10.13 | 138 |
| **Compensation of employees** | Agri & allied | 318 | 703 | 9.23 | 121 |
| | Manufacturing | 470 | 1069 | 9.56 | 127 |
| | Total | 3846 | 9906 | 11.09 | 158 |
| **Operating Surplus/Mixed Income (Income of producers)** | Agri & allied | 1708 | 4062 | 10.11 | 138 |
| | Manufacturing | 1073 | 2148 | 8.02 | 100 |
| | Total | 6344 | 14214 | 9.38 | 124 |

*Source: National Accounts Statistics, 2025.*

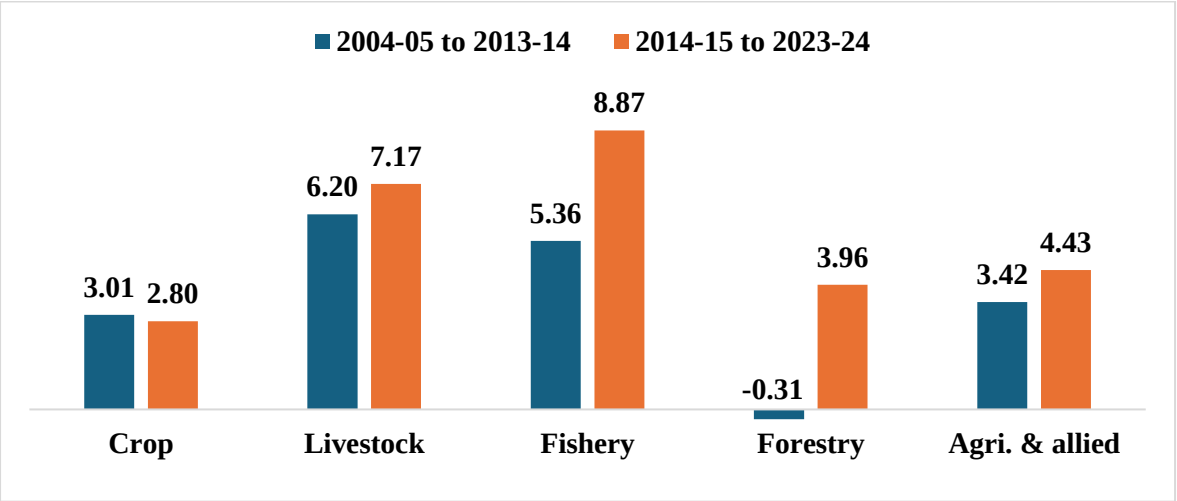
## 1.3 Performance at Disaggregate Level

Agriculture and allied sectors comprise four activities or sub sectors viz. (i) crops, (ii) livestock, (iii) fishery and (iv) forestry. These sub sectors exhibit considerable heterogeneity particularly the crop sector which can be broadly divided into field crops (cereals, pulses, oilseeds, fodder crops and some commercial crops like sugarcane, cotton and jute) and horticulture (fruits, vegetables, floriculture, plantation crops, condiments and spices, drug and narcotics and other high value crops).

Performance of four sub sectors is examined by looking at growth in their 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 2013-14 and 2014-15 to 2023-24 are presented in Figure3.

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 jumped 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.

**Figure 3: Average annual growth rate of GVA of various sub-sectors of agriculture and allied sectors during 2004-05 to 2013-14 and 2014-15 to 2023-24.**




*Source: Same as Fig 1.*

In the absence of disaggregated value added data, growth in value of output at 2011-12 prices was used as an indicator of performance of various crops and crop groups (Table 3). Within the crop sector, highest growth is observed in fodder and grasses exceeding 7 per cent annually over the past decade. This is consistent with rapid growth in livestock output. Condiments and spices also exhibit close to 7 per cent growth. There was clear differentiation in growth rate of field crops and horticulture crops.

**Table 3: 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: Same as Fig 1.*

Total crop sector growth remained modest at 2.46 per cent. Output of cotton and "other crop products" not mentioned in the Table 3 showed decline during 2014-15 to 2023-24. Among major food groups, fruits witnessed 3.68 per cent annual growth while lowest growth was achieved in the case of cereals.

Overall, the evidence points to a clear structural shift within agriculture: high value commodities and allied activities are expanding significantly faster than traditional staples such as cereals, oilseeds and common vegetables.

## 1.4 State Level Performance

State-wise data on macroeconomic aggregates, available up to year 2023-24, reveals significant inter-state variations in growth across in GVA agriculture and allied, manufacturing, non-agriculture and total economy in the last 10 years (Table 4).

The State of Gujarat topped in growth of total economy in the last decade with 7.85 per cent average annual rate of growth followed closely by Assam (7.53 per cent) and Karnataka (7.49 per cent). At the lower end, Uttarakhand registered the slowest growth at 4.40 per cent, while Punjab and Kerala recorded growth below 5 per cent during 2014–15 to 2023–24.

Sectoral growth rates exhibit much wider variation across states than aggregate economic growth. Manufacturing growth ranged from 1.45 per cent to 10.8 per cent, while agricultural growth varied between 1 per cent and 7 per cent, compared to a narrower range of 4.4 to 7.8 per cent for overall GSVA.

Agriculture and allied sector performance shows considerable divergence across states. Kerala recorded negative growth, while Uttarakhand registered barely 1 per cent annual growth during the decade. Himachal Pradesh and Punjab also experienced low growth, below 2 per cent per annum. At the other end, Assam reported the highest agricultural growth (around 7 per cent), although this appears inconsistent with its relatively modest growth in sectoral output. Excluding Assam, Andhra Pradesh emerges as the top performer, with growth close to 7 per cent, followed by Madhya Pradesh (6.48 per cent) and Bihar (6.26 per cent). However, high population growth in Bihar moderates gains in per capita terms. Odisha, Chhattisgarh, and Telangana also recorded robust growth exceeding 5 per cent annually.

**Table 4: Average annual growth rate in gross value added in agriculture and non agriculture sectors in major states, at 2011-12 prices, 2014-15 to 2023-24**

| State | Growth rate % 2014-15 to 2023-24 | | | |
|---|---|---|---|---|
| | Agri. & allied | Non-Agri. | Manufacturing | Economy |
| **Andhra Pradesh** | 6.99 | 6.76 | 10.80 | 6.79 |
| **Assam** | 7.12 | 7.78 | 10.73 | 7.53 |
| **Bihar** | 4.18 | 6.88 | 9.99 | 6.26 |
| **Chhattisgarh** | 5.59 | 5.23 | 4.32 | 5.25 |
| **Gujarat** | 4.55 | 8.52 | 9.82 | 7.85 |
| **Haryana** | 3.61 | 6.65 | 6.59 | 6.05 |
| **Himachal Pradesh** | 1.58 | 5.78 | 7.38 | 5.12 |
| **Jharkhand** | 3.74 | 6.16 | 7.75 | 5.73 |
| **Karnataka** | 4.93 | 7.89 | 7.57 | 7.49 |
| **Kerala** | -0.12 | 5.03 | 7.63 | 4.49 |
| **Madhya Pradesh** | 6.48 | 6.24 | 7.36 | 6.19 |
| **Maharashtra** | 3.37 | 5.69 | 2.81 | 5.35 |
| **Odisha** | 5.18 | 6.07 | 8.55 | 5.81 |
| **Punjab** | 1.80 | 5.97 | 5.90 | 4.89 |
| **Rajasthan** | 4.57 | 5.71 | 9.14 | 5.34 |
| **Tamil Nadu** | 4.99 | 6.14 | 7.32 | 6.00 |
| **Telangana** | 5.24 | 7.25 | 5.82 | 6.82 |
| **Uttar Pradesh** | 4.81 | 6.52 | 7.25 | 6.10 |
| **Uttarakhand** | 1.02 | 4.77 | 1.45 | 4.40 |
| **West Bengal** | 3.19 | 5.55 | 7.90 | 5.03 |
| **All India** | **3.96** | **6.44** | **6.24** | **6.01** |

*Source: Same as Fig 1.*

*Note: State level data show very high fluctuations and sudden jump in GVA agriculture and allied in some years in some states.*

Sub-sectoral performance varies sharply across states, mirroring national trends but with greater dispersion (Table 5). At the national level, crop sector output grew at 2.46 per cent annually during 2014–15 to 2023–24, comprising 3.84 per cent growth in horticulture and 1.86 per cent in non-horticulture crops.

At the state level, Madhya Pradesh and Rajasthan recorded the highest growth in crop output. In contrast, Kerala experienced near-stagnation, while Uttarakhand recorded negative growth. Horticulture performance was particularly weak in the Western Himalayan region, with Uttarakhand registering a decline of 3.96 per cent and Himachal Pradesh recording marginal growth of 0.24 per cent. In contrast, Uttar Pradesh and Madhya Pradesh exhibited strong diversification towards horticulture, with annual growth exceeding 8 per cent in fruits and vegetables. Andhra Pradesh and Rajasthan also recorded robust horticulture growth of 7.4 per cent and 7 per cent, respectively. Punjab showed improvement from a low base, while Telangana achieved about 4 per cent crop

growth despite a decline in horticulture, driven by strong performance in field crops, particularly rice.

Several traditionally high-performing agricultural states, including Haryana, West Bengal, and Punjab, recorded relatively low growth—below 1.5 per cent in crop output—indicating emerging structural constraints.

**Table 5: Statewise growth rates in value of output at constant prices of year 2011-12**

| State/U.Ts | Growth rate 2014-15 to 2023-24 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | All Crop | Horti-culture | Non-Horticulture | Live-stock | Milk group | Meat group | Eggs | For-estry | Fish |
| **Andhra Pradesh** | 2.75 | 7.39 | -1.11 | 6.63 | 4.49 | 11.27 | 7.38 | 1.90 | 16.52 |
| **Assam** | 1.72 | 1.69 | 1.82 | 3.18 | 2.91 | 4.01 | 2.81 | 1.23 | 5.73 |
| **Bihar** | 2.87 | 2.10 | 3.35 | 5.68 | 5.82 | 5.96 | 17.11 | 4.27 | 7.38 |
| **Chhattisgarh** | 3.67 | 3.60 | 4.62 | 6.52 | 5.81 | 5.93 | 5.31 | 4.37 | 10.74 |
| **Gujarat** | 2.19 | 4.60 | 1.61 | 4.02 | 4.65 | 1.63 | 2.02 | 0.66 | 2.88 |
| **Haryana** | 0.52 | 0.38 | 0.61 | 4.97 | 4.96 | 7.12 | 6.90 | 3.93 | 7.72 |
| **Himachal Pradesh** | 0.28 | 0.24 | 1.15 | 3.83 | 4.31 | -2.61 | -1.59 | 3.91 | 6.09 |
| **Jharkhand** | 0.95 | 1.39 | 1.06 | 6.23 | 5.73 | 8.57 | 32.49 | 4.34 | 11.80 |
| **Karnataka** | 2.28 | 4.89 | 1.08 | 8.60 | 8.45 | 13.81 | 8.67 | 4.76 | 10.76 |
| **Kerala** | 0.06 | 1.66 | -0.57 | -0.04 | -0.28 | 0.30 | -0.24 | 1.54 | 4.68 |
| **Madhya Pradesh** | 5.80 | 8.39 | 4.56 | 8.13 | 8.34 | 11.82 | 13.44 | 3.43 | 14.95 |
| **Maharashtra** | 1.88 | 2.63 | 1.90 | 5.68 | 5.71 | 9.28 | 4.37 | 6.64 | 3.84 |
| **Odisha** | 1.99 | 1.42 | 3.00 | 3.65 | 3.56 | 4.09 | 5.25 | 5.51 | 11.50 |
| **Punjab** | 1.28 | 6.04 | 0.59 | 2.94 | 3.44 | 0.95 | 1.32 | 1.54 | 5.88 |
| **Rajasthan** | 4.67 | 6.97 | 4.65 | 7.45 | 9.14 | 5.40 | 11.18 | 2.09 | 10.35 |
| **Tamil Nadu** | 3.03 | 5.07 | 2.48 | 7.55 | 4.00 | 10.29 | 0.54 | 5.22 | 3.87 |
| **Telangana** | 4.00 | -0.84 | 6.32 | 6.33 | 4.02 | 8.99 | 6.22 | 2.52 | 7.36 |
| **Uttar Pradesh** | 3.73 | 8.67 | 2.81 | 4.06 | 4.86 | 1.55 | 12.06 | 3.31 | 9.86 |
| **Uttarakhand** | -0.51 | -3.96 | 1.73 | 1.69 | 2.07 | -1.96 | 6.52 | 2.86 | 8.72 |
| **West Bengal** | 1.34 | 2.08 | 0.73 | 6.88 | 4.56 | 8.83 | 12.71 | 2.67 | 3.69 |
| **All India** | **2.46** | **3.84** | **1.86** | **5.65** | **5.58** | **7.23** | **6.34** | **3.76** | **8.77** |

*Source: Same as Fig 1.*

Livestock has been the most consistently performing sub-sector across states, with the exception of Kerala. Karnataka led with 8.6 per cent annual growth, followed by Madhya Pradesh (8.13 per cent), while Rajasthan and Tamil Nadu recorded growth of around 7.5 per cent. Growth in livestock is increasingly driven by the meat segment, which registered double-digit expansion in several states, including Andhra Pradesh, Karnataka, Madhya Pradesh, and Tamil Nadu. Similar patterns are observed in Maharashtra, Telangana, West Bengal, and Jharkhand, where meat output growth significantly outpaced that of milk. Egg production also recorded rapid growth, particularly in Jharkhand (32 per cent) and Bihar (17 per cent), although Himachal Pradesh experienced a decline in both meat and egg output.

Forestry growth remains modest and uneven, ranging from below 1 per cent in Gujarat to about 6.6 per cent in Maharashtra.

Fishery has emerged as the fastest-growing sub-sector across most states, often outpacing both crops and livestock. Andhra Pradesh leads with an annual growth rate of 16.5 per cent, driven by strong performance in both marine and inland fisheries. Madhya Pradesh follows with about 15 per cent growth, while Chhattisgarh, Jharkhand, Odisha, and Rajasthan also recorded double-digit expansion. In contrast, Maharashtra, Tamil Nadu, West Bengal, and Gujarat lag behind in fisheries growth.

Overall, the evidence highlights wide divergence in agricultural performance across states and sub-sectors, with high-growth regions and activities driving structural transformation, while several traditionally strong regions face low growth or stagnation.

## 2. Changing Composition of Agriculture

The structure of Indian agriculture is undergoing a discernible transformation. This change is driven primarily by changes in consumer preferences, evolving dietary patterns, diversification in end uses of agricultural produce, and the emergence of new demand sources. Technological advancements and supply-side responses have further reinforced these trends. The cumulative impact is reflected in a steady reconfiguration of the composition of agricultural output (Tables 6 and 7).

At the aggregate level, the share of crops in total agriculture and allied sector output declined from 64 per cent to 54 per cent between the triennium ending (TE) 2014–15 and TE 2023–24. This implies an average annual decline of about 1 percentage point, indicating a sustained relative contraction of the crop sector. In contrast, the share of livestock increased by nearly 8 percentage points, while fisheries and aquaculture registered a gain of about 2.2 percentage points over the same period. If these trends persist, the share of crops in total agricultural income is likely to fall below 50 per cent by 2029–30.

Within the crop sector, the composition is also shifting away from traditional field crops, despite continued price support through the minimum support price (MSP) system. The share of field crops declined from 52.3 per cent in TE 2013–14 to 49.0 per cent in TE 2023–24. In contrast, high-value segments have expanded significantly. The share of fruits increased by about 20 per cent, while condiments and spices more than doubled their share during this period. These changes underscore a broader structural shift towards high-value agriculture, driven largely by diversification in both domestic consumption and export demand for agri-food products.

**Table 6: Changes in composition of GVA in agriculture and allied sectors between Trienniums ending 2014-5 and 2023-24, at current prices**

| Sub sector | Share in GVA AA % | | |
|---|---|---|---|
| | 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 7: Changes in composition of crop output between trienniums ending 2013-14 and 2023-24, at current prices**

| Crop/group | Share in total crop output % | | Change over the decade |
|---|---|---|---|
| | TE 2013-14 | TE 2023-24 | |
| **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.*

## 3. Drivers of Growth

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. At the same time, non-price factors such as infrastructure, institutions and technological progress are equally important. Sustained growth requires a balanced interplay between these two sets of drivers of growth.

### 3.1 Role of Prices

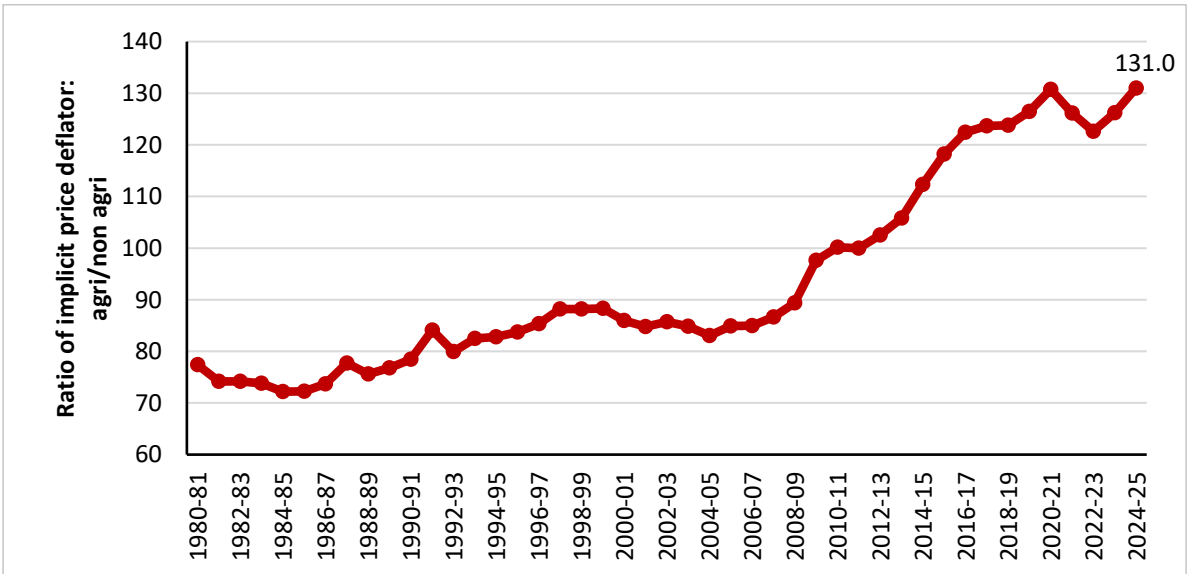
Index of agricultural prices relative to non-agricultural prices (with base 2011-12=100), which can be termed as indicator of terms of trade for agriculture vis-a-vis non agriculture, showed fluctuations with overall gradual increase. For instance, terms of trade for agriculture declined during early 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 after 2008-09 the terms of trade for agriculture show increase of 41.3 percentage points (Figure 4).

The major shift was initially triggered by the global food price surge around 2007-08 which is referred to as global food crisis or global food prices crisis. The reasons for this are well documented in the literature (Chand, 2010). Since then, global food prices show 2 – 3 episodes of price rise, which also transmitted to domestic market. This was followed by policy decision of the Central government to accept long pending demand of farmers to raise and fix MSP based on new criterion of cost to strengthen incentives to the farmers. In 2018-19, the present government at the Centre adopted new formula for MSP which entails at least 50 per cent margin over cost of production, popularly known as A2+ FL. Thus, MSP since 2018-19 includes 50% or more margin for the producers, over all costs paid by the farmers including imputed 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 deflator for non-agriculture. After that there was some moderation in the terms of trade for agriculture for 2 years, but they again turned back to level of 2020-21 in 2024-25.

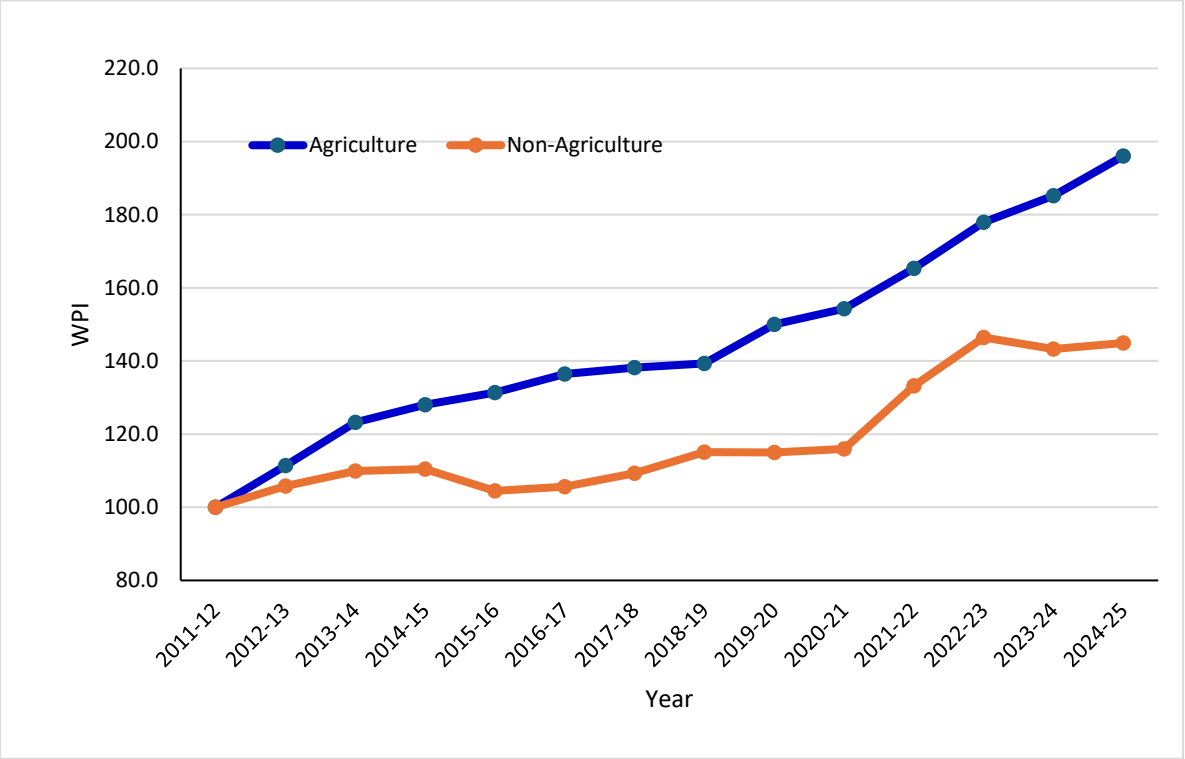
A similar pattern is evident from wholesale price index (WPI). Between 2011-12 and 2024-25 the WPI of agricultural commodities nearly doubled, while non-agriculture prices increased by 42 per cent in the same period, with base 2011-12 (Figure5). This shows that during the last 13 years, wholesale agriculture prices which represent the prices received by agricultural producers 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.

**Figure 4: Agri prices in relation to non-agri prices (base 2011-12=100)**




*Source: Same as in Table 2.*

**Figure 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.*

These trends indicate a sustained improvement in price incentives for agriculture over the past decade and half which has been a major driver of sectoral growth.

## 3.2 Non-Price Factors

The improvement in price incentives has been complemented by significant progress in non-price determinants of agricultural growth, particularly since 2014-15. Public irrigation, which had declined from 17.3 million hectare (mh) in 1991-92 to 15.3 mh in 2015-16 has since recovered. Gross irrigated area under all sources of irrigation increased from 98 mh in 2015-16 to 130 mh in 2023-24 which increased irrigation coverage from 49.3 per cent to 59.9 in the same period. This expansion has pushed productivity gains, higher cropping intensity and a shift towards higher value crops.

Area under fruits and vegetables increased from 10.23 million hectare in 2014-15 to 12.58 million hectare in 2023-24 marking a 23% increase in nine years. This diversification towards high value commodities has been a key contributor to growth in the crop sector.

Two other factors which exerted positive influence on growth of agriculture include expansion of institutional credit and increase in farmers covered under crop insurance. 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 co-

operatives increased from 29.4% of value of agricultural output in 2013-14 to 41.7% in 2023-24. 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.

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 initiatives launched during the last ten years which played important role in improving agriculture performance are: equipping farmers with mobile apps, modern tools like drones, 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 March 2026, 1,656 mandis have been integrated on the e-NAM platform. At the same time, programmes promoting organic farming, natural farming, and bio inputs are being strengthened 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 Yojan*a 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 tonne in 2013-14 to 367.72 million tons in 2023-24 while fish production more than doubled in the last 11 years. India is now the largest producer of milk and biggest exporter of rice in the world with about 1/3$^{rd}$ share in world exports. Such achievements are result of growth miracle witnessed in agriculture in the decade 2015 to 2025 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. 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.

Overall, the acceleration in agricultural growth over the past decade reflects the combined effect of improved price

incentives and a broad-based strengthening of non-price factors. The interaction between these drivers has enabled both productivity gains and structural transformation within the sector.

## 4. Food Production and Nutrition

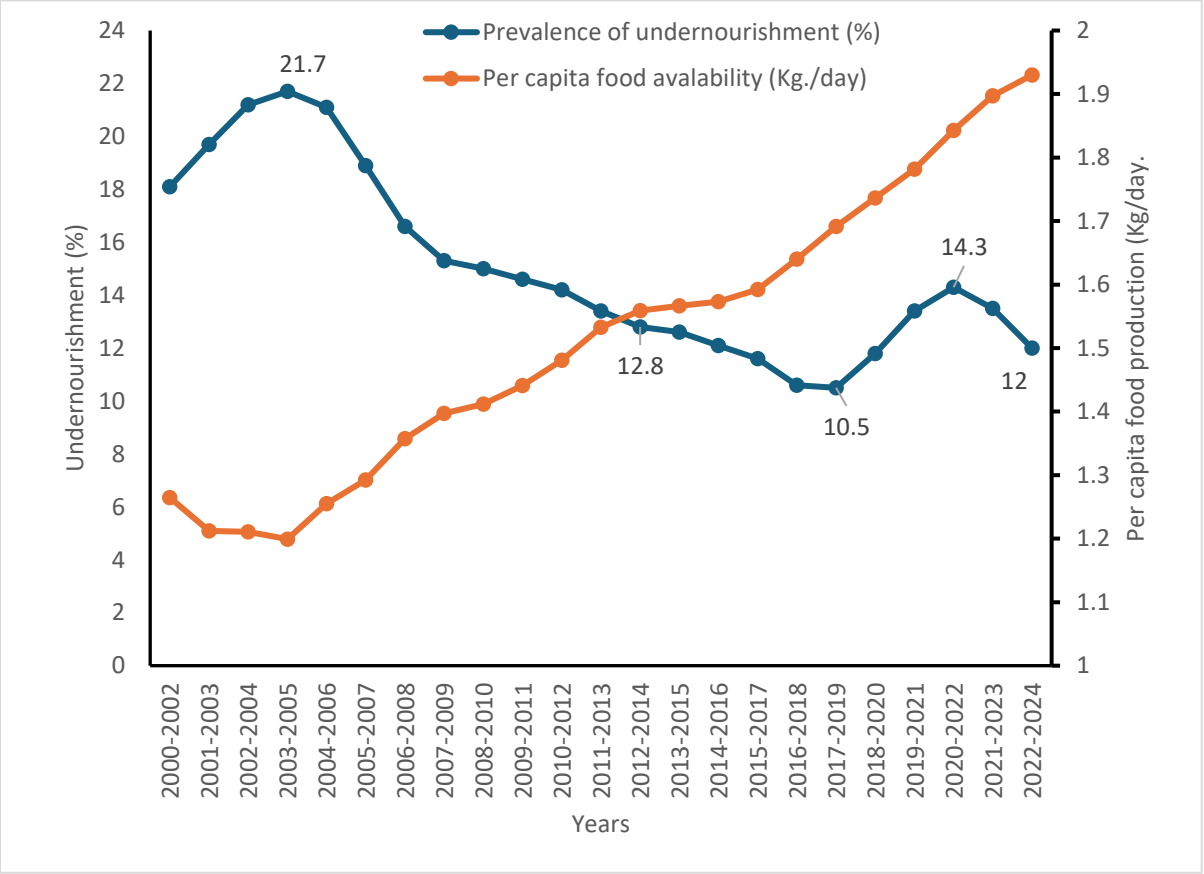
Food production in India has, for most of the post green revolution period, increased faster than human population. The gap between growth of food production and population widened considerably during the 21st Century as former followed acceleration whereas rate of increase in population followed slowdown. This is reflected in per capita food production presented in Figure6.

Per capita food output increased from about 374 kg per person per annum at the beginning of the century to over 700 kg in recent years. Notably, since the mid-2000s, this growth has been both strong and stable, following a near-linear upward trajectory. In per-day terms, food production has risen from about 1.69 kg per person to nearly 1.93 kg in the past five years. This substantial increase in supply, alongside rising net availability, would be expected to translate into improved nutritional outcomes.

Prevalence of undernourishment (POU) is used internationally as a broad indicator of nutrition status. This indicator for the world and country level is jointly published by the Food and Agriculture Organization (FAO), and partner organizations under the title "The State of Food Security and Nutrition in the World" each year. The estimate of undernourishment (POU) is based primarily on dietary energy (calorie) intake, derived from national food balance sheets and is reported as three-year moving averages.

POU for India as per this report show a broad inverse relationship between per capita food availability and undernourishment (Figure6), but with notable deviations during the COVID-19 period. The POU estimates for 2018–2020, 2019–2021, and 2020–2022 include a year or part of the year belonging to Covid period. According to the "State of Food Security" report of FAO and its partners the incidence of undernourishment in India increased from 10.5 per cent before the Covid to 14.3 per cent during the Covid period. However, POU declined to 12 per cent in the subsequent two years.

**Figure 6: Per capita food production and prevalence of undernourishment as per FAO.**




*Source: FAO Stat*

FAO attributes the rise in undernourishment partly to high food inflation. While this may be a contributing factor, concerns have also been raised regarding the methodology used by the FAO in estimating POU. It is felt that the FAO estimates of undernourishment for India are not consistent with significant increase in per capita food production and supply of highly subsidized food staples to majority of the population of the country. Some researchers have explained disconnect between nutrition status and food availability to voluntary choice of consumers (Chand and Jumarani, 2013; Chand, 2024a; Chand, 2025). They contend that households who are undernourished need to be classified into two categories viz. low income and middle and high income. Purchasing power is an important factor for the former while latter did not have such constraint. Accordingly, strategy to address undernourishment requires different approaches for the two classes of population. Population in low income category with low purchasing power still needs subsidized food beyond cereals to include more nutritive food. Population in higher income category need nutrition awareness and sensitization about adequate and balanced diet.

Overall, the sustained increase in per capita food production and the ongoing diversification of agricultural output provide

a strong supply-side foundation for improving nutrition. Translating this into better nutritional outcomes will require addressing demand-side constraints, improving dietary diversity, and refining measurement approaches to better capture actual consumption patterns.

## 5. Viability of Smallholders

India's agriculture is dominated by small, marginal, and tiny landholdings, similar to most other countries in Asia. Together, these categories constitute 86.1 per cent of total operational holdings, including 79.5 per cent marginal holdings and 20.5 per cent small holdings. Further, 70.3 per cent of marginal land holdings operate on less than half hectare or 1.24 acre. Such farm size is considered extremely small with many falling below poverty level if they do not get income from non farm sources (Chand et al., 2011).

According to the Situation Assessment Survey (SAS) 2018–19 of NSO, households with very small landholdings, derive major income from non-farm activities, such as wages, salaries, and small trade. Crop production and livestock contribute only 36 per cent of household income for agricultural households possessing land up to one acre (0.4 hectares) while wages contribute more than 55 per cent. Further, income from livestock farming was higher than crop farming at such households.

A similar pattern is observed among households possessing 0.4–1.0 hectare of land, where more than 50 per cent of household income originates from non-farm sources, including wage earnings. Thus, marginal landholdings (below one hectare) depend more heavily on non-farm income than on farm income. Once farm size increases beyond one hectare, however, the share of farm income—comprising crop production and livestock—becomes significantly higher than non-farm income and continues to rise with increasing farm size. It can be inferred from this that farming is non viable at marginal holdings.

This raises an important policy question whether to support tiny and marginal farmers remain engaged in farming activities or help them to move to non farm occupations with higher income.

Two key considerations have been used to justify continued support for marginal farmers. First, to support food security and livelihood stability by providing supplementary income opportunities within agriculture until these households can secure better and more remunerative employment in the non-farm sector. Second, several studies found inverse relationship between farm size and productivity, implying higher efficiency at lower farm size classes.

### 5.1 Farm Size and Productivity

Many studies in early and mid 1960s reported inverse relationship between farm size and per acre productivity based on data taken from the Farm Management Studies (Sen, 1962; Sen, 1964; Hanumantha Rao, 1966). This led to a long debate with some studies questioning this conclusion (A P Rao, 1967) and some other strongly supported the inverse relationship between farm size and productivity (Rudra 1968; Saini, 1971; Usha Rani, 1971). Another class of

researchers find data from Farm Management Studies inadequate to draw any definite conclusion about farm size and productivity (Bhardwaj, 1974) and some challenged the universal validity of the alleged inverse relation-ship (Chatopadhyaya and Rudra, 1976).

It was hypothesized by the proponents of inverse relationship between farm size and productivity that smallholders allocate a larger share of their land to high-value crops and apply higher doses of fertilizer. These findings were used to lend policy support to small farmers on the ground of productivity and efficiency. In addition, small farms often benefit from a labour advantage, which is particularly important in agriculture. This advantage allows them to offset scale disadvantages in production costs and in the marketing of inputs and outputs.

Another set of studies examined farm size and productivity relationship after widespread adoption of green revolution technology. A comprehensive analysis by Chadha based on in depth analysis of various factors associated with scale and productivity demonstrated that "*the small farmers in Punjab compete with the large ones in all aspects of production technology — except in the matter of investment in size-biased implements/ machinery. For this their small land area alone is the bottleneck and this bottleneck has been there in the past; it has increased over the years and is likely to be magnified still more in the future. The moral is clear. If the small farms are to be preserved, their capital structure must be improved.*" (Chadha, 1978). It is pertinent to mention that the study by Chadha pertains only to the state of Punjab where green revolution technology was widely adopted along with high level of mechanization and capitalization.

As observed by Chadha for Punjab, the advance of green revolution in other parts of the country led to increase in mechanized and capital-intensive production. As a result, the labour advantage at small farms lost its edge and the inverse relationship between farm size and productivity disappeared in many regions and crops. The recent literature shows mixed relationship between farm size and productivity across states without any conclusive evidence on inverse relationship between farm size and productivity (Das, 2024). The paper found positive relationship between farm size and productivity for high value crops in U.P. and West Bengal and questioned the small farmer led growth. Thus, the more nuanced relationship was more visible at disaggregate level than aggregate level (Das, 2024).

It emerges from the survey of recent literature that no level of labour advantage or efficiency can make very small and tiny holdings economically viable (Mishra and Singh, 2021).

## 6. Employment

Detailed and in depth information on employment by sector, gender, activity, and rural and urban is available from Periodic Labour Force Survey (PLFS) started in the year 2017-18. The PLFS data is now available on annual, quarterly and monthly basis for undertaking timely and detailed analysis of changes in labour market.

Broad changes in workforce based in agriculture and allied activities and

manufacture sector are presented in Table 8. This shows that workforce in India 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 the country. However, 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 the increase in female workforce has been absorbed in agriculture sector. This increase has led to new trends in sectoral composition of labourforce and workforce.

PLFS data show that 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 are likely to 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 8: Growth rates and share of workforce among sectors and gender

| Worker/Sector | Workforce (Million) | | Annual Growth (%) | Sector share (%) | |
|---|---|---|---|---|---|
| | 2017-18 | 2023-24 | | 2017-18 | 2023-24 |
| **All workers** | | | | | |
| **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 |
| **Female workers** | | | | | |
| **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 |
| **Male workers** | | | | | |
| **Agri & allied** | 140.8 | 144.0 | 0.38 | 40.24 | 36.29 |
| **Manufacturing** | 42.1 | 45.2 | 1.18 | 12.03 | 11.38 |
| **Total** | 349.9 | 396.8 | 2.12 | 100.0 | 100.0 |
| **Worker participation rate %** | | | | | |
| **Female** | 16.51 | 30.72 | | | |
| **Male** | 52.1 | 56.3 | | | |
| **Total** | 43.8 | 47.4 | | | |

*Source: Estimates based on NSO-PLFS data*

As any economy grows, the share of agriculture in employment declines, with the workforce gradually shifting towards more productive and remunerative non-agricultural activities. However, data from the Periodic Labour Force Survey (PLFS) show increase in share of agriculture in total employment from 44.1 per cent to 46.1 per cent over the past six years. In contrast, the share of manufacturing—typically expected to rise—has shown a slight decline.

At first glance, these trends may suggest stagnation in manufacturing employment and an unhealthy reversal in workforce transformation. However, such conclusions do not capture the full picture. A deeper analysis, particularly of gender-disaggregated data and absolute employment changes, is necessary to understand the evolving structure of employment in India.

Disaggregated analysis reveals that the increase in agriculture's employment share is entirely attributable to the rise in female workforce participation. Between 2017–18 and 2023–24, the number of women engaged in agriculture more than doubled—from 60.4 million to 136.6 million—accounting for 96 per cent of the total increase in agricultural employment[6]. In contrast, male employment in agriculture grew by only 2.2 per cent over the same period. Consequently, the share of male workers in agriculture declined from 40.2 per cent of total male employment in 2017–18 to 36.3 per cent in 2023–24.

The sharp rise in female participation—averaging over 14 per cent annually in agriculture and contributing to an overall female employment growth of 12.3 per cent per year—appears too large to be explained by demographic factors alone. Nor has there been commensurate structural change in agriculture to fully justify this surge. A key explanation lies in improved measurement: it seems the PLFS has progressively captured women's work more accurately, including previously underreported or un-acccounted contributions.[7] Increased time spent by women in agricultural activities and a gradual shift towards more women-friendly agricultural operations have also contributed to this trend.

This development is significant and positive, reflecting improved recognition of women's economic contributions, greater gender inclusion, and an expansion of the effective workforce. However, it also complicates the interpretation of changes in agriculture's employment share over time.

To address comparability issues, it is useful to examine male and female employment trends separately. Such an approach reveals that the apparent increase in agriculture's share in total employment is largely a statistical effect arising from better enumeration of women workers, rather than a reversal of structural transformation. In fact, the continued decline in the share of male workers in agriculture suggests that the long-term shift towards non-agricultural employment remains intact.

A gender-disaggregated view of workforce trends highlights the following:

- The rise in agriculture's share in total employment is driven entirely by increased female participation; the share of male workers in agriculture continues to decline.
- Manufacturing employment has grown at around 4 per cent annually, exceeding population growth and indicating steady expansion in absolute terms.

[6] Possibly many of these women were already working in agriculture but they were not counted as workers. PLFS is gradually addressing this issue.

[7] Measurement issues and underreporting of women's work in official statistics has been widely observed in Indian data (Mehta 2026).

- There is a marked feminisation of both agriculture and the overall workforce. Women now account for 48.7 per cent of the agricultural workforce and 35 per cent of total employment, up from 30 per cent and 23 per cent, respectively, in 2017–18.
- Women's participation in non-household activities has increased sharply, with the Worker Population Ratio (WPR) rising from 16.5 per cent to 30.7 per cent over the past six years.

## 7. 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, industrial uses and seed etc. Changes in household food demand and dietary pattern in last decade or so are presented in Table 9. 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 estimates. Among various 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 a period of 11 years after 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. The household data shows decline in intake of pulses but this is not due to falling preference for pulses and is result of falling availability – India has shortage of pulses and a part of it is 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. Per capita intake of meat also doubled in 11 years. Among animal food the increase is lowest (36 per cent) in fish though its production is increasing much more rapidly than other animal foods.

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 per cent increase in its per capita production between 2011-12 to 2022-23.

Overall dietary pattern in India shows profound changes, largely towards horticulture produce and livestock produce. These changes have strong implications 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 9: 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 the supply-side, agri-food sector has maintained annual growth rate exceeding 4 per cent for more than a decade. Visualizing future of agriculture requires an assessment of demand and supply prospects. Aggregate demand for food can be projected using key parameters such as growth in population, growth in income and income elasticity of food demand.

Medium-term projections (Table 10) suggest that aggregate food demand will grow at 2.5-3.0 per cent annually over the next decade. Three alternative scenarios are considered for domestic supply (i) business as usual growth at 3.3 per cent, (ii) a downside scenario with 2.5 per cent growth, and (iii) an upside scenario reflecting the last decade's trend of 4.4 per cent growth.

A comparison of these scenarios indicates that India is unlikely to face aggregate food shortages in the medium term. Under the business-as-usual scenario, domestic production is projected to exceed demand by about 12 per cent by 2035. If the higher growth trajectory is sustained, the surplus could reach around 20 per cent. Even under the downside scenario, although the surplus would narrow, India is expected to remain self-sufficient at the aggregate level.

**Table 10: Projections of emerging scenario of food demand and supply towards 2035**

| 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.*

## 8. Medium and Long Term Perspective

Indian agriculture has strong possibility to grow at 4 per cent or higher. However, domestic demand is projected to grow at a slower pace of 2.5-3.0 per cent per annum (Table 10). Projections upto 2047 indicate a moderate to large surplus in several commodities (NITI Aayog, 2024). According to these estimates domestic production exceeds domestic demand during 2025-26 by about 26 million tonne for rice, 11 million tonne for wheat, 15 mt for milk and 3 mt for fish, and 5 mt for sugar. In contrast, India meets more than 60 per cent of its vegetable oil demand and around 25 per cent of pulses from imports.

### 8.1 Demand Constraint on Growth

To absorb 4% or higher growth in domestic output, will require expansion of demand beyond domestic consumption. Exports represent the most important avenue for absorbing surplus production. This in turn requires domestic prices to be sufficiently lower than prices in overseas destinations. India would need to be efficient producer as well as efficient supplier to tap overseas market. Both cost of production as well as cost of marketing, transport, storage and other logistics need to be reduced using modern technologies, facilitating regulations, scale, and state of the art post-harvest infrastructure.

Food processing offers another major opportunity. Despite rapid growth in demand for processed foods, the share of processing in total output remains low. Import substitution, particularly in edible oils and pulses, can also absorb part of the surplus. In addition, emerging uses of agri-produce for biofuels and industrial applications—especially for crops like maize—provide new demand avenues.

### 8.2 Balancing Prices and Non Prices Factors

Agricultural growth in India has been driven by a combination of price and non price factors including irrigation, diversification, and better technological advancement. Over

time, the role of output prices in pushing agricultural growth has seen big increase (Vaidyanathan, 2010; Birthal et.al. 2024). A part of the rise in real prices of agriculture is associated largely with GOI agricultural price policy effected through MSP and expanded procurement. States have also contributed to it by providing bonuses above MSP. It is observed that role of prices in shaping growth has become so strong that growth trajectory oscillates with rise and fall of (real) prices of agri-food commodities (Chand and Shinoj, 2012).

However, price led growth is not sustainable in the long run. Excessive reliance on price incentives can distort market and weaken competitiveness. Future growth must increasingly rely on technological advancement, efficiency gains, and improvements in infrastructure. This calls for a better balance between expenditure on price support and subsidies on the one hand, and investments in agriculture on the other.

## 8.3 Alternative Instruments for MSP

Agricultural price policy implemented through MSP and public procurement, has benefited the country and economy in several ways. Since 2018, MSP has been fixed at least 50 per cent above A2+FL cost, significantly increasing producer margins. However, market prices in several cases have not kept pace with increase in MSP. The situation turned more serious where states announced bonus over and above the MSP. This resulted in many unintended consequences.

First, it required strong government intervention to bridge the gap between the Minimum Support Price (MSP) and the open market prices. Second, enforcing MSP on the market without regard to demand-side conditions distorted price signals. Third, it discouraged private trade from purchasing directly from farmers, effectively forcing the government to procure most market arrivals to sustain open market prices at MSP, with subsequent disposal entailing substantial losses. Fourth, prices set above market-clearing levels made imports more attractive and weakened export prospects, even in years of surplus. Fifth, it skewed cropping patterns toward MSP-favoured crops such as paddy and wheat, despite the need to expand area under oilseeds and pulses for economic and sustainability reasons.

These challenges call for innovative policy interventions that ensure farmers receive MSP without distorting open market prices. One approach is to combine procurement with price deficiency payments (PDP). Under this framework, the government procures only the quantity required for the Public Distribution System (PDS), welfare schemes, and buffer stocks, while ensuring MSP for the remaining market arrivals through mechanisms such as PDP.

Government is expanding its role in agricultural markets for price stabilization and as an alternative agency for agricultural marketing for healthy functioning of agri-food economy. Public sector agencies like NAFED, NCEL, NCCF are operating in agricultural markets for internal and external trade. Their operations can be dovetailed to support effectiveness of MSP.

## 8.4 Investments in Agriculture

Investments and technology lay the foundation for long term growth by improving infrastructure, efficiency, competitiveness, sustainability and resilience. There are three main sources of investments - public, households and corporates. Household investments in agriculture refer to the investments by farm households and are termed as private investments. It is also pertinent to mention that the concept of "investment in agriculture", as used by the NSO, includes only the investments in production agriculture- the investments in post harvest agriculture like marketing, warehouses, cold storage, cold chains, value chains, and value addition are not included under this head.

Total investment in agriculture increased from Rs.267.6 thousand crore in 2011-12 to Rs.480.7 thousand crore during 2023-24 at 2011-12 prices and Rs.757.9 thousand crore at current prices. They show compound growth rate of 5 per cent in real terms. About 86 per cent investment in agriculture is contributed by farmers. Public sources constitute around 13 per cent. These shares remained more or less same since 2011-12. Corporate sector makes very small investments in agriculture, which just reached 1.2 per cent of total investments in 2023-24, though it shows large improvement over last 12 years (Table 11).

### Table 11: Total and R&D investments in agriculture and allied sectors, 2011-12 and 2023-24

| Source | Investment: Rs. Crore | | Growth rate % | Share of each source in total % | | Share in GVA Agriculture % | |
|---|---|---|---|---|---|---|---|
| | 2011-12 | 2023-24 | | 2011-12 | 2023-24 | 2011-12 | 2023-24 |
| **At 2011-12 prices** | | | | | | | |
| **Public** | 35576 | 63397 | 4.93 | 13.3 | 13.2 | 2.4 | 2.7 |
| **Private** | 229589 | 411319 | 4.98 | 85.8 | 85.6 | 15.3 | 17.4 |
| **Corporate** | 2489 | 5999 | 7.61 | 0.9 | 1.2 | 0.2 | 0.3 |
| **Total** | 267654 | 480715 | 5.00 | 100.0 | 100.0 | 17.8 | 20.3 |
| **At current prices** | | | | | | | |
| **Public** | 35576 | 104527 | 9.40 | 13.3 | 13.8 | 2.4 | 2.1 |
| **Private** | 229589 | 644493 | 8.98 | 85.8 | 85.0 | 15.3 | 13.2 |
| **Corporate** | 2489 | 8918 | 11.22 | 0.9 | 1.2 | 0.2 | 0.2 |
| **Total** | 267654 | 757938 | 9.06 | 100.0 | 100.0 | 17.8 | 15.5 |
| **R&D** | 9355 | 21494 | 7.18 | 3.5 | 2.8 | 0.6 | 0.4 |

*Source: National Accounts data and DST data*

Despite growth in absolute terms, investments share in agricultural GVA remains small. Gross Fixed Capital formation as per cent of GVA agriculture increased from 17.8 per cent to 20.3 per cent at 2011-12 prices while it showed a decline to 15.5 per cent at current prices. Share of public investment in GVA agriculture sector was 2.4 per cent in 2011-12 and further declined to 2.1 per cent in 2023-24 at current prices. This is considered low and inadequate as against the level considered desirable for 4 per cent

growth in agriculture (Planning Commission, 2007).

The decline in share and low level of public investment in agriculture could be a reason for high dependence of agricultural growth on prices. Investments on agriculture R&D, a key driver of productivity, fell from 0.6 per cent of GVA agriculture in 2011-12 to 0.4 per cent in 2023-24.

In order to impart strength to the sector and to expand the basis for long-term growth, there is a need for increase in investment in R&D and other heads included in agricultural investments. In order to sustain 4 per cent growth rate in agriculture, public investment in this sector must increase faster than sectoral income. It is also pertinent to mention that CACP has been making repeated recommendations in its reports on Price Policy, to pay more attention to non price factors for healthy growth of agriculture sector and raising farmers' income.

## 8.5 Agricultural Modernization, Reforms and Exports

Agriculture offers expanding opportunities in high-value, quality-differentiated, attribute-based products and the bioeconomy. Demand for bio-based products is rising rapidly in both domestic and international markets. Realizing this potential requires a conducive policy and market environment, along with new skills, knowledge, and capital for production and value capture.

Experience so far suggests that crop varieties with superior nutritional traits—capable of addressing health concerns while delivering higher farm returns—have not gained widespread adoption. Examples include Quality Protein Maize (QPM) and biofortified varieties of wheat, rice, and millets. A key constraint is that such produce is not visually distinguishable from conventional varieties; when sold in bulk alongside ordinary produce, it fails to command a price premium.

For farmers to benefit from nutritionally superior varieties, marketing systems must support quality testing, traceability, labeling, branding, and segregation. The current agricultural marketing structure, however, does not adequately reward such differentiation. Addressing this gap requires the development of alternative channels—direct farmer-to-buyer linkages (including wholesalers, processors, and consumers) and contract farming arrangements. Farmer Producer Organizations (FPOs) and co-operatives can play a pivotal role in organizing production, aggregation, and marketing of these specialized products. This, in turn, calls for institutional and policy reforms, including in contract farming and land leasing, and in regulatory frameworks such as the Agricultural Produce Market Committee (APMC) Acts and the Essential Commodities Act.

In the post-WTO period, India's share in global exports rose modestly during 1995–2005 but nearly doubled between 2005 and 2021, increasing from 1.21 per cent to 2.36 per cent (Table 12). Over the past two decades, agricultural exports have grown at an average annual rate of 8.9 per cent, compared with 5.6 per cent for global agricultural trade. Notably, agricultural exports have outpaced non-agricultural exports, underscoring their growing role in India's overall export performance.

### Table 12: India and World Agriculture Exports, 1980 to 2024.

| Year | Agriculture $ Billion | | Total $ Billion | | India's share in world export % | |
|---|---|---|---|---|---|---|
| | India | World | India | World | Agriculture | Total |
| **1980** | 2.8 | 298.8 | 8.6 | 2036.1 | 0.95 | 0.42 |
| **1985** | 2.6 | 265.5 | 9.1 | 1952.9 | 0.97 | 0.47 |
| **1990** | 3.5 | 414.7 | 18.0 | 3490.4 | 0.85 | 0.51 |
| **1995** | 6.3 | 589.4 | 30.6 | 5167.2 | 1.07 | 0.59 |
| **2000** | 6.0 | 549.8 | 42.4 | 6452.0 | 1.08 | 0.66 |
| **2005** | 10.3 | 847.7 | 99.6 | 10522.1 | 1.21 | 0.95 |
| **2010** | 23.1 | 1341.6 | 226.4 | 15303.9 | 1.72 | 1.48 |
| **2015** | 34.6 | 1564.6 | 268.0 | 16565.1 | 2.21 | 1.62 |
| **2020** | 38.9 | 1807.2 | 276.4 | 17647.8 | 2.15 | 1.57 |
| **2021** | 50.5 | 2139.4 | 395.4 | 22289.9 | 2.36 | 1.77 |
| **2022** | 54.7 | 2322.8 | 453.4 | 24903.1 | 2.35 | 1.82 |
| **2023** | 51.1 | 2299.5 | 431.6 | 23885.6 | 2.22 | 1.81 |
| **2024** | 52.3 | 2376.8 | 442.8 | 24456.3 | 2.20 | 1.81 |

*Source: WTO Trade Statistics.*

India is also advancing trade liberalization through free trade agreements. The recently concluded India–EU FTA, along with similar agreements, opens new opportunities for exporting high-quality food commodities and processed products. Rising agricultural surpluses are expected to further accelerate export growth. India is projected to have about one-fifth of its production available for export by 2035 (Table 10), compared to about 6 per cent in 2024–25. This expansion could significantly raise India's share in global agricultural trade.

Realizing this potential will require lower logistics costs and a stable, predictable export policy regime. India also holds a niche in organically and naturally produced commodities that are free from chemical residues. Meanwhile, the dairy sector is exhibiting strong and broad-based growth across states, with substantial scope for further expansion. Evidence suggests that Indian milk producers receive prices well below international benchmarks (OECD, 2025), indicating strong underlying competitiveness in the dairy sector.

## 8.6 Sustainability

The prevailing system of farming has placed excessive pressure on natural capital and, without timely corrective action, poses risks to both people and the planet. Future development must explicitly account for the health of critical natural resources—soil, land, water, biodiversity, and the broader environment—to safeguard the well-being of present and future generations. Agriculture is central to this agenda, as it is the largest user of natural resources among all economic activities. Cropped and fallow lands together occupy more than half of the country's reported geographical area, while irrigation accounts for nearly 85–90 per cent of total groundwater extraction.

Groundwater use has exceeded recharge in many regions, leading to a progressive deterioration of aquifers—from safe to semi-critical and critical categories—particularly across the Indo-Gangetic plains. Water quality is also deteriorating in several areas due to arsenic contamination and saline ingress. Arsenic contamination alone affects millions across multiple states, with especially high and often chronic exposure reported in West Bengal, Bihar, Assam, and Uttar Pradesh. Groundwater used for irrigation is a major pathway through which such contamination enters the food chain, posing significant health risks (Alam, Villholth and Podgorski 2021).

Agriculture (including crops and livestock) contributes about 13.44 per cent of the country's greenhouse gas emissions (MOEFCC, 2023 p.73). At the same time, achieving net-zero emissions in agriculture presents considerable challenges, given the sector's essential role in food security and livelihoods. Cropping patterns have narrowed over time, reducing diversity in crops and varieties, while intensive farming practices have diminished the presence of many plant species and beneficial insects that were common prior to the Green Revolution.

Soil health has also emerged as a major concern. Empirical evidence points to widespread deficiencies in both macronutrients (nitrogen, phosphorus, potassium) and micronutrients such as sulphur, zinc, iron, copper, and manganese. These deficiencies adversely affect soil fertility, crop productivity, nutritional quality, and human health (Sahu et al., 2026). Soil organic carbon levels—an important indicator of soil health—are declining; recent soil testing indicates that nearly half of sampled soils have low organic carbon content (below 0.5 per cent) (Sahu et. Al. 2025). In addition, soil erosion continues to drive land degradation, with the affected area increasing over time (ISRO, 2021).

Existing policy incentives—particularly those related to input and output pricing—often encourage resource-intensive crops and practices and need careful review and reform. For instance, unmetered and highly subsidized electricity for irrigation has contributed significantly to groundwater overextraction. There is, therefore, an urgent need to promote the judicious and sustainable use of natural resources. This requires a reorientation of policies, practices, and technologies, alongside a transition towards a food systems approach, as advocated by United Nations and other global institutions.

Transitioning to metered power supply, combined with direct benefit transfers (DBT) to compensate farmers, instead of free power can help align incentives with sustainability goals without adversely affecting farm incomes. Similarly, reforming fertilizer subsidies through DBT can promote balanced and efficient nutrient use and use of organic sources of nutrients.

Reducing agricultural emissions remains a critical challenge, especially where mitigation options must not compromise food security. Promising technologies are emerging, such as Direct Seeded Rice and aerobic cultivation, which can significantly reduce emissions from paddy fields. Conservation practices like zero tillage—

widely adopted in countries such as Argentina and Brazil—offer additional potential to lower costs and emissions.

In recent years, crop residue burning has become a major source of air pollution and greenhouse gas emissions. However, viable alternatives exist, including in-situ residue management and its use as feedstock for bioenergy. Government initiatives such as SATAT and second-generation (2G) ethanol programmes are demonstrating encouraging progress in converting agricultural waste into energy. The policy objective should be to eliminate crop residue burning and promote the productive use of agricultural waste.

## 8.7 Bio Economy and Bio Inputs

Globally, consumer preferences are increasingly shifting toward bio-based materials, moving away from chemical- and petroleum-derived products. A similar transition is evident in food systems, with rising demand for produce grown using bio-inputs rather than synthetic fertilisers, chemical pesticides, herbicides, and preservatives. Plant-based proteins, nutraceuticals, and bio-based industrial products such as bioplastics are also gaining traction. At the same time, the bioeconomy offers viable pathways to substitute environmentally damaging products—particularly fossil fuels—with renewable bioenergy.

The bioeconomy spans a wide range of domains, including biotechnology, biopharmaceuticals, biochemicals, and the circular bioeconomy. It encompasses concepts such as waste-to-wealth and the green economy, reframing agricultural residues and organic waste as valuable resources rather than environmental liabilities (Khanna et al, 2024).

India's historical experience aligns closely with the principles of a bioeconomy. Its traditional mixed crop–livestock production systems exemplify circularity, wherein crop residues are utilized as livestock feed and animal waste is recycled as organic manure to sustain soil fertility and crop production. Similarly, systems such as Ayurveda are rooted in the use of plant-based materials for prevention, cure, and holistic health. In this context, the bioeconomy is not a new paradigm for India, but rather a modern articulation of long-standing practices.

In recent years, there has been a discernible shift toward circularity and reduced reliance on synthetic inputs in agriculture. This transition is reflected in the growing adoption of approaches such as organic farming, natural farming, and *Bhartiya Prakritik Krishi Paddhati*. Both the Union and state governments are actively promoting these systems, and products derived from such methods are increasingly preferred by consumers.

Policy initiatives have also focused on scaling up bioenergy. Under the SATAT and GOBAR-DHAN schemes, the government is promoting the establishment of compressed biogas (CBG) plants that convert agricultural residues, cattle dung, and municipal solid waste into clean fuel. These initiatives not only generate renewable energy but also help curb crop residue burning and produce nutrient-rich slurry for agricultural use. Producers are assured a minimum support price for CBG supplied to oil marketing

companies. As per recent reports, over 130 CBG plants are operational, with a combined production capacity of around 920 tonnes per day. The long-term target is to establish 5,000 plants, producing 15 million tonnes per annum, alongside a phased CBG blending mandate beginning at 1 percent in 2025–26 and rising to 5 percent by 2028–29.

Ethanol production has also expanded significantly—from about 380 million litres in 2014 to over 6,600 million litres by mid-2025. India has nearly achieved 20 per cent ethanol blending in petrol, five years ahead of the 2030 target. This progress has contributed to reducing import dependence on fossil fuels while advancing climate mitigation goals.

Maize is emerging as a key feedstock for ethanol production, with output nearly doubling between 2015–16 and 2024–25. Currently, more than half of ethanol production is maize-based. Several states have adopted high-yielding maize hybrids, achieving productivity levels exceeding 7 tonnes per hectare. The spread of such technologies is expected to further boost maize output, supporting both ethanol expansion and the availability of by-products such as distillers dried grains with solubles (DDGS) for livestock feed.

Going forward, a calibrated transition toward a bioeconomy will be critical for addressing sustainability challenges, enhancing resource-use efficiency, and improving overall societal welfare.

## 8.8 Future of Smallholders

It emerges from the survey of recent literature that no level of labour advantage or efficiency can make very small and tiny holdings economically viable (Mishra and Singh, 2021). Second, income from non farm sources, especially wages, is the major contributor to the household income of marginal farmers who constitute more than 70 per cent of total land holding farm houses.

The key implication is that small and marginal land holdings are in a serious disadvantage in terms of crop productivity and scale. Multi-pronged strategy is needed to raise income and to improve livelihood of such farmers. Land lease market should be liberalized to help such farmers to improve their income either by leasing in land and expand farm size, or, by leasing out their land and work full time in non farm occupations without loosing rental income on agricultural land. Scale and cost disadvantage of small farmers should be addressed by extending support for small farm mechanization and institutional mechanisms like self help groups, co-operatives and FPO to share lumpy units, pool resources and market as a group. Maximum emphasis should be placed on job creation in secondary agriculture, post harvest value chain, agro processing and non farm rural activities. There is lot of emphasis on developing tier 2 and tier 3 towns as growth hubs. Appropriate skilling of workforce at small holders can help many to get better income in such urban places. Most of small farmers will be served better by a part-time farming combined with part-time non-farm employment, particularly in areas close to their place of residence. Rapidly rising participation of women in farm work in recent years further lend support to male members to go for non farm employment to augment their family income.

## 8.9 Structural Changes in Output and Employment

Various theories of economic development imply a declining share of agriculture in both national income and employment as economies grow and per capita incomes rise. Historical evidence, however, shows that the decline in agriculture's share of employment has been much slower than the decline in its income share across most countries (Chand, 2024b).

For India, changes in the sectoral composition of output (GVA) are presented in Table 13, while shifts in the occupational structure over the past two decades are shown in Table 8. The output series with base year 2011–12 indicates a steady decline in agriculture's share in total GVA—from 22.64 per cent in 2004–05 to 14.66 per cent in 2023–24 at constant prices. The decline is less pronounced at current prices, reflecting relatively higher growth in agricultural prices compared to overall and manufacturing prices during this period. Nevertheless, the shift in output composition towards non-agricultural sectors is clear and unmistakable.

**Table 13: Changes in structure of Indian economy 2004-05 to 2023-24 at current and constant prices**

| Share in GVA | 2004-05 | 2011-12 | 2017-18 | 2023-24 |
|---|---|---|---|---|
| **At current prices** | | | | |
| **Agriculture** | 19.54 | 18.53 | 18.25 | 17.79 |
| **Manufacturing** | 17.36 | 17.39 | 16.55 | 14.31 |
| **Services** | 48.40 | 48.97 | 52.54 | 54.40 |
| **At 2011-12 prices** | | | | |
| **Agriculture** | 22.64 | 18.53 | 15.29 | 14.66 |
| **Manufacturing** | 15.58 | 17.39 | 18.36 | 17.50 |
| **Services** | 46.86 | 48.97 | 53.33 | 54.53 |

*Source: Author's estimates using data from National Accounts Statistics, Press Note 7 Jan 2026, NSO.*

To achieve the income levels envisioned under the goal of *Viksit Bharat*, the Indian economy would need to grow at an average annual rate of about 8 per cent over the next 23 years over the base 2024-25. The experience of Asian peers, particularly China, suggests that during such structural transformation, the agriculture sector typically grows at around 4–5 per cent annually. India's trajectory is likely to be similar. Supply-side factors indicate that Indian agriculture has the potential to sustain growth in the range of 4–5 per cent in the short to medium term. Under this scenario, the share of agriculture in total output is projected to decline from present 17.94 per cent at 2024–25 prices to around 8.24 per cent by 2047–48 (Table 14).

**Table 14: Current and projected size of total economy and agriculture sector by 2047 at 2024-25 prices**

| GVA, GDP: Rs. Trillion | Current 2024-25 | Proj. 2047 |
|---|---|---|
| **Total GVA at 2024-25 prices** | 300.22 | 1797.76 |
| **Agri and allied** | 53.85 | 148.21 |
| **Total GDP** | 330.68 | 1941.58 |
| **Share of agriculture in total GVA %** | 17.94 | 8.24 |

*Source: Author's estimates using data from National Account Statistics base 2011-12.*

As already mentioned in Section 6, the male labour in agriculture which constituted 40.24 per cent of total male workforce in 2017-18 declined to 36.30 in year 2023-24. If this change continues in future the share of male agriculture workers in total male workers is estimated to reach 20.5 per cent by 2047.

The trends in share of agricultural and non-agricultural sectors in total income of the economy and in total male employment in the country have consistently declined since 2004-05. This shows that structural changes in India's economy and workforce are heading in right direction and the gap between share of agriculture in male workforce and GVA is consistently narrowing down.

## 9. Conclusions and the Way Forward

India's agriculture has witnessed unprecedented progress during the decade 2015-16 to 2024–25, recording the highest-ever growth in both output and farm income. The growth rate of agricultural GDP during this period stands among the highest globally. This performance resulted from a strong policy thrust, innovative initiatives, and institutional strengthening that are transforming the rural and agrarian landscape.

Targeted interventions in irrigation sector, price support, risk management, expanded credit supply, digital access, and improved market linkages—have eased constraints across production and agri-value chains. These efforts have incentivized farmers to enhance productivity, efficiency, and diversification towards high value crops, dairying and fishery. Some states have accelerated growth by embracing high yielding field crops like paddy. Importantly, the growth process has been qualitatively superior, marked by demand-led diversification towards high-value crops, horticulture, livestock, and fisheries. This has broadened the geographical and structural base of agricultural growth, making it more inclusive and regionally balanced.

A notable feature of this period is the improved stability and resilience of agricultural output, despite climatic shocks and global disruptions. This resilience reflects technological progress, expanded irrigation, better risk management systems, and diversification of income sources. At the same time, agriculture has continued to serve as a social and economic stabilizer by absorbing a significant share of the workforce, including rising participation of women.

## Changing Production Patterns and Consumption Dynamics

In most states, horticulture has outpaced field crops, while eastern states benefiting from the spread of the Green Revolution and states like Telangana—with rapid expansion in irrigation—have witnessed strong growth in field crops. Livestock has performed robustly across states, and fishery has emerged as the fastest-growing sub-sector in many regions.

Food production is increasing much faster than population, leading to higher per capita availability and a more diversified consumption basket. Consumption patterns are shifting away from cereals and sugar towards fruits, vegetables, livestock products, and fish. Notably, per capita consumption of dry fruits has increased more than threefold between 2011–12 and 2022–23. These trends reinforce the need for continued diversification towards high-value agriculture.

However, improving nutritional outcomes requires targeted policy support. Low-income populations need access to affordable, nutritious foods beyond cereals, while higher-income groups require greater awareness of balanced diets as preferences shift toward quality food.

## Demand–Supply Imbalance and Emerging Opportunities

As agriculture moves towards a growth trajectory exceeding 4 per cent, demand-side factors are becoming increasingly important. Aggregate food demand is projected to grow at around 2.5 per cent annually, compared to over 4 per cent growth in supply. This implies a potential surplus of nearly 20 per cent by 2035.

Managing this surplus will require expanding alternative demand channels. Exports represent the largest opportunity, but competitiveness must improve through reductions in production and logistics costs, supported by better technology, infrastructure, and regulatory frameworks. At the same time, demand can be strengthened through agro-processing, import substitution (particularly in edible oils and pulses), and the use of agricultural produce in biofuels and industrial applications.

The low share of processing in total output, despite rapidly growing demand for processed foods, highlights a major untapped opportunity for value addition and employment generation.

## Drivers of Growth and the Need for Rebalancing

Agricultural growth has been driven by a combination of price and non-price factors, including irrigation, diversification, and technological improvements. However, the increasing reliance on output prices raises concerns about sustainability, as price-led growth is inherently unsustainable.

Future growth must increasingly rely on technological advancements, efficiency improvements, and stronger institutions. This requires rebalancing public expenditure away from excessive reliance on price incentives and input subsidies towards higher investment in research,

infrastructure, and innovation. Low public investment remains a key constraint and must increase faster than agricultural income to sustain a 4 per cent growth trajectory. At the same time, policies must attract start ups and corporate investment into agriculture.

### Reforming Price Policy and Market Systems

Minimum Support Price (MSP) and procurement policies have played a critical role in supporting farmers and ensuring food security. However, the gap between MSP and market prices in several crops is creating distortions, including excessive government procurement, crowding out of private trade, fiscal burdens, reduced export competitiveness, and skewed cropping patterns.

A more balanced approach is needed to ensure income support without distorting markets. A combination of limited procurement for public needs and price deficiency payments (PDP) for the remaining produce can achieve this objective more efficiently.

At the same time, the agricultural marketing system must evolve to support diversification and value addition. Alternative marketing channels—such as direct farmer-to-buyer linkages, contract farming, and aggregation through Farmer Producer Organizations (FPOs) and co-operatives need to be strengthened. This requires complementary reforms in land leasing, contract farming frameworks, and agricultural marketing regulations.

### Trade, Exports, and Global Integration

India's agricultural exports have grown faster than global trade over the past two decades, reflecting rising strength of domestic production. Free trade agreements offer new opportunities for high-quality and processed food exports.

To fully realize this potential, India must reduce logistics costs, ensure stable export policies, and build reliable value chains. There is also strong potential in niche segments such as organic and natural farming products. The dairy sector, in particular, offers significant scope for export expansion.

### Sustainability and Resource Management

Sustainability challenges are becoming increasingly critical. Agriculture is the largest user of natural resources, and groundwater over-extraction—especially in the Indo-Gangetic plains—has reached alarming levels. Soil health is deteriorating due to nutrient imbalances, declining organic carbon, and erosion, contributing to land degradation. The sector also contributes significantly to greenhouse gas emissions.

Policy distortions in input pricing, particularly free or heavily subsidized electricity and fertilizers, have exacerbated these challenges. Transitioning to more efficient systems—such as metered electricity combined with direct benefit transfers (DBT) and reform of fertilizer subsidies—can promote sustainable resource use.

Technological innovations, including Direct Seeded Rice, improved residue management, and bioenergy initiatives, offer practical solutions for reducing environmental impact. The emerging bio-economy—encompassing bio-based materials, plant-based proteins, and biofuels—presents new opportunities for sustainable growth.

### Structural Transformation

India is undergoing structural transformation, with agriculture's share in gross value added projected to decline from about 18 per cent to around 8 per cent by 2047. At the same time, the share of agricultural workers—particularly male workers—is steadily declining, indicating gradual alignment between sectoral output and workforce distribution. The male labour in agriculture, which constituted 40.24% of total male workforce in 2017-18 and 36 per cent in 2023-24, is projected to decline to 20 per cent by 2047.

### Sum Up

India is well positioned to leverage its growing agricultural surplus to drive a transition towards a more sustainable, diversified, and globally competitive agri-food system. This transformation must be anchored in judicious use of natural resources, climate-resilient practices, stronger and more integrated value chains, and a strategic expansion of export markets. At the same time, sustaining agricultural growth beyond 4 per cent will require a decisive shift from input-driven expansion to efficiency-led growth, with a sharper focus on competitiveness, resource use efficiency, and environmental sustainability. Policy frameworks must realign incentives with long-term national objectives so that growth is not only faster, but also more resilient, inclusive, and sustainable.

Achieving sustained agricultural growth above 4 per cent will be central to realizing the vision of *Viksit Bharat @2047*. This calls for a regionally differentiated strategy, recognizing that states are at varying stages of development and productivity. In some regions, the priority will be to harness and deepen the gains from Green Revolution technologies, supported by appropriate price incentives. In others, diversification towards high-value crops will be critical, while a few regions offer significant potential for high-value, quality-driven, and high tech agriculture. Overall, India's agricultural transformation will hinge on accelerating the adoption of new technologies, embracing innovations, strengthening market linkages, and advancing a policy regime that consistently promotes efficiency, competitiveness, and sustainability.

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