



DAILY EDITORIAL ANALYSIS

TOPIC

**ACCELERATING INDIA'S
AGRICULTURAL TRANSFORMATION**

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ACCELERATING INDIA'S AGRICULTURAL TRANSFORMATION

Context

- India's agriculture sector is evolving rapidly, linking from *biofuels and food processing to agri-tech and organic farming* that demands a **systems-level approach** rooted in **farmer-centric policy, innovation, and technology**.

<u>India's Agriculture Sector</u>		
● Contribution	to	GDP
(agriculture & allied activities):		
16% (approx.)		
● Employment	Generation:	
About 46.1% of the population		

Need of Agricultural Transformation in India

- Rising Demand for Food Security:** Sustainable farming practices and technological advancements are crucial to meeting future demand.
- Climate Change and Environmental Concerns:** Erratic weather patterns, soil degradation, and water scarcity threaten agricultural output.
 - Soil degradation affects nearly **30% of India's land**, jeopardizing productivity and long-term food security.
- Economic Growth and Farmer Welfare:** Transforming the sector through better market access, financial inclusion, and value-added processing can improve livelihoods.
- Technological Advancements:** Digital tools, AI-driven precision farming, and smart irrigation systems can optimize yields and reduce losses.
 - The adoption of modern technology is key to making Indian agriculture more efficient.
- Global Competitiveness:** India is a major food producer, but enhancing agricultural exports and ensuring quality standards will strengthen its global position.
 - Policy reforms and infrastructure development are essential for this.

Challenges in Agricultural Transformation

- Land Fragmentation:** Shrinking farm sizes and lack of accurate land records make it difficult for farmers to generate sufficient income.
 - 82% of farmers in India are small or marginal.**
- Infrastructure and Market Access:** Limited storage facilities, transportation bottlenecks, and market volatility affect profitability.
- Policy and Regulatory Framework:** While government initiatives like **PM-KISAN** and **e-NAM** support farmers, regulatory uncertainties and subsidy inefficiencies remain challenges.
- Climate and Resource Constraints:** Water scarcity and excessive fertilizer use impact soil health and long-term sustainability.

India's Agricultural Transformation

- Soil Health:**
 - Balanced fertilizer use** — including micronutrients and organics — is essential.
 - Soil Health Card initiative**, covering over 140 million farmers, provides a critical data-driven baseline.
 - Union Budget (2025)** prioritizes subsidy diversification and promotes **organic inputs**.

- **Global Competition:**

- ♦ Encouraging indigenous crops like **millets and makhana** aligns India with the global push for clean, nutritious food.
- ♦ Achieving **edible oil self-reliance** through oilseed R&D and infrastructure could reduce the \$18 billion import bill.

- **Role of Technology:**

- ♦ **Precision agriculture** is no longer aspirational—it's imperative. Technologies like **AI, drones, IoT, and satellites** are reshaping farming:
- ♦ AI can **increase yields by 20%** and **cut input costs by 15%** (National Academy of Agricultural Sciences).
- ♦ Platforms such as **AgriStack, Kisan e-Mitra**, and **UFSP** are making digital agriculture inclusive.
- ♦ The **IndiaAI Mission** needs to focus on localization, global benchmarking, and civil society collaboration.

- **Sustainable Energy: Greening Agri-Supply Chains:**

- ♦ India's goal of **500 GW of solar capacity by 2030** offers a bold roadmap.
- ♦ Innovations like **floating solar farms, AI-based wind mapping**, and **rural grid integration** can transform agriculture into a net contributor to clean energy.

- **Climate Resilience Agriculture:** Climate extremes — droughts, floods, heatwaves — are now **structural risks** in Indian agriculture. Building resilience is essential:

- ♦ Adoption of **stress-tolerant seeds, smart irrigation**, and **agroforestry** must scale.
- ♦ Over **10 million hectares** now use micro-irrigation; over **1 million farmers** practice agroforestry.

Way Forward: Farmer Empowerment

- The Union Budget (2025) allocates **\$2 billion in agricultural credit**.
- **Agri-extension networks** need to expand, driven by both public and private actors.
- Allied sectors like **dairy, poultry, and fisheries**, already supporting **70 million households**, are crucial for income diversification and stability.
- The future of Indian agriculture cannot rest on policy alone. It demands **strategic collaboration** between Government, Industry, Academia, Civil society, and Farmers.
- The shift must be from fragmented interventions to **long-term partnerships**. India must aim not only to feed its population but to lead in **sustainable, inclusive, and high-value agriculture**.

Source: BL

Mains Practice Question

[Q] How can technological advancements and sustainable farming practices accelerate India's agricultural transformation while ensuring farmer welfare and global food security?

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