#RiseWithRICE

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for

IAS MAINS EXAMINATION

From

16th Nov to 20th Nov 2026

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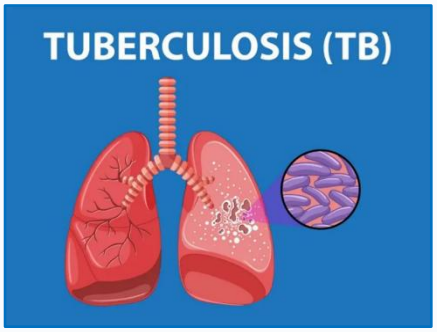
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GENERAL STUDIES 2

1.1. HEALTH

1.1.1. TB-FREE INDIA: PROGRESS AND PERSISTENT GAPS



Context

India set an ambitious target of eliminating Tuberculosis (TB) by 2025, five years ahead of the global SDG deadline of 2030, reflecting its commitment to accelerating public health outcomes. However, the WHO's Global TB Report 2026 highlights the persistent disease burden and the gap in achieving this target.

Introduction

India has made notable progress in expanding TB diagnosis, treatment coverage and community-based interventions, alongside a decline in TB mortality. However, the unmet 2025 elimination target underscores the need to build on these gains by addressing healthcare gaps and the socio-economic determinants of TB.

India's TB Elimination Targets

India's National Strategic Plan for TB Elimination (2017–2025) envisaged:

- 80% reduction in TB incidence: From 217 cases per lakh population in 2015 to 43 per lakh by 2025.
- 90% reduction in TB mortality: From 32 deaths per lakh population to 3 per lakh by 2025.
- Zero catastrophic costs: Ensuring TB-affected households do not face catastrophic expenditure due to the disease.

Why Has India Missed the TB Elimination Target?

A. Health system and diagnostic challenges

- Undetected cases: Delayed diagnosis and undiagnosed infections sustain transmission within communities.
- Uneven access: Remote areas and vulnerable populations face barriers to testing, treatment and follow-up.
- Private sector fragmentation: A large share of patients seeks private care, creating challenges in notification, treatment continuity and standardisation of care.

B. Socio-economic determinants

- Undernutrition: Weakens immunity and increases the risk of progression from TB infection to active disease.
- Poor living conditions: Crowded housing and inadequate ventilation facilitate transmission.
- Economic vulnerability: Travel, diagnostic expenses, nutritional requirements and wage loss can create financial distress and treatment interruptions.

C. Drug-resistant TB

- Drug resistance complicates treatment, increases treatment duration and costs and raises the risk of poorer outcomes.
- Identification of drug-resistant cases and access to appropriate regimens remain critical challenges.

D. Limitations of a predominantly medical approach

- TB elimination requires addressing nutritional deprivation, poverty, housing and occupational vulnerabilities alongside diagnosis and treatment.
- Expansion of screening and notification alone cannot eliminate transmission without sustained preventive and social interventions.

Government Initiatives and Recent Progress

1. **National TB Elimination Programme (NTEP):** Provides free diagnosis, treatment, prevention and patient support services.
2. **TB Mukt Bharat Abhiyaan:** Strengthens active case-finding, screening and community mobilisation.
3. **Rapid molecular diagnostics:** Expands early detection and identification of drug resistance.
4. **Ni-kshay Poshan Yojana:** Nutritional financial support for TB patients.
5. **Ni-kshay Mitra initiative:** Community participation in nutritional, social and other patient support.
6. **Shorter drug-resistant TB regimens:** All-oral regimens such as BPaLM for eligible patients reduce treatment burden.

Way Forward

1. **Strengthen active case-finding:** Expand community-based screening and targeted interventions among high-risk populations.
2. **Improve diagnostic access:** Scale up rapid molecular testing, drug-susceptibility testing and decentralised diagnostic services.
3. **Address social determinants:** Integrate TB elimination with nutrition, housing, sanitation and social protection programmes.
4. **Reduce catastrophic costs:** Strengthen nutritional support, patient assistance and livelihood protection to ensure treatment adherence.
5. **Strengthen private sector engagement:** Improve mandatory notification, standardised protocols and continuity of treatment.
6. **Combat drug resistance:** Ensure early drug-susceptibility testing and wider access to shorter, effective regimens.
7. **Improve surveillance:** Strengthen real-time data systems, prevalence surveys and district-level monitoring for evidence-based policymaking.

Conclusion

India's path towards a TB-free future lies in shifting from treatment-led control to prevention-driven healthcare. Stronger surveillance, accessible diagnostics and social protection will be crucial to achieving sustainable TB elimination.

Q. *India's fight against tuberculosis requires a shift from a disease-centric approach to a comprehensive socio-economic strategy. Discuss.* ***15 Marks***

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2.1. AGRICULTURE

2.1.1. REBALANCING INDIA'S RICE ECONOMY

Context

India's position as the world's largest rice exporter highlights a growing policy dilemma: sustaining export competitiveness while addressing groundwater depletion, energy consumption and greenhouse gas emissions associated with intensive rice cultivation.



Introduction

India's rice economy must transition from volume-driven production towards resource-efficient, high-value and climate-resilient agriculture to reconcile export growth with ecological sustainability and farmers' long-term welfare.

Significance Of India's Rice Economy: Dimension-Wise Analysis

1. **Economic and Export Dimension**
   - **Global export leadership:** India has remained the world's largest rice exporter since 2012, accounting for approximately **30–35% of global rice exports**, strengthening its agricultural trade competitiveness.
   - **Foreign exchange earnings:** Rice export value increased from **$8.82 billion (2020–21) to $12.47 billion (2024–25)**, supporting export diversification and foreign exchange generation.
2. **Agricultural and Farmers' Income Dimension**
   - **Livelihood security:** Rice cultivation supports millions of farming households, agricultural labourers and allied enterprises, particularly in eastern and northern India.
   - **Value realisation:** In 2025–26, Basmati exports earned approximately **₹50,138 crore from 6.52 million tonnes**, highlighting the potential of premium varieties and quality-based exports.
3. **Environmental and Water Security Dimension**
   - **Groundwater sustainability:** Intensive paddy cultivation in Punjab, Haryana and western Uttar Pradesh increases groundwater extraction, threatening long-term agricultural and drinking-water security.
   - **Virtual water trade:** Rice exports indirectly transfer freshwater resources embedded in production, making **blue-water consumption per tonne of exported rice** an important sustainability indicator.
4. **Climate and Ecological Dimension**
   - **Greenhouse gas emissions:** Flooded paddy fields generate methane, while excessive nitrogen fertiliser application contributes to nitrous oxide emissions, increasing agriculture's climate footprint.

- **Ecological sustainability:** Intensive monocropping, excessive chemical inputs and repeated puddling can degrade soil health and reduce agro-biodiversity.

5. **Food Security and Social Dimension**
   - **National food security:** Rice is a major staple food and an important component of India's PDS and foodgrain procurement system, supporting nutritional and consumption security.
   - **Rural employment:** Rice production generates employment across cultivation, milling, processing, transportation and agricultural marketing, strengthening rural livelihoods.
6. **Technological and International Trade Dimension**
   - **Agricultural modernisation:** Technologies such as **Alternate Wetting and Drying (AWD), Direct Seeded Rice (DSR) and Integrated Nutrient Management (INM)** improve resource-use efficiency and reduce environmental costs.
   - **Global strategic importance:** India's rice exports support food availability in developing countries, particularly in Africa and Asia, strengthening its position in international agricultural trade.

Major Challenges In Rebalancing India's Rice Economy

1. **Economic and Institutional Challenges**
   - **MSP-procurement dependency:** Assured procurement of rice and wheat in Punjab and Haryana reinforces water-intensive paddy cultivation and discourages crop diversification.
   - **Limited alternative markets:** Inadequate procurement infrastructure and remunerative prices for pulses, oilseeds and millets make farmers reluctant to shift away from rice.
2. **Groundwater Depletion and Irrigation Challenges**
   - **Excessive groundwater extraction:** Agriculture accounts for approximately **87% of India's total groundwater extraction (213.29 BCM)**, intensifying pressure on aquifers in major rice-producing regions.
   - **Subsidised electricity:** Free or highly subsidised agricultural power reduces groundwater pumping costs, encouraging excessive irrigation and inefficient water consumption.
3. **Technological and Agronomic Challenges**
   - **Limited DSR adoption:** Weed infestation, specialised machinery requirements and inadequate technical knowledge restrict the adoption of Direct Seeded Rice.
   - **Research-extension gap:** Inadequate access to climate-resilient seeds, precision irrigation and region-specific agricultural technologies limits sustainable farming practices.
4. **Climate Change and Environmental Challenges**
   - **Agricultural greenhouse gas emissions:** Flooded paddy fields generate methane, while excessive nitrogen fertiliser application contributes to nitrous oxide emissions, increasing agriculture's carbon footprint.
   - **Soil degradation:** Continuous monocropping, repeated puddling and excessive chemical inputs adversely affect soil health, fertility and agro-biodiversity.

5. **Food Security and International Trade Challenges**
    - **Domestic-export trade-off:** India's rice export restrictions during 2022–24 demonstrated the difficulty of balancing domestic food security, consumer affordability and export competitiveness.
    - **Global market uncertainty:** Geopolitical tensions, international price fluctuations and inconsistent export policies affect India's reliability as a major global rice supplier.

Government Initiatives And Policy Measures

1. **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**

    The scheme promotes improved irrigation infrastructure, water conservation and efficient water utilisation through its *Per Drop More Crop* component.

2. **Crop Diversification Programme (CDP)**

    Implemented under PM-RKVY, the programme encourages farmers in Punjab, Haryana and western Uttar Pradesh to shift from paddy towards pulses, oilseeds, millets and other alternative crops.

3. **Soil Health Card Scheme**

    It provides farmers with information on soil nutrient status and recommendations for balanced fertiliser application, supporting efficient nutrient management.

Way Forward

1. **Value-based Export Strategy:** Promote premium Basmati, GI-tagged regional varieties, quality certification and modern processing to maximise export earnings per tonne rather than increasing export volumes.
2. **Region-Specific Crop Diversification:** Shift water-stressed regions towards pulses, millets and oilseeds through assured procurement, remunerative prices and transitional incentives for farmers.
3. **Sustainable Water Management:** Scale up **Alternate Wetting and Drying (AWD), Direct Seeded Rice (DSR), aquifer mapping and rainwater harvesting** to improve irrigation efficiency and groundwater sustainability.
4. **Low-Carbon Rice Cultivation:** Promote Integrated Nutrient Management, methane-reducing irrigation practices, climate-resilient rice varieties and solar-powered irrigation to reduce agricultural emissions.
5. **Technology-Driven Agricultural Governance:** Strengthen ICAR research, KVK-based farmer training, satellite-based crop monitoring and a **Water-Carbon-Value framework** to measure resource efficiency and sustainable export performance.

Conclusion

India must move beyond measuring rice-sector success through production and export volumes alone. A sustainable rice economy should maximise farmers' income and export value while minimising groundwater depletion, energy consumption and carbon emissions, ensuring long-term food and ecological security.

Q. *What are the major factors responsible for making rice-wheat system a success? In spite of this success how has this system become a bane in India?* ***15 marks***

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