PrepAlpine

The Next-Generation UPSC Institution

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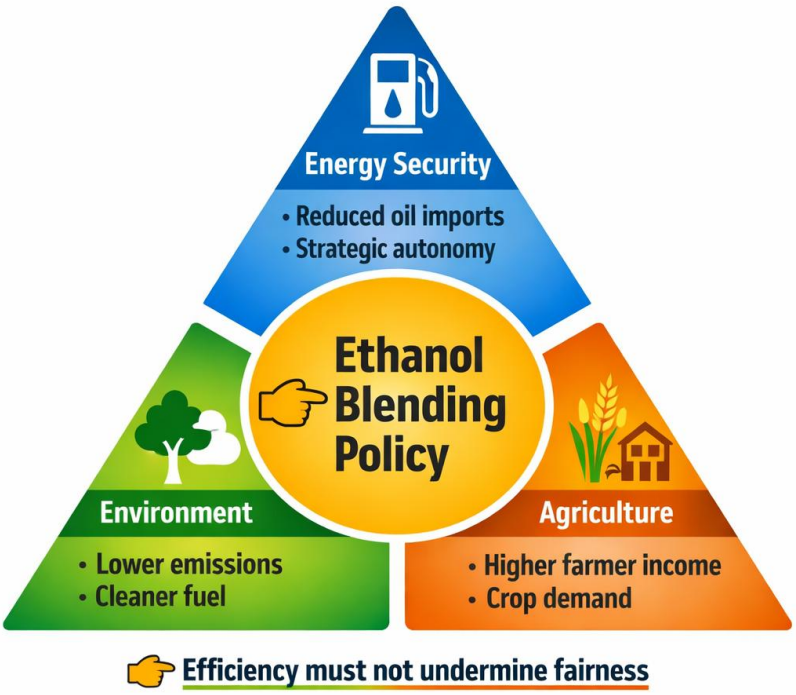
DAILY CURRENT AFFAIRS DATED 24.03.2026

GS Paper II: Current Affairs

1. Ethanol Blending in India: Energy Security with Sustainability Concerns

a. Introduction

India's rapid economic growth has led to a steady rise in energy demand, especially for transport fuels. At present, the country depends heavily on crude oil imports, making it vulnerable to global price fluctuations and geopolitical uncertainties. In this context, ethanol blending has emerged as a strategic solution to reduce import dependence while promoting cleaner energy and supporting the rural economy.



b. Understanding Ethanol Blending

What is Ethanol?

- Ethanol is a biofuel made from agricultural sources like sugarcane, maize, and surplus grains.
- It is renewable, unlike fossil fuels such as petrol and diesel.

What is Ethanol Blending?

- It refers to mixing ethanol with petrol in fixed proportions.
- Example: E20 means 20% ethanol + 80% petrol.

Key Advantage

- Allows gradual shift from fossil fuels to cleaner alternatives.
- Does not require immediate large-scale infrastructure change.

Thus, ethanol blending is a transitional energy strategy rather than a complete replacement.

c. Rationale for Ethanol Blending in India

Enhancing Energy Security

- Reduces dependence on imported crude oil.
- Protects the economy from global oil price shocks.
- Strengthens strategic autonomy.

Environmental Benefits

- Ethanol burns cleaner than petrol.
- Reduces greenhouse gas emissions and air pollutants.
- Helps India meet climate commitments.

Augmenting Farmer Income

- Provides additional demand for crops like sugarcane and maize.
- Helps absorb surplus production.
- Stabilises agricultural prices.

Efficient Resource Utilisation

- Uses damaged or surplus grains that would otherwise go waste.
- Promotes a circular economy approach.

d. India's Progress and Policy Momentum

Rapid Increase in Blending Levels

- Ethanol blending has increased from very low levels to around 20%.
- India has achieved its blending targets faster than expected.

Expansion of Feedstock Base

- Earlier focused mainly on sugarcane.
- Now includes grains like maize and rice.

Policy Support

- Government incentives for ethanol production.
- Coordinated efforts between agriculture and energy sectors.
- Pricing mechanisms to encourage supply.

e. Lessons from the Brazilian Experience

Long-Term Commitment

- Brazil has maintained high blending levels for decades.
- Policy continuity has ensured stability.

Technological Innovation

- Development of flex-fuel vehicles — can run on petrol or ethanol.
- Adaptation of engines to higher ethanol blends.

Key Takeaway for India

- Gradual transition is more effective than sudden change.
- Technology and policy must evolve together.

f. Strategic Importance for India

Economic Benefits

- Reduces import bill and saves foreign exchange.
- Supports domestic industries and agriculture.

Rural Development

- Creates demand for agricultural produce.
- Enhances rural income and employment.

Energy Transition Role

- Acts as a bridge between fossil fuels and future clean energy like EVs.
- Provides immediate, scalable solution.

Thus, ethanol blending connects energy, agriculture, and environment policies.

g. Challenges and Concerns

Food Security Concerns

- Use of food crops for fuel may reduce availability for consumption.
- Risk of rising food prices.

Water and Environmental Stress

- Sugarcane is highly water-intensive.
- Expansion may worsen water scarcity in some regions.

Infrastructure Constraints

- Need for storage, transport, and distribution systems.
- Logistics gaps can reduce efficiency.

Technological and Vehicle Issues

- Most vehicles are not designed for high ethanol blends.
- Requires engine modifications and flex-fuel vehicles.

Policy and Pricing Challenges

- Different tax structures for petrol and ethanol.
- Pricing distortions affect competitiveness.

h. Way Forward

Gradual Scaling

- Increase blending targets step by step.
- Avoid sudden disruptions in fuel and agriculture markets.

Diversification of Feedstock

- Reduce dependence on sugarcane.
- Promote alternative sources like maize, agricultural waste, and second-generation biofuels.

Technological Adaptation

- Promote flex-fuel vehicles.

- Encourage research in engine compatibility.

Infrastructure Development

- Invest in storage and transport systems.
- Strengthen supply chains.

Policy Reforms

- Rationalise taxation.
- Ensure stable and predictable pricing mechanisms.

Sustainability Focus

- Balance energy goals with food security.
- Promote water-efficient crops and practices.

Conclusion

Ethanol blending represents a significant step towards achieving energy security, environmental sustainability, and agricultural resilience in India. Its strength lies in addressing multiple policy objectives at once.

However, its long-term success depends on careful balancing. India must ensure that the shift towards biofuels does not compromise food security or ecological stability. With thoughtful planning, technological innovation, and sustainable practices, ethanol blending can become a key pillar of India's transition to a more secure and sustainable energy future.

GS Paper II: Current Affairs

2. Tuberculosis in India: From Disease Control to a Holistic Public Health Approach

a. Introduction

Tuberculosis (TB) continues to be one of India's most serious public health challenges, even though it is both preventable and curable. Its persistence shows that TB is not just a medical issue but is deeply connected to social realities such as poverty, undernutrition, overcrowding, and lack of access to healthcare.

Therefore, controlling TB requires moving beyond a narrow disease-focused approach to a broader strategy that combines medical treatment with social support and community participation.

b. Understanding Tuberculosis as a Social and Public Health Issue

Medical Nature of the Disease

- TB is caused by a bacterial infection, mainly affecting the lungs.
- It spreads through air when an infected person coughs or sneezes.

Link with Social Determinants

- Higher risk among undernourished and poor populations.
- Overcrowded living conditions increase transmission.
- Weak immunity due to poor health conditions worsens outcomes.

TB as a Disease of Inequality

- More common among economically vulnerable groups.

- Reflects broader issues of social and economic inequality.

Thus, TB must be understood as both a medical disease and a social problem.

c. Early Diagnosis: The Foundation of Effective Control

Importance of Early Detection

- Breaks the chain of transmission.
- Allows timely treatment and reduces complications.

Technological Advancements

- Molecular tests provide faster and more accurate diagnosis.
- AI-supported chest imaging helps in mass screening.
- Portable devices enable testing in remote areas.

Remaining Gaps

- Difficulty in detecting asymptomatic cases.
- Under-diagnosis in children and extra-pulmonary TB.
- Delays in confirming and starting treatment.

d. From Disease Treatment to Person-Centred Care

Concept of Person-Centred Care

- Focuses on the overall well-being of the patient.
- Goes beyond treating the infection alone.

Associated Challenges Faced by Patients

- Coexisting diseases like diabetes and respiratory illnesses.
- Nutritional deficiencies.
- Psychological and economic stress.

Benefits of This Approach

- Improves treatment adherence.
- Reduces relapse rates.
- Enhances long-term recovery.

e. Integration with Comorbidities

TB and Other Diseases

- Diabetes increases susceptibility to TB.
- TB worsens outcomes in patients with other illnesses.

Need for Integrated Healthcare

- Combine TB care with general healthcare services.
- Ensure continuous and coordinated treatment.

System-Level Benefits

- Reduces duplication of efforts.
- Improves efficiency of health systems.

f. Nutrition as a Central Pillar of Care

Role of Undernutrition

- Weakens immunity and increases TB risk.
- Worsens disease progression.

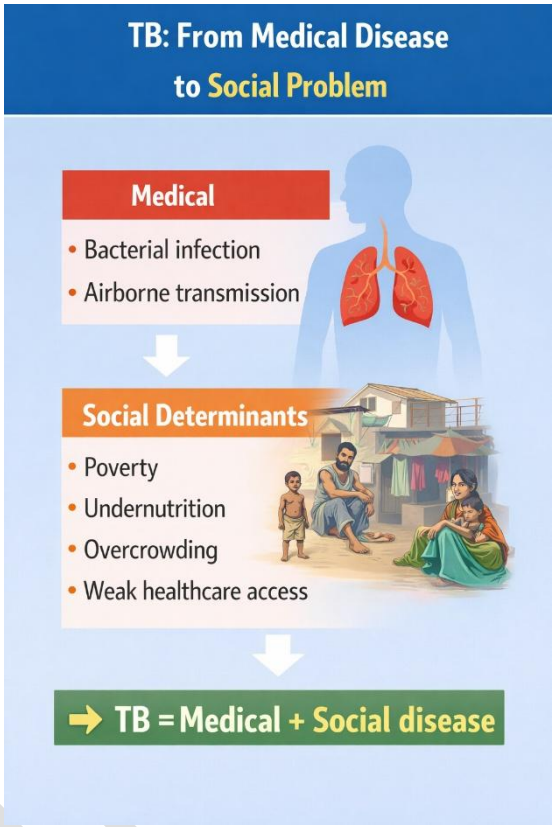
Vicious Cycle

- TB leads to weight loss and poor nutrition.
- Poor nutrition further weakens recovery.

Need for Nutritional Support

- Financial assistance and food support programmes.
- Regular monitoring of nutritional status.

Thus, nutrition is not optional but a core part of treatment.



g. Mental Health: The Overlooked Dimension

Psychological Impact

- Anxiety and depression due to long treatment.
- Social stigma and isolation.

Effect on Treatment

- Poor mental health reduces treatment adherence.
- Increases chances of treatment failure.

Required Interventions

- Counselling and psychological support.
- Support systems for patients and families.

h. Family and Caregiver Support

Impact on Families

- Emotional stress and financial burden.
- Social stigma affecting the entire household.

Need for Family-Centred Care

- Support caregivers along with patients.
- Improve the home environment for recovery.

i. Challenges in Childhood and Extra-Pulmonary Tuberculosis

Childhood TB

- Symptoms are often unclear.
- Difficulty in collecting diagnostic samples.

Extra-Pulmonary TB

- Affects organs other than lungs.
- Symptoms vary widely, leading to delayed diagnosis.

Required Measures

- Improved diagnostic tools.
- Research focused on these specific forms.

j. Role of Science and Technology

Diagnostic Innovations

- Molecular testing improves detection accuracy.
- AI-based imaging enhances screening efficiency.

Indigenous Innovation

- Development of affordable local technologies.
- Ensures scalability and accessibility.

Data and Surveillance

- Better tracking of cases and high-risk groups.
- Enables targeted interventions.

k. Community Participation: The Key to Sustained Success

Importance of Community Role

- Helps in early detection and awareness.
- Reduces stigma associated with TB.

Key Stakeholders

- Civil society organisations.
- Local institutions and volunteers.
- TB survivors as advocates.

Benefits

- Improves treatment adherence.
- Builds trust in healthcare systems.

l. Governance Lessons: Science, Systems and Society

Three Pillars of Effective Control

- **Science:** diagnostics and treatment tools.
- **Systems:** healthcare delivery mechanisms.
- **Society:** community participation and support.

Need for Integration

- All three must work together for success.
- Weakness in any one reduces effectiveness.

m. Persistent Challenges

Gaps in Detection

- Missed and delayed cases.
- Difficulty in diagnosing complex forms.

Social Determinants

- Continued undernutrition and poverty.
- Unequal access in remote areas.

Systemic Issues

- Limited mental health integration.
- Variations in service quality.

n. Way Forward

Strengthening Diagnosis

- Universal access to advanced diagnostic tools.
- Reduce delays in detection and treatment.

Person-Centred Healthcare

- Integrate treatment with nutrition and mental health.
- Address comorbidities effectively.

Nutrition and Social Support

- Expand targeted nutritional programmes.
- Provide sustained financial assistance.

Research and Innovation

- Focus on childhood and extra-pulmonary TB.
- Develop new diagnostic and treatment methods.

Community Engagement

- Increase awareness and reduce stigma.
- Strengthen local participation.

Health System Integration

- Link TB programmes with primary healthcare.
- Move towards universal health coverage.

Conclusion

Tuberculosis in India reflects the deep connection between health and social conditions. Its persistence shows the limitations of a purely medical approach and highlights the need for a broader, integrated framework.

The path to elimination lies in shifting from treating the disease to caring for the person. By combining early diagnosis, integrated care, nutritional and mental health support, and strong community participation, India can move towards a more equitable, effective, and resilient public health system.

Reader's Note — About This Current Affairs Compilation

Dear Aspirant,

This document is part of the PrepAlpine Current Affairs Series — designed to bring clarity, structure, and precision to your daily UPSC learning.

While every effort has been made to balance depth with brevity, please keep the following in mind:

1. Orientation & Purpose

This compilation is curated primarily from the UPSC Mains perspective — with emphasis on conceptual clarity, analytical depth, and interlinkages across GS papers.

However, the PrepAlpine team is simultaneously developing a dedicated Prelims-focused Current Affairs Series, designed for:

- factual coverage
- data recall
- Prelims-style MCQs
- objective pattern analysis

This Prelims Edition will be released separately as a standalone publication.

2. Content Length

Some sections may feel shorter or longer depending on topic relevance and news density.
To fit your personal preference, you may freely resize or summarize sections using any LLM tool (ChatGPT, Gemini, Claude, etc.) at your convenience.

3. Format Flexibility

The formatting combines:

- paragraphs
- lists
- tables
- visual cues

—all optimised for retention.

If you prefer a specific style (lists → paras, paras → tables, etc.), feel free to convert using any free LLM.

4. Monthly Current Affairs Release

The complete Monthly Current Affairs Module will be released soon, optimized to a compact 100–150 pages — comprehensive yet concise, exam-ready, and revision-efficient.