Ethanol Blending in India: Evaluating the E20 Policy

Concept and Context

- **Definition**: Ethanol blending refers to the mixing of ethanol (ethyl alcohol, $C_2 H_5 OH$), largely derived from crops such as sugarcane, rice, and maize, with petrol.
- **E20**: Petrol containing 20% ethanol.
- **Policy Target**: The National Biofuel Policy (2018) aimed for 20% blending by 2030; India reached this milestone in 2025, five years ahead of schedule.
- **Global Comparison**: Brazil and the U.S. remain leaders with blending levels exceeding 50%. India has accelerated efforts due to dependence on crude imports and climate commitments.
- **Relevance**: GS 3 (Environment & Ecology), GS 2 (Governance).

Economic Impact

- **Forex Savings**: From 2014–15 onwards, ethanol blending has reportedly saved India about ₹1.4 lakh crore by cutting petrol imports.
- **Public Sector Gains**: PSUs like IOC, BPCL, and ONGC reported dividend growth of 255% (since 2022–23). Yet, consumer petrol prices reduced only ~2% despite a ~65% dip in crude oil costs—indicating state revenues absorbed most benefits.
- **Farmer Income Boost**: Since FY15, farmers have received around ₹1.2 lakh crore via ethanol procurement. Production rose from 40 crore litres (FY14) to 670 crore litres (FY24).
- **Agricultural Shifts**: By 2034, about 22% of sugarcane could be diverted to ethanol (OECD–FAO). This raises sustainability concerns as sugarcane is water-intensive. Diversification into maize and rice is ongoing but heightens food–fuel conflicts (India imported 9.7 lakh tonnes of maize in 2024–25).

Environmental Dimensions

- **Positive**: The government claims a reduction of nearly 700 lakh tonnes of CO_2 emissions through blending. Ethanol has lower carbon intensity compared to petrol.
- **Concerns**:
    - Sugarcane requires 60–70 tonnes of water per tonne, causing groundwater depletion, especially in UP and Maharashtra.
    - About 30% of India's land is degraded, partly due to unsustainable farming.
    - Climate extremes (heatwaves, droughts) intensify risks.
    - Diversification into rice and maize adds to the **food vs fuel** dilemma.

Consumer Impact

- **Vehicle Compatibility**: Since 2023, new vehicles are designed for E20, while older ones require material upgrades (fuel systems, rubber parts).

- **Mileage & Maintenance**: Surveys show 2/3rd of vehicle owners oppose E20; only 12% favour it. Concerns include reduced mileage (ethanol has lower energy density) and higher maintenance.
- **Government Position**: Admits a 6–8% efficiency dip but suggests engine tuning can offset this. NITI Aayog proposed tax incentives to reduce consumer burden.

Geopolitical and Trade Aspects

- **U.S. Pressure**: American trade reports criticise India's ethanol import restrictions as protectionist.
- **India's Stand**: Domestic industry (ISMA) resists imports, fearing harm to local sugar mills and ethanol producers.
- **Global Market**: Imports may lower prices but could hurt farmer incomes.

Energy Transition Debate

- **Short-term Role**: E20 reduces import bills, raises farm earnings, and marginally lowers emissions.
- **Conflict with EV Push**: EV penetration reached ~7.6% in 2024; target is 30% by 2030, requiring >22% growth annually. EVs promise deeper decarbonisation.
- **EV Challenges**: Dependence on rare earths, mostly sourced from China, creates vulnerabilities (e.g., germanium export curbs). Automakers like Maruti Suzuki have cut EV production due to supply shortages.

Unresolved Issues

- **Beyond E20?** The Petroleum Ministry hinted at higher blending, but in March 2025 the government clarified no decision has been taken. Debate continues on whether to push for E30+ or redirect focus toward EV adoption.

Summary of Impacts

- **Positives**: Reduced oil imports, assured farm incomes, moderate emission cuts.
- **Concerns**: Water stress, land degradation, food–fuel trade-offs, consumer resistance, benefits not reaching citizens, and possible EV delays.

Honour Killings in India: Persistence and Social Legitimacy

Basics and Context

- **Definition**: Honour killings involve family/community members murdering individuals who defy caste, religion, or gender norms, especially in marriage.
- **Legal Status**: No special law; treated as homicide under IPC (Sec. 302).
- **Relevance**: Links caste, patriarchy, and family authority.
- **Recent Case**: The murder of C. Kavin Selvaganesh in Tamil Nadu (Aug 2025) highlighted ongoing caste-based violence.
- **Relevance**: GS 1 (Society), GS 2 (Social Issues, Fundamental Rights).

Caste as a Social Institution

- Caste persists not as an individual belief but as a community and family-driven practice.
- Children absorb caste rules—who to associate or marry—early in life.
- Despite urbanisation and democracy, caste continues through rituals, family honour, and marriage patterns.

Inter-caste Marriages and Backlash

- **Stats**: Only ~5% of marriages are inter-caste (IHDS-II). Rates are relatively higher in Tamil Nadu, Maharashtra, and Kerala.
- **Paradox**: These states also see higher rates of honour killings—not where caste is strongest, but where it is challenged.
- **Reason**: Inter-caste marriages, especially between Dalit men and dominant caste women, destabilise entrenched hierarchies.

Honour Killings as Insecurity

- Violence is less about caste strength and more about its weakening boundaries.
- Families legitimise such killings as a defence of purity and lineage.

Tamil Nadu's Paradox

- **Progressive Face**: Anti-caste movements, protests, and legal activism are strong.
- **Contradiction**: Family and private spaces continue to enforce caste rules.
- **Role of Social Media**: Enables anonymous glorification of caste violence.

Family as the Stronghold of Caste

- Families sustain caste through rituals, expectations, and emotional pressures of honour/shame.
- Weakening family authority (changing lifestyles, individual autonomy) undermines caste's grip.

Social Change and Youth Trends

- Internationally (Japan, South Korea), marriage and fertility decline show weakening family centrality.
- In India, rising youth autonomy and focus on well-being gradually reduce caste control—not through revolution but slow shifts.

Wider Social Justice Context

- Access to education and jobs (particularly for Dalits) fosters equality and challenges caste.
- Romantic relations become political acts against caste hierarchies.
- Tamil Nadu's public resistance contrasts with silence in other states, keeping caste violence under scrutiny.

Challenges in Addressing Honour Killings

- **Legal Gaps**: No dedicated law criminalising honour crimes.
- **Community Silence**: Families and communities normalise violence, hindering justice.
- **Digital Glorification**: Social media reinforces prejudice.
- **Victim Protection**: Couples face boycotts, harassment, and little institutional support.

Way Forward

- **Legal**: Enact a specific law, set up fast-track courts, and ensure victim safety.
- **Social**: Strengthen inter-caste youth movements; counter caste propaganda online.
- **Cultural**: Reframe family values around autonomy and dignity; introduce anti-caste content in schools and media.
- **Policy**: Expand schemes like Dr. Ambedkar's support for inter-caste marriages.

Grasslands in Flux: Dibru–Saikhowa National Park (DSNP)

Basics and Location

- Situated in Assam's Tinsukia and Dibrugarh districts, between the Brahmaputra and Lohit rivers.
- Declared a Wildlife Sanctuary (1986), upgraded to National Park (1999), and designated a Biosphere Reserve (1997).
- Area: ~765 sq km.
- **Relevance**: GS 3 (Environment).

Ecology

- **Grasslands**: Dynamic, seasonal, floodplain grasslands shaped by erosion and silt deposition.
- **Forests & Wetlands**: Semi-evergreen, moist deciduous, bamboo, and oxbow lakes ("beels").
- **River Dynamics**: Brahmaputra's shifting course reshapes habitats constantly.

Biodiversity

- **Flora**: Tall grasses (Saccharum, Phragmites, Arundo).
- **Fauna**: Feral horses, tigers, leopards, elephants, water buffalo, river dolphins.
- **Birds**: >300 species, including Bengal Florican and White-winged Wood Duck.
- **Conservation Role**: Crucial for grassland birds and large herbivores.

Grasslands in Flux

- **Annual Change**: Floods create and erase patches annually.
- **Succession**: Without floods/fires, grasslands turn into forests, harming species like Bengal Florican.
- **Human Impact**: Encroachment, grazing, and industrial activity accelerate degradation.

Human and Livelihood Dimensions

- Communities depend on DSNP for grazing, reeds, and fishing.
- Frequent floods + conservation restrictions create conflicts.
- Tourism (safaris, bird-watching) has potential but risks disturbing habitats.

Conservation Challenges

- Altered flood cycles from dams/embankments.
- Agricultural encroachment in fringes.
- Invasive species (mimosa, hyacinth) choke wetlands.
- Oil and gas exploration threatens ecological balance.
- Climate change increases unpredictability.

Ecological Importance

- Acts as a carbon sink.
- Mitigates floods and erosion.
- Habitat for endangered species.
- Cultural and livelihood relevance for locals.

Policy and Legal Status

- Protected under the Wildlife Protection Act, 1972.
- Biosphere Reserve status ensures broader management.
- Courts (Supreme Court, NGT) have intervened against oil drilling.

Way Forward

- Adaptive management (controlled burning, invasive species removal).
- Local community involvement in eco-tourism and grazing regulation.
- Restore hydrological cycles.
- Continuous biodiversity monitoring.
- Integrate DSNP conservation within the larger Brahmaputra landscape strategy.

The Onion Model of Biodiversity

Basics and Context

- Earth's biogeographical zones (Nearctic, Afrotropical, Indo-Malayan, etc.) each hold distinct species shaped by climate and geography.
- Traditionally assumed species distribution was random within each region.
- Known pattern: Tropics richer, poles poorer.
- **New Study (Nature Ecology & Evolution, July 2025)**: Biodiversity within regions follows a universal "onion-like" layering pattern.
- **Relevance**: GS 3 (Ecology, Biodiversity).

Study Methods

- **Data**: 30,000 species (mammals, birds, amphibians, reptiles, trees, dragonflies, rays).
- **Approach**: Grid-based analysis (111 sq km cells), using Infomap clustering.
- **Classification**: Species labelled as core/endemic or spill-over from neighbouring zones.
- **Metrics**: Species richness, overlap, endemicity.

Key Findings: Onion Layers

1. **Core hotspots**: High richness + endemic species.
2. **Inner layers**: Rich, widespread species.
3. **Middle layers**: Moderate richness, mix of core + outsiders.
4. **Transition zones**: Species-poor, dominated by generalists.

- Climate (temperature + rainfall) explains patterns with 98% accuracy.

Scientific Significance

- Confirms a **universal biodiversity rule**.
- Shows assemblages are shaped by environmental filters, not random.
- Shifts view from chaotic to structured mosaics.

Conservation Implications

- Protect **core hotspots** for maximum impact.
- Preserve **transition zones** as corridors for climate-driven shifts.
- Himalayas and Western Ghats emerge as critical Indian examples.
- Policy frameworks (NBM, NWAP) can incorporate these findings.

Critiques

- Gaps in regional data, over-reliance on certain taxa.
- Still correlative, not causative.

Way Forward

- Expand Global South datasets.
- Integrate with climate models.
- Strengthen citizen science for biodiversity mapping.

Conclusion

The onion model demonstrates that biodiversity is structured, not haphazard—densest at cores, thinning outward. Conservation strategies must therefore prioritise cores while keeping outer layers permeable for species migration under climate change.

Healthocide: Warfare Against Healthcare

Basics and Context

- **Term**: "Healthocide" coined by researchers (American University of Beirut, Aug 2025, BMJ Global Health).
- **Definition**: Large-scale, deliberate destruction of health ecosystems in warzones—distinct from isolated attacks.
- **Analogy**: Like genocide, but directed at health systems essential to survival and dignity.
- **Relevance**: GS 2 (Governance, Social Justice), GS 3 (Disaster/Conflict Management, Health Security).

Why a New Term?

- Existing phrase "attacks on healthcare" covers localised incidents.
- "Healthocide" highlights systemic, intentional, and widespread targeting.

Dimensions

- Direct violence against medical staff.
- Bombing hospitals and clinics.
- Blocking ambulances, restricting patient evacuation.
- Disrupting medicine and oxygen supply chains.
- Long-term collapse of healthcare capacity.

Legal & Ethical Aspects

- Geneva Conventions protect health personnel and patients, but systemic destruction is inadequately recognised.
- Framing it as "healthocide" raises urgency and moral gravity.

Responsibilities

- **Medical Community**: Document and resist complicity.

- **Governments & UN**: Enforce humanitarian law and punish offenders.
- **Civil Society**: Mobilise public opinion and advocacy.

Debates

- **Critics**: Argue existing terms suffice (e.g., Rubenstein).
- **Supporters**: Say "healthocide" reflects new, systemic realities (e.g., Elamin).
- **Underlying Issue**: Semantics vs advocacy power.

Broader Implications

- Recognition in UN/IHL could reframe narratives in Gaza, Syria, Yemen, Sudan, Ukraine.
- Potential to strengthen accountability for crimes against humanity.
- Reinforces healthcare as a universal collective right.

Way Forward

- Legally codify "healthocide" alongside genocide/war crimes.
- Strengthen monitoring systems (WHO, Red Cross, NGOs).
- Build coalitions of doctors, educators, activists.
- Impose sanctions on violators.

19th August Daily MCQs

1. Which of the following best describes the term "Dutch Disease" in economics?
    - a) A condition where a country's economic growth is driven mainly by exports of agricultural commodities.
    - **b) A situation where large inflows of foreign currency cause a decline in the manufacturing sector.**
    - c) A form of economic crisis that emerges due to excessive fiscal spending on welfare schemes.
    - d) A persistent rise in unemployment despite high GDP growth.

Correct Answer: (b)
Explanation:
• Dutch Disease refers to the negative impact on a country's manufacturing sector due to a surge in revenues from natural resource exports. The inflow of foreign currency appreciates the domestic currency, making exports from other sectors (especially manufacturing) less competitive internationally.
• The term originated from the Netherlands' discovery of natural gas in the 1960s.

2. Question

The term "Stagflation" refers to:

- a) Simultaneous occurrence of high inflation and low unemployment.

- b) High economic growth accompanied by low inflation.
- **c) A situation of stagnant economic growth combined with high inflation and unemployment.**
- d) Low inflation and high export growth leading to current account surplus.

Correct Answer: (c)
Explanation:
• Stagflation is an economic condition where stagnation (slow or negative economic growth) coexists with high inflation and high unemployment.
• It contradicts the traditional Phillips Curve trade-off and is particularly challenging for policymakers because tools to control inflation often worsen unemployment and vice versa.

3. Question

Consider the following statements regarding Balance of Payments (BoP):
1. A BoP surplus always implies an increase in a country's foreign exchange reserves.
2. BoP includes both current account and capital account transactions.
3. FDI inflows are recorded under the current account of BoP.
How many of the above statements are correct?

- a) Only one
- **b) Only two**
- c) All three
- d) None

Correct Answer: (b)
Explanation:
• Statement 1: Correct. A BoP surplus typically leads to an increase in forex reserves, especially if the central bank chooses to absorb excess dollars.
• Statement 2: Correct. BoP has two main components: Current Account and Capital & Financial Account.
• Statement 3: Incorrect. FDI inflows are recorded under the capital account, not current account.
• Hence, only two statements are correct.

4. Question

Which of the following policies can be considered as part of expansionary monetary policy?
1. Reducing repo rate.
2. Purchasing government securities in the open market.
3. Increasing the Cash Reserve Ratio (CRR).
4. Reducing the Statutory Liquidity Ratio (SLR).
Select the correct answer using the code:

- a) 1 and 2 only
- b) 2 and 3 only
- **c) 1, 2 and 4 only**

- d) All four

Correct Answer: (c)
Explanation:
• Statement 1: Correct. Reducing repo rate lowers borrowing costs, promoting credit and investment.
• Statement 2: Correct. Buying government securities injects liquidity into the system.
• Statement 3: Incorrect. Increasing CRR absorbs liquidity — it's a contractionary measure.
• Statement 4: Correct. Reducing SLR frees up funds for lending — expansionary in nature.
• So, 1, 2, and 4 are correct.

5. Question

With reference to the Phillips Curve, consider the following:
1. It shows the inverse relationship between inflation and unemployment in the short run.
2. In the long run, the Phillips Curve is vertical at the natural rate of unemployment.
3. Monetarists argue that inflation can permanently reduce unemployment.
Which of the above statements is/are correct?

- a) 1 only
- **b) 1 and 2 only**
- c) 2 and 3 only
- d) All three

Correct Answer: (b)
Explanation:
• Statement 1: Correct. The original Phillips Curve showed a short-run trade-off between inflation and unemployment.
• Statement 2: Correct. In the long run, the curve becomes vertical at the natural rate of unemployment (NAIRU), where inflation has no impact on unemployment.
• Statement 3: Incorrect. Monetarists (like Milton Friedman) argue that inflation cannot permanently reduce unemployment — only temporary effects exist.
• Hence, 1 and 2 only are correct.