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IMPORTANT INSIGHTS

UPI at 10 Years: India's Digital Payments Revolution Now Faces the Challenge of Sustainability, Competition and Global Expansion:

Recent Developments:

- During **FY2025–26**, UPI processed **24,161.69 crore transactions** worth approximately **₹314 lakh crore**, with **703 banks** live on the platform by March 2026.
- UPI accounted for about **85% of India's digital-payment volume in FY2025–26**, while its share of global real-time payment volume was estimated at **49% in 2025**.
- The **March 2026** monthly record reached **2,264 crore transactions** worth **₹29.53 lakh crore**, demonstrating the extraordinary scale of India's retail digital-payment infrastructure.
- In August 2026, amendments to the **Payments and Settlement Systems Act, 2007** created a legal pathway for a possible reintroduction of **Merchant Discount Rate (MDR)** on selected digital-payment transactions, although the detailed fee structure has not been finalised.
- The government has clarified that **person-to-person UPI payments will remain free**, while any future MDR is expected to focus on a limited category of merchant transactions rather than ordinary consumers and small merchants.

Evolution and Institutional Architecture of UPI:

Background and Genesis:

- Before UPI, India relied on multiple payment systems such as **NEFT, RTGS and IMPS**, creating a need for a more interoperable and user-friendly retail-payment architecture.
- The **RBI's 2012 Vision Document for Payment Systems** highlighted the low penetration of non-cash payments in India and identified the need for greater electronic-payment adoption.
- **NPCI**, established as the umbrella organisation for retail payment systems, developed UPI to provide a common interoperable interface connecting multiple bank accounts, payment applications and merchants.
- The UPI pilot began with **21 member banks** on **11 April 2016**, while UPI-enabled applications became increasingly available from August 2016.

How UPI Works:

- UPI enables users to link **multiple bank accounts** to a single application and initiate instant payments through a common interface.
- Its architecture involves **users, merchants, UPI applications, remitter banks, beneficiary banks and Payment Service Providers (PSPs)**.
- UPI supports **Person-to-Person (P2P)** and **Person-to-Merchant (P2M)** transactions through interoperable bank accounts.
- Payments can be initiated through **Virtual Payment Addresses (VPAs), QR codes, mobile applications and intent-based payments**, reducing dependence on physical cash and card infrastructure.
- **Two-factor authentication** and the use of virtual payment identifiers improve security by reducing the need to disclose sensitive bank-account information during ordinary transactions.

Factors Behind UPI's Rapid Expansion:

Interoperability and Low Transaction Friction:

- UPI allows customers to use a single interface across participating banks and payment applications, thereby reducing fragmentation in the digital-payment ecosystem.
- **QR-code payments**, instant settlement and mobile-based authentication made digital payments accessible even for small-value everyday transactions.
- The model substantially reduced the dependence on **Point-of-Sale terminals, cash handling and physical banking infrastructure**.

Zero-MDR Policy:

- **Merchant Discount Rate (MDR)** is a fee associated with processing digital payments and is generally distributed among participants in the payment ecosystem.
- Since **January 2020**, MDR was made zero for **RuPay Debit Card and BHIM-UPI transactions** through amendments involving Section 10A of the **Payments and Settlement Systems Act, 2007** and Section 269SU of the **Income-tax Act, 1961**.
- The zero-MDR framework lowered the cost of accepting digital payments and encouraged merchants, particularly small businesses, to adopt UPI.

Government Incentive Support:

- The Union Cabinet approved a **₹1,500 crore incentive scheme for FY2024–25** to promote low-value BHIM-UPI P2M transactions among small merchants.
- Under the scheme, transactions up to **₹2,000 involving small merchants** remained subject to zero MDR while qualifying transactions received an incentive of **0.15% of transaction value**.
- The incentive is paid to the **acquiring bank** and subsequently shared among relevant ecosystem participants, including issuer banks, PSP banks and TPAPs.
- The policy has therefore treated UPI as a form of **Digital Public Infrastructure (DPI)** whose adoption can generate wider economic and social benefits beyond direct transaction revenue.

COVID-19 and Digital Adoption:

- The COVID-19 pandemic accelerated digital-payment adoption because consumers and merchants increasingly preferred **contactless and cash-light transactions**.
- The pandemic therefore reinforced an already expanding UPI ecosystem and increased the frequency of small-value digital payments.

UPI and Financial Inclusion:

Democratization of Digital Payments:

- UPI has enabled street vendors, small retailers, transport operators and informal businesses to accept digital payments using **low-cost QR codes** rather than expensive card-payment infrastructure.
- Its high frequency of small-value transactions demonstrates its integration into **everyday consumption and retail commerce**.
- According to official FY2025–26 data, **86% of P2M transactions were below ₹500**, highlighting the dominance of micro-payments in UPI usage.

Rural and Semi-Urban Expansion:

- Future domestic growth is expected to increasingly depend on **Tier-3 to Tier-6 cities, rural areas and underserved populations**.
- **UPI 123PAY** extends digital payments to feature-phone users, while **UPI Lite** and **UPI LiteX** address low-value and offline-payment requirements.
- Such innovations can reduce the **digital divide** by lowering dependence on smartphones, continuous internet connectivity and conventional banking infrastructure.

The MDR Debate and Sustainability Challenge:

Why the Zero-MDR Model Is Under Pressure:

- UPI's enormous transaction volume generates substantial costs related to **technology infrastructure, cybersecurity, banking systems, compliance and transaction processing**.
- Zero MDR removes a conventional revenue stream from the payment ecosystem even though payment providers continue to incur operating and infrastructure costs.
- Government incentives partially compensate ecosystem participants, but questions remain regarding whether **public subsidies alone can sustainably finance a rapidly expanding payment infrastructure**.

Case for Reintroducing MDR:

- Industry stakeholders argue that the initial zero-MDR model was useful for **rapid adoption**, but the mature ecosystem now requires a more sustainable revenue model.
- A selective MDR could be imposed on **high-value merchant transactions** while keeping ordinary P2P payments and small-merchant transactions free.
- One proposal discussed in the current policy debate involves MDR of around **0.3–0.5% on transactions above ₹2,000 for eligible large merchants**, although no final fee structure has been established.
- High-value transactions can provide a potential revenue base because they account for a much larger share of transaction value than their share in transaction volume.

Arguments Against MDR:

- Reintroducing MDR could increase operating costs for merchants and potentially lead to **higher consumer prices** if merchants pass the cost on to customers.
- Additional charges could discourage digital-payment adoption among price-sensitive consumers and small businesses.
- The policy could weaken one of UPI's principal advantages, namely **simple and low-cost digital transactions**.
- Any poorly designed MDR could therefore undermine the very network effects that made UPI successful.

A Balanced Approach:

- A sustainable model should distinguish between **P2P transactions, small-value P2M transactions and high-value merchant transactions** rather than imposing a uniform charge.
- Small merchants and low-value transactions should continue to receive protection because they have the greatest significance for **financial inclusion and cash-to-digital transition**.
- Any MDR framework should be **transparent, capped, proportionate and competition-sensitive**, with adequate safeguards against cost pass-through to consumers.

Market Concentration and Competition:

Dominance of Major Third-Party Apps:

- The UPI ecosystem has experienced strong concentration among major **Third-Party Application Providers (TPAPs)**, particularly **PhonePe and Google Pay**.
- Such concentration creates concerns regarding **market power, systemic dependence and competitive neutrality** within a payment infrastructure that has become critical to the economy.
- The concentration problem is particularly important because UPI itself is interoperable, but user behaviour can remain concentrated around a small number of dominant applications.

30% Market-Share Cap:

- NPCI introduced a **30% market-share ceiling for individual TPAPs** to prevent excessive concentration in the UPI application ecosystem.
- Implementation of the cap has been repeatedly deferred because immediate enforcement could disrupt consumers and merchants dependent on dominant applications.
- The current extension runs until **December 2026**, making competition and market concentration an important regulatory issue for the next phase of UPI development.

Banks and FinTechs:

- Traditional banks face intense competition from **FinTech companies and TPAPs** in the customer-facing payments layer.
- Banks continue to provide the underlying accounts and regulated payment infrastructure, while large technology platforms have developed strong consumer interfaces, merchant networks and transaction ecosystems.
- This creates a policy challenge involving the appropriate balance between **innovation, competition, consumer choice and regulatory oversight**.

Internationalisation of UPI:

UPI as India's Digital Public Infrastructure:

- UPI has increasingly become an instrument of **India's Digital Public Infrastructure diplomacy**, with other countries adopting or linking their payment systems with Indian infrastructure.
- Internationalisation can reduce dependence on expensive and slower traditional cross-border retail-payment mechanisms while strengthening India's technological and financial influence.

Cross-Border Payment Linkages:

- India has developed UPI-based payment linkages with several countries, including **Singapore, Nepal, Bhutan, Mauritius, Sri Lanka, the UAE and France**, while international acceptance continues to expand.
- In June 2026, NPCI **International Payments Limited (NIPL)** and Cambodia's **ACLEDA Bank** launched the first phase of UPI acceptance through Cambodia's **KHQR** system, enabling Indian travellers to make QR payments at more than **4.5 million Cambodian merchants**.
- India and Nepal also operationalised a direct linkage between **UPI and Nepal's National Payments Interface (NPI)** for instant P2P cross-border remittances in June 2026.
- The **UPI-PayNow linkage with Singapore** demonstrates how interoperable payment systems can facilitate faster and more efficient cross-border retail remittances.

UPI One World:

- **UPI One World** enables eligible foreign visitors to make UPI payments in India without requiring an Indian mobile number or domestic bank account.
- The service can be used across a large network of Indian QR codes and supports applications such as merchant payments, travel bookings, hotels, restaurants and transportation.
- In 2026, NPCI extended the service to international delegates from more than **40 countries**, strengthening UPI's role as a globally exportable payment technology.

Emerging Challenges:

Cybersecurity and Operational Resilience:

- The enormous scale of UPI makes **cybersecurity, fraud prevention, data protection and operational resilience** critical components of financial stability.
- A major disruption to UPI could affect millions of individuals and businesses because the platform has become deeply embedded in everyday economic activity.
- NPCI has continued issuing operational and security-related circulars, including measures concerning **safeguarding user information and system controls**.

Digital Divide:

- Smartphone ownership, internet access, digital literacy and language barriers can still restrict UPI adoption among some sections of the population.
- **Feature-phone payments, offline functionality and assisted digital-payment models** can help address these barriers.

Consumer Protection:

- Rising digital-payment adoption increases the importance of **fraud reporting, grievance redressal, transaction reversals and customer awareness**.
- UPI's in-app grievance mechanisms and regulatory oversight need to evolve alongside the increasing sophistication of digital fraud.

Financial Sustainability:

- The central policy challenge is to ensure that the payment ecosystem remains financially viable without transforming UPI into a costly platform for ordinary users.
- A sustainable ecosystem should distribute costs fairly among **merchants, payment providers, banks, technology platforms and the government**, according to the benefits received by each participant.

Significance for the Indian Economy:

- UPI reduces **transaction costs**, facilitates formalisation and expands access to digital financial services.
- Digital payment records can improve the ability of financial institutions to assess the economic activity and creditworthiness of small businesses.
- UPI supports the broader **Jan Dhan–Aadhaar–Mobile (JAM)** ecosystem by strengthening the digital layer through which financial services can reach citizens.
- Its interoperability promotes **competition among payment applications**, even though concentration among major TPAPs remains a concern.

- UPI strengthens India's position in **Digital Public Infrastructure**, alongside platforms such as **Aadhaar and DigiLocker**.
- International deployment of UPI can strengthen India's **fintech diplomacy, remittance infrastructure and technological influence**.

Way Forward:

Sustainable and Inclusive Pricing:

- India should adopt a **targeted MDR framework** that protects P2P transactions, small merchants and low-value payments while allowing reasonable charges on selected high-value merchant transactions.
- Any MDR should remain **transparent, capped and proportionate to transaction value and merchant capacity**.

Strengthening Competition:

- The implementation of the **30% TPAP market-share ceiling** should be calibrated to prevent market disruption while promoting a more diversified ecosystem.
- Greater participation by banks, domestic FinTechs and smaller TPAPs can reduce concentration risks.

Improving Rural Access:

- Expansion of **UPI 123PAY, UPI Lite, UPI LiteX and offline payment capabilities** should continue to reduce digital exclusion.
- Regional-language interfaces and stronger digital-literacy programmes can further expand adoption.

Enhancing Cybersecurity:

- India should strengthen **real-time fraud detection, authentication, cyber resilience, data protection and consumer grievance mechanisms**.
- Payment-system operators should maintain high system availability because UPI has become a critical component of the national economic infrastructure.

Expanding International Linkages:

- India should prioritise interoperability with countries having substantial **Indian diaspora populations, tourism flows and remittance corridors**.
- Cross-border UPI linkages should be integrated with broader efforts to reduce the cost and settlement time of international retail payments.

Value Addition for UPSC:

Key Terms:

- **UPI:** Unified Payments Interface, an interoperable instant-payment system developed by NPCI.
- **NPCI:** National Payments Corporation of India, the umbrella organisation for India's retail-payment systems.
- **MDR:** Merchant Discount Rate, a fee associated with processing merchant digital payments.
- **P2P:** Person-to-Person payment between individuals.
- **P2M:** Person-to-Merchant payment for purchasing goods or services.

- **TPAP:** Third-Party Application Provider, a non-bank application provider participating in the UPI ecosystem through a PSP bank.
- **DPI:** Digital Public Infrastructure, interoperable digital systems that enable large-scale delivery of public and private services.

Important Data for Prelims and Mains:

- **UPI pilot launch:** 11 April 2016.
- **Banks at launch:** 21.
- **Banks live on UPI by March 2026:** 703.
- **FY2025–26 transaction volume:** 24,161.69 crore.
- **FY2025–26 transaction value:** approximately ₹314 lakh crore.
- **Peak monthly volume:** 2,264 crore transactions in March 2026.
- **UPI share of India's digital-payment volume:** 85% in FY2025–26.
- **UPI share of global real-time payment volume:** 49% in 2025.
- **P2M transactions below ₹500:** 86% in FY2025–26.
- **Low-value BHIM-UPI incentive:** 0.15% for eligible transactions up to ₹2,000 involving small merchants under the FY2024–25 scheme.
- **UPI TPAP market-share ceiling:** 30%, with implementation extended to December 2026.

UPSC Mains Linkages:

- **GS Paper II:** Governance, e-governance, financial inclusion, digital public infrastructure and regulatory institutions.
- **GS Paper III:** Indian economy, FinTech, digital payments, financial-sector development, cybersecurity and technological innovation.
- **Essay:** Digital transformation, inclusive growth, technology-led development and India's emergence as a digital-power centre.
- **Prelims:** NPCI, UPI architecture, MDR, P2P/P2M, UPI 123PAY, UPI Lite, TPAP and cross-border payment linkages.

Possible Mains Question:

“UPI has transformed India's retail-payment ecosystem, but its future depends on balancing affordability, competition and financial sustainability.” Discuss.

E20 Ethanol Blending: India's Energy Security Gains Must Be Balanced with Vehicle Compatibility, Food Security and Economic Sustainability:

Recent Developments:

- The **Ethanol Blended Petrol (EBP) Programme** has become a major component of India's energy-transition strategy, with ethanol blending increasing from **1.53% in 2013–14 to 20% in Ethanol Supply Year 2025–26**, achieving the original 20% target five years ahead of the earlier 2030 deadline.
- As of July 2026, the Government reported that the programme had saved **over ₹1.97 lakh crore in foreign exchange**, substituted nearly **316 lakh metric tonnes of crude oil**, reduced around **952 lakh metric tonnes of carbon dioxide emissions**, and transferred more than **₹1.66 lakh crore to farmers**.

- India imports approximately **88.5% of its crude-oil requirement**, making diversification through domestically produced biofuels important for energy security and protection against international oil-price volatility.
- The latest official assessments report **no widespread or substantiated pattern of E20-linked engine failure**, while acknowledging that some E10-designed vehicles may experience approximately **3–5% lower fuel economy**, depending on vehicle characteristics, driving conditions and maintenance.

Ethanol Blending and E20:

What is Ethanol:

- **Ethanol** is a biofuel that can be produced from sugar-containing feedstocks such as sugarcane, starch-containing feedstocks such as maize and damaged foodgrains, and cellulosic biomass.
- Ethanol can be blended with petrol to reduce dependence on imported crude oil, create additional agricultural markets and reduce lifecycle greenhouse-gas emissions.
- The **National Policy on Biofuels, 2018**, amended in 2022, expanded the permissible feedstock base to include **damaged foodgrains, broken rice and foodgrains unfit for human consumption**.

Meaning of E20:

- **E20** refers to petrol containing approximately **20% ethanol and 80% petrol** by volume.
- The **Ethanol Blended Petrol Programme** seeks to reduce crude-oil imports, conserve foreign exchange, provide an additional market for agricultural produce, support farmers and reduce environmental impacts.
- India originally targeted 20% ethanol blending by **2030**, but the target was advanced to **Ethanol Supply Year 2025–26** following rapid expansion of domestic ethanol-production capacity.

Evolution of India's Ethanol Blending Programme:

Institutional Development:

- India's ethanol-blending journey predates the current E20 phase, with a **pilot programme launched in 2001**, formal policy development in 2004 and **E5 blending** introduced in several States by 2006.
- The policy framework was subsequently strengthened through the **National Policy on Biofuels, 2018**, which expanded feedstocks and created conditions for large-scale ethanol production.
- **NITI Aayog's Roadmap for Ethanol Blending in India: 2020–25** provided a structured framework for expanding production, ensuring feedstock availability, developing compatible vehicles and achieving higher blending levels.
- The roadmap recommended a **phased introduction of E20 from April 2023** and continued availability of E10 for older vehicles during the transition period.

Progress in Blending:

- The average ethanol-blending level increased progressively from approximately **8.1% in ESY 2020–21 to 10% in ESY 2021–22, 12.1% in ESY 2022–23, 14.6% in ESY 2023–24, 19.2% in ESY 2024–25 and 20% during November 2025–June 2026**.
- This progression indicates that the transition involved successive increases rather than an overnight shift from low blending to E20.

Expansion of Ethanol Production Capacity:

Capacity Creation:

- India's ethanol-production capacity expanded nearly **fivefold**, from approximately **421 crore litres in 2014 to around 2,000 crore litres in 2026**.
- Ethanol procurement increased from approximately **38 crore litres in ESY 2013–14 to more than 1,200 crore litres projected for ESY 2025–26**.
- Dedicated ethanol plants, distilleries, storage infrastructure and long-term procurement arrangements helped create greater certainty for investors and producers.
- Government interventions included **remunerative ethanol prices, financial assistance for distillery expansion, wider feedstock eligibility, reduced GST on ethanol for the EBP Programme and long-term procurement arrangements**.

Importance of Feedstock Diversification:

- Earlier ethanol production depended heavily on **sugarcane and molasses**, but the policy framework increasingly diversified production towards **maize, FCI rice, damaged foodgrains and other permitted feedstocks**.
- Feedstock diversification reduces dependence on a single crop and improves the resilience of ethanol supply.
- It also creates a direct connection between **agricultural policy, food management, energy security and rural income generation**.

Major Feedstocks and Their Policy Significance:

Sugarcane-Based Feedstock:

- **Sugarcane juice and B-heavy molasses** can be diverted towards ethanol production instead of being used entirely for sugar production.
- Ethanol procurement provides sugar mills with an additional revenue stream and can help address the structural problem of **surplus sugar production**.
- However, excessive diversion during poor agricultural seasons could create tension between **ethanol production and sugar availability**.

Maize:

- **Maize** has become increasingly important as a feedstock for ethanol production.
- Greater maize demand can provide farmers with an alternative market, but rapid diversion of maize towards fuel can also affect **feed availability, food prices and poultry and livestock industries**.
- A balanced feedstock strategy should therefore avoid excessive dependence on food-grade agricultural commodities.

Rice and Damaged Foodgrains:

- **FCI rice, broken rice and damaged foodgrains** can provide additional feedstock while reducing dependence on sugarcane.
- The use of foodgrains unfit for human consumption can be particularly useful because it reduces the direct food-versus-fuel conflict.
- However, diversion of usable foodgrains should remain consistent with **food-security requirements and buffer-stock norms**.

Economic and Energy-Security Benefits:

Reduction in Crude-Oil Dependence:

- India's high crude-oil import dependence exposes the economy to **global oil-price volatility, geopolitical conflicts, supply disruptions and exchange-rate pressures**.
- Every litre of domestically produced ethanol used in petrol reduces the quantity of imported petroleum required for transport.
- The Government estimates that the EBP Programme has already substituted nearly **316 lakh metric tonnes of crude oil imports**.

Foreign-Exchange Savings:

- The EBP Programme has generated cumulative foreign-exchange savings of **more than ₹1.97 lakh crore** according to the latest Government assessment.
- Lower crude-oil import requirements can improve India's **current-account position** and reduce vulnerability to external energy shocks.
- The foreign-exchange benefit is particularly significant because petroleum imports constitute a major component of India's merchandise import bill.

Benefits to Farmers:

- Ethanol procurement creates an additional demand channel for **sugarcane, maize and other permitted feedstocks**.
- The Government reported that more than **₹1.66 lakh crore** had been transferred directly to farmers through the ethanol programme by July 2026.
- The programme can therefore support rural incomes by transforming agricultural producers from merely food suppliers into participants in the **domestic energy economy**.

Environmental Dimensions:

Potential Emission Benefits:

- Ethanol can reduce lifecycle greenhouse-gas emissions compared with conventional fossil petrol, although the magnitude depends on **feedstock, cultivation practices, processing technology, transport and land-use effects**.
- The Government estimates that the ethanol programme has reduced approximately **952 lakh metric tonnes of carbon dioxide emissions** cumulatively.
- Ethanol's relatively high octane rating can also support efficient combustion in appropriately calibrated engines.

Water-Footprint Concern:

- Sugarcane-based ethanol can have a substantial **water footprint**, particularly in water-stressed regions.
- NITI Aayog's ethanol roadmap highlighted the need to promote **less water-intensive feedstocks and second-generation biofuels** to address this concern.
- The environmental sustainability of ethanol therefore depends not merely on replacing petrol but also on **how and from what feedstock ethanol is produced**.

The E20 Vehicle-Compatibility Debate:

Modern Vehicles:

- Vehicles designed and calibrated for E20 incorporate appropriate **fuel-system materials, engine calibration and component specifications** to operate with higher ethanol blends.
- E20-compatible vehicles were introduced from **2023**, while E20-tuned engines were envisaged for wider rollout from 2025 under the ethanol-blending roadmap.
- Ethanol has a high octane rating and can provide **better anti-knock characteristics**, particularly in engines appropriately calibrated for higher ethanol blends.

Legacy Vehicles:

- Older vehicles originally designed for **E5 or E10** have generated concerns regarding material compatibility, fuel economy and long-term maintenance.
- Ethanol can interact differently with certain materials and absorbs moisture because of its **hygroscopic properties**, making fuel-system design and storage conditions important.
- However, current official evidence does not establish a widespread pattern of abnormal engine wear, corrosion or vehicle failure attributable to E20.
- The Government reported that **Maruti Suzuki serviced 2.84 crore vehicles during FY2025–26, including 1.5 crore older non-E20-certified vehicles, without reporting E20-linked corrosion, abnormal wear or component-life damage**, while Hero MotoCorp reported similar field experience.

Fuel-Economy Impact:

- Ethanol has a lower energy density than petrol, which can reduce fuel economy when higher ethanol blends are used.
- Government and industry assessments indicate that some **E10-designed vehicles may experience approximately 3–5% lower fuel economy**, although actual mileage also depends on driving conditions, driving habits, tyre pressure, vehicle maintenance and air-conditioner usage.
- Therefore, claims that E20 automatically causes a **30% real-world mileage reduction** are not supported by the available official evidence.

Conflicting Assessments and Evidence-Based Evaluation:

Government and Industry Assessment:

- The Government states that E20 was introduced after **laboratory studies, field trials and consultations** involving the Automotive Research Association of India, Society of Indian Automobile Manufacturers, Indian Oil Corporation Limited, Indian Institute of Petroleum and automobile manufacturers.
- These assessments examined **engine durability, drivability, startability, corrosion resistance, material compatibility, emissions and fuel efficiency**.
- Official evidence currently does not indicate a widespread pattern of engine damage or abnormal vehicle wear attributable to E20.

Need for Continued Independent Monitoring:

- The absence of widespread documented damage does not eliminate the need for **long-term independent monitoring**, particularly for ageing vehicles and diverse climatic conditions.
- Transparent publication of **vehicle-wise test results, fuel-economy data, component-life assessments and consumer complaint statistics** can strengthen public confidence.

- A scientifically credible policy should distinguish between **isolated consumer experiences, controlled laboratory findings and large-scale field evidence.**

Pace and Sequencing of the E20 Transition:

India's Approach:

- India achieved 10% blending in **June 2022** and subsequently increased the blending level to 20% during ESY 2025–26.
- The Government argues that the transition was based on more than two decades of policy development, capacity creation, stakeholder consultation and phased implementation rather than an abrupt policy decision.
- NITI Aayog had recommended a **phased E20 rollout from April 2023**, including consideration of older vehicles during the transition.

Brazil as a Comparative Model:

- **Brazil** has operated high ethanol blends for decades and developed a mature ecosystem involving fuel production, distribution, vehicle technology and consumer adaptation.
- India has benefited from international experience and technological learning while developing its own ethanol ecosystem.
- The comparison nevertheless highlights the importance of **stable policy signals, consumer awareness, vehicle compatibility and long-term infrastructure planning.**

Food Security and Ethanol:

Sugar-Ethanol Linkage:

- Sugarcane juice and B-heavy molasses can be diverted from sugar production to ethanol, creating a trade-off between **sugar availability and fuel production.**
- So far, Government policy has attempted to regulate diversion through production estimates, sugar-stock considerations and feedstock policies.
- The availability of adequate sugar stocks is therefore important for maintaining flexibility between **food processing and fuel production.**

Foodgrain-Ethanol Linkage:

- The use of rice, damaged foodgrains and maize creates a potential **food-versus-fuel debate**, particularly during droughts, crop failures or food-supply disruptions.
- Ethanol policy should therefore remain flexible enough to reduce diversion of food-sensitive feedstocks during periods of domestic shortage.
- A diversified feedstock strategy based on **agricultural residues, non-food biomass and second-generation ethanol** can reduce this vulnerability.

Ethanol and the Cost of Petrol:

Why E20 Is Not Necessarily Cheaper:

- Ethanol procurement prices vary according to the **feedstock used**, with Government-administered prices differing substantially between sugarcane juice, molasses, damaged foodgrains, FCI rice and maize.

- Ethanol pricing must also account for **GST, transportation, storage and handling costs**, making a direct comparison between the procurement price of ethanol and the retail price of petrol economically inappropriate.
- Petrol's retail price includes substantial components beyond the underlying fuel cost, including **taxes and other charges**, so ethanol cannot be judged as cheaper merely by comparing two retail or procurement figures.

Energy-Security Rather Than Immediate Price Objective:

- The primary economic rationale of ethanol blending is not necessarily to make petrol cheaper on a particular day but to **reduce exposure to volatile international crude-oil prices**.
- Approximately one-fifth of petrol represented by domestically produced ethanol is less directly exposed to international crude-price fluctuations.
- The economic value of ethanol therefore includes **foreign-exchange savings, energy-security gains, farmer income, rural investment and emission reduction**, rather than only the immediate price of blended petrol.

Major Challenges:

Energy-Food-Water Nexus:

- Ethanol policy simultaneously affects **energy security, food security, agricultural markets and water resources**, creating an interconnected policy challenge.
- Excessive reliance on water-intensive sugarcane can aggravate groundwater stress, while excessive diversion of maize or rice can affect food and feed markets.
- India therefore requires a **feedstock-neutral but sustainability-oriented strategy** based on regional resource availability.

Legacy Vehicle Transition:

- Older vehicles require continued attention because their design specifications may differ from newer E20-compatible models.
- Manufacturers, regulators and oil marketing companies should provide clear information regarding **fuel compatibility, maintenance practices and warranty conditions**.
- Consumer protection is especially important where vehicle owners have limited technical knowledge about fuel compatibility.

Supply-Chain Infrastructure:

- Large-scale ethanol blending requires adequate **distillation capacity, storage facilities, transportation infrastructure and inter-State movement mechanisms**.
- Seasonal variation in sugarcane and maize production can create regional supply imbalances.
- Efficient inter-State movement and storage can therefore improve the reliability of ethanol supply.

Second-Generation Ethanol:

- **Second-generation ethanol** can be produced from agricultural residues and lignocellulosic biomass rather than relying primarily on food crops.
- Greater adoption of 2G ethanol can reduce the **food-versus-fuel dilemma**, utilise agricultural waste and potentially reduce crop-related land and water pressures.
- It can therefore become an important component of India's long-term sustainable biofuel strategy.

Way Forward:

Adopt a Sustainable Feedstock Strategy:

- India should diversify ethanol production across **maize, sugarcane residues, damaged foodgrains, agricultural residues and second-generation feedstocks** according to regional resource availability.
- Feedstock selection should incorporate **water intensity, food-security implications, lifecycle emissions and farmer profitability**.

Strengthen Independent Vehicle Testing:

- India should establish continuous and transparent monitoring of E20's impact on **legacy vehicles, fuel systems, mileage, emissions and component durability**.
- Independent testing institutions should periodically publish evidence-based assessments to separate genuine technical concerns from unsupported claims.

Protect Consumers During Transition:

- Automobile manufacturers and fuel retailers should provide clear information on **vehicle compatibility, expected fuel-economy changes and maintenance requirements**.
- Consumer grievance mechanisms should be strengthened to address genuine E20-related complaints rapidly and transparently.

Promote 2G and Advanced Biofuels:

- Greater investment in **second-generation ethanol, agricultural-residue conversion, cellulosic biofuels and advanced fermentation technologies** can reduce dependence on food crops.
- This approach can simultaneously address **energy security, agricultural-waste management, rural employment and climate objectives**.

Integrate Ethanol with India's Broader Energy Transition:

- Ethanol should be treated as one component of a diversified mobility strategy involving **electric vehicles, biofuels, green hydrogen, public transport and energy efficiency**.
- The long-term objective should be to reduce the economy's overall dependence on imported fossil fuels rather than replacing one single fuel dependency with another.

Value Addition for UPSC:

Key Terms:

- **Ethanol Blended Petrol:** Petrol containing a specified proportion of ethanol produced from biomass-based feedstocks.
- **E20:** Petrol containing approximately 20% ethanol and 80% petrol.
- **Ethanol Supply Year:** The annual period used by India for ethanol procurement and supply planning.
- **First-Generation Ethanol:** Ethanol produced primarily from food-based feedstocks such as sugarcane, maize and grains.
- **Second-Generation Ethanol:** Ethanol produced from lignocellulosic biomass such as agricultural residues rather than conventional food crops.
- **Feedstock:** Raw material used for producing ethanol.

- **Energy Security:** Reliable access to adequate and affordable energy while reducing vulnerability to external supply shocks.
- **Food-versus-Fuel Conflict:** Competition between the use of agricultural resources for food production and their use for energy production.
- **Lifecycle Emissions:** Total greenhouse-gas emissions generated across the production, transportation, processing and use of a fuel.
- **Energy Trilemma:** The policy challenge of balancing **energy security, energy affordability and environmental sustainability.**

Important Data for Prelims and Mains:

- **Ethanol blending in 2013–14:** 1.53%.
- **Ethanol blending in ESY 2025–26:** 20%.
- **Original 20% blending target:** 2030.
- **Revised target:** ESY 2025–26.
- **Cumulative foreign-exchange savings:** More than ₹1.97 lakh crore.
- **Crude-oil substitution:** Nearly 316 lakh metric tonnes.
- **Carbon dioxide emissions reduction:** Around 952 lakh metric tonnes.
- **Farmer payments:** More than ₹1.66 lakh crore.
- **Ethanol production capacity:** Approximately 2,000 crore litres in 2026.
- **Ethanol procurement in ESY 2025–26:** More than 1,200 crore litres projected.
- **Ethanol blending in ESY 2020–21:** Approximately 8.1%.
- **Ethanol blending in ESY 2021–22:** 10%.
- **Ethanol blending in ESY 2022–23:** 12.1%.
- **Ethanol blending in ESY 2023–24:** 14.6%.
- **Ethanol blending in ESY 2024–25:** 19.2%.
- **Fuel-economy reduction in some E10-designed vehicles:** Approximately 3–5%.

UPSC Mains Linkages:

- **General Studies Paper II:** Government policies, agricultural policy, consumer protection, cooperative federalism and regulatory governance.
- **General Studies Paper III:** Energy security, biofuels, crude-oil imports, agriculture, environmental sustainability, climate change and technological innovation.
- **Essay:** Energy independence, sustainable development, technology-led agriculture and India's transition towards a low-carbon economy.
- **Prelims:** Ethanol Supply Year, E10, E20, E85, National Policy on Biofuels, first-generation and second-generation biofuels, feedstocks and EBP Programme.

Possible Mains Question:

“Ethanol blending can simultaneously strengthen India's energy security and agricultural economy, but its expansion also raises concerns relating to food security, water use and vehicle compatibility.” Discuss.

Total Solar Eclipse: A Natural Laboratory for Studying the Sun–Earth–Moon System, Space Weather and Fundamental Physics

Recent Developments:

- A total solar eclipse occurred on **12 August 2026**, with the path of totality crossing **Greenland, Iceland, northern Russia, the Atlantic Ocean, Spain and a small part of Portugal**, while a partial eclipse was visible across much wider parts of Europe, Africa and North America.
- The eclipse had a maximum totality of approximately **2 minutes 18 seconds**, according to NASA's eclipse catalogue.
- The event provided an important natural laboratory for studying the **solar corona, upper atmosphere, ionosphere, space weather and Sun–Earth interactions**.
- Solar eclipses are particularly valuable because the Moon temporarily blocks the intense solar disc, allowing observations of phenomena that are otherwise difficult to isolate.
- The next major total solar eclipse visible from parts of **southern Spain, North Africa, Saudi Arabia and Yemen** will occur on **2 August 2027**.

What is a Solar Eclipse?

Definition:

- A **solar eclipse** occurs when the **Moon passes between the Sun and Earth**, causing the Moon's shadow to fall on part of Earth and blocking some or all of the Sun's visible disc.
- A solar eclipse can occur only during the **New Moon phase**, when the Sun, Moon and Earth are sufficiently aligned.
- Solar eclipses do not occur every month because the **Moon's orbital plane is tilted** relative to Earth's orbital plane around the Sun.
- An eclipse generally occurs when the New Moon is close to one of the **orbital nodes**, where the Moon's orbit intersects the plane of Earth's orbit.
- The alignment of the three bodies during an eclipse demonstrates the precise nature of **orbital mechanics and gravitational interactions** within the Earth–Moon–Sun system.

Types of Solar Eclipse:

Total Solar Eclipse:

- A **total solar eclipse** occurs when the Moon completely covers the visible disc of the Sun for observers located within the **umbra**, the darkest central part of the Moon's shadow.
- During totality, the sky can become dark enough to resemble twilight or dawn, while the **solar corona** becomes visible around the Moon.
- Totality is possible because the apparent angular sizes of the Sun and Moon in Earth's sky can be sufficiently similar, despite their enormous difference in physical size and distance.

Partial Solar Eclipse:

- A **partial solar eclipse** occurs when the observer is located within the **penumbra**, where the Moon covers only part of the Sun's disc.
- The Sun therefore appears partially obscured, producing a characteristic **crescent-shaped or "bitten" appearance**.
- A partial eclipse can also be observed outside the narrow path of totality during a total solar eclipse.

Annular Solar Eclipse:

- An **annular solar eclipse** occurs when the Moon passes between the Sun and Earth while being relatively farther from Earth in its orbit.
- The Moon then appears smaller than the Sun and cannot completely cover the solar disc, leaving a bright outer ring called the “**Ring of Fire.**”
- The apparent size of the Moon changes because its orbit around Earth is **elliptical rather than perfectly circular.**

Hybrid Solar Eclipse:

- A **hybrid solar eclipse** is a rare type in which the eclipse appears **total from some locations and annular from others** along its path.
- This occurs because Earth’s curved surface and the geometry of the Moon’s shadow cause the apparent relationship between the Moon and Sun to change along the eclipse path.

Shadow Geometry of a Solar Eclipse:

Umbra:

- The **umbra** is the darkest central portion of the Moon’s shadow where the Sun can be completely blocked.
- Observers within the umbra during a suitable eclipse experience **totality.**

Penumbra:

- The **penumbra** is the lighter outer portion of the Moon’s shadow where only part of the Sun is blocked.
- Observers within the penumbra experience a **partial solar eclipse.**

Antumbra:

- The **antumbra** extends beyond the tip of the umbra and occurs when the Moon’s apparent disc is smaller than the Sun.
- Observers within the antumbra experience an **annular eclipse.**

Scientific Significance of Solar Eclipses:

Study of the Solar Corona:

- A **total solar eclipse** provides an exceptional opportunity to observe the inner solar corona because the bright photosphere is temporarily concealed by the Moon.
- The corona is the Sun’s **outer atmosphere** and contains extremely hot plasma structured by complex magnetic fields.
- Studying the corona helps scientists understand **coronal heating, magnetic activity and the acceleration of the solar wind.**
- Understanding the solar wind is important because disturbances originating from the Sun can affect **satellites, spacecraft, communication systems and other technological infrastructure.**

Study of Space Weather:

- **Space weather** refers to changes in the space environment caused primarily by solar activity, including solar flares, coronal mass ejections and variations in the solar wind.
- Solar eclipses provide controlled, temporary reductions in solar radiation and therefore help researchers examine how Earth's atmosphere responds to sudden changes in solar input.
- Better understanding of solar activity contributes to improved prediction of **space-weather disturbances** and their technological consequences.

Study of the Ionosphere:

- The **ionosphere** is an electrically charged region of the upper atmosphere containing substantial concentrations of ions and free electrons.
- Solar radiation is a major source of ionization, so a solar eclipse causes a temporary reduction in ionization and can alter **electron density, temperature and atmospheric dynamics**.
- Changes in the ionosphere can influence the propagation of **radio waves**, making eclipse observations relevant to communication and navigation systems.
- NASA research has used eclipses as natural experiments to examine the relationship between **solar radiation and ionospheric behaviour**.

Study of Earth's Atmosphere:

- The rapid reduction and subsequent restoration of solar radiation during an eclipse produces temporary changes in **atmospheric temperature, winds and ionospheric conditions**.
- These observations help distinguish the effects of solar forcing from other atmospheric processes.
- Solar eclipses therefore function as naturally occurring experiments for studying **atmospheric dynamics and Sun–Earth coupling**.

Solar Eclipse and Verification of Scientific Theories:

The 1919 Solar Eclipse:

- The **29 May 1919 total solar eclipse** became historically significant because observations were used to investigate the gravitational deflection of starlight predicted by **Einstein's General Theory of Relativity**.
- Expeditions led by **Arthur Eddington and Frank Dyson** observed stars appearing close to the Sun during the eclipse and compared their apparent positions with reference observations.
- The observations from **Príncipe and Sobral, Brazil**, supported the prediction that the Sun's gravitational field bends passing starlight.
- The 1919 observations therefore became an important historical example of an astronomical event being used as a **natural laboratory for testing fundamental physics**.

Understanding Celestial Mechanics:

Orbital Geometry:

- The occurrence and precise prediction of solar eclipses demonstrate the ability of modern astronomy to model the **orbital motions of the Earth and Moon** with very high accuracy.
- Eclipse prediction requires precise knowledge of the **Moon's orbit, Earth's rotation, orbital geometry and relative positions of the Sun, Earth and Moon**.
- The narrow path of totality illustrates how small changes in orbital geometry can substantially alter the region experiencing complete solar obscuration.

Saros Cycle:

- Solar eclipses exhibit long-term patterns known as the **Saros cycle**, which is approximately **18 years, 11 days and 8 hours**.
- After one Saros cycle, a broadly similar eclipse geometry recurs, although the additional fraction of a day causes the eclipse path to shift westward.
- The Saros cycle is useful for **classifying and predicting eclipse sequences** and demonstrates the periodic nature of celestial mechanics.

Solar Eclipse and Earth's Rotation:

Historical Astronomical Records:

- Historical records of eclipses from civilizations such as **India, China and the Middle East** provide valuable astronomical information.
- Ancient observations can contribute to the reconstruction of historical eclipse paths and astronomical conditions.
- Long-term eclipse records can also assist researchers in studying variations in **Earth's rotation**, because the observed timing of historical eclipses can be compared with modern astronomical calculations.

Solar Eclipse and Scientific Temper:

Public Understanding of Science:

- Solar eclipses provide an opportunity to explain a visually dramatic phenomenon through **astronomy and celestial mechanics rather than superstition**.
- Public engagement with eclipses can encourage interest in **astronomy, physics, space science and STEM education**.
- Scientific communication during eclipses is therefore relevant to promoting **scientific temper**, an objective explicitly reflected in the Fundamental Duties under **Article 51A(h)** of the Constitution of India.

Safe Observation:

- Direct observation of the Sun during the partial or annular phases can cause serious **retinal injury** because ordinary sunglasses do not provide adequate protection.
- NASA recommends using appropriate **eclipse glasses or safe solar-viewing methods**, except during the brief totality phase when the solar disc is completely covered.
- The safety distinction is important because **partial and annular eclipses never completely block the bright solar disc**.

Why Solar Eclipses Do Not Occur Every Month:

Orbital Inclination:

- The Moon's orbital plane is inclined by approximately **5°** relative to the plane of Earth's orbit around the Sun.
- Therefore, during most New Moons, the Moon passes above or below the apparent solar disc from Earth's perspective.
- A solar eclipse becomes possible when the New Moon occurs close to an **ascending or descending orbital node**.

- This orbital geometry explains why eclipses occur during specific **eclipse seasons** rather than during every New Moon.

Solar Eclipse and India:

Geographical Relevance:

- The visibility of a solar eclipse from India depends entirely on the **geographical path of the Moon's shadow** across Earth.
- A total eclipse may be visible as only a partial eclipse from another region because the umbral path is much narrower than the penumbral region.
- Therefore, the occurrence of a total solar eclipse does not mean that **totality will be visible from every part of Earth**.

Indian Scientific Significance:

- India's participation in eclipse observations contributes to research on **solar physics, atmospheric science, ionospheric dynamics and space weather**.
- Eclipse observations can complement data obtained from **space-based solar observatories and ground-based astronomical instruments**.
- For India, understanding space weather is increasingly important because dependence on **satellite communication, navigation, remote sensing and space-based infrastructure** continues to increase.

Solar Eclipse and Space-Based Technology:

Communication and Navigation:

- Changes in the ionosphere during an eclipse can modify the propagation of radio signals.
- Since several communication and navigation systems depend on predictable radio propagation, ionospheric disturbances are relevant to **technological resilience**.

Satellite Operations:

- Space weather associated with solar activity can influence **satellite electronics, satellite communications, navigation systems and spacecraft operations**.
- Eclipse observations improve scientific understanding of the Sun–Earth system and therefore indirectly contribute to better **space-weather modelling and forecasting**.

Challenges and Limitations:

Short Duration:

- Totality generally lasts only for a **few minutes**, limiting the duration available for direct observations.
- The 2026 total eclipse had a maximum totality of approximately **2 minutes 18 seconds**.

Weather Dependence:

- Ground-based eclipse observations can be affected by **cloud cover, atmospheric conditions and geographical accessibility**.

- Consequently, scientific teams often combine ground observations with aircraft, radar and space-based instruments.

Need for Multi-Platform Observations:

- A single eclipse cannot provide a complete understanding of solar or atmospheric processes.
- Combining **ground-based telescopes, satellites, aircraft, sounding rockets, radar systems and citizen-science observations** produces a more comprehensive dataset.
- NASA's eclipse research has already used sounding rockets and ionospheric instruments to measure changes in **electric fields, magnetic fields, atmospheric density and temperature.**

Broader UPSC Relevance:

General Studies Paper I:

- **Astronomy and physical geography:** Earth–Moon–Sun geometry, orbital motion, eclipses and Earth's rotation.
- **Geography:** atmospheric processes, ionosphere and spatial variation in eclipse visibility.

General Studies Paper III:

- **Science and technology:** solar physics, space weather, satellite systems and astronomical observation.
- **Disaster and technological resilience:** understanding space weather and its potential effects on communication and navigation infrastructure.
- **Environment:** Sun–Earth interactions and atmospheric response to changes in solar radiation.

Essay and Ethics:

- Solar eclipses provide an example of how **scientific temper can replace superstition through evidence-based reasoning.**
- They also demonstrate how **basic scientific research can generate long-term technological and societal benefits.**

Value Addition for UPSC:

Best Institute for OAS/IAS

Important Terms:

- **Umbra:** The darkest central part of the Moon's shadow where total solar obscuration can occur.
- **Penumbra:** The outer part of the Moon's shadow where only partial solar obscuration occurs.
- **Antumbra:** The region beyond the umbra where the Moon appears smaller than the Sun and an annular eclipse is visible.
- **Solar Corona:** The Sun's outer atmosphere, visible most clearly during total solar eclipses.
- **Ionosphere:** The electrically charged region of the upper atmosphere that is strongly influenced by solar radiation.
- **Space Weather:** Variations in the space environment driven primarily by solar activity and capable of affecting technological systems.
- **Eclipse Season:** A period during which the Sun is sufficiently close to a lunar orbital node for eclipses to occur.
- **Saros Cycle:** An approximately 18-year, 11-day and 8-hour cycle after which similar eclipse geometry recurs.

Key Facts for Prelims:

- **2026 Total Solar Eclipse:** 12 August 2026.
- **Maximum totality:** Approximately 2 minutes 18 seconds.
- **Major regions of totality:** Greenland, Iceland, northern Russia, Spain and a small part of Portugal.
- **Next major total solar eclipse:** 2 August 2027.
- **Primary cause:** Alignment of the Sun, Moon and Earth during a New Moon near a lunar orbital node.
- **Total eclipse:** Umbra.
- **Partial eclipse:** Penumbra.
- **Annular eclipse:** Antumbra.
- **Hybrid eclipse:** May appear total or annular depending on the observer's location.
- **1919 eclipse:** Used by Eddington and Dyson to test the gravitational bending of starlight predicted by General Relativity.

Potential UPSC Mains Question:

“Solar eclipses are not merely astronomical spectacles but natural laboratories for understanding the Sun–Earth system and testing fundamental scientific theories.” Discuss.

Regional Parties in India: Electoral Stress, Federal Representation and Their Continuing Role in Democratic Politics

Recent Developments:

- The relevance of **regional parties** has become a major political and constitutional debate amid recent electoral setbacks, defections and organisational challenges faced by several State-based parties.
- The apparent decline in the number of States governed independently by regional parties does **not necessarily indicate a proportional decline in their electoral support**, because regional parties continue to exercise considerable influence in State elections and coalition politics.
- The **2024 Lok Sabha election** demonstrated the continuing importance of regional political forces, particularly in States such as Andhra Pradesh, Bihar, Jharkhand, Maharashtra, Odisha, Tamil Nadu, Telangana and West Bengal.
- The Election Commission of India formally recognises political parties as **National Parties and State Parties** under the **Election Symbols (Reservation and Allotment) Order, 1968**; the expression **regional party** is commonly used for parties whose electoral influence is concentrated primarily in one or a few States.
- The debate has gained further importance in the context of **One Nation, One Election**, because simultaneous elections may alter the relative weight of national and State-level political issues. The High-Level Committee on Simultaneous Elections recorded that several political parties expressed concerns about the possible marginalisation of regional parties.

What is the Classification of the Party System in India?:***Political Party and Multi-Party System:***

- A **political party** is an association of Indian citizens registered with the **Election Commission of India** under **Section 29A of the Representation of the People Act, 1951**. The Election Commission provides for registration of political parties under this provision.
- India follows a **multi-party political system**, in which national and State-level political forces compete at both Union and State levels.

- For electoral purposes, the Election Commission broadly distinguishes between **recognised parties** and **registered unrecognised parties**.
- Recognised parties are classified as **National Parties** and **State Parties** under the **Election Symbols (Reservation and Allotment) Order, 1968**.
- A **State Party** is often described as a regional party when its electoral influence is concentrated predominantly within a particular State.
- The Constitution of India did not originally contain a comprehensive constitutional framework for political parties, but the **52nd Constitutional Amendment Act, 1985** introduced the **Tenth Schedule**, thereby constitutionally addressing the problem of political defections.

Regional Parties and Federal Politics:

- Regional parties generally emerge from **regional aspirations, linguistic identities, cultural interests, sub-nationalism, State autonomy and State-specific socio-economic concerns**.
- They provide an institutional channel through which regional interests can enter the national policy-making process.
- Their presence therefore strengthens the **federal character of Indian democracy** by preventing political competition from becoming entirely centralised around national parties.

Why is the Political Space for Regional Parties Shrinking in India?:

Rise of Dominant National Parties:

- The expanding **electoral, financial and organisational reach of major national parties** has reduced the independent political space available to several regional parties.
- National parties increasingly possess extensive organisational networks, greater campaign resources and stronger national leadership structures.
- This allows them to compete directly for voters on issues that were previously dominated by State-based political formations.
- However, the exact number of States governed independently by regional parties should be interpreted cautiously because several regional parties also govern through **coalitions with national parties**.

Evolving Role of Regional Parties:

- The evolution of India's party system can broadly be understood through three phases:
 - **One-Party Dominance, 1952–1967:** The Congress system dominated politics at both Union and State levels.
 - **Rise of Regional Aspirations, 1967–1989:** Linguistic, cultural, caste-based and regional political identities became increasingly significant.
 - **Coalition Politics, 1989–2014:** Regional parties acquired greater bargaining power and frequently became **kingmakers** in Union governments.
- The contemporary period has witnessed renewed national-party dominance, which has reduced the bargaining space of some regional parties.
- Nevertheless, the return of coalition dynamics at the Union level in the **2024 Lok Sabha** demonstrates that regional parties can still significantly influence national government formation.

First-Past-the-Post Effect:

- India's **First-Past-the-Post** system converts constituency-level plurality into legislative representation.
- A regional party can therefore lose a substantial number of seats despite experiencing only a modest decline in its overall vote share.

- Conversely, a small increase in votes concentrated in strategically important constituencies can generate a disproportionately large increase in seats.
- Therefore, **seat share alone cannot fully measure the decline or resilience of regional parties.**

Organisational Decay and Dynastic Politics:

- Several regional parties are strongly centred around a **dominant leader or political family**, which can weaken internal democracy and institutional decision-making.
- Limited internal leadership elections and weak mechanisms for leadership succession can produce **succession crises, factionalism and party splits.**
- The concentration of political authority within a family can also restrict opportunities for emerging leaders.
- Capable leaders may consequently migrate towards parties offering stronger organisational structures and greater political opportunities.

Resource Asymmetry:

- Regional parties generally face greater financial and organisational constraints than large national parties.
- Under the current framework, the **candidate expenditure ceiling** for a Lok Sabha constituency in larger States is **₹95 lakh**, while the ceiling for an Assembly constituency is **₹40 lakh**. The corresponding limits in smaller States are **₹75 lakh and ₹28 lakh**, respectively.
- These limits apply to **candidates**, while political parties themselves do not face an equivalent overall statutory ceiling on their aggregate election expenditure.
- Consequently, large national parties with extensive financial networks can possess substantial campaign advantages over resource-constrained regional parties.
- The Election Commission maintains expenditure reporting and transparency mechanisms for recognised political parties, demonstrating the continuing importance of electoral-finance regulation.

Political and Organisational Challenges:

- The **Tenth Schedule** and the **Anti-Defection Law** were introduced to discourage political defections, but their implementation has generated continuing debates over defections, mergers and the role of the Speaker.
- The **two-thirds merger provision** permits legislators to avoid disqualification when a merger is supported by at least two-thirds of the members of the legislature party.
- Critics argue that this provision can facilitate organised political defections and weaken smaller or regional parties.
- Defections can create prolonged **political, constitutional and judicial disputes**, particularly when questions arise regarding the validity of mergers or the authority of the Speaker.
- Allegations concerning selective use of investigative agencies, corruption and the influence of money power can further increase organisational pressure on regional parties.

Shrinking Political Space Through Federal Constraints:

- Regional parties derive much of their political relevance from **State autonomy, fiscal federalism and State-specific policy-making.**
- The discretionary role of Governors, delays in granting assent to State legislation and conditions attached to **Centrally Sponsored Schemes** can affect the policy space available to State governments.
- Greater dependence on Centrally Sponsored Schemes may reduce the flexibility of States to design policies according to their specific developmental requirements.
- **Cesses and surcharges** are not part of the divisible pool of central taxes, and their increasing use can affect the share of resources available to States for discretionary expenditure.

- Article 271 permits Parliament to impose surcharges for Union purposes, but such surcharges are not distributed among States.
- Reduced untied fiscal resources can weaken the capacity of regional governments to deliver State-specific welfare, infrastructure and development programmes.
- National parties can consequently gain political space by presenting themselves as the principal channel through which States access **central resources and development programmes**.

Threats Associated with One Nation, One Election:

- **One Nation, One Election** seeks to synchronise elections to the Lok Sabha and State Legislative Assemblies, although simultaneous elections do not necessarily require voting across the entire country on a single day.
- Simultaneous elections may increase the visibility of **national security, macroeconomic performance and national leadership** relative to State-specific issues.
- Critics argue that this could disproportionately benefit well-resourced national parties because voters may be more inclined to support the same political formation at both Union and State levels.
- The High-Level Committee on Simultaneous Elections recorded that **15 of the 47 political parties** that submitted views raised concerns about possible anti-democratic effects and the marginalisation of regional parties.
- At the same time, supporters argue that simultaneous elections can reduce electoral expenditure, administrative disruption and repeated enforcement of the **Model Code of Conduct**.
- Therefore, the impact of simultaneous elections on regional parties requires a balanced assessment rather than an assumption of automatic disadvantage.

Shift from Identity Politics to Aspirational Politics:

- Regional parties historically gained support by mobilising around **language, caste, ethnicity, regional identity and State autonomy**.
- Contemporary voters increasingly combine these concerns with expectations relating to **employment, infrastructure, economic growth, public services, welfare delivery and national security**.
- Regional parties that rely exclusively on identity-based mobilisation may therefore face declining appeal among aspirational voters.
- Their long-term survival increasingly depends on combining **regional identity with credible governance and development-oriented politics**.

Evidence of Resilience:

Stable Electoral Support:

- The decline in the number of States independently governed by regional parties does not necessarily establish a corresponding decline in their **electoral relevance**.
- Regional parties continue to command a substantial share of votes in Lok Sabha elections and remain particularly influential in State-level elections.
- The **2024 Lok Sabha election** showed that regional parties and State-based political formations remained central to electoral competition across several major States.
- Vote share should nevertheless be interpreted alongside the number of constituencies contested because parties contesting different numbers of seats cannot be compared solely on aggregate vote share.

Assembly-Level Strength:

- Regional parties often perform more strongly in **State Assembly elections** than in simultaneous or separate national elections.
- This reflects the continued importance of **State-specific political identities, local leadership and regional governance performance**.
- Voters can distinguish between their preferences for Union and State governments, demonstrating that Indian electoral behaviour is not necessarily determined by a single national political narrative.

Coalition Relevance:

- Regional parties remain important **coalition partners** at both Union and State levels.
- Their importance becomes particularly visible when no single national party obtains sufficient seats to form a government independently.
- Regional parties can therefore influence **government formation, ministerial allocation, legislative bargaining and policy priorities** even without independently leading a government.
- The 2024 Lok Sabha election again demonstrated the strategic importance of regional allies in the formation and functioning of the Union government.

Federal Representation:

- Regional parties provide institutional representation to **State-specific interests** that may not receive adequate emphasis in national party agendas.
- They can raise issues relating to **language, culture, State finances, resource allocation, regional infrastructure and Centre-State relations** at the national level.
- Their presence therefore contributes to **cooperative and competitive federalism**.

Why Regional Parties Remain Important for Indian Democracy?:***Protection of Regional Aspirations:***

- Regional parties provide political representation to communities whose interests may be geographically concentrated in particular States or regions.
- They can convert regional grievances into **constitutional and democratic political demands** rather than allowing such grievances to remain outside institutional politics.

Strengthening Federalism:

- Regional parties act as an important political counterweight to excessive centralisation.
- Their participation in Union governments can strengthen the bargaining position of States on issues involving **tax devolution, centrally sponsored schemes, language, resources and development priorities**.
- They therefore contribute to the practical functioning of **Indian cooperative federalism**.

Political Competition:

- Regional parties increase the number of viable political alternatives available to voters.
- Competition between national and regional parties can encourage governments to improve **governance, welfare delivery and responsiveness to local concerns**.

Accommodation of Diversity:

- India's linguistic, cultural, ethnic and socio-economic diversity makes political accommodation essential for democratic stability.
- Regional parties can provide an institutional mechanism through which this diversity is incorporated into the political system.
- Strong regional representation can therefore support the constitutional principle of “**Unity in Diversity**”.

What Measures Can Strengthen Regional Parties?:

State Funding of Elections:

- **Partial State funding of elections**, as recommended by the **Indrajit Gupta Committee, 1998**, can reduce the financial disparity between large national parties and smaller regional parties.
- Public funding should be accompanied by strong **transparency, auditing and disclosure requirements** to prevent misuse of public resources.
- Such reforms can shift electoral competition towards **policies, governance and organisational capacity rather than financial power**.

Curbing Wholesale Defections:

- The **two-thirds merger provision** under the Tenth Schedule should be examined because organised defections can weaken regional parties.
- Removing the merger exception or introducing stricter safeguards could reduce incentives for large-scale political defections.
- The objective should be to protect legislators from coercive party control while preventing **engineered defections for political gain**.

Independent Adjudication of Defection Cases:

- The **Dinesh Goswami Committee, 1990** recommended that questions of disqualification should be decided by the President or Governor on the advice of the Election Commission rather than by the Speaker or Chairman.
- The **Law Commission's 170th Report, 1999** recommended transferring adjudicatory authority to an independent tribunal.
- The **National Commission to Review the Working of the Constitution, 2002** also supported an institutional mechanism independent of the legislature.
- An independent adjudicatory mechanism can reduce perceptions of **partisan decision-making** in defection cases.

Enhancing Intra-Party Democracy:

- Regional parties should strengthen **internal elections, transparent candidate selection, collective decision-making and institutionalised leadership succession**.
- Developing a second rung of leadership can reduce dependence on a single political family or personality.
- Institutionalisation can prevent party fragmentation during leadership transitions.

Re-evaluating One Nation, One Election:

- Any implementation of **simultaneous elections** should consider its potential consequences for regional political competition.

- Constitutional and institutional safeguards should ensure that **State-specific issues are not overshadowed by national narratives**.
- The High-Level Committee proposed constitutional changes involving **Articles 82A and 324A** for implementing simultaneous elections.
- Any reform should therefore balance the objectives of electoral efficiency with **federal representation and political pluralism**.

Addressing Delimitation Concerns:

- The impending **delimitation exercise** has major implications for the federal balance because population-based representation can alter the relative political weight of different States.
- States that achieved greater success in **population stabilisation** should not be disproportionately disadvantaged for their demographic achievements.
- Delimitation should therefore balance the principles of **democratic representation, federal equity and population-based representation**.

Governance Innovations:

- Regional parties should move from exclusive dependence on primordial identities towards **developmental regionalism**.
- Developmental regionalism can combine regional cultural identity with measurable governance outcomes.
- Regional governments should focus on **infrastructure, health, education, employment, investment, fiscal prudence and efficient public service delivery**.
- Strong State-specific governance models can enable regional parties to remain relevant even when national parties expand their organisational presence.

Way Forward:

Institutional Reforms:

- Strengthen **intra-party democracy, financial transparency and independent adjudication of defection cases**.
- Reform electoral financing to reduce excessive resource asymmetry between national and regional parties.
- Ensure that political reforms do not unintentionally weaken **political pluralism and federal representation**.

Federal Reforms:

- Strengthen **cooperative federalism** through predictable fiscal transfers, greater consultation with States and greater flexibility in centrally sponsored programmes.
- Establish clearer constitutional conventions regarding the **Governor's role** in matters involving State legislation and government formation.
- Maintain an appropriate balance between national priorities and State-specific developmental requirements.

Political Reorientation:

- Regional parties should combine **regional identity, good governance and developmental performance**.
- Leadership should become more institutional rather than being concentrated entirely around a political family.
- Regional parties should build durable organisations capable of surviving changes in individual leadership.

Conclusion:

- Regional parties are **not necessarily losing their political relevance; rather, they are undergoing a major structural stress test.**
- Their electoral challenges arise from the growing organisational strength of national parties, resource asymmetry, defections, leadership concentration and changing voter aspirations.
- However, their continuing importance in State elections, coalition governments and Centre–State bargaining demonstrates that Indian politics cannot be understood solely through the lens of national parties.
- A healthy democracy requires **strong national parties as well as effective regional voices** so that India's social, linguistic, cultural and economic diversity receives meaningful political representation.
- The future of regional parties will depend on their ability to transform from **personality-driven and identity-centred organisations into institutionally strong, development-oriented and democratically accountable political formations.**

Value Addition for UPSC:

Constitutional Linkages:

- **Article 324:** Provides for the superintendence, direction and control of elections by the Election Commission of India.
- **Article 271:** Permits Parliament to impose a surcharge on certain taxes and duties for Union purposes; such surcharge is not distributed among States.
- **Article 263:** Provides for an **Inter-State Council**, which can facilitate coordination between the Union and States.
- **Seventh Schedule:** Distributes legislative subjects between the Union and States and forms a core component of India's federal structure.
- **Tenth Schedule:** Provides the constitutional framework for dealing with **disqualification on grounds of defection.**

Important Committees and Reports:

- **Indrajit Gupta Committee, 1998:** Recommended State funding of elections.
- **Dinesh Goswami Committee, 1990:** Recommended reforms relating to electoral law and defection adjudication.
- **Law Commission, 170th Report, 1999:** Recommended an independent mechanism for deciding defection cases.
- **National Commission to Review the Working of the Constitution, 2002:** Supported an independent mechanism for adjudicating defection cases.
- **High-Level Committee on Simultaneous Elections, 2024:** Examined the constitutional, administrative and electoral implications of simultaneous elections and proposed a phased approach.

UPSC Mains Analytical Framework:

- **Political relevance:** Regional parties remain important because electoral support and governmental power are not identical indicators of political influence.
- **Federal relevance:** Regional parties institutionalise State-specific aspirations within India's federal framework.
- **Democratic relevance:** They promote political competition and provide alternatives to national parties.
- **Governance relevance:** Their long-term survival increasingly depends on measurable development outcomes rather than identity mobilisation alone.

- **Reform relevance:** Electoral-finance reform, intra-party democracy, anti-defection reform and balanced simultaneous-election design can strengthen political pluralism.

Possible UPSC Mains Question:

“The apparent decline of regional parties in electoral power does not necessarily signify their decline in political relevance.” Discuss in the context of Indian federalism and coalition politics.

Draft National Food Security Amendment Bill, 2026 Seeks to Restructure Antyodaya Foodgrain Entitlements and Strengthen Food Security

Recent Developments:

- The **Department of Food and Public Distribution** has invited public comments on the **Draft National Food Security (Amendment) Bill, 2026**, which proposes changes to **Section 3 of the National Food Security Act, 2013**.
- The principal proposal would provide every person belonging to an **Antyodaya Anna Yojana household** with **7 kg of foodgrains per month**, subject to a maximum of **35 kg per household per month**.
- The proposal would therefore shift the AAY entitlement from a purely **household-based entitlement of 35 kg to a per-person entitlement subject to a household ceiling**.
- The proposed change seeks to rationalise allocation by reducing the disparity between the effective per-capita entitlement of smaller and larger AAY households.
- The proposal has also revived wider debates concerning **nutritional security, outdated beneficiary coverage, household-size disparities and implementation barriers** under the existing food distribution system.

National Food Security Act, 2013:

Objectives and Legal Framework:

- The **National Food Security Act, 2013** marked a major shift in India's approach to food security by moving from a predominantly **welfare-based approach to a rights-based approach**.
- The Act legally provides for coverage of up to **75% of the rural population and 50% of the urban population** through the **Targeted Public Distribution System**.
- The maximum coverage under the Act was originally calculated at approximately **81.35 crore persons** using population and consumption data associated with the **2011 Census framework**.
- The Act seeks to ensure **availability, accessibility and affordability of foodgrains** for eligible households.
- The Act also follows a **life-cycle approach** by providing nutritional support to pregnant women, lactating mothers and children through designated public programmes.
- The **eldest woman aged 18 years or above** in an eligible household is designated as the head of the household for the purpose of issuing ration cards, thereby incorporating an element of **women's empowerment**.

Entitlement under NFSA:

- The Act provides foodgrain entitlements through two principal categories, namely **Antyodaya Anna Yojana households** and **Priority Households**.

- **Antyodaya Anna Yojana households:** The poorest of the poor households are entitled to **35 kg of foodgrains per household per month**.
- **Priority Households:** Eligible persons are entitled to **5 kg of foodgrains per person per month**.
- Beneficiary identification is primarily undertaken by **State Governments and Union Territory Administrations** within the coverage determined under the Act.

Who are the Antyodaya Anna Yojana Beneficiaries?:

Target Group:

- **Antyodaya Anna Yojana** is intended to cover the **poorest of the poor** households.
- States and Union Territories identify eligible households according to the applicable Central Government guidelines and their administrative framework.
- Eligible categories have historically included households headed by **widows, terminally ill persons, persons with disabilities and elderly persons** without assured means of subsistence or social support.
- Other vulnerable groups include **single women or men without family support, primitive tribal households, landless agricultural labourers, marginal farmers and rural artisans**.
- Vulnerable groups in urban areas, including **slum dwellers and persons dependent on informal-sector daily livelihoods**, can also fall within the identified categories.
- Eligible **Below Poverty Line families of persons living with HIV** are also included among the vulnerable categories.

Priority Households:

- **Priority Households** comprise beneficiaries identified by State Governments and Union Territory Administrations according to their prescribed criteria.
- The distinction between AAY and PHH reflects the NFSA's attempt to provide **higher household-level protection to the poorest beneficiaries** while extending broader per-person coverage to other eligible households.

Merger with Pradhan Mantri Garib Kalyan Anna Yojana:

COVID-19 Response:

- During the **COVID-19 pandemic in 2020**, the government introduced the **Pradhan Mantri Garib Kalyan Anna Yojana** to provide additional foodgrains free of cost to eligible beneficiaries.
- The programme was designed as an emergency food-security intervention during widespread economic disruption and livelihood losses.

Integration with NFSA:

- From **January 2023**, the government made the regular NFSA foodgrain entitlement **free of cost**, thereby removing the financial burden on eligible beneficiaries.
- From **1 January 2024**, free foodgrain distribution under the scheme was continued for **five years**, covering approximately **81.35 crore beneficiaries** according to the Department of Food and Public Distribution.
- The current free entitlement continues to provide **35 kg per AAY household per month** and **5 kg per PHH person per month**.
- The policy aims to improve **accessibility, affordability and availability** of foodgrains while maintaining greater uniformity across States and Union Territories.

Proposed Amendments under the Draft Bill, 2026:

Change in AAY Entitlement:

- The Draft Bill proposes to substitute the existing proviso under **Section 3 of the NFSA, 2013**.
- Every person belonging to an **AAY household** would become entitled to **7 kg of foodgrains per month**, subject to a maximum of **35 kg per household per month**.
- The existing entitlement provides **35 kg per AAY household**, irrespective of the number of members in that household.
- The proposed formula would therefore combine **individual entitlement with a household ceiling**.
- The Draft Bill itself provides that the applicable price would be determined under **Schedule I**, although the government's existing policy provides these foodgrains free of cost under the current arrangement.

Rationale of the Proposed Change:

- The proposed reform seeks to address the disparity created when households of different sizes receive the same **35 kg household entitlement**.
- A small AAY household currently receives a substantially higher quantity per person than a larger AAY household.
- The proposed **7 kg per person with a 35 kg ceiling** would partially link entitlement to household size while retaining a maximum fiscal and foodgrain commitment per household.
- However, households with five or more members would continue to face the **35 kg ceiling**, making the reform only partially proportional to household size.

Major Concerns Associated with the Proposed Amendment:

Inadequate Nutritional Security:

- The proposed amendment primarily concerns the **quantity of foodgrains**, rather than the broader quality of nutrition.
- Cereals alone cannot fully address **protein, micronutrient and dietary-diversity deficiencies**.
- A comprehensive food-security framework should therefore consider complementary access to **pulses, edible oils, fortified foods and other nutrient-rich foods**.

Demand for Higher Per-Person Entitlement:

- Some food-rights advocates have argued that the proposed **7 kg per person** entitlement remains inadequate for the poorest households.
- A higher entitlement has been demanded to better reflect actual household food requirements, particularly among vulnerable populations.

Disadvantage to Larger Families:

- The continued **35 kg household ceiling** means that larger AAY households would not receive foodgrains in direct proportion to their population.
- For example, a household with five members would receive the maximum **35 kg**, equivalent to **7 kg per person**, whereas a household with six members would receive less than **7 kg per person** because of the same ceiling.
- Thus, the proposal improves proportionality for smaller households but does not completely resolve the problem of larger households.

Regional Disparities:

- Changes in household-size patterns across States can produce different effects from the same entitlement formula.
- Smaller households, which are relatively more prevalent in some southern States, may experience a reduction in total household allocation compared with the existing uniform **35 kg entitlement**.
- The final impact therefore needs to be assessed using **State-wise household-size and beneficiary data** rather than through a uniform national assumption.

Outdated Beneficiary Coverage:

- NFSA coverage continues to be anchored to the demographic framework associated with the **2011 Census**, even though India's population and household structure have changed considerably.
- The official NFSA portal states that the maximum coverage is approximately **81.35 crore**, while current coverage is around **80.60 crore persons** according to the latest information displayed on the portal.
- Updating beneficiary identification using newer demographic information is therefore important for reducing **exclusion errors**.
- A food-security system cannot fully achieve its rights-based objective if eligible households remain outside the coverage because of outdated population benchmarks.

Implementation and Exclusion Challenges:

- The effectiveness of the NFSA depends not only on statutory entitlement but also on the ability of beneficiaries to access foodgrains through the **Public Distribution System**.
- **Biometric authentication failures, electronic know-your-customer requirements, connectivity problems and migration-related difficulties** can prevent eligible persons from obtaining their entitlements.
- Elderly persons, persons with disabilities and migrant workers can face disproportionate difficulties when access depends heavily on digital authentication.
- The **One Nation One Ration Card** framework has improved portability for migrant beneficiaries, but effective last-mile implementation remains essential.
- Therefore, technological reform should complement rather than replace **accessible and human-centred grievance-redress mechanisms**.

Food Security beyond Foodgrain Quantity:***Nutritional Security:***

- **Food security** involves more than the physical availability of cereals and includes adequate access to nutritious food.
- The NFSA already incorporates nutritional support for **pregnant women, lactating mothers and children aged 6 months to 14 years** through designated programmes.
- Future reforms should strengthen the connection between **food security and nutritional security** by increasing dietary diversity.
- Greater integration with programmes dealing with **maternal nutrition, child nutrition, school meals and public health** can improve outcomes beyond calorie sufficiency.

Foodgrain Procurement and Buffer Stocks:

- The food-security architecture depends on **procurement, storage, allocation and distribution** of foodgrains through institutions such as the **Food Corporation of India** and State agencies.

- The Food Corporation of India plays a central role in procurement and distribution of wheat, rice and coarse grains under TPDS and other welfare schemes.
- Adequate **buffer stocks** are important for maintaining food availability during droughts, floods, crop failures and other supply shocks.
- Foodgrain procurement and distribution must therefore balance **food security, fiscal sustainability, farmer incentives and environmental concerns**.

Federal Dimensions of NFSA:

Shared Responsibilities:

- Food security under the NFSA involves substantial cooperation between the **Union Government and State Governments**.
- The Union Government plays a major role in procurement, allocation and food subsidy, while States and Union Territories are responsible for identifying beneficiaries and implementing distribution at the local level.
- This division of responsibilities makes **cooperative federalism** central to effective implementation.
- State-level differences in beneficiary identification, administrative capacity and PDS infrastructure can produce variations in actual access to statutory entitlements.

Need for Consultation with States:

- Changes in entitlement formulas directly affect State-level beneficiary identification, ration-card management and distribution systems.
- The final amendment should therefore involve meaningful consultation with **States and Union Territories**.
- A cooperative approach can reduce implementation disputes and ensure that reform does not create new exclusion errors.

Way Forward:

Update Beneficiary Coverage:

- NFSA coverage should be periodically updated using the **latest reliable population and household data**.
- Any transition to updated coverage should ensure that existing eligible beneficiaries do not lose access to foodgrains.
- Special mechanisms should be created to identify **migrants, homeless persons, elderly persons and other vulnerable groups** who are more likely to remain outside conventional household databases.

Improve Nutritional Quality:

- Foodgrain-based support should increasingly be complemented by **pulses, edible oils and fortified foods** according to nutritional requirements.
- The objective should shift from merely preventing **calorie deprivation** towards ensuring adequate nutrition and dietary diversity.
- Nutrition-sensitive food policy should be linked with maternal health, child development, school meals and public health interventions.

Strengthen PDS Accessibility:

- Biometric authentication should have reliable **offline and alternative authentication mechanisms** so that technical failure does not result in denial of food.
- Migrant workers should be able to access their entitlements seamlessly through **portability mechanisms**.
- Grievance-redress systems should remain easily accessible at the local level, particularly for vulnerable beneficiaries.
- Greater transparency in allocation, stock availability and beneficiary records can reduce **leakages and exclusion errors**.

Balance Entitlement with Household Size:

- The proposed **7 kg per person subject to a 35 kg household ceiling** should be evaluated using actual household-size distributions and State-wise data.
- Any final formula should prevent both **disproportionately high per-capita allocations for very small households** and inadequate allocations for large vulnerable households.
- Periodic review should be built into the entitlement framework so that food requirements and demographic changes can be accommodated.

Strengthen Cooperative Federalism:

- The Union and States should jointly determine implementation mechanisms to ensure that statutory food entitlements remain accessible across diverse administrative and demographic contexts.
- The reform should preserve **uniform national food-security standards** while allowing States sufficient flexibility to address local nutritional and social vulnerabilities.

Conclusion:

- The **Draft National Food Security (Amendment) Bill, 2026** represents an attempt to rationalise the distribution of foodgrains under the **Antyodaya Anna Yojana** by introducing a per-person entitlement while retaining a household ceiling.
- The proposed **7 kg per person and maximum 35 kg per household** formula addresses an existing disparity between smaller and larger households but does not completely resolve the problem of household-size-based inequality.
- The larger challenge is to ensure that food security remains **rights-based, inclusive, nutritionally adequate and accessible** rather than focusing only on the quantity of cereals distributed.
- Updating beneficiary coverage, improving last-mile delivery, strengthening portability and authentication safeguards, diversifying nutrition and maintaining Union–State cooperation are therefore essential.
- The success of the amendment should ultimately be measured not merely by the quantity of foodgrains allocated but by its ability to ensure **food access, nutritional security, dignity and social protection for vulnerable citizens**.

Value Addition for UPSC:***Constitutional and Legal Linkages:***

- **Article 21:** The right to life has been judicially interpreted to include the right to live with **human dignity**, providing an important constitutional foundation for food and nutritional security.
- **Article 47:** The State has a duty to raise the level of **nutrition and the standard of living** and to improve public health.

- **Article 39(b):** The State should ensure that the ownership and control of material resources are distributed to best subserve the **common good**.
- **National Food Security Act, 2013:** It represents a shift from a welfare-oriented food distribution model towards a **statutory, rights-based entitlement framework**.

Important Institutional Linkages:

- **Food Corporation of India:** Central institution for procurement, storage and distribution of foodgrains under major food-security programmes.
- **Targeted Public Distribution System:** Primary delivery mechanism through which NFSA foodgrain entitlements are implemented.
- **One Nation One Ration Card:** Facilitates portability of foodgrain entitlements, particularly for **migrant beneficiaries**.
- **State Food Commissions:** Form part of the grievance-redress and accountability architecture under the NFSA.

UPSC Mains Analytical Framework:

- **GS-II:** Welfare schemes, food security, vulnerable sections, cooperative federalism and Centre–State relations.
- **GS-III:** Agricultural procurement, foodgrain management, buffer stocks, subsidies and supply-chain efficiency.
- **Essay:** “Food security is meaningful only when availability is accompanied by accessibility, affordability and nutrition.”
- **Core analytical balance:** The policy must reconcile **food security, nutritional security, fiscal sustainability, farmer incentives and administrative accessibility**.

QUESTIONS

1. Consider the following international destinations:

- (1) France
- (2) Vietnam
- (3) Malaysia
- (4) Sri Lanka
- (5) Japan

As of August 2026, how many of the above countries have operationalized Unified Payments Interface (UPI) cross-border transaction services?

- (A) Only two
- (B) Only three
- (C) Only four
- (D) All five

2. Consider the following statements regarding the chemical properties of ethanol and its operational impacts on automotive internal combustion engines:

- (1) Ethanol is a polar solvent that leads to the degradation of older rubber compounds, plastics, and fuel hoses over time.
- (2) Ethanol blended fuels are alkaline in nature, causing it to absorb atmospheric moisture.
- (3) In stationary vehicles, phase separation of the ethanol-water mixture creates an oxidized layer that causes corrosion in fuel tanks and injectors.
- (4) Ethanol possesses higher lubricity compared to conventional petrol, which enhances pump life in non-calibrated legacy engines.

Which of the statements given above accurately describe the chemical characteristics and effects of ethanol blending?

- (A) 4 only
- (B) 2 and 3 only
- (C) 1 only
- (D) 1, 2 and 3 only

3. Given below are two statements, one labeled as Assertion (A) and the other as Reason (R):

Assertion (A): Historical solar eclipse observations provided crucial Empirical evidence supporting Albert Einstein's General Theory of Relativity.

Reason (R): During the 1919 total solar eclipse, astronomers observed the deflection of starlight passing near the massive gravitational field of the Sun.

Select the correct answer using the code given below:

- (A) Both A and R are true and R is the correct explanation of A
- (B) Both A and R are true but R is NOT the correct explanation of A

- (C) A is true but R is false
(D) A is false but R is true

4. With reference to the Indian party system and political parties, consider the following statements:

- (1) The term "political party" was explicitly mentioned in the original text of the Constitution of India in 1950 in article 102.
(2) Political parties are registered under Section 29A of the Representation of the People Act, 1951 with the Election Commission of India.
(3) The Election Symbols (Reservation and Allotment) Order, 1968 governs the formal classification of recognized National and State Parties.
(4) Candidate election expenditure limits are uniform across all States and Union Territories for Lok Sabha and Assembly seats.

Which of the statements given above are correct?

- (A) 1, 3 and 4 only
(B) 1 and 2 only
(C) 1, 2 and 3 only
(D) 2 and 3 only

5. With reference to the proposed Draft National Food Security (Amendment) Bill, 2026, consider the following statements:

- (1) It proposes an entitlement of 7 kg of foodgrains per person per month for Antyodaya Anna Yojana (AAY) households.
(2) It completely removes the existing upper ceiling of 35 kg of foodgrains per month per household for AAY cardholders.
(3) The proposed revised foodgrain entitlement for AAY households will continue to be provided free of any charges.
(4) The amendment expands the statutory scope of NFSA to mandate the distribution of pulses and edible oils alongside cereals.

Which of the statements given above are correct?

- (A) 2 and 4 only
(B) 1 and 3 only
(C) 1, 2 and 3 only
(D) 1, 3 and 4 only

ANSWER KEY

1 – Answer (A), 2 – Answer (C), 3 – Answer (A), 4 – Answer (D), 5 – Answer (B)



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