

The Hindu Important News Articles For UPSC CSE

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The operationalisation of the India-New Zealand Free Trade Agreement, slated to take effect on October 20, marks a significant milestone in bilateral economic diplomacy. Aimed at doubling bilateral trade to ₹35,000 crore over the next few years, the pact underscores India's strategy of diversifying export markets and securing resilient supply chains amidst global trade friction.

India-New Zealand FTA takes effect on Oct. 20

The agreement aims at doubling bilateral trade to ₹35,000 crore over the 'next four to five years'

India's dairy, and other sensitive agriculture sectors will remain protected, says Minister

FTA to erase import levies on Indian goods; 95% exports to India to be tariff-free or at low levies

Saptaparno Ghosh
NEW DELHI

The Free Trade Agreement (FTA) between India and New Zealand that was ratified on Monday and comes into effect on October 20 aims at doubling bilateral trade to ₹35,000 crore in the "next four to five years", according to Union Commerce Minister Piyush Goyal.

"The entry into force of the India-New Zealand FTA will translate this goal into concrete economic outcomes," he told journalists.

According to New Zealand's foreign trade office, the FTA is set to erase import levies on all Indian goods, while 95% of ex-

ports to India will either be allowed tariff-free or at "sharply" reduced levies.

Mr. Goyal insisted that India has safeguarded its sensitive sectors, such as dairy and agricultural produce, including onions, almonds, chickpeas, peas, artificial honey, and sugar, not granting Wellington any relaxation or concessions on these products in the agreement. The deal will benefit India's micro, medium, and small enterprises, farmers, handloom artisans, and weavers, the Minister added.

New Zealand also has technological expertise in manufacturing of engineering and other goods, Mr. Goyal said. "They could look to support our



companies or invest and set up manufacturing in India to capture global markets," he added.

New Zealand's Minister of Trade and Investment, Todd McClay, emphasised

the significance of the two countries getting the deal done at a time of global "uncertainty", with escalating tariffs and trade barriers. "It gives confidence to our business communi-

ties to grow, form relationships, and trade," he said.

India is New Zealand's ninth largest export market, and the value of bilateral trade between the two countries stood at \$1.3 billion in the fiscal year 2024-25.

Elaborating on the potential avenues for investment, Mr. Goyal said: "There are many areas where they have cutting-edge technology and innovation. Agriculture is one of their strengths in certain products." He pointed to kiwi farming and apiculture as prime examples.

Wellington has committed \$20 billion worth of foreign direct investment into India as part of the deal.

The Commerce Minister

said that global investors are interested in setting up manufacturing in India not only for access to the large Indian market but also to help "seamlessly export" to about two-thirds of the global economy where India has preferential market access.

Mr. Goyal observed that in several countries, including New Zealand, labour is scarce and expensive. Manufacturing in India instead would be more economical.

U.S. sanctions law

"They are on the lookout for countries where they can export their technology to a trusted partner, where intellectual property is respected and would

not be stolen," he added.

Asked about India's response to recent United States legislation imposing sanctions on countries buying Russian oil, Mr. Goyal said that the fine print of the law was being studied.

Responding to a query from *The Hindu* about progress on India's trade deal with Chile, Mr. Goyal said, following productive talks, "in the coming months, we will hear some good news."

About the trade deal with Canada, the Union Minister noted that both sides have resolved to fast-track discussions. Indian negotiators are slated to visit the North American country for the fifth round of talks on October 5, he said.

Deep Analysis & Core Dimensions

- **Asymmetrical Market Access and Safeguards:** The pact grants 100% duty-free access to Indian goods in New Zealand, boosting labor-intensive sectors like textiles, footwear, and gems. Conversely, India has offered tariff concessions on roughly 70% of its tariff lines for New Zealand, while strictly protecting sensitive domestic segments.
- **Exclusion of Vulnerable Domestic Sectors:** To protect smallholder livelihoods, India has completely kept sensitive agricultural and dairy products—including milk, cheese, butter, onions, chickpeas, peas, almonds, and sugar—off the concession table.
- **Investment and Technological Synergy:** New Zealand has committed to facilitate \$20 billion in foreign direct investment into India over 15 years. This capital inflow, coupled with an Agriculture Productivity Partnership, aims to infuse advanced technology into Indian horticulture, apiculture, and manufacturing.

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Daily News Analysis

- **Mitigating Global Trade Fragmentation:** Concluded during a period of rising international trade barriers, the pact provides business certainty, encourages supply chain resilience, and leverages India's preferential market access network.

Related Static Dimensions (UPSC Syllabus)

- **GS Paper II (International Relations):** Bilateral, regional, and global groupings involving India and agreements affecting India's interests; economic diplomacy.
- **GS Paper III (Indian Economy):** Effects of liberalization on the economy, changes in industrial policy, export-import dynamics, and food security concerns regarding agricultural protection.

Conclusion

The India-New Zealand FTA successfully balances export expansion with domestic livelihood protection. By securing strategic technology transfers and investment commitments while insulating vulnerable agricultural sectors, the agreement sets a pragmatic template for India's future comprehensive economic partnerships.

UPSC Prelims Practice Questions

Question: With reference to the India–New Zealand Free Trade Agreement, consider the following statements:

1. New Zealand has agreed to provide duty-free access to Indian goods across all tariff lines.
2. India has offered tariff concessions on a smaller proportion of its tariff lines while retaining protection for sensitive sectors.
3. India has excluded certain agricultural and dairy products from tariff concessions.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: b)

UPSC Mains Practice Questions

Question: "India's recent Free Trade Agreements reflect an attempt to balance export expansion with protection of sensitive domestic sectors." Discuss with reference to the India–New Zealand FTA. **(10 Marks, 150 Words)**

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The Supreme Court's decision to strike down Maharashtra's mandatory methanol denaturing rules underscores the judiciary's strict scrutiny of subordinate legislation. While acknowledging the state's objective to prevent illicit liquor tragedies, the apex court emphasized that regulatory burdens on legitimate industries must satisfy the constitutional test of proportionality without being arbitrary or ineffective.

Why did the SC reject methanol rules?

What did the Supreme Court find wrong with Maharashtra's methanol rules? Why did the court hold the methanol restrictions disproportionate? What constitutional rights did the impugned rules violate? What guidelines did the Supreme Court issue to prevent tragedies?

EXPLAINER

Rizmi Lia M.

The story so far:

In September 18, the Supreme Court struck down Maharashtra government rules requiring methanol to be denatured with a colourant and bitterant before sale to non-drug manufacturers, holding that the measures were disproportionate and lacked sufficient connection with the problem they sought to address. A Bench, including J.B. Pardiwala and K. Vinod Chandran, allowed the writ petitions filed by the methanol-based product manufacturers against the mandatory inclusion of additives in methanol because of amendments to the Maharashtra Poisons Rules, 1972.

What was the case about?

Methanol, or methyl alcohol, is a highly toxic substance. It is also widely used as an industrial raw material in products including formaldehyde, paraformaldehyde, paints, resins and other chemicals.

The Maharashtra government introduced stricter controls on methanol following a 1991 hooch tragedy in Mumbai, in which around 93 people died after consuming spurious liquor containing methanol. A committee headed by then Additional Director General of Police P.R. Parthasarthy was constituted to examine the causes of the tragedy and suggest measures.

In 2011, Maharashtra amended its Poisons Rules and introduced Rules 18A and 18B.

The petitioners are aggrieved by the operation of the impugned Rules 18A and 18B of the Maharashtra Poisons Rules, respectively, which restrict the purchase of methanol and mandate the addition of bitterant and colourant to methanol before sale to a non-drug manufacturer. Further, by operation of Rule 18B, any possession of methanol without a licence in Form A is liable to confiscation.

Companies told the court that colour contamination could make products



GETTY IMAGES

unacceptable to the paint and pharmaceutical industries, while the additives could affect catalysts, laboratory and pharmaceutical applications.

The State, however, argued that the rules were necessary because methanol could be mixed with liquor and cause fatal poisoning. Making methanol identifiable and bitter would help prevent its misuse, it added.

What did the court examine?

The central question was whether Rules 18A and 18B violated Articles 14 and 19(1)(g) of the Constitution.

The basic tenet of Article 14 is fairness in action and non-arbitrariness, while Article 19(1)(g) protects the right to carry on an occupation, trade or business. The court said that the State does have the power to regulate methanol. The Poisons Act, 1919 permits State governments to make rules regulating the possession and sale of poisons. But the question before the court was whether Rules 18A and 18B, respectively, of the Maharashtra Poisons Rules could be said to be arbitrary, disproportionate, and unreasonable.

What was the ruling?

The Supreme Court held that the impugned provisions of the Maharashtra Poisons Rules, 1972, were unconstitutional.

The court found that Rule 18A(i), which

required verification of a purchaser's Form A licence before methanol could be sold, imposed a disproportionate restriction on legitimate industrial users. The court held that merely verifying a Form A licence did not establish how the purchaser would use methanol.

The court also struck down Rule 18A(2), which required methanol sold to non-drug manufacturers to be mixed with a colourant and bitterant. It held that the requirement did not have a reasonable and proximate nexus with preventing the misuse of methanol in illicit liquor. The State failed to demonstrate that the additives would prevent diversion or manufacture of spurious liquor.

"What is discernable from the above is that in practicality, the impugned rules prescribe a regulatory framework that does not prevent the misuse of methanol in liquor which takes place in the unregulated field. The sub-rule even in the best case of full compliance cannot prevent the misuse it aims to prevent... It addresses a mischief, it does not in fact remedy while imposing a continuous burden on the industries," it observed.

As for Rule 18B, which provided for confiscation of methanol possessed without a Form A licence, the court found that it could conflict with the lawful possession of methanol under a Form B permit and effectively render that permit redundant. The provision, therefore, also

failed the proportionality test.

Applying the proportionality framework laid down in *K.S. Puttaswamy v. Union of India* (2017), the court held that although the prevention of loss of life from methanol-adulterated liquor constituted a legitimate aim, the impugned restrictions were neither suitable nor necessary to achieve that objective. The court consequently allowed the writ petitions, disposed of the connected civil appeal, and held that the impugned rules were violative of Articles 14 and 19(1)(g). The court noted that "a policy that is irrational, or lacks rational justification, or is violative of any constitutional, statutory or any other provision of law is liable to be struck down".

What were the guidelines?

The court passed the guidelines regarding important aspects and steps to prevent hooch tragedies and for effective implementation of the policies.

The court said States should work together through the prohibition, excise, police, transport, industries and health departments, along with NGOs, to prevent illicit liquor. This includes checking State borders, stopping illegal transport, identifying places where illicit liquor is made or stored, and monitoring industrial units that may illegally supply chemicals used to make spurious liquor.

As regards the existing rules in States/Union Territories, the court said methanol rules should be strengthened. Licences should be granted only after proper verification and should be regularly reviewed. Industrial users should return unused or excess methanol, maintain proper stock and consumption records, and face suspension or cancellation of licences for violations. Methanol should be transported in dedicated tankers under excise supervision and sealed in a way that prevents theft, diversion or tampering.

It also called for more de-addiction centres, support for affected families and local counselling centres.

The court added that while it could issue directions, effective implementation ultimately depends on the police and enforcement machinery.

THE GIST

The Supreme Court struck down Maharashtra's rules requiring methanol sold to non-drug manufacturers to be denatured with colourant and bitterant, finding them disproportionate and unconstitutional under Articles 14 and 19(1)(g).

It held that the rules did not have a reasonable and proximate nexus with preventing methanol misuse in illicit liquor, while imposing continuing burdens on legitimate industries.

The court issued guidelines for States to strengthen methanol regulation, including stricter licensing, stock and transport controls, and inter-departmental enforcement.

Deep Analysis & Core Constitutional Dimensions

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Daily News Analysis

- **Failure of the Proportionality Test:** Applying the framework from the *K.S. Puttaswamy* judgment, the Court ruled that although preventing deaths from adulterated liquor is a legitimate state aim, forcing colorants and bitterants into industrial methanol was neither suitable nor necessary.
- **Lack of Rational Nexus:** The Court found that the rules only regulated lawful sales, leaving the unregulated and illegal channels of pilferage untouched. Since illicit operators source chemicals outside formal networks, adding denaturants failed to stop misuse while continuously penalizing compliant industries.
- **Infringement of Fundamental Rights:** The impugned rules violated **Article 14** (non-arbitrariness and fairness) and **Article 19(1)(g)** (freedom to practice any profession or carry on any occupation, trade, or business) by imposing commercial hurdles, damaging catalysts, and reducing product quality for paint and pharmaceutical manufacturers.
- **Redundancy and Confiscation Flaws:** Rule 18A's license verification mechanisms failed to track actual end-use, and Rule 18B's broad confiscation powers conflicted directly with lawful permits held by genuine industrial consumers.

Related Static Dimensions (UPSC Syllabus)

- **GS Paper II (Indian Constitution & Polity):** Separation of powers, scope of judicial review over executive actions and subordinate legislation, doctrine of proportionality, and fundamental rights (Articles 14 and 19).
- **GS Paper III (Internal Security & Governance):** Regulatory frameworks for hazardous chemicals, enforcement challenges against illicit manufacturing, and public health policy implementation.

Conclusion

The ruling establishes a vital precedent ensuring that administrative measures do not sacrifice industrial viability for surface-level enforcement. Effective public safety requires holistic policing and coordinated supply-chain monitoring rather than disproportionate restrictions on lawful trade.

UPSC Prelims Exam Study Questions

Question: With reference to the doctrine of proportionality in Indian constitutional law, consider the following statements:

1. A restriction on a fundamental right must pursue a legitimate objective.
2. The measure adopted must have a rational connection with the objective sought to be achieved.
3. A restriction must necessarily be the only conceivable means of achieving the objective.
4. The impact of the restriction on the right-holder must be balanced against the public interest.

Which of the statements given above are correct?

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

Ans: a)

UPSC Mains Exam Study Questions

Question: "Judicial efficiency depends not only on timely adjudication but also on effective management of the administrative processes surrounding litigation." Discuss with reference to the management of court deposits in India. **10 Marks, 150 Words)**

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The safe return of astronauts from low-Earth orbit hinges on the precise aerodynamic deceleration of the Gaganyaan crew module. Because a spacecraft re-entering the atmosphere travels at hypersonic speeds, managing kinetic energy through a multi-staged parachute deployment system is critical to ensuring structural integrity and astronaut survival.

How will Gaganyaan's crew module deploy its parachutes?

Why does Gaganyaan need multiple parachutes? How are they tested?

Unnikrishnan Nair S.

The story so far:

Any spacecraft entering the earth's atmosphere will rely primarily on atmospheric drag to lose a significant fraction of its velocity. To gently touch down on land or in the sea, additional decelerating systems like parachutes have to be activated.

The parachute used for crewed space vehicles demands extraordinary engineering with multi-staging, redundancy, high-performance materials and high-pressure packing to reduce storage space.

How are parachutes deployed?

The parachute system contains three types of chutes: pilot, drogue, and main. The pilot chute is a mini-parachute

deployed to pull out wider drogue or main chutes. The drogue chute is deployed early in the descent to stabilise the module and first reduce the velocity. The main chute has a wider canopy and is used in the final phase to reduce the velocity enough to achieve gentle soft-landing conditions.

The crew module's blunt shape creates a turbulent wake in its rear side and the parachute has to be ejected through this wake. The ejection mechanism should ensure the energy imparted to the parachute suffices to cross the wake in the shortest time and deploy the parachute in the far-wake region.

Generally, the parachutes are deployed when the module has reduced its speed to below the speed of sound.

Why deploy parachutes in stages?

As it descends, the Gaganyaan crew

module will be moving at around 170 m/s in the lower atmosphere. If the full-sized main parachute is deployed straightaway, it will experience a high opening shock, shredding the fabric or subjecting the crew to dangerously high deceleration.

Multi-staging, on the other hand, increases the chutes' diameter in successive stages, keeping the dynamic pressure to acceptable levels.

Also, to keep a chute from opening really quickly, a cord wound around the canopy restricts how far it can spread. After a preset delay, when the vehicle has slowed enough, a timed cutter severs the cord, which goes loose and allows the parachute to bloom fully.

How are parachutes tested?

There are different platforms to test parachutes. The 'rail track rocket sled' is a ground facility where a sled is accelerated

along rails by firing small solid motors, and the parachutes are deployed from the sled at an appropriate velocity. The Terminal Ballistic Research Lab, Chandigarh, has a state-of-the-art RTRS facility.

Other modes of testing include dropping the test article from a helicopter or an aircraft or using small rocket-powered test vehicles, which launch the crew module to some appropriate altitude and release it from there.

After splashdown in the sea or upon soft-landing on land, if the parachute is not detached immediately, the wind acting on the canopy could drag the module on land or capsize it in sea and this might cause injuries to the astronauts. Hence, the parachute is released by activating pyro cutters or mechanical quick-release devices.

What materials are used in aerospace parachutes?

A parachute's material is controlled by conditions like tensile strength, thermal resistance, and mass. Modern aerospace parachutes use advanced synthetic polymers engineered to meet specific design conditions.

Kevlar is used in high-load suspension lines, risers, and structural reinforcement tapes due to its exceptional tensile

strength and heat resistance. Nomex finds application in heat-exposed areas to withstand hot mortar gas discharge and aerothermal heating.

Nylon is widely used for canopy broadcloths because of its elasticity, which helps absorb initial dynamic shock loads during inflation. It is highly compressible, so it can be packed into a relatively small volume.

What parachutes are in the Gaganyaan crew module?

In crewed missions, recovery systems use redundant clusters of pilot, drogue, and main parachutes. The Gaganyaan crew module has two drogue chutes deployed by mortars and three main chutes deployed by mortar-ejected pilot chutes.

If one main parachute suffers an anomaly, the remaining two independent chains are fully capable of ensuring a safe touchdown.

ADRDE in Agra, which is a laboratory under the Defence Research & Development Organisation, is the developing agency.

(Unnikrishnan Nair S. is former director, VSSC and IIST; Founding Director, HSFC; and an expert in launch vehicle systems, orbital re-entry and human spaceflight technologies. Currently Dr Sarabhai Professor at VSSC)

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Deep Analysis & Core Engineering Dimensions

- **Multi-Stage Deployment Sequence:** The deceleration architecture operates in successive phases to prevent catastrophic dynamic shock loads. Miniaturized pilot chutes deploy first to extract the larger drogue chutes, which stabilize the module and bleed off initial high velocities in the turbulent wake region. Once subsonic conditions are reached, redundant main parachutes deploy to facilitate a gentle terminal descent.
- **Redundancy and Cluster Design:** The Gaganyaan crew module relies on clusters of independent parachute chains (including multiple drogue and main chutes). This fault-tolerant design ensures that even if one main parachute encounters an anomaly, the remaining units retain full capability to execute a safe soft landing.
- **Advanced Material Engineering:** Extreme thermal and mechanical stress require specialized polymers. Kevlar is utilized for high-load suspension lines due to its high tensile strength; Nomex withstands intense aerothermal heating near mortar gas discharges; and nylon is used for canopy broadcloths because of its elasticity and high compressibility for compact packing.

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Daily News Analysis

- **Rigorous Ground and Air-Drop Testing:** The system undergoes extensive validation across specialized facilities, including Rail Track Rocket Sled (RTRS) setups and Integrated Main Parachute Airdrop Tests (IMAT) where simulated modules are dropped from heavy-lift aircraft (such as the IAF IL-76) to verify structural margins under maximum expected loads.

Related Static Dimensions (UPSC Syllabus)

- **GS Paper III (Science & Technology):** Awareness in space technology, achievements of India in space science, indigenous research and development (ISRO and DRDO/ADRDE synergy), and critical technology transfer.
- **GS Paper III (Disaster Management & Safety Systems):** Engineering safety protocols, human-rated testing frameworks, and high-reliability life-support systems.

Conclusion

The meticulous design and multi-layered testing of Gaganyaan's parachute network represent a vital leap in India's human spaceflight capabilities. By prioritizing structural redundancy and rigorous qualification trials, ISRO ensures that the complex transition from orbital velocity to a safe terrestrial landing meets stringent global safety standards.

UPSC Prelims Practice Questions

Question: With reference to the Gaganyaan crew module's parachute system, consider the following statements:

1. Pilot parachutes assist in the deployment of larger parachutes.
2. Drogue parachutes help stabilise and decelerate the crew module before deployment of the main parachutes.
3. Main parachutes are primarily intended to provide the final controlled descent of the crew module.
4. All parachutes must necessarily deploy simultaneously to minimise aerodynamic instability.

Which of the statements given above are correct?

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

Ans: a)

UPSC Mains Practice Questions

Question: Human spaceflight demands a substantially higher level of reliability than conventional space missions. Discuss the role of redundancy, staged deployment and rigorous testing in ensuring crew safety during spacecraft recovery. **(10 Marks, 150 Words)**

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Recent data from the Central Electricity Authority reveals that nearly 40% of India's coal-fired power plants are operating with critically low fuel inventories. Driven by surging electricity demand under intense weather patterns and logistical bottlenecks, this crunch places a spotlight on the resilience of India's primary baseload energy infrastructure.

'Nearly 40% of coal power plants critically low on fuel'

The number of power plants with critically low coal stocks of less than 25% of the required inventory rose sharply to 74 as of September 19 from about 60 plants last week, data show

Reuters
NEW DELHI

Nearly 40% of India's coal-fired power plants are operating with critically low fuel stocks due to a surge in power demand amid hotter-than-usual weather linked to El Niño, government data showed on Monday.

The number of power plants with critically low coal stocks of less than 25% of the required inventory or only able to generate power for less than three days rose sharply to 74 as of September 19 from about 60 plants last week, data from the Central Electricity Authority that is updated daily showed.

India's peak power de-



Power struggle: India's peak power demand has been hovering between 230 gigawatts and 250 gigawatts in the past week. REUTERS

mand, a measure of the maximum electricity requirement, has been hovering between 230 gigawatts and 250 gigawatts in the past week.

Peak power demand hit an all-time high of 270.70

gigawatts in May.

The decline in power plant stocks appears to be a temporary logistical issue rather than a sign of any structural supply constraints, Crisil analysts said. India's coal and rail-

way ministries said in early September they were increasing supplies to the plants after erratic monsoon rains had impacted shipments.

Renewable power generation rose about 21% between April and August, but due to the intermittent nature of clean energy, coal-fired power continued to play a critical role in meeting round-the-clock demand, Crisil said.

Meanwhile, Indian power producers' coal imports in August rose to a 15-month high as a heatwave boosted electricity demand while hydroelectric power generation remained subdued, prompting utilities to turn to costly overseas supplies, Reuters reported last week.

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Deep Analysis & Core Dimensions

- **Surging Power Demand and Weather Stress:** Peak power demand has hovered persistently between 230 gigawatts and 250 gigawatts, propelled by extended hot weather linked to El Niño conditions. While renewable energy generation has grown significantly, the intermittent nature of clean energy leaves coal-fired plants responsible for meeting round-the-clock base load.
- **Logistical and Transportation Bottlenecks:** Analysts indicate that the inventory depletion stems primarily from logistical constraints rather than an absolute shortage of domestic coal. Prolonged or erratic monsoon rains across major eastern coal-bearing belts have hampered mining operations and railway rake movements, restricting fuel evacuation to distant utilities.
- **Recourse to Costly Imports:** Subdued domestic hydroelectric generation coupled with high cooling demand pushed Indian utilities to ramp up overseas coal purchases to a 15-month high. This reliance on international markets exposes power generators to global price volatility and strains foreign exchange reserves.
- **Intervention and Mitigation Strategies:** In response to plants holding less than three days of continuous stock, the Ministry of Coal and Ministry of Railways have stepped up coordination, allowing alternative transportation routes—such as road-cum-rail logistics—to expedite coal movement.

Related Static Dimensions (UPSC Syllabus)

- **GS Paper III (Infrastructure & Energy):** Energy security, infrastructure bottlenecks, coal distribution and logistics, and integration of renewable energy with thermal grids.
- **GS Paper III (Economic Development):** Industrial growth dependency on uninterrupted power supply, supply chain resilience, and vulnerability to climate-induced weather anomalies.

Conclusion

While immediate inventory pressures underscore vulnerabilities in domestic coal evacuation channels, they highlight a temporary logistical strain rather than structural scarcity. Ensuring long-term energy security necessitates reinforcing multi-modal transport infrastructure and strategically balancing renewable expansion with reliable thermal backup.

UPSC Mains Exam Study Questions

Question: Coal-stock depletion at thermal power plants may reflect weaknesses in energy logistics rather than an absolute shortage of coal. Examine the factors responsible for such supply-side vulnerabilities in India. (10 Marks, 150 Words)

Decoding the transition to alternative fuels

While adoption of EVs has risen in the passenger vehicles category, it is mainly two-wheeler and three-wheeler categories that are adopting EVs than cars

DATA POINT

Sachin Swaraj
Gandla Sneha

August 2026 marked a notable milestone in India's journey towards a shift from fossil-fuel run vehicles to Electric Vehicles (EVs), as the data from the Federation of Automobile Dealers Associations' (FADA) showed that it was a period of a "historic fuel crossover".

In the passenger vehicles category that mainly includes cars, FADA data showed that, for the first time, the share of new vehicles in the alternative fuels category (41.95%) overtook the share of petrol vehicles (40.85%). FADA's statement said that alternative fuels included "CNG, hybrid and electric combined".

Without doubt, India has made considerable progress in moving away from fossil fuels and adapting EVs. As **Chart 1** shows, petrol and diesel still dominate the market by a huge margin, accounting for 83.5% of all the roughly 82 lakh vehicles registered from January to March this year. But this is a sharp 11.5 percentage points drop from the same period in 2021, when petrol and diesel accounted for over 95% of all the 57 lakh vehicles registered then.

Less adoption among cars

While the chart shows the sale of EVs on a sharp increase, accounting for 10.6% of total registrations, a granular analysis of sub-categories under the alternative fuels based on data accessed from the Vahan portal showed that this was driven more by EV adoption in the two-wheeler and three-wheeler categories. When it came to cars, the growth under the alternative fuels is more pronounced in vehicles that use CNG and LPG, which are fossil fuels with significantly lower emissions, than EVs.

The two-wheeler segment which accounts for over 70% of all

the new vehicles registered in the country had shown signs that EV adoption is gaining pace.

After registering a marginal increase year-on-year, the share of EVs in two-wheelers has made a jump from 6.4% in 2025 to 9.1% in 2026 (till August) (**Chart 2**). This is also the first time the share of two-wheelers running on petrol has come down to the 90% mark. This jump in the sale of EV two-wheelers has contributed significantly to the overall share of petrol and diesel vehicles, across all categories, coming down well below the 85% mark this year.

If there is one segment that has made a rapid transition away from petrol and diesel, it is the three-wheeler category. They, however, account for only 4% of all the vehicles sold. Of the roughly 9.8 lakh three-wheelers registered till August this year, 60.5% have been EVs (**Chart 3**). The share of petrol and diesel in the registration of three-wheelers has halved from nearly 30% in 2021 to less than 15% in 2026. Interestingly, the share of three-wheelers using CNG or LPG has also come down this year.

It is in the cars segment, which accounts for the second biggest share in vehicles after two-wheelers, that the picture is more nuanced than what the shift indicates when "alternative fuels" are clubbed together. **Chart 4** shows a remarkable drop in the share of petrol and diesel cars from 86% in 2021 to 61.6% in 2026.

However, this decline is because there are more hybrid cars that run on petrol with CNG or LNG than EVs. There is certainly progress in the sale of EVs, but it is much slower when compared to vehicles using CNG or LPG. The share of hybrid EVs has remained fairly constant since 2023 at around eight per cent. The data indicates the need for further interventions through measures such as the ramping up of charging infrastructure, which can help accelerate the pace of EV adoption among cars as well.

Nuance in the mix

The data for the charts were sourced from the Vahan portal. Values for 2026 are till August. Vehicles in few other fuel categories with negligible share in total registrations are not shown in the charts. Sachin Swaraj and Gandla Sneha are interning with The Hindu's Data team



CHART 1: The lines show the total number of vehicles registered in each fuel category while the values within brackets show the share of each fuel type in total vehicles registered. Q1 - Jan to March, Q2 - Apr to June, Q3 - July to Sep, Q4 - Oct to Nov

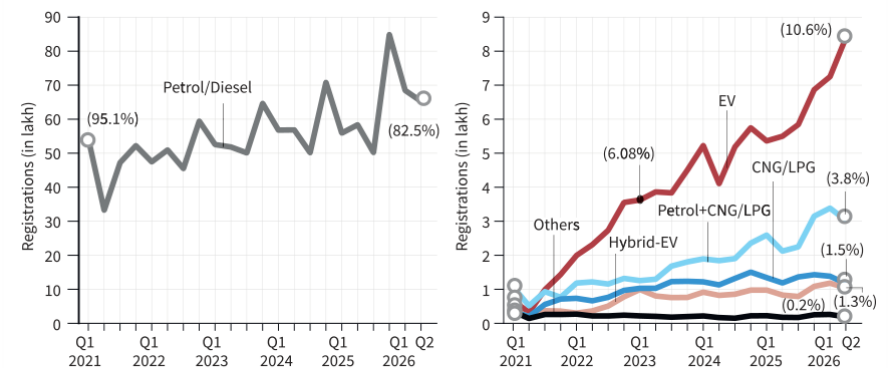
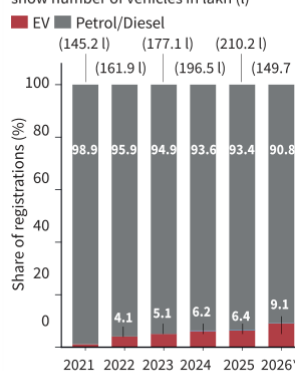
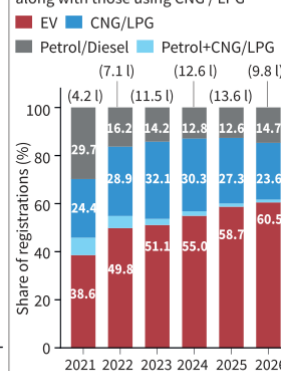


CHART 2: Share of EVs in two-wheelers has shown a notable jump in 2026. Values above bars in Charts 2, 3 and 4 show number of vehicles in lakh (l)



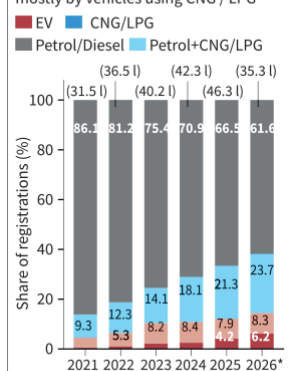
For the first time, the sale of petrol vehicles in the number of new two-wheelers registered has dropped to 90% mark in 2026

CHART 3: EVs now dominate three-wheelers, while share of vehicles using petrol/diesel have come down sharply along with those using CNG / LPG



The share of EVs among three-wheelers has jumped from less than 40% in 2021 to over 60% in 2026

CHART 4: While share of petrol and diesel vehicles in sale of cars has come down, their share is replaced mostly by vehicles using CNG / LPG



The share of petrol/diesel vehicles has come down significantly, but share of EVs is growing only marginally

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GS Paper III: Indian Economy

UPSC Mains Exam Practice Questions: India's transition towards electric mobility is progressing unevenly across vehicle segments. Examine the economic and infrastructural factors responsible for this variation. **15Marks, 250 Words)**

Context

Recent data from the Federation of Automobile Dealers Associations (FADA) indicates a historic fuel crossover in India's automotive sector. While alternative fuels have collectively surged past petrol and diesel in specific passenger vehicle categories, a granular review shows that EV adoption is highly uneven, being spearheaded primarily by two-wheelers and three-wheelers rather than cars.

Deep Analysis & Core Dimensions

- **Uneven Segment-Wise Penetration:** While overall alternative fuel adoption looks robust, true battery electric vehicle (EV) penetration is heavily concentrated in the two-wheeler and three-wheeler segments. Three-wheelers lead the transition with over 60% running on electric power, driven by lower total cost of ownership and fixed urban route profiles.
- **Nuances in the Passenger Car Segment:** In the car category, the decline of pure petrol and diesel vehicles is primarily driven by the uptake of compressed natural gas (CNG), liquefied petroleum gas (LPG), and hybrid technologies rather than pure battery EVs. Pure EVs face slower adoption in this tier due to upfront vehicle costs and range anxiety.
- **Infrastructure Gaps and Charging Deficits:** The slower pace of pure EV adoption among passenger cars highlights persistent structural bottlenecks, notably the need for aggressive expansion of public fast-charging infrastructure, standardized grid access, and domestic battery cell manufacturing.
- **Policy and Subsidy Impacts:** Targeted government interventions, such as the PM E-Drive scheme and earlier FAME iterations, have successfully incentivized commercial fleets and two-wheelers, though passenger car subsidies and tax rationalization require further fine-tuning to accelerate consumer adoption.

Related Static Dimensions (UPSC Syllabus)

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Daily News Analysis

- **GS Paper III (Economic Development & Infrastructure):** Transition to clean energy, electric mobility infrastructure, reduction of carbon footprint in the transport sector, and fossil-fuel import dependency.
- **GS Paper III (Environment & Ecology):** Climate change mitigation, air quality improvement in urban centers, and India's international commitments toward net-zero emissions.

Conclusion

India's automotive landscape is undergoing a structural shift toward alternative energy sources, anchored by rapid electrification in light commercial and two-wheeler segments. Replicating this momentum in the passenger car market requires sustained investments in charging infrastructure and robust supply chains to ensure a comprehensive green transition.