

The Hindu Important News Articles For UPSC CSE

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Page 06: GS II : International Relations / Preliminary Examination

The decision by the United States to transition temporary trade tariffs into permanent measures marks a significant shift toward unilateral trade enforcement. Following an investigation under **Section 301 of the Trade Act of 1974** regarding forced labor in global supply chains, the U.S. Trade Representative (USTR) announced permanent tariffs across 60 trading partners.

While a higher 12.5% rate was imposed on countries lacking forced labor import bans, **India secured a lower tariff tier of 10%** due to its proactive policy measure prohibiting the import of forced labor-linked goods. This highlights the growing intersection between international trade, labor standards, and strategic economic diplomacy.

Key Insights & Deep Analysis

A. Non-Tariff Standards as Strategic Trade Policy

- **Labor Standards in Global Trade:** The U.S. is increasingly using human rights compliance (such as forced labor bans) as a prerequisite for preferential tariff treatment, shifting global trade from pure price competitiveness to regulatory compliance.
- **Proactive Indian Strategy:** India's timely policy intervention—banning imports produced via forced labor—allowed it to avoid the higher 12.5% punitive bracket, preserving relative competitiveness against non-compliant trading partners.

B. Unilateralism vs. WTO Multilateral Rules

- **Bypassing the WTO:** Reliance on Section 301 investigations reflects a continuing trend of major economies taking unilateral action rather than utilizing the World Trade Organization's (WTO) Dispute Settlement Mechanism.
- **Precedent for Trade Measures:** Structuring tariffs around domestic labor investigations creates a precedent where developed nations can define non-tariff criteria, potentially creating hurdles for developing nations.

C. Economic Impact on Indian Exports

- **Relative Advantage:** Kept at 10%, Indian exports gain a marginal edge over competing economies penalized at 12.5%.
- **Absolute Friction:** A permanent 10% baseline tariff still adds cost pressures across major Indian export sectors to the U.S. (e.g., textiles, agriculture, pharmaceuticals, engineering goods).

U.S. announces permanent tariffs; India remains at 10%

T.C.A. Sharad Raghavan
WASHINGTON

Even as the U.S.'s temporary 10% tariffs come to an end, it has announced permanent tariffs related to its investigation into forced labour on 60 of its trading partners, including India. India's tariff rate, however, remains at 10% instead of the proposed 12.5% after it banned the import of forced labour goods earlier this month.

The U.S. had in February imposed a temporary 150-day 10% tariff on all of its trade partners, which expired on Friday. In March, the office of the U.S. Trade Representative had also launched two separate investigations under Section 301 of the Trade Act, 1974. The new tariffs announced late Thursday night (India time) are a result of the findings of one of these investigations – the one on whether the U.S.'s trade partners were doing enough to prevent the import of goods made using forced labour.

The second investigation, into whether other economies were using excess manufacturing capacity to export to the U.S. in a manner that was hurting the U.S. economy, is still pending and could result in further tariffs.

'Correct rights abuses'
"President Donald Trump recognises that decades of moral suasion have not eradicated forced labour from global supply chains," U.S. Trade Representative Jamieson Greer said in a statement.

"The U.S. has had a forced labour import ban for nearly a century, and rigorously enforces it; it's



Donald Trump

well past time for our trading partners to do the same... Today's action will begin to correct what is both a human rights abuse and a distortive trade practice to improve the welfare of workers everywhere," he added.

The draft report of the investigation, released in June, had proposed a 12.5% tariff on 54 countries as they had "failed to impose and effectively enforce" prohibitions on the import of goods produced using forced labour.

Now, after final findings, 10% tariffs will apply to countries that impose a forced labour import prohibition, have committed to enforce such a prohibition through a trade agreement with the U.S., or have imposed a partial regime with the effect of preventing the import of certain forced labour goods.

These economies include India, Argentina, Bangladesh, Cambodia, Canada, Ecuador, El Salvador, Guatemala, Honduras, Indonesia, Jordan, Malaysia, Mexico, Pakistan, Sri Lanka, Trinidad and Tobago, and the United Kingdom. The U.S. will impose a 12.5% tariff on all other countries it probed.

'MIXED REACTION'
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Daily News Analysis

- **Impending Risk:** The U.S. is conducting a second Section 301 investigation into "excess manufacturing capacity," which could lead to additional tariffs if concluded unfavorably.

Related Static Dimensions

1. Section 301 of the U.S. Trade Act, 1974

- Grants the U.S. President broad authority to enforce U.S. rights under trade agreements and respond to unfair, unreasonable, or discriminatory foreign trade practices.

2. International Labour Organization (ILO) Conventions

- Forced labor standards are anchored in ILO Core Conventions (specifically **No. 29** on Forced Labour and **No. 105** on the Abolition of Forced Labour).
- Aligning national trade policies with international labor standards is increasingly necessary to access major Western markets.

3. WTO Framework on Trade & Non-Economic Objectives

- Article XX (General Exceptions) of the **General Agreement on Tariffs and Trade (GATT)** permits member nations to adopt measures necessary to protect public morals or human health, but prohibits using these as hidden trade barriers.

4. India's Foreign Trade Policy (FTP) & External Sector

- U.S. remains one of India's largest merchandise export destinations and key trade surplus partners.
- Tariff dynamics directly influence India's broader macroeconomic target of achieving **\$2 trillion in exports (goods and services combined) by 2030**.

Challenges facing Indian Trade Strategy

- **High Exposure to Single Major Market:** Significant export dependence on the U.S. leaves key manufacturing sectors vulnerable to unilateral policy pivots.
- **Secondary Investigation Risk:** Threat of potential tariffs under the pending U.S. excess manufacturing capacity probe.
- **Compliance Burden:** Small and Medium Enterprises (MSMEs) may face higher documentation and compliance costs to prove supply chain compliance.

Way Forward

- **Diversification of Export Markets:** Expand trade footprint across regional blocks through high-standard Free Trade Agreements (FTAs), such as ongoing negotiations with the EU, UK, and ASEAN partners.

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Daily News Analysis

- **Institutionalizing Supply Chain Compliance:** Help Indian exporters—especially MSMEs—adopt robust traceability and labor compliance mechanisms to seamlessly clear international audits.
- **Strategic Bilateral Dialogue:** Leverage the India–U.S. Trade Policy Forum (TPF) to negotiate long-term stability and seek exemptions or lower tiers for key labor-intensive exports.
- **Reforming Multilateral Trade Frameworks:** Collaborate with G20 and Global South nations to strengthen the WTO and establish mutually agreed standards on labor and environmental trade rules.

Conclusion

India's strategic policy move to ban forced labor imports highlights how proactive regulatory alignment can cushion an economy against broader protectionist trends. However, as trade barriers pivot from tariff walls to regulatory and ethical benchmarks, sustained success for Indian exports will depend on enhancing supply-chain transparency, diversifying market dependencies, and maintaining active bilateral economic diplomacy with major trade partners.

UPSC Mains Practice Questions

Question: Analyze the impact of protectionist policies of developed countries on India-US trade relations. (10 Marks, 150 Words)

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Page 06 :GS II : International Relations/ Preliminary Examination

India is the second-largest supplier of seafarers globally, contributing over 12% to the international maritime workforce. However, the multi-jurisdictional and transnational nature of commercial shipping exposes Indian seafarers to severe risks in active conflict zones (such as West Asia, the Red Sea, and the Black Sea), piracy, and abandonment by shipowners.

Syed Akbaruddin highlights that while Indian foreign policy heavily focuses on naval deployments, port infrastructure, and maritime corridors, it must urgently pivot toward protecting the **human element** of its maritime strength through proactive consular diplomacy, regulatory transparency, and multilateral collaboration.

India's foreign policy must look seaward

At sea, nationality is usually clear. Responsibility seldom is. An Indian seafarer may be recruited in Mumbai, hired by a company based in Singapore, placed on a ship flying the flag of Panama, carrying Kuwaiti oil, attacked off the coast of Oman, and detained in a fifth country. His family may know that he is in danger without knowing which government, shipowner, or insurer is responsible for bringing him home. No single authority is fully in charge. For thousands of Indian seafarers, this uncertainty is not an exception but a routine part of ordinary working life.

Of the 14 Indians killed in attacks connected to the conflict in West Asia since February 28, at least eight were seafarers aboard commercial ships. Other Indian seafarers have been injured or stranded because their vessel, its owner or its cargo made them targets in a war they did not choose.

Forgotten maritime workforce

India tends to regard seafarers as a shipping matter until trouble arises. Then, they become a consular case. Government figures put the workforce at about 3.2 lakh as of June 2025, nearly three times its size in 2014. The 2026 Seafarer Workforce Report ranks it second behind the Philippines, narrowly ahead of China, with just over 12% of global supply.

They work abroad without ever settling abroad. Their workplace moves. That mobility sits awkwardly with a consular system organised by territory. During a single voyage, a seafarer can cross several jurisdictions. No authority follows him all the way. An Indian mission may not even know that one of its nationals is nearby until his ship is seized, abandoned or hit.

India cannot wait for an emergency to find out where its seafarers are. Data compiled by the International Transport Workers' Federation show that 1,125 Indian seafarers were abandoned in 2025, more than from any other country. In such cases, the file ricochets among a flag State, port authority, owner, insurer and Indian



Syed Akbaruddin

Former Permanent Representative of India to the United Nations and, currently, Dean, Kautilya School of Public Policy, Hyderabad

mission. After the recent strikes in West Asia, the government announced its Seafarer First response.

Officials must now account for every Indian seafarer in West Asia, whatever flag the vessel flies. A dashboard will track ships, threats and crew welfare; each affected family will have a liaison officer.

West Asia is not the only danger zone. In the Black Sea and Red Sea, crews now face missiles, drones and mines. Piracy and hostage-taking persist around the Gulf of Aden and off West Africa. On July 15, the government told shipowners, managers and recruitment agencies to avoid deploying Indian seafarers on vessels passing through the Strait of Hormuz until further orders. The dashboard and liaison system should remain available whenever a region is identified as high-risk.

There is a lifeline, there are gaps

Technology adds a peculiar cruelty here. A family in Kochi can watch a ship crawl, dot by dot, across a tracking app and still have no idea whether the person aboard is injured, detained or being sent into danger. A moving dot is a poor substitute for a phone call.

The dashboard can locate a ship. It cannot compel an owner or flag State to act, or secure access to a detained seafarer. Continuous tracking is unrealistic. When the system is activated, recruitment agencies should supply current crew and route data from owners and managers. India needs a standing maritime consular protocol that specifies who takes charge from the moment a distress signal is received.

In major shipping centres, Indian missions need a designated officer who knows the port authority, hospitals, insurers and local lawyers. Such relationships cannot be improvised after a ship is hit. Some flag States are quick to register a ship and slow to enforce the Maritime Labour Convention when wages stop, a crew is abandoned or repatriation is due. India must press them to honour those obligations.

India's bilateral maritime agreements usually recognise Indian certificates and expand access to jobs. However, they say little about legal assistance, consular access, or repatriation. Shipowners choose the flag under which vessels operate, but they still need crews. The Philippines and Indonesia face similar challenges. Together, the three countries could push for common standards on repatriation, detention, and deployment in conflict zones through the International Maritime Organization and the International Labour Organization. Otherwise, an owner constrained by one country's rules can simply hire elsewhere.

A cook in the ship galley does not become a combatant because the cargo is disputed or the owner has acquired enemies. India should oppose attacks on commercial shipping, whoever carries them out. Open sea lanes mean little if civilian crews cannot sail through them safely.

The right to know

Before signing a contract, a seafarer has a right to know who really owns the vessel, where it will sail, whether it is under sanctions, whether its insurance is valid and whether its owners have abandoned a crew before. Routes can change after departure. A seafarer ordered into a designated high-risk region should be able to refuse and return home without penalty.

On May 14, the Directorate General of Shipping prohibited licensed recruitment agencies from placing Indian seafarers on 366 vessels linked to abandonment unless specified compliance requirements were met. A seafarer should not have to hunt for the list. Recruitment agencies must show it to him before he signs and face penalties if they ignore it.

India's maritime ambitions are usually measured in ports, corridors, naval deployments and tonnage. In a seafarer's home, the questions are more immediate. Where is he? Who employs him? Who is responsible if he does not return? The flag above the vessel may be foreign. India's responsibility to its nationals is not.

Indian seafarers need protection beyond borders, flags, and jurisdictions

Core Issues & Deep Analysis

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A. The "Jurisdictional Web" of Global Shipping

- **Multi-Country Ambiguity:** A single voyage involves fragmented responsibilities—an Indian seafarer recruited in Mumbai may work for a Singaporean company on a Panamanian-flagged ship carrying Kuwaiti oil.
- **Loss of Accountability:** When a ship is attacked, seized, or abandoned, accountability bounces between the **Flag State** (country where the ship is registered), **Port State**, **Shipowner**, and **Insurer**.
- **Mismatch with Consular Systems:** India's traditional consular protection operates on fixed geographical territories, whereas seafarers operate in constantly shifting international waters without continuous oversight.

B. Geopolitical Risks & Human Cost

- **Civilian Targets in Conflict Zones:** Attacks in West Asia, the Red Sea, and the Black Sea use drones, missiles, and sea mines against commercial traffic, turning non-combatant seafarers into collateral damage.
- **Problem of Abandonment:** Over 1,100 Indian seafarers were reported abandoned globally in a single year, leaving crews stranded without wages, supplies, or clear pathways for repatriation.

C. Technological & Operational Gaps

- **Limitations of Ship Tracking:** While tracking apps show vessel location, they do not provide real-time information on crew safety, medical needs, or detention status.
- **Reactive Diplomacy:** Consular interventions historically begin *after* an emergency occurs rather than maintaining continuous tracking in designated high-risk maritime zones.

Related Static Dimensions

1. Flag of Convenience (FoC) System

- **Definition:** A business practice where a shipowner registers a vessel in a country other than their own to avoid higher taxes, strict labor standards, or environmental regulations (e.g., Panama, Liberia, Marshall Islands).
- **Consular Conflict:** FoC nations often fail to enforce labor standards or facilitate repatriation during crises.

2. Maritime Labour Convention (MLC), 2006 (ILO)

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- Often called the "Seafarers' Bill of Rights," it sets global minimum standards for seafarers' working conditions, health, welfare, repatriation, and financial security in cases of abandonment.

3. International Maritime Organization (IMO) & ILO

- The specialized UN agencies that regulate global shipping safety, environmental standards, and labor welfare.

4. Regulatory Oversight in India

- **Directorate General of Shipping (DGS):** The statutory authority under the Ministry of Ports, Shipping and Waterways responsible for maritime safety, education, and regulating recruitment and placement services (RPSL).

4. Strategic & Policy Recommendations (Way Forward)

A. Dedicated Maritime Consular Architecture

- **Standing Consular Protocol:** Establish an operational protocol that defines immediate authority and standard operating procedures (SOPs) as soon as a distress signal is received.
- **Nodal Port Officers:** Station designated consular officers in major global shipping hubs (e.g., Dubai, Singapore, Rotterdam) trained in local port laws, maritime insurance, and emergency response.

B. Minilateral Cooperation among Crew-Supplying Nations

- **Collective Bargaining:** India should partner with major seafarer-supplying countries like the **Philippines** and **Indonesia** to demand unified standards at the IMO and ILO.
- **Preventing Arbitrage:** A joint front prevents rogue shipowners from replacing crews from nations with stricter safety requirements with those from nations with lax enforcement.

C. Empowering Seafarers & Regulatory Transparency

- **Pre-Deployment Disclosure:** Ensure seafarers have a legally guaranteed "Right to Know" regarding vessel ownership, operational risks, sanction status, and past crew abandonment records before signing contracts.
- **Enforcing the "Right to Refuse":** Grant seafarers the explicit right to refuse sailing into designated high-risk or war zones without financial or professional penalties.
- **Strict Enforcement on Recruitment Agencies:** Rigorously enforce DG Shipping blacklists on unregistered or non-compliant placement agencies.

Conclusion

India's aspirations of becoming a major maritime power cannot rest on physical infrastructure and naval strength alone; it must extend to the safety and welfare of its seafarers. Initiatives like the U.S.–West Asia crisis response dashboard and "Seafarer First" approach are positive steps toward proactive governance.

By integrating maritime labor rights into its foreign policy framework and leveraging multilateral forums, India can build a resilient safety net for its global maritime workforce, ensuring that national protection follows citizens wherever they sail.

UPSC Prelims Practice Questions

Question: Flag of Convenience (FoC) refers to—

- (a) the use of a special flag on warships
- (b) registering a ship in a country other than that of its owner to reduce tax, labor, and regulatory obligations
- (c) the registration of United Nations ships only
- (d) a flag used during naval exercises

Ans: b)

UPSC Mains Practice Questions

Question: Evaluate the rights of maritime workers, regulatory reforms, and international cooperation in the context of India's growing role in the blue economy and global supply chains. **(10 Marks, 150 Words)**

Page 06 : GS II : Social Justice / Preliminary Examination

The Central Drugs Standard Control Organisation (CDSCO) recently granted marketing authorization for **Qdenga** (TAK-003)—a live-attenuated, tetravalent dengue vaccine developed by Japan-based Takeda. This marks a milestone in India's public health trajectory, as it is the country's first licensed dengue vaccine.

However, translating this regulatory milestone into meaningful epidemiological protection requires navigating complex virological challenges, dosing vulnerabilities, and pricing barriers.

Core Themes & Editorial Analysis

A. The Virological Challenge: Serotypes & ADE

- **Four Distinct Serotypes (DENV-1 to DENV-4):** Dengue is caused by four antigenically distinct strains. Primary exposure to one strain grants lifelong immunity against that specific strain, but secondary infection by a different strain can trigger **Antibody-Dependent Enhancement (ADE)**, leading to severe dengue (e.g., Dengue Hemorrhagic Fever).
- **Lessons from Dengvaxia:** The first licensed vaccine, Dengvaxia, presented significant risks to "dengue-naïve" (seronegative) individuals by acting like a primary infection, thereby increasing hospitalization risk during subsequent natural exposures.
- **Qdenga's Design Advantage:** Built on a genetic backbone of DENV-2, Qdenga can be administered **without prior serological screening**, making it structurally safer and far easier to deploy at a population level.

B. Epidemiological Mismatch & Regional Efficacy

- **Varied Strain Protection:** Clinical trial data indicates that Qdenga's protective efficacy is highest against **DENV-2**, followed by **DENV-1**. However, notable uncertainty remains regarding its baseline protection against **DENV-3** and **DENV-4** in individuals who have never had dengue.
- **Shifting Serotype Dominance in India:** While DENV-2 has historically dominated in India, surveillance shows an increasing prevalence of **DENV-3**. If DENV-3 becomes the primary circulating strain in upcoming monsoon seasons, the vaccine's real-world impact may drop significantly among dengue-naïve populations.

C. Operational & Implementation Hurdles

- **The Two-Dose Schedule Risk:** Qdenga requires a **2-dose schedule spaced 3 months apart**.
 - The first dose provides incomplete protection (stronger against DENV-1/2 than DENV-3/4).

On guard

The dengue vaccine must be made affordable to those at greatest risk

The CDSCO's approval of the Qdenga dengue vaccine – the first in India's history – follows the vaccine's licensing in over 40 countries and a WHO prequalification, and some of the country's worst dengue years *vis-à-vis* the disease's burden, although that is evidence of better surveillance as well. The *Aedes* mosquitoes that spread the disease are expanding into semi-urban and rural districts, where conventional vector control is harder to sustain. The time to develop the vaccine itself is understandable. The four antigenically distinct dengue serotypes and the possibility of a 'second infection' by a different serotype producing more severe disease through antibody-dependent enhancement mean that an effective shot has to induce strong immunity against all four at once. This constraint nearly derailed the first licensed dengue vaccine, Dengvaxia, and the controversy in the Philippines in 2017 prompted greater regulatory caution. The design of Qdenga, by Japan-based Takeda, differs from that of Dengvaxia and, unlike the latter, can be administered without screening for a prior dengue infection.

Its protection against the serotypes varies from highest against DENV-2, followed by DENV-1, while uncertainty remains regarding protection against DENV-3 and DENV-4 in people without prior exposure to dengue. This is concerning because while DENV-2 is more common in India, DENV-3 prevalence is increasing. If the DENV-3 serotype dominates the 2026 monsoon season, Qdenga's impact could be substantially lower than anticipated, especially if many recipients are dengue-naïve. Qdenga also requires two doses across three months apart. Clinical data suggest that the first dose protects unevenly, with stronger evidence against DENV-1 and DENV-2 than DENV-3 and DENV-4. If a seronegative person takes the first shot on July 1, when the monsoon begins, and encounters DENV-3 in August, the shot may not suffice to prevent severe illness. Ensuring the highly mobile migrant workforce receives its second dose will be significantly difficult, too; those falling through the cracks may also be exposed to concerns raised in the TIDES trial of a 'negative efficacy' against hospitalisation related to DENV-3 among seronegative children. Finally, following Takeda's tiered pricing strategy worldwide, Qdenga may be too expensive for people living in dense urban slums with poor drainage. To ensure sufficient uptake among the populations at greatest risk, the government must negotiate a lower price. In the end, administering a dengue vaccine properly in a population is no less tricky than developing a vaccine against dengue, and the Qdenga rollout should give no cause for complacency.

Daily News Analysis

- If a dengue-naïve individual gets shot #1 at the onset of the monsoon (e.g., July) and contracts DENV-3 shortly after (e.g., August), the partial coverage may fail to prevent severe illness.
- **Migrant Population Drop-Off:** Ensuring that mobile, migrant workers return for their second dose after three months poses a major administrative challenge. Incomplete regimens heighten the risk of "negative efficacy" against DENV-3 hospitalizations among seronegative cohorts.
- **Affordability & Tiered Pricing:** Under Takeda's international tiered pricing, the private market cost of Qdenga could place it out of reach for vulnerable populations residing in dense urban slums—the exact demographic experiencing the highest vector exposure.

Related Static Dimensions

1. Central Drugs Standard Control Organisation (CDSCO)

- The national regulatory authority of India under the Ministry of Health and Family Welfare, responsible for approving new drugs, conducting clinical trials, and enforcing standards under the **Drugs and Cosmetics Act, 1940**.

2. Aedes Aegypti & Changing Vector Ecology

- *Aedes aegypti* (and *Aedes albopictus*) are day-biting mosquitoes. Rapid unplanned urbanization, poor drainage systems, and climate change are accelerating their expansion into semi-urban and rural areas where vector management is difficult to sustain.

3. Universal Immunization Programme (UIP) & NTAGI

- **National Technical Advisory Group on Immunization (NTAGI):** The apex advisory body that evaluates clinical evidence to recommend whether a vaccine should be integrated into India's public procurement under the UIP.

Way Forward

- **Price Negotiation & Tiered Procurement:** The Indian government must leverage its market size to negotiate bulk-purchase price reductions from the manufacturer, ensuring subsidized or free rollouts in high-burden, low-income areas.
- **Targeted Regional Rollouts:** Prioritize deployment in urban hot-spots with documented high DENV-1 and DENV-2 prevalence while maintaining rigorous genomic surveillance to track circulating strains.
- **Strengthening Genomic & Vector Surveillance:** Integrated Disease Surveillance Programme (IDSP) networks must continuously monitor regional shifts in serotypes (especially DENV-3 and DENV-4) to dynamically evaluate vaccine performance.
- **Sustaining Conventional Vector Control:** Vaccination is a supportive tool, not a standalone solution. Municipalities must maintain routine anti-larval measures, door-to-door inspections, and public sanitation initiatives.
- **Digital Tracking for Complete Dosing:** Utilize digital health platforms (like the U-WIN platform) to track migrant workers and ensure adherence to the 3-month second-dose schedule.

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Conclusion

The approval of Qdenga gives India a crucial new tool against a growing vector-borne threat. However, a vaccine's success depends as much on equitable delivery as it does on molecular design. To turn regulatory success into a genuine public health victory, India must ensure affordable access, close dosing gaps among mobile populations, and pair immunization with strong vector control.

UPSC Prelims Exam Questions

Question: Consider the following statements regarding the Central Drugs Standard Control Organisation (CDSCO)—

1. It is India's National Drug Regulatory Authority.
2. It functions under the Ministry of Health and Family Welfare.
3. It grants marketing authorization for new drugs and vaccines.

Select the correct answer—

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

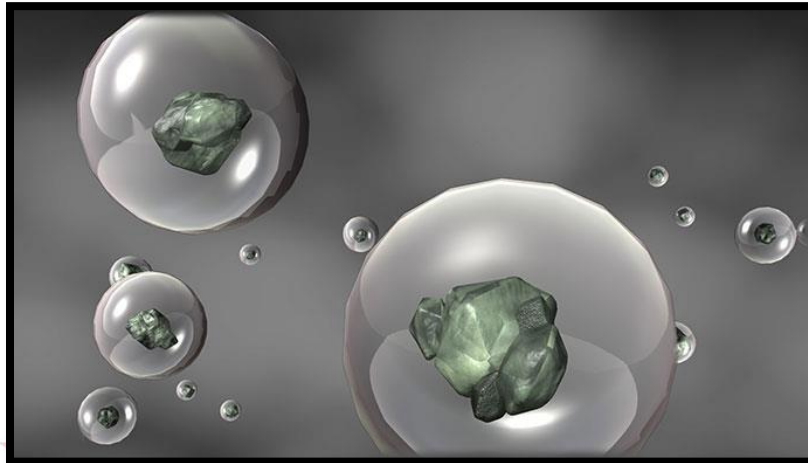
Ans:d)

UPSC Mains Exam Study Questions

Question: Discuss the complementary role of vaccination and serum control in dengue control in India. **(10 Marks, 150 Words)**

In News : Preliminary Examination

A new study revealed that South Asia faces the highest climate impacts from dust-pollution aerosols, leading to significant atmospheric heating.



About Aerosols

- Aerosols are tiny particles suspended in the atmosphere.
- **Source:** They originate from sources such as desert dust, vehicle emissions, industrial pollution and forest fires.

Properties

- **Size:** Aerosols range in size from a few tens of nanometers to several tens of micrometers.
- These particles can either reflect sunlight back into space or absorb it,
- They are often not or barely visible to the human eye, yet their impact on climate, weather, health, and ecology are significant.
- These particles alter Earth's energy balance and influence temperatures, cloud formation and rainfall.

Types

- **Primary Aerosols:** These are injected into the atmosphere directly and are known as 'primary aerosols'.
- **Examples:** Sea spray, mineral dust, smoke, and volcanic ash are all primary aerosols.
- **Secondary aerosols:** These are aerosols which were emitted in another form (e.g. gases), then become aerosol particles after going through chemical reactions in the atmosphere,
- **Example:** Sulfate aerosols from volcanoes or industrial emissions.

Key Highlights of the Study

- Scientists classified aerosols into seven categories:

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Daily News Analysis

- Pure dust, dust-dominated mixtures, pollution-dominated mixtures, very weakly absorbing, weakly absorbing, moderately absorbing and strongly absorbing aerosols
- Pure dust dominates northern Africa, while Europe and North America are largely characterised by less-absorbing urban and industrial aerosols.
- Strongly absorbing aerosols, which often contain high levels of black carbon, produced the greatest atmospheric warming.
- Very weakly absorbing aerosols had the lowest atmospheric forcing, reflecting more sunlight back into space and producing a much smaller warming effect.
- Tropical regions affected by biomass burning are mainly dominated by strongly absorbing aerosols.
- Black carbon-rich aerosols drive stronger warming.

UPSC Prelims Exam Questions

Ques: Consider the following statements regarding aerosols—

1. Aerosols are microscopic solid or liquid particles suspended in the atmosphere.

2. All aerosols cool the Earth by reflecting sunlight.

Aerosols can influence cloud formation and precipitation patterns.

Select the correct answer—

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

Ans: b)

In News : Preliminary Examination

A sustainable cultivation model adopted by farmers in Himachal Pradesh's Mandi district is showing promising signs of conserving the *Picrorhiza kurroa* species.

About *Picrorhiza Kurroa*

- It is a perennial herb with the presence of rhizomes.
- *Picrorhiza* word has been taken from the Greek language. In Greek, the word "Picros" means bitter and "Rhiza" means root, so bitter root.
- It is locally known as Kutki.
- **Habitat:** It is native to the alpine and sub-alpine regions (2,700-4,500 metres) of the Himalayas.
- **Distribution:** It is found in Himalayan region, from Garwal to Bhutan and Kashmir to Sikkim, Pakistan, Tibet, west of China and Myanmar.

Required Climatic Conditions

- It prefers moist, relatively less exposed, north-west facing slopes.
- **Soil:** Sandy clay textured soil is the best for its growth.
- It needs porous soil layers, which facilitate horizontal spreading of the rhizomes underneath, that produce aerial sprouts from the nodes.
- It suffers heavy mortality during prolonged and intense rains.
- **Propagation:** The planting stock can initially be raised through seedlings, but can also be propagated through rhizomes/stolons/offsets.
- Stolons are a side branch which creeps on the soil and possesses nodes and is a type of stem.

Applications of *Picrorhiza Kurroa*

- Kutki is an anti-pyretic, anthelmintic, carminative, stomachic, hepatoprotector, anti-malarial, and laxative in small doses but cathartic in large doses.
- It improves appetite and stimulates gas- tric secretions.
- It is useful for asthma, cold, and cough.

Conservation Status of *Picrorhiza Kurroa*



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- **IUCN Red List:** Endangered
- **CITES:** Appendix II.

UPSC Prelims Exam Questions

Ques: Which of the following conditions are most suitable for the growth of *Picrorhiza kurroa*?

- (a) Arid desert regions and sandy soil
- (b) Moist, north-west facing slopes and sandy-clay soil
- (c) Coastal marshy areas
- (d) Mangrove forests

Ans: b)

A growth story that needs women at work

India aspires to become a developed country (Viksit Bharat) by 2047, yet youth unemployment is already double the rate of 2012. India, especially the government, may be forced to recognise the weaknesses of India's economy due to the West Asia war shock. However, weakness pre-dates this exogenous shock. Policy-induced shocks from 2016 (demonetisation, a poorly designed Goods and Services Tax, NBFCs, COVID-19 pandemic management) to the economy had already reversed structural change (rise in farm employment, falling manufacturing share of gross value added and in employment); non-farm job growth had slowed. The economy became more unequal, and hence aggregate demand collapsed, and with it investment/GDP ratio. So, GDP growth is much slower (even if government figures of 6.2% p.a. are believed (it is actually at best 4.5%, as the former Chief Economic Adviser recently argued).

An engine of growth

Further, India's growth story will remain incomplete without increasing the work participation rate (WPR) of half the population, i.e., women. In a new study, we estimate that a 10-percentage-point increase in India's female WPR could add nearly two percentage points to GDP growth, making women's employment one of the strongest drivers of economic growth. To sustain rapid growth of 8%-9% and emerge as a global economic power, the nation must harness the immense potential of its youth, especially young women.

Increased female WPR could contribute to economic growth in multiple ways. First, it increases the overall labour supply, thereby expanding productive capacity. When more women enter paid employment, household incomes rise, consumption increases, and savings improve. Higher household incomes also lead to better nutrition, education, and healthcare for children, thereby strengthening long-term human capital. Women's work participation can also improve productivity and innovation. Based on cross-country evidence, Nobel laureate Claudia Goldin argues that gender-diverse workplaces are often more efficient, creative, and competitive. Including women in the workforce is not merely a welfare measure but also a strategy for enhancing national productivity.

However, the work participation rate (WPR) of women in India remains below 30% – among the lowest in the world, comparable to that of countries such as Saudi Arabia and Yemen and West Asia. India's female labour force participation rate (LFPR) is low by international



Santosh Mehrotra

Former Professor of Economics, Jawaharlal Nehru University, and with the Planning Commission



Jajati Keshari Parida

Professor of Economics, University of Hyderabad

standards, even when compared with countries at similar levels of per capita income. Worse, it declined steadily between 1983 and 2018. As overall job growth in both the farm and non-farm sectors fell between 2012 and 2018, how did women fare? This is a critical question, especially since women are now much better educated than earlier.

Decline in women's work

In the 1980s and during the early 1990s, the WPR for women was high, primarily due to high participation in agricultural activities. However, this trend began to decline as economic growth and structural transformation led to a shift away from agriculture from 2004-05 to 2012. Many rural women withdrew from the workforce due to mechanisation and reduced demand for manual labour.

Fortunately, this period also saw a rise in educational attainment among young women, leading to increased school attendance. In other words, the Indian economy experienced a downward movement in female WPR in the first half of the U-shaped curve until 2018-19, consistent with the argument of Claudia Goldin.

Much has been made by government economists of the increase in women's work participation in India, post 2020. However, this increase built upon a GDP growth slowdown since 2017. Further, COVID-19 had induced economic distress, and large-scale return migration from urban to rural areas. With male workers losing urban employment and moving back to villages, women were compelled to intensify their role in subsistence agriculture and allied activities, often as unpaid family labour (UFL). This surge in UFL reflected a "distress-driven feminisation of agriculture", as women entered or remained in insecure, informal, and unremunerated agricultural work, due to shrinking non-farm opportunities and reinforced gender norms that limited mobility. The share of such work was falling from 1983 to 2012, as was the absolute number of women in such work. The collapse of non-farm work for men and women now meant that adult, poorly educated women returned to agriculture.

The structure of India's economic growth has also contributed to weak female employment generation. Much of India's recent GDP growth has been concentrated in capital-intensive sectors such as finance, information technology, and organised manufacturing, which do not absorb large numbers of workers. Labour-intensive sectors such as textiles, food processing, garments, and small-scale manufacturing saw a fall in absolute terms in employment between

2013 and 2019. In fact fewer women were employed in manufacturing in 2019 than in 2004 which shows how manufacturing jobs collapsed, despite all the hype about "Make in India" and Performance-Linked Incentives for manufacturing. It was not until 2022 that manufacturing work for women rose to a level found in 2004. In much of India, manufacturing, or women's work has not received sufficient policy support.

The north-south divide

We show that young girls' unemployment is much higher than for young men. However, there is a real north-south divide, as highlighted in the book, *India Out of Work*. What is achievable is demonstrated by Tamil Nadu, which has been one of India's fastest-growing States. More than 40% of India's women factory workers are employed in Tamil Nadu. This is remarkable, given that Tamil Nadu accounts for only about 5%-6% of India's population. This concentration is driven primarily by the State's strong presence in textiles and garments (especially in Tiruppur and Coimbatore), footwear, electronics assembly (Sriperumbudur), and automobiles and auto components, as well as by higher female literacy, greater mobility, and well-developed hostel and transport facilities for women workers.

Similarly, Hindi-belt States need to invest in the health (not insurance-based) and public education for all, especially of girls and women, to reduce higher-than-African level malnutrition and stunting rates – as the Southern states have done. They can then also see similar outcomes. There is no chance for India being 'Viksit' without gender equality in all dimensions, especially in north India.

Some increase of female WPR (who re-entered agriculture) across India since 2020 was due to older adult women engaging in animal husbandry and poultry farming – a welcome development for household incomes.

However, what about educated young girls? The gross enrolment rate at the secondary level was universalised between 2010 and 2015, with gender parity achieved even in rural Uttar Pradesh and Bihar. However, educated young women face high and rising unemployment rates.

Worse, the number of young women (aged 15-29 years) who were neither looking for work nor in education, was under 70 million until 2004. It increased to 84 million in 2012 and then rose to over 100 million by 2018. Bihar's female WPR is only 15%. Hence, India will remain out of work, and cannot become a developed country by excluding half its population from productive employment.

Women's employment is essential for growth, productivity, and achieving Viksit Bharat goals

GS Paper I & II: Social Issues and Justice

UPSC Mains Exam Practice Questions: Discuss the key economic and social reasons for the low Female Labour Force Participation Rate (FLFPR) in India. (10 Marks, 150 Words)

Context :

India aims to achieve **Viksit Bharat (a developed nation status) by 2047**. However, macro-level employment trends indicate severe structural bottlenecks, particularly double the youth unemployment rate compared to 2012 levels and a persistent drop in female labour force participation.

Economists Santosh Mehrotra and Jajati Keshari Parida argue that sustaining an 8%–9% GDP growth trajectory is impossible without integrating women into the formal, non-farm economy. Increasing India's female Work Participation Rate (WPR) by **10 percentage points could boost GDP growth by nearly 2 percentage points**, converting gender parity into a major growth multiplier.

Core Issues & Deep Analysis

A. Economic Case for Female Work Participation

- **Supply-Side Expansion:** Increasing female WPR directly expands national productive capacity and labour supply.
- **Inter-Generational Human Capital:** Higher female earnings raise household disposable income, improving spending on nutrition, healthcare, and education for children.
- **Productivity & Diversity:** Citing Nobel laureate **Claudia Goldin**, gender-diverse workplaces show higher efficiency, innovation, and competitiveness.

B. Structural Distortions & "Distress-Driven Feminisation"

- **Pre-2018 Decline:** Between 1983 and 2018, female WPR declined due to farm mechanisation, reduced demand for agricultural manual labour, and higher enrollment of young women in secondary/higher education (moving down the U-shaped female labor curve).
- **Post-2020 Rebound (Distress-Driven):** The recent surge in female WPR post-COVID-19 is largely an artifact of **distress-driven entry into Unpaid Family Labour (UFL)** in subsistence agriculture due to urban job losses and slowing non-farm employment.

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Daily News Analysis

- **Failure of Manufacturing Absorption:** Capital-intensive growth in IT, finance, and organized manufacturing has failed to absorb mass labor. Key labor-intensive sectors (textiles, garments, food processing) saw absolute drops in employment between 2013 and 2019, leaving female manufacturing employment lower in 2019 than in 2004.

C. The North–South Divide & The "Tamil Nadu Model"

- **The Regional Disparity:** Southern states like **Tamil Nadu** host over **40% of India's female factory workers**, despite holding only 5%–6% of the national population.
- **Drivers of Southern Success:**
 - Clustering in labor-intensive sectors (garments in Tiruppur/Coimbatore, electronics in Sriperumbudur, auto parts).
 - High female literacy, social mobility, public health investments, and targeted state infrastructure (safe transportation and women's worker hostels).
- **Northern Laggards:** States in the Hindi belt (e.g., Bihar with a female WPR of ~15%) suffer from high female youth unemployment, under-investment in basic public health/education, and high rates of child stunting.

D. Educated Youth & The NEET Crisis

- Universalisation of secondary education (2010–2015) brought young women to educational parity even in states like UP and Bihar.
- However, jobs matching their qualifications are scarce. The number of young women (aged 15–29) **Neither in Employment, Education, or Training (NEET)** expanded from under 70 million (pre-2004) to over 100 million.

Related Static Dimensions

1. Goldin's U-Shaped Female Labour Force Curve

- **Theory:** As a country transitions from agrarian to industrialization, female LFPR initially falls because work moves from household farms to distant factories (where social barriers exist) and household incomes rise (allowing women to exit low-paid manual labor).
- **Second Half of U-Curve:** As female education levels rise and service/light manufacturing sectors grow, female participation rises again. India remains stalled in the trough of this curve.

2. Types of Unpaid Work & National Accounts

- **Unpaid Family Labour (UFL):** Contributing family workers who assist in household economic enterprises without direct remuneration.

Daily News Analysis

- **Time Use Survey (TUS) Insights:** Reveals that women perform a disproportionate share of unpaid care and domestic work, creating time poverty that hinders formal employment.

3. Measuring Employment in India

- **Periodic Labour Force Survey (PLFS):** Conducted by the National Sample Survey Office (NSSO) to measure employment and unemployment metrics using **Usual Status (PS+SS)** and **Current Weekly Status (CWS)**.

4. Policy Challenges & Bottlenecks

- **Capital-Intensive Growth Bias:** Policies like Production-Linked Incentive (PLI) schemes have historically favored capital-heavy sectors over high-employment, labor-intensive industries.
- **Social Norms & Care Burden:** Lack of affordable childcare facilities, safety concerns, and mobility restrictions constrain women from joining the formal urban workforce.
- **Quality of Jobs:** A high proportion of working women are trapped in informal, low-paying, or self-employed activities without social security.

Way Forward

- **Promote Labour-Intensive Manufacturing:** Re-orient industrial policy and incentive structures toward apparel, leather, food processing, and assembly lines that absorb female labor at scale.
- **Replicate Social Infrastructure Nationally:** Northern states must emulate Tamil Nadu's model by building safe working-women hostels, providing dedicated industrial transport, and strengthening public health/education.
- **Formalize Social & Care Economy:** Expand state-supported crèche facilities (under National Creche Scheme) and invest in eldercare to reduce women's unpaid care burden.
- **Targeted Skill Upgrading for Educated Youth:** Align vocational training and apprenticeship programs with emerging service-sector and digital roles to absorb the 100M+ female NEET demographic.
- **Safe Transport & Public Workplaces:** Address urban mobility barriers through safe, affordable, and well-lit public transit systems.

Conclusion

Achieving the vision of Viksit Bharat by 2047 remains improbable if half of the country's population is excluded from productive non-farm employment. Moving beyond "distress-driven" agriculture re-entry toward high-quality, formal, and manufacturing-led female employment is not just an imperative of social justice, but an indispensable macroeconomic engine for India's long-term economic power.



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