

The Hindu Important News Articles & Editorial For UPSC CSE

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India has imposed anti-dumping duties on five Chinese products to safeguard domestic industries from unfair trade practices. The affected products include:

- Soft ferrite cores used in electric vehicles, chargers, and telecom devices
- Vacuum insulated flasks
- Aluminium foil
- Trichloro isocyanuric acid used in water treatment
- Poly vinyl chloride (PVC) paste resin

India imposes anti-dumping duty on Chinese goods for up to 5 years

Press Trust of India

NEW DELHI

India has imposed anti-dumping duty on five Chinese goods to protect domestic players from cheap imports from the neighbouring country.

These duties were imposed as these products – Soft Ferrite Cores, a certain thickness of vacuum insulated flask, aluminium foil, Trichloro Isocyanuric Acid, and Poly Vinyl Chloride Paste Resin – were exported to India from China at below normal prices.

In separate notifications, the Central Board of Indirect Taxes and Cus-



The duties were imposed as products were exported from China at below normal prices.

toms, Department of Revenue, said that the duty imposed “shall be levied for a period of five years” on imports of Soft Ferrite Cores, vacuum insulated flasks,

and Trichloro Isocyanuric Acid. The anti-dumping duty of up to \$873 per tonne was imposed provisionally on aluminium foil for six months.

The government has imposed a duty in the range of \$276 per tonne to \$986 per tonne on imports of the acid (a water treatment chemical) from China and Japan.

On imports of Soft Ferrite Cores (used in electric vehicles, chargers, and telecom devices), up to 35% duty was imposed on CIF (cost, insurance freight) value.

Similarly, on a vacuum-insulated flask, \$1,732 per

tonne anti-dumping duty was levied. The levy, which ranges from \$89 per tonne to \$707 per tonne, on Poly Vinyl Chloride Paste Resin was slapped on the imports from China, Korea RP, Malaysia, Norway, Taiwan and Thailand for five years.

These duties are imposed after recommendations for the same were made by the Directorate General of Trade Remedies (DGTR).

Anti-dumping probes are conducted by countries to determine whether domestic industries have been hurt due to a surge in cheap imports.

The decision follows an investigation by the Directorate General of Trade Remedies, which found that these products were being exported to India at below normal prices, hurting domestic manufacturers.

Key Highlights of the Anti-Dumping Duty

- Most duties are imposed for five years, while aluminium foil faces a provisional duty for six months.
- **Range of duties:**
 - Soft ferrite cores – Up to 35 percent of CIF value
 - Vacuum insulated flasks – 1,732 dollars per tonne
 - Trichloro isocyanuric acid – 276 to 986 dollars per tonne, also applied to imports from Japan
 - Poly vinyl chloride paste resin – 89 to 707 dollars per tonne, also covering imports from Korea, RP, Malaysia, Norway, Taiwan, and Thailand
 - Aluminium foil – Up to 873 dollars per tonne for six months
- **Economic and Trade Implications**
 - Protects domestic industries from cheap imports that could otherwise dominate the market
 - Supports local manufacturing and encourages self-reliance in key industrial sectors
 - Aligns with India's trade defense policies to counter unfair trade practices
 - Serves as an economic response to trade imbalances with China and promotes a balanced import policy

Conclusion

- The imposition of anti-dumping duties reflects India's commitment to fair trade practices and protecting domestic industries. It also complements broader economic initiatives like self-reliance and reduces dependence on low-cost imports that undermine local production.

UPSC Mains Practice Question

Ques:What is anti-dumping duty? Discuss its significance in protecting domestic industries from unfair trade practices.(250 words)

A recent study from Denmark, published in Behavior Genetics, has found that the decision to get a tattoo is influenced more by cultural and environmental factors rather than genetic predisposition. This challenges the notion that personal choices like tattooing are inherited traits.

Why do people get tattoos? Study of twins says it's nurture, not nature

A new study from Denmark has found genetic differences have little to do with the decision of one of a pair of identical twins to get a tattoo. Researchers from a Korean university say that they have shown empirically that tattooing ... is a cultural phenomenon with little to no evidence of genetic influences

D.P. Kasbekar

Why do some individuals get tattooed while others don't? Is it because of differences in their genes? Researchers from the University of Southern Denmark in Odense recently addressed these questions. Their findings, reported in February in the journal *Behavior Genetics*, showed that differences in an individual's propensity to get tattooed were not due to nature but because of nurture.

"Nature" here refers to an intrinsic, genetically-determined predisposition that affects one's behaviour. "Nurture" denotes extrinsic factors such as one's education, culture, family, and peers. A tattoo is an indelible design registered on the skin by injecting inks and dyes into a skin layer called the dermis. There, the pigment particles become engulfed and subsequently kept in place by cells of the body's immune system, making them permanent.

In 1991, hikers stumbled on the naturally mummified remains of a man since named Otzi the Iceman in northern Italy. Scientists found that he lived more than 5,000 years ago and had tattoos. Today, many sports and entertainment celebrities also sport tattoos – as do their fans, and indeed anyone who wishes to bear symbols they consider important or significant to themselves on their person.

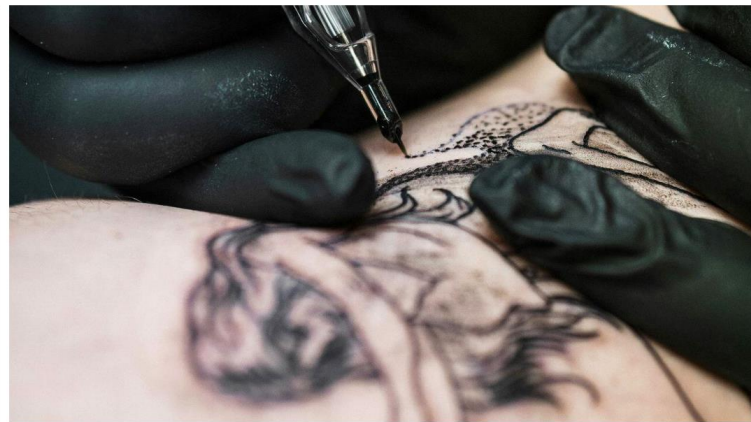
Since adding any foreign substance to one's body is a health risk from a medical viewpoint, studying the long-term effects of tattooing on public health has been an important research focus.

Sorting nature from nurture
If two offspring are born from the same pregnancy, they are called twins. The offspring can be genetically identical or non-identical. Identical twins share all their genes while non-identical twins share on average only 50% of their genes.

After the father's sperm fertilises the mother's egg, the unified cell that is formed is called the zygote. The zygote then develops into an embryo that in turn grows into the baby.

Sometimes two sperm can simultaneously fertilise two eggs to produce two zygotes, and the zygotes can go on to form non-identical twins. On the other hand, identical twins are formed when an embryo from a single zygote splits at an early stage to become two embryos, and each then grows to become a baby.

For this reason, identical twins are also known as monozygotic twins and non-identical twins are called dizygotic twins. Monozygotic twins are always of



If both members of a twin pair sport a tattoo or both don't, they are said to be concordant. But if one twin has a tattoo and the other doesn't, they are discordant. COLLINS LESLIE/UNSPASH

the same biological sex, whereas dizygotic twins – like any other pair of siblings – can be either of the same or of different sexes.

If both members of a twin pair sport a tattoo, they are further said to be concordant. They are also concordant if both don't. But if one twin has a tattoo and the other doesn't, they are said to be discordant.

The researchers behind the new study were curious as to whether there was a 'greater' concordance at work in monozygotic twins than in dizygotic twins of the same sex. Their search came up empty, i.e. there was no greater concordance, even despite the fact that monozygotic twins share twice as many genes as dizygotic ones.

The finding suggested that genetic differences have little, if anything, to do with an individual wanting to get tattooed.

Additional findings

The Danish Twin Register (DTR) is a database with details of more than 175,000 twins born between 1870 and 2009. The researchers mailed out a questionnaire to twins recorded in the DTR. They received responses from 4,790 individuals, including from both twins of 1,327 twin pairs.

Of these respondents, 1,058 (22%) were monozygotic, 3,501 (73%) were dizygotic, and the zygosity was unknown for 231 (4.8%). The researchers sorted the

Since adding any foreign substance to one's body is a health risk from a medical viewpoint, studying the long-term effects of tattooing on public health has been an important research focus

twins into three cohorts based on their birth years: oldest (1925-1960), middle (1961-1980), and youngest (1981-2004).

Finally, the researchers asked the respondents if their co-twin also had a tattoo, about the tattoos' colours and sizes, and the age at which they were first tattooed. The responses revealed that 22% had at least one tattoo. In the 1,327 pairs for which both twins responded, the self-reported tattoo status matched the information provided by the co-twin in 98.5% of the cases.

The researchers reported a marked increase from the oldest to the youngest cohorts, from below 6% to above 30%, in terms of the propensity for getting a tattoo. Evidently tattooing has become increasingly popular in recent times.

The researchers also asked the respondents about their lifestyle factors such as education, smoking, amount of physical exercise, and alcohol consumption. They could correlate tattooing strongly only with smoking. But they also acknowledged limitations in their ability to correlate with alcohol

consumption and exercise "because the age at first tattoo and age at which the questionnaire was answered may vary up to several decades".

More concordance for some defects
In 2021, researchers from the Seoul National University College of Medicine in South Korea reported in the journal *BJOG* the concordance rates for several different birth defects found in 3,386 monozygotic and dizygotic twin pairs born between 2001 and 2019.

Birth defects affecting the nervous system, the circulatory system, cleft lip/palate, and the urinary system were found to be significantly more concordant in monozygotic than in dizygotic twins. The implication was that aberrant biological development in these systems is primarily due to one's genes.

On the other hand, the concordance rates did not significantly differ for malformations of the eye, ear, face or neck, the genital organs, and the musculoskeletal system, meaning that these disorders, extrinsic aspects of the uterine environment, such as maternal nutrition, physiology, smoking, and infections, played a more significant role.

The researchers ended their paper writing: "we have shown empirically that tattooing ... is a cultural phenomenon with little to no evidence for genetic influences."

(D. P. Kasbekar is a retired scientist.kasbekardp@yahoo.co.in)

THE GIST

Identical twins are known as monozygotic, and non-identical twins are called dizygotic. Monozygotic twins are always of the same biological sex, whereas dizygotic twins can be either of the same or of different sexes

Researchers wanted to know if there was a 'greater' concordance at work in monozygotic than in dizygotic twins of the same sex. Their search came up empty

Researchers studied concordance rates for birth defects. Those affecting the nervous, circulatory, cleft lip/palate, and urinary systems were found to be more concordant in monozygotic than dizygotic. The implication was that aberrant development is primarily due to genes

Key Findings of the Study:

➡ **Twins and Concordance:**

- Researchers examined identical (monozygotic) and fraternal (dizygotic) twins to determine if genetics played a role in getting tattoos.
- Identical twins share 100% of their genes, while fraternal twins share 50% on average.
- If tattoos were genetic, identical twins would have a higher concordance rate than fraternal twins. However, the study found no such difference.
- ➔ **Influence of Nurture:**
 - The study used data from the Danish Twin Register (DTR), surveying 4,790 individuals.
 - A significant increase in tattooing was observed over generations:
 - Before 1960: <6% had tattoos.
 - 1981-2004 cohort: >30% had tattoos.
 - This indicates that tattooing has become more culturally acceptable over time rather than being biologically inherited.
- ➔ **Lifestyle Correlation:**
 - The study found a strong correlation between tattooing and smoking.
 - No clear link was established between tattooing and alcohol consumption or exercise habits.

Comparison with Other Genetic Studies:

- ➔ **Birth Defects & Genetics:**
 - In a 2021 study from South Korea, genetic influence was significant in defects affecting the nervous, circulatory, urinary systems, and cleft lip/palate.
 - However, defects in the eye, ear, face, neck, and musculoskeletal system were more influenced by environmental factors.
- ➔ **Significance of the Study:**
 - Public Health Considerations: Since tattooing involves injecting foreign substances into the skin, its long-term effects remain an area of medical research.
 - Cultural Evolution: The rise in tattooing over generations reflects societal changes rather than inherited tendencies.

Conclusion:

- ➔ The study reaffirms that tattooing is a cultural choice rather than a genetic trait. Over time, societal acceptance has led to a rise in tattooing, making it an interesting case study of nature vs. nurture in human behavior.

UPSC Mains Practice Question

Ques : Tattooing involves inserting foreign substances into the body. Analyze the public health risks associated with tattooing and suggest regulatory measures. **(250 words)**

Lapis lazuli, a deep blue semi-precious gemstone, has been highly valued for millennia due to its striking color and historical significance. The rock is primarily composed of the mineral lazurite and is found in various regions, with the highest quality sourced from Afghanistan's Badakhshan province.

WHAT IS IT?

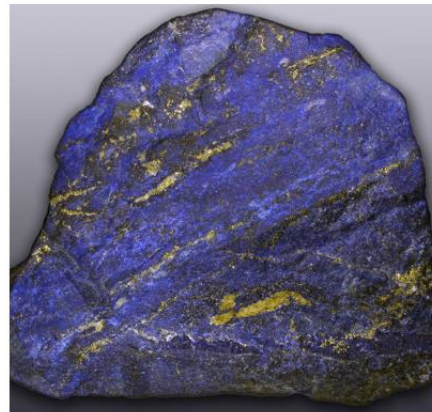
Lapis lazuli: earth's best blues

Vasudevan Mukunth

Lapis lazuli is a vividly blue rock, sometimes with streaks of gold, that has been known for millennia for its eye-popping colour and use as a semi-precious gemstone.

It gets its colour from the presence of an unusual mineral called lazurite (25-40%). Its blueness depends on the amount and structure of sulphur in this mineral. The presence of calcite can reduce the blueness while the golden sparkle comes from the presence of pyrites. Some other minerals, like diopside and sodalite, are present in smaller quantities.

Lapis lazuli has been found in many countries so far, including Chile, Russia, and the US, but the highest quality rock comes from Afghanistan's Badakhshan province, where people have been mining it for more than 6,000 years. In ancient times, traders in India imported lapis lazuli from Badakhshan, perhaps as long ago as 1000 BC. Archaeologists have also found ornamental lapis lazuli ornaments in the remains of Indus Civilisation sites including Mohenjo-daro and Harappa. The ancient Egyptians were also known to



A section of lapis lazuli rock with pyrite mined in Afghanistan in January 2008. HANNES GROBE (CC BY-SA 2.5)

use it to make jewellery and to powder it to use as eye shadow.

In the Renaissance period, artistes in Europe ground lapis lazuli down into ultramarine, an expensive pigment they used in their paintings. The rock gets its name from two languages: lapis is the Latin for 'stone' whereas 'lazuli' comes from the Persian word lazward, meaning 'blue.'

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for 'Science', please write to
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Key Features of Lapis Lazuli:

➔ **Composition:**

- Main mineral: Lazurite (25-40%), responsible for its blue color.
- Other minerals: Pyrite (giving golden streaks), Calcite (can reduce blueness), Diopside, Sodalite (in minor quantities).

➤ **Geographical Occurrence:**

- Found in Afghanistan, Chile, Russia, and the US.
- Afghanistan's Badakhshan province has produced the finest quality for over 6,000 years.

➤ **Historical Significance:**

- Indus Valley Civilization (Mohenjo-daro, Harappa): Used in ornaments and trade.
- Ancient Egypt: Used in jewelry and cosmetics (eye shadow).
- Renaissance Europe: Ground into ultramarine pigment for high-value paintings.

➤ **Etymology:**

- Lapis (Latin) = "Stone"
- Lazuli (Persian: Lazward) = "Blue".



- ➔ With ongoing global maritime crises, including the Red Sea conflict and U.S. tariffs on Chinese-built ships, India's dependence on foreign shipping fleets is a growing concern. The Indian government's plan to launch Bharat Container Line (BCL) aims to strengthen India's maritime industry, reduce dependence on foreign vessels, and enhance trade security.

Time to float more Indian ships

The need for India to build its own strong shipping fleet assumes greater urgency as this will not only end its dependence on foreign ships but will also equip it to better manage future maritime crises at the global level; the government's plan to launch the Bharat Container Line is timely

NEWS ANALYSIS

TE Raja Simhan

With the Red Sea crisis dragging on for more than a year now, and the US recently announcing plans to impose a tariff on Chinese ships, the need for India to build its own strong shipping fleet assumes greater urgency. This would not only end its dependence on foreign ships but also equip it to better manage future maritime crises at the global level. In this context, the government's plan to launch the Bharat Container Line (BCL) is timely.

Amid the escalation in the Israel-Palestine conflict, the attack by Yemen's Houthi rebels in the Red Sea is forcing ships, especially large container vessels, to avoid the Suez Canal and traverse the longer, expensive route via the Cape of Good Hope. The delays and added cost have dealt a heavy blow to global maritime trade.

Aggravating matters is the US administration's plan to charge Chinese-owned cargo ships as well as China-built third-country flagged vessels \$1 million or more per port of call in the US. Reason? Over half of all ships delivered globally in 2024 were built in China.

India's shipping trade is heavily dependent on foreign ships to carry Indian cargo to international destinations, including the US.



Taxing times: Major shipyards, including Cochin Shipyard Ltd., have nearly ₹1,000 crore in unutilised ITC, the Indian Shipyards Association pointed out. UMESH S. SHETTIGAR

US-based freight forwarding and logistics company Flexport estimates that Chinese vessels constitute nearly 30 per cent of the top 20 ocean carriers' fleet. Container ships typically make 2-3 port calls per loop – so the fee could be a whopping \$3 million per trip. To put things in perspective, the average revenue per trip is \$10-15 million, it said. Maritime transport accounts for 95 per cent of India's trade (by volume), but the country's shipping fleet numbers just over 1,500, with about 14 million gross tonnage (GT). Of these, fewer than 50 are container ships, and they are small and operate mainly on India's coasts.

Foreign players like Maersk, CMA-CGM, MSC and Hapag-Lloyd operate container ships in India, carrying both inbound and outbound cargo.



The inverted duty structure in GST is creating significant financial stress for shipyards, leading to input tax credit accumulation

Mind-boggling data

With its reliance on foreign vessels, India's shipping-related expenses stand at \$90 billion annually – the second-largest import cost after crude oil, says Container xChange, a global digital marketplace for container trading and leasing. The reliance on leased containers – particularly Chinese-origin, is expected to continue in the short- to mid-term.

Lars Jensen, a Denmark-based expert on the con-

tainer shipping industry, posted on social media that even with a fleet of 100 vessels, BCL would remain a small, niche player on the global stage, and certainly not capable of lifting more than a fraction of Indian exports.

"A pursuit of this will further intensify the competition in especially the crowded intra-Asia market – a market wherein I would expect to see additional M&A activity in the coming years, and depending on how much money the Indian government plans to put into the project, BCL could possibly also arrive on stage as an acquirer," he posted.

"India plans to establish a consortium from public sector enterprises to pursue port projects globally. Essentially, this has a clear flavour that India is now trying to some degree to

copy China's Belt and Road Initiative," he added.

Much like food, defence, and economic security, logistics security is a crying need if India is to emerge as a frontrunner in world trade, says J. Krishnan, Partner, S Natesa Iyer Logistics LLP.

Home-grown fleets will facilitate genuine competition in container trade, he opined. Limited competition leads to price fixing, which the Indian government or trade cannot act upon, he said.

Anil Devli, CEO, Indian National Shipowners Association (INSA), says that while one cannot do anything about tariffs imposed by a third country, the damage can be partly mitigated if the country has a healthy Indian flag fleet to secure transportation and thereby control costs and supply chains.

This fleet will also serve the nation well during trade wars and other periods of emergency, he said.

The removal of GST on shipping operations will further spur investment in vessels, Mr. Devli says.

Jagannarayan Padmanabhan, Senior Director and Global Head, consulting-transport, mobility and logistics, Crisil Intelligence, concurs. A focused shipbuilding industry will not only cut forex spend but also give a fillip to the local manufacturing sector.

The ratio of direct to indirect employment in shipbuilding is 1:5, hence there is significant scope for em-

ployment generation, he said. To remedy India's negligible presence in global shipbuilding, on the anvil is the ₹25,000 crore maritime development fund and ₹18,090 crore shipbuilding financial assistance policy.

This could reduce India's dependence on foreign-owned container ships over time, says Container xChange's report.

The exemption of basic customs duty on shipbuilding components for another decade could lead to cheaper container manufacturing and repair in India. However, Indian shipyards must scale up automation and efficiency to compete with China.

The Indian Shipyards Association, at a post-Budget meeting in Mumbai, urged the Centre to bring in reforms to boost manufacturing.

The inverted duty structure in GST is creating significant financial stress for shipyards, leading to input tax credit accumulation, blocking of working capital and rising cost.

Major shipyards, including Cochin Shipyard Ltd., have nearly ₹1,000 crore in unutilised ITC, the association pointed out. Ship-grade aluminium and a specific grade of steel are not manufactured in India, leading to imports.

The association called for a firm policy on scrapping vessels aged above 25, beginning with vessels of up to 600 GT.

(The writer is with The Hindu businessline; inputs from Anesh Phadnis)

Key Issues in India's Shipping Sector:

1. Heavy Dependence on Foreign Shipping Fleets

- ➔ 95% of India's trade (by volume) is carried through maritime transport.

- ▶ India's shipping fleet consists of just over 1,500 ships (14 million GT), with fewer than 50 container ships, mainly for coastal trade.
- ▶ Foreign shipping companies like Maersk, MSC, CMA-CGM, and Hapag-Lloyd dominate India's cargo transport.

2. High Shipping Costs

- ▶ India's annual shipping expenses: \$90 billion, second only to crude oil imports.
- ▶ Heavy reliance on leased Chinese-origin containers increases logistics costs.
- ▶ New U.S. tariffs on Chinese ships (\$1 million+ per port call) could further impact shipping costs.

3. Strategic and Economic Risks

- ▶ Global trade disruptions (e.g., Red Sea crisis) impact India's supply chains.
- ▶ Lack of an indigenous fleet weakens India's trade security during geopolitical conflicts.
- ▶ Tariffs imposed by third countries (like the U.S.) could impact India's exports.

Government Initiatives to Strengthen India's Shipping Industry

1. Bharat Container Line (BCL) – A National Shipping Fleet

- ▶ Aims to reduce reliance on foreign ships and enhance India's control over shipping routes.
- ▶ Expected to increase competition in intra-Asia shipping and improve cost efficiencies.
- ▶ However, with an initial fleet of 100 vessels, BCL would still be a small player in the global market.

2. ₹25,000 Crore Maritime Development Fund

- ▶ Aims to boost shipbuilding capacity and reduce foreign exchange outflows.
- ▶ ₹18,090 crore shipbuilding financial assistance policy will help expand domestic manufacturing.

3. Tax and Policy Reforms to Support Indian Shipbuilding

- ▶ GST exemptions and lower customs duties on shipbuilding components.
- ▶ Indian Shipyards Association demands reforms to address the inverted duty structure in GST.
- ▶ Cochin Shipyard Ltd. and others have nearly ₹1,000 crore in unutilized Input Tax Credit (ITC), affecting cash flow.

4. Strengthening Domestic Shipbuilding Industry

- ▶ Need for improved automation and efficiency in shipyards to compete with China.

- India lacks ship-grade aluminium and specialized steel, leading to import dependence.
- Proposed policy to scrap vessels aged above 25 years to modernize fleet.

UPSC Mains Practice Question

Ques : India's dependence on foreign shipping fleets is a strategic and economic risk. Discuss the need for indigenous shipbuilding and the steps taken by the government to strengthen the sector. **(250 words)**



In News :Sukhna Wildlife Sanctuary

The Punjab government, in its affidavit submitted before the Supreme Court (SC) recently, stated that the Eco Sensitive Zone (ESZ) around the Sukhna Wildlife Sanctuary limit will remain at 100 meters for the Nayagaon municipal committee instead of 1 to 3 km.

About Sukhna Wildlife Sanctuary

- It is a protected area located in Chandigarh, near the famous Sukhna Lake at the foothills of the Shivalik range.
- The lake was created by the architect Le Corbusier in 1958 by diverting the Sukhna Choe, a seasonal stream that flows down from the Shivalik hills.
- The sanctuary was developed as a result of afforestation done for soil conservation around Sukhna Lake.
- Spreading over an area of 2600 hectares, Sukhna Wildlife Sanctuary was established in 1998.
- The place is quite unstable geographically and becomes prone to soil erosion by surface runoff during rains.
- It has sandy soil of Shivalik with pockets of clay embedded at places.
- Apart from the Sukhna Lake, there are around 150 small and large water bodies in the sanctuary that form its catchment area.
- **Vegetation:** It is characterized by a mix of forests, grasslands, and wetlands, with the Sukhna Lake forming an important part of the ecosystem.
- **Flora:** The common flora of the sanctuary includes Khair, Phulai, Kikar, Shisham, Moonj, Amaltas, Jhingan, Amla, Rati, Vasaka, and many more.
- **Fauna:**
 - Squirrel, Common-Mongoose, Indian Hare, Porcupine, Jungle Cat, Jackal, Wild boar, etc, are the mammals found in the sanctuary.
 - Peacock, Hill myna, Jungle crow, Black drongo, Parrots, Doves, and others are the common birds of this region. Migratory birds also flock around this place.

The need for universal and equitable health coverage

India has made substantial and tangible progress in Tuberculosis (TB) care, adopting new strategies to detect, treat and prevent TB. Some key areas of progress include the expansion of molecular testing for rapid detection of TB and drug-resistance; the introduction of the shorter, all-oral BPaLM regimen (a combination of four drugs Bedaquiline (B), Pretomanid (Pa), Linezolid (L), and Moxifloxacin (M)); doubling of the entitlement under the Ni-kshay Poshan Yojana (NPY) for nutrition support to ₹1,000 a month; roll-out of TB preventive therapy; and an expanded role for communities through the involvement of TB survivors and Champions. The impact of the roll-out of these strategies can be seen in the 17.7% decline in TB incidence in India, from 237 per 1,00,000 population in 2015 to 195 per 1,00,000 population in 2023, in tandem with a 21.4% reduction in TB-related deaths.

Since Independence, India's public health system has delivered disease control services through primarily vertical health programmes, such as the National Tuberculosis Elimination Programme (NTEP). While this vertical nature has allowed for concentrated focus and brought benefits in many ways, it has also been limiting. Integration of TB services within the broader public health system is key to India's pursuit of equitable, universal health coverage (UHC) for all.

Decentralising TB care for all

The ambitious Ayushman Bharat National Health Protection Scheme was launched in India in 2018 to provide UHC for the Indian population. Today, TB has been integrated within both key components of Ayushman Bharat: the Pradhan Mantri Jan Arogya Yojana (AB-PMJAY), considered the world's largest insurance scheme, and the Ayushman Arogya Mandirs (AAMs, formerly known as Health and Wellness Centres), which provide a comprehensive basket of primary health-care services in rural and urban India.

From the perspective of a person with TB symptoms, the best experience would be accessing consistently high-quality services at the first point of contact. The integration of TB services at the AAM primary care level is designed to meet this need, bringing together diagnostic, treatment and preventive care under one umbrella. AAMs serve as sputum collection centres, where people with TB symptoms can give samples for testing. The NTEP has also been optimising sample collection and transportation methods through a diagnostics network optimisation exercise. A person diagnosed with TB at a secondary or tertiary care facility can undergo treatment at the health centre closest to their residence, again minimising time and costs. In the first two months when people with TB are weak and drop outs as well as mortality is highest, community health officers positioned at



Dr. Soumya Swaminathan

is Chairperson, M.S. Swaminathan Research Foundation (MSSRF)

the AAMs and their teams must be trained to identify and refer such patients for admission.

While TB services have been free within the public health system, over 50% of all people with TB symptoms continue to seek care in the private sector. Uneven standards of care across the vastly heterogeneous private health sector has led to delays in diagnosis and contributed to poor outcomes as well as significant out-of-pocket expenditure (OOPE) for families. It is imperative to strengthen referrals from the private to the public health system, particularly for those who cannot afford to incur substantial expenditure on health and who may not be aware that TB services are freely available in the public health system. It is equally essential to ensure that the AB-PMJAY provides full insurance coverage for those who seek care for TB in the private or public sector, particularly those who are severely ill.

Equitable and decentralised care for all

What does the road to equitable TB care look like? There are five key steps we can take to accelerate our progress towards TB elimination and universal health coverage (UHC).

First, while we work to achieve decentralisation, we must strengthen person-centred care approaches, and deliver them at scale. There have been model interventions in several States that have assessed people with TB for social and clinical vulnerabilities and linked them to care. In Tamil Nadu, the Tamil Nadu Kasanoi Erappila Thittam (TN-KET), or "TB death-free project", has been successful in achieving reduced TB mortality through a robust system of identifying those most vulnerable or sick, and referring them for a brief period of admission. Similarly, there have been other interventions focusing on tribal communities, migrants, and homeless populations. One clear pathway to achieving UHC and increased utilisation of the public health system is by strengthening investment in the traditional 'inputs' for health and streamlining their functioning – human resources, supplies and infrastructure.

Second, we must develop mechanisms to recognise intersectionalities. Multiple factors such as gender, age, caste, disability, socio-economic status, and occupation determine health seeking intent and access to health and TB services. The intersection of these aspects of identity can both positively and adversely impact TB outcomes. The NTEP has adopted the national framework for a gender-responsive approach to TB, recognising that women, men, and LGBTQIA persons experience TB differently. Improving understanding of gender will take time, and inevitably challenge personal behaviours and

norms, but is essential to equitable care.

Similarly, there has been some early work to better understand TB and disability, which must be built upon.

Third, integrated care remains a challenge for India's health system, as we continue to build our primary care services. How do we ensure that someone who comes with TB symptoms is tested for Chronic obstructive pulmonary disease (COPD) or asthma? How can a person with TB be screened for depression or hypertension and

linked to appropriate services and counselling? We must adopt models of integrated general health screening in community settings, for example, test for TB and COPD through validated Artificial Intelligence (AI)-enabled chest x-rays and upfront molecular testing, along with screening of common non-communicable diseases through blood pressure, blood glucose, and body mass index (BMI) monitoring.

Fourth, UHC approaches are centred around minimising OOPE, thereby eliminating health-related debt. Schemes such as the NPY have helped alleviate the financial burden on families, by providing monetary support for access to nutritious food. Case-finding approaches, such as the ongoing '100 Days' campaign, can help reduce OOPE prior to diagnosis. However, there are still several significant indirect costs that remain. Expanding social protection by extending nutrition support to the family, piloting wage-loss schemes to offset a loss of income during TB treatment and introducing livelihood programmes for TB survivors are potential future actions.

Lessons from COVID-19, communication

Finally, equity in terms of access to information and knowledge is critical. TB remains severely misunderstood. Recall how swiftly we were able to ensure public understanding of COVID-19, through a flood of science-based information using a multitude of platforms. We need similar approaches for TB, to encourage people to seek care and adopt simple measures to reduce transmission within homes and communities. Promoting knowledge about drug-resistant TB, in the context of growing anti-microbial resistance (AMR) is vital. Decimating TB stigma is critical to ensuring early detection and successful treatment outcomes for people with TB.

An equitable TB programme is one where every individual receives the highest quality of person-centred care that takes into account individual needs. Equity is a cornerstone of health care, and is essential to achieving TB elimination and universal health coverage. India's TB response is well poised to define global standards and benchmarks. Applying the equity lens will only accelerate our progress.



Integration of TB services within the broader public health system is key to India's pursuit of equitable, universal health coverage for all

Paper 02: Social Justice

UPSC Mains Practice Question: A welfare state ensures the well-being of its citizens by providing essential services like healthcare, education, and social security.

Context :

- ▶ Integrating TB services into the public health system is essential for ensuring fair and universal healthcare for everyone in India.

What are the key advancements India has made in tuberculosis (TB) care?

- ▶ **Expansion of Molecular Testing for Rapid Detection:** India has significantly expanded molecular testing, enabling faster and more accurate diagnosis of TB and drug-resistant TB. Example: Introduction of CBNAAT (Cartridge-Based Nucleic Acid Amplification Test) and TrueNat machines in primary health centers for early detection.
- ▶ **Improved Drug Regimens & Shorter Treatment Duration:** Newer drug combinations have reduced treatment duration for drug-resistant TB, increasing patient compliance. Example: The shorter BPaL regimen (Bedaquiline, Pretomanid, and Linezolid) has improved MDR-TB cure rates and reduced mortality.
- ▶ **Better Access to Free & Effective Treatment:** Government programs like the National TB Elimination Programme (NTEP) provide free TB medicines, improving adherence and reducing deaths. Example: MDR-TB patients receiving Bedaquiline and Delamanid have better survival rates compared to traditional toxic injectable treatments.
- ▶ **Enhanced Nutritional and Financial Support:** The Ni-kshay Poshan Yojana (NPY) doubled financial assistance from ₹500 to ₹1,000 per month for TB patients to ensure proper nutrition. Example: Over 40 lakh patients have benefited from direct benefit transfers under this scheme.
- ▶ **Integration of TB Services with Primary Healthcare:** TB care is now incorporated into the Ayushman Bharat scheme, linking it with Health and Wellness Centres (Ayushman Arogya Mandirs). Example: These centers serve as sputum collection points and treatment hubs, improving accessibility for rural and urban populations.
- ▶ **Community Engagement and Preventive Strategies:** Expansion of TB preventive therapy and involvement of TB survivors as "TB Champions" to promote awareness and early detection. Example: The "100 Days" campaign aims to improve case detection and ensure early intervention for high-risk populations.

How have these advancements contributed to a decline in TB incidence and mortality rates?

- ➔ **Decline in TB Incidence:** In 2015, TB incidence in India was 237 per lakh population. By 2022, it had dropped to below 200 per lakh, showing a 16% decline. Example: If 237 people per lakh had TB in 2015, now fewer than 200 per lakh are affected.
- ➔ **Reduction in TB Mortality:** TB mortality declined from higher levels in 2015 to 23 per lakh population in 2022. This represents an 18% decline in TB-related deaths. Example: If 100,000 people were affected, 23 would die from TB in 2022 compared to a higher number in 2015.

Who are the most vulnerable groups affected by TB?

- ➔ **People with Weakened Immune Systems:** Individuals with HIV/AIDS, diabetes, malnutrition, or chronic illnesses are more susceptible due to weaker immunity. Example: TB is the leading cause of death among people with HIV, as their immune system cannot effectively fight the infection.
- ➔ **Low-Income & Undernourished Populations:** Malnutrition and poverty increase TB risk by weakening immunity and limiting access to healthcare. Example: In India, undernourished populations, especially in tribal and slum areas, have higher TB incidence due to poor living conditions.
- ➔ **Migrants, Prisoners, and Urban Slum Dwellers:** Overcrowded and poorly ventilated environments increase TB transmission. Example: Migrant workers living in congested dormitories or prison inmates are at a higher risk of infection due to close contact with infected individuals.

Gender & Tuberculosis: Challenges, Data, and Solutions

Category	Challenges	Data & Examples	Solutions
Women & TB	Social Stigma and Fear of Isolation	60% of women diagnosed with TB in India face stigma (REACH, 2022).	Community awareness campaigns like "TB Mukta Mahila" in Uttar Pradesh.
	Misdiagnosis & Underreporting	Only 34% of TB cases in women are officially diagnosed (WHO, 2019).	Gender-sensitive diagnostic protocols in PHCs. Routine TB screening during maternal health checkups (Rajasthan model).
	Limited Healthcare Access	50% of rural women delay TB treatment due to financial dependence (Global TB Report, 2023). Example: Bihar's ASHA workers report women refusing solo hospital visits, delaying treatment.	Mobile TB clinics and door-to-door screenings.
	Higher Risk of	45% of women with TB suffer	Ni-kshay Poshan Yojana

Daily News Analysis

	Malnutrition	from malnutrition (NFHS, 2023). Example: 80% of TB-infected women in Jharkhand lack protein-rich diets, increasing dropout rates.	benefits for women, with an extra ₹500 allowance in Madhya Pradesh.
Children & TB	Non-Specific Symptoms & Misdiagnosis	60% of childhood TB cases present with fever and weight loss, not cough (IAP, 2022).	AI-based diagnostic tools like Bihar's AI-assisted TB detection, which increased early diagnosis by 28%.
	Sputum Test Ineffectiveness	40-50% of children's TB cases are undetectable using standard sputum tests (WHO, 2023). Example: Delhi's AIIMS introduced stool-based PCR testing, increasing childhood TB detection by 25%.	Nationwide adoption of stool-based PCR tests.
	Late Detection in Infants	30% of TB meningitis cases in infants are fatal due to delayed screening.	Routine TB screening during childhood immunizations.
	Malnutrition & Weak Immunity	Malnourished children are six times more likely to develop TB (WHO, 2023). Example: 90% of TB-infected children in Jharkhand were also undernourished.	Integrate TB screening with anganwadi nutrition programs.
	Exposure to Household TB	50% of children living with TB-infected adults develop latent TB, but only 15% receive preventive therapy (Nikshay Portal, 2023). Example: Kerala's preventive therapy program reduced childhood TB cases by 40%.	Preventive therapy for all children in TB-affected households.
	Lack of Awareness Among Parents	70% of parents believe TB only affects adults (UP survey, 2023). Example: Schools in Gujarat introduced annual TB screening	Mandatory TB screening in schools and anganwadis. Maharashtra's "TB-Free

		camps, improving early detection.	Schools" program detected 5,000 hidden cases in 2023.
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Why is the integration of TB services within the broader public health system crucial for achieving Universal Health Coverage (UHC) in India?

- **Ensures Comprehensive and Equitable Healthcare Access:** Integrating TB services into primary healthcare allows early detection and treatment for all, especially marginalized populations. Example: Including TB screening in Ayushman Bharat-Health and Wellness Centres (HWCs) improves outreach in rural areas.
- **Reduces Financial Burden on Patients:** Universal Health Coverage (UHC) aims to provide affordable treatment and minimize out-of-pocket expenses for TB care. Example: Linking TB care with PM-JAY (Ayushman Bharat) ensures free diagnostic and treatment services, reducing financial distress.
- **Improves Early Detection and Treatment Outcomes:** Strengthening public health infrastructure with integrated screening programs improves early diagnosis and treatment adherence. Example: Nikshay Poshan Yojana provides nutritional support to TB patients, improving recovery and treatment success rates.
- **Addresses Co-Morbidities and Holistic Patient Care:** TB patients often suffer from HIV, diabetes, or malnutrition; integration helps manage co-existing diseases efficiently. Example: Co-treatment of TB and HIV in ART (Antiretroviral Therapy) centers ensures better health outcomes.
- **Strengthens Disease Surveillance and Data Management:** A unified health system enhances TB monitoring, tracking drug resistance, and controlling outbreaks. Example: The Nikshay portal helps track patient progress and ensures adherence to treatment regimens.

How does the Ayushman Bharat scheme contribute to decentralizing TB care?

- **Expansion of Health and Wellness Centres (HWCs):** Primary healthcare centres (PHCs) and HWCs under Ayushman Bharat provide TB screening, diagnosis, and treatment at the grassroots level, reducing dependency on tertiary hospitals. Example: A TB patient in a remote village can access free CBNAAT/Truenat testing at a nearby HWC, ensuring early detection.
- **Financial Protection through PM-JAY:** The Pradhan Mantri Jan Arogya Yojana (PM-JAY) covers TB treatment costs, reducing the financial burden on poor and vulnerable groups. Example: A migrant laborer diagnosed with drug-resistant TB can avail free hospitalization and medication under PM-JAY without financial hardship.
- **Community-Based TB Care and Awareness:** Health workers (ASHA, ANMs) are trained to provide TB awareness, medication adherence support, and nutritional aid at the community level. Example:

An ASHA worker monitors a TB patient's medicine intake and nutrition under the Nikshay Poshan Yojana, preventing treatment dropout.

What are Ayushman Arogya Mandirs (AAMs)?

- Ayushman Arogya Mandirs (AAMs) are upgraded Health and Wellness Centres (HWCs) under the Ayushman Bharat scheme, aimed at strengthening primary healthcare across India.
- These centers provide comprehensive healthcare services at the community level, integrating preventive, promotive, curative, and diagnostic care.

What role do Ayushman Arogya Mandirs (AAMs) play in this process?

- **Strengthening TB Screening and Early Detection:** Ayushman Arogya Mandirs (AAMs) serve as first-contact healthcare facilities offering free TB screening and diagnostic services, improving early detection. Example: A person with persistent cough visiting an AAM in a rural area can get an immediate sputum test, preventing delayed diagnosis.
- **Ensuring Free and Continuous TB Treatment:** AAMs provide directly observed treatment (DOTS) services, ensuring uninterrupted access to TB medicines and better adherence to treatment. Example: A TB patient enrolled at an AAM receives daily monitored medication, reducing the risk of drug resistance and treatment dropout.
- **Community Engagement and Nutritional Support:** AAMs facilitate awareness programs, counseling, and nutritional support through schemes like Nikshay Poshan Yojana to enhance treatment outcomes. Example: A malnourished TB patient visiting an AAM is linked to a nutrition support program, improving overall recovery and immunity.

Way forward:

- **Strengthen Multi-Sectoral Collaboration:** Enhancing partnerships between healthcare, nutrition, and social welfare sectors can ensure a holistic approach to TB care. Example: Expanding Nikshay Poshan Yojana with additional dietary interventions can improve patient recovery.
 - **Leverage Technology for TB Surveillance & Treatment:** Expanding AI-driven diagnostic tools and digital adherence tracking can improve early detection and treatment success. Example: Scaling up the use of AI-based X-ray screening in rural areas can enhance case detection rates.
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