

The Hindu Important News Articles & Editorial For UPSC CSE

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सुप्रीम कोर्ट ने कहा कि केंद्र ने 2021 के अनुरोध के बावजूद तमिलनाडु की कावेरी-दक्षिण वेल्लार लिंक परियोजना को मंजूरी नहीं दी है।

➔ कर्नाटक ने जल अधिकारों पर चिंताओं का हवाला देते हुए परियोजना का विरोध किया।

Centre yet to give approval to Tamil Nadu's Cauvery-South Vellar Link project, says SC

Karnataka argues that the plan prejudicially affects or is likely to affect the rights and interests of the State and its inhabitants along the waters of Cauvery; Bench disposes of Karnataka's application saying it is not necessary to consider the State's interim plea for injunction as of today

The Hindu Bureau
NEW DELHI

The Supreme Court has found that the Centre is yet to grant 'in-principle approval' to the Cauvery-South Vellar Link project four years after Tamil Nadu sought clearance from the Jal Shakti Ministry in January 2021.

A Bench of Justices A.S. Oka and A.G. Masih noted the fact while disposing of an application filed by Karnataka urging the top court to restrain neighbouring Tamil Nadu from proceeding with the work on the

Vellar project.

The Bench disposed of the application while observing it was not necessary to consider Karnataka's interim plea for injunction as the request by Tamil Nadu for project clearance has still not received the in-principle approval of the Centre.

"Therefore, as of today, it is not necessary to consider the prayer for interim relief," the order, which was published on Thursday, read.

Tamil Nadu had written to the Ministry on January 5, 2021 for in-principle approval to the Cauvery-



Tamil Nadu had written to the Centre in 2021 for in-principle approval to the Cauvery-South Vellar Link project. FILE PHOTO

South Vellar Link project and for the declaration of Cauvery-Vaigai-Gundar Link project as a national project.

Karnataka, in its injunction application, said the

project was one of a series taken up by Tamil Nadu "to appropriate and commit Karnataka's Cauvery water".

The South Vellar Link project would result in the

transfer of a large quantity of inter-State Cauvery water. This would involve the diversion of flood surplus water from the Mettur dam to the dry tanks in the Sarabanga basin in Salem district at a cost of ₹565 crore. The water would be in excess of 483 tmcft available across the inter-State border at Biligundlu in Karnataka, the State submitted.

"The plan prejudicially affects or is likely to affect the rights and interests of Karnataka and its inhabitants along the waters of Cauvery," the application said.

In fact, Karnataka had

urged the Union government in February 2021 to not accord clearance to the South Vellar project or declare the Gundar Link as a national project.

The Karnataka application had argued that the Tamil Nadu Chief Minister had gone ahead and laid the foundation stone for the project on February 21, 2021 "in disregard of Constitutional conventions" and against federal principles.

The application stemmed from an original suit filed by Karnataka against Tamil Nadu in the Supreme Court.

कावेरी-दक्षिण वेल्लार लिंक परियोजना: मुख्य विवरण

- ➔ तमिलनाडु ने जनवरी 2021 में जल शक्ति मंत्रालय से परियोजना के लिए सैद्धांतिक मंजूरी मांगी थी, लेकिन केंद्र ने अभी तक मंजूरी नहीं दी है।
- ➔ परियोजना अवलोकन: दक्षिण वेल्लार लिंक का उद्देश्य तमिलनाडु के मेट्टूर बांध से अधिशेष पानी को सलेम जिले के सरबंगा बेसिन में सूखे टैंकों में मोड़ना है।
- ➔ कर्नाटक का विरोध: कर्नाटक ने चिंता जताई कि यह परियोजना कावेरी जल पर उसके अधिकारों को प्रभावित कर सकती है, क्योंकि इस परियोजना में कर्नाटक की बिलिगुंडलु सीमा से अंतर-राज्यीय जल का स्थानांतरण शामिल है।
- ➔ लागत और दायरा: ₹565 करोड़ की अनुमानित लागत, जिसमें 483 टीएमसीएफटी पानी स्थानांतरित किया जाएगा।
- ➔ कानूनी कार्रवाई: कर्नाटक ने संवैधानिक और संघीय चिंताओं का हवाला देते हुए परियोजना के खिलाफ निषेधाज्ञा के लिए याचिका दायर की - और केंद्र से मंजूरी नहीं मांगी।

केंद्रीय खान मंत्रालय ने मदुरै जिले में नायकरपट्टी टंगस्टन खनिज ब्लॉक की नीलामी रद्द कर दी।

Tungsten mining: Centre decides to annul auction of mineral block in Madurai

The Hindu Bureau
CHENNAI

The Union Ministry of Mines on Thursday announced its decision to annul the auction of the tungsten mineral block at Nayakkarpatti in Madurai district. The locals had been protesting against the auction, and the Assembly had unanimously adopted a special resolution urging the Union government to immediately cancel the tungsten mining rights granted to a firm.

The decision was taken considering the importance of the biodiversity heritage site in the area, and showed the commitment of the Government of India to protecting traditional rights, an official press release said.

The Centre's decision followed a meeting between leaders of the Ambalakarar community from Madurai district and Union

Locals are protesting against the auction and Assembly had unanimously adopted a special resolution

Minister for Coal and Mines G. Kishan Reddy in New Delhi on January 22.

The community leaders had told the Union Minister that the Nayakkarpatti tungsten mineral block included the Arittapatti biodiversity heritage site and a number of cultural heritage sites. They requested the Union Minister to cancel the auction of the Nayakkarpatti block.

In a social media post, Chief Minister M.K. Stalin recalled having asserted in the Assembly that his government would not permit the proposal as long as he held his post.

"We adopted a resolution unanimously in the Assembly. The Union go-

vernment has now given in to the sentiments of the people and the determination of the State government," he said.

The Centre should not issue notifications for such auctions without the consent of the State governments, Mr. Stalin said. "The AIADMK, too, should not go along with legislations that are against the States' rights," he added.

Welcoming the decision, AIADMK general secretary Edappadi K. Palaniswami recalled the steps that his party took to highlight the issue in the Assembly and expose the "drama" staged by the DMK government over it.

The decision of the Centre was a victory to the steps undertaken by the AIADMK, and had put a stop to the "double standards" of the DMK government over the proposal. The people's power had won, Mr. Palaniswami said.

समाचार में स्थान:

- ▶ नायकरपट्टी, मदुरै: केंद्रीय खान मंत्रालय ने स्थानीय लोगों के विरोध और अरिद्वापट्टी जैव विविधता विरासत स्थल पर चिंताओं के कारण टंगस्टन खनिज ब्लॉक की नीलामी रद्द कर दी।

Daily News Analysis

- अरिष्टापट्टी जैव विविधता विरासत स्थल: तमिलनाडु का पहला जैव विविधता विरासत स्थल, अरिष्टापट्टी, समृद्ध जैव विविधता का दावा करता है, जिसमें लैगर फाल्कन और शाहीन फाल्कन जैसे शिकारी पक्षी शामिल हैं। इसमें मेगालिथिक संरचनाओं और रॉक-कट मंदिरों जैसे ऐतिहासिक स्थल भी हैं।



समाचार में रोडामाइन बी नामक सिंथेटिक डार्ई के स्वास्थ्य जोखिमों पर चर्चा की गई है, जो कैंसर से जुड़ा हुआ है।

The hidden dangers of Rhodamine B: a global and local perspective

Rhodamine B is a synthetic dye utilised in industries such as textiles, paper, and leather. Its application extends to scientific research due to its fluorescent properties. However, its use in consumable products is fraught with health risks. Studies indicate it can cause DNA damage, leading to mutations and potentially triggering cancerous growths

Monisha Madhumita

Imagine indulging in an appetizing looking, sweet treat, only to discover it contains a dye primarily used in textiles and linked to cancer. This alarming reality has prompted significant health interventions worldwide, including recent decisive actions in India.

Rhodamine B is a synthetic dye known for its bright pink hue, commonly utilised in industries such as textiles, paper, and leather. Its application extends to scientific research due to its fluorescent properties. However, its use in consumable products is fraught with health risks. Studies indicate that Rhodamine B can cause DNA damage, leading to mutations and potentially triggering cancerous growths.

Animal research has demonstrated tumour development in organs like the liver and bladder following prolonged exposure to the dye.

Recognising its potential dangers, many countries have put in place strict regulations on use of Rhodamine B. In the United States, the Food and Drug Administration (FDA) has long prohibited its use in food products, classifying it as unsafe for human consumption. A recent ban issued by the FDA in January 2025 further reinforces these restrictions, prohibiting the use of Rhodamine B in any food-related applications due to increasing evidence of its carcinogenic properties.

The FDA cited growing concerns over children's exposure to high levels of the dye in candies, baked goods, and other processed foods, prompting an urgent call for manufacturers to reformulate their products. This ban stems from studies indicating its potential carcinogenicity and other health risks. Similarly, the European Union classifies Rhodamine B as a substance of very high concern, restricting its use in cosmetics and other consumer goods.

Indian perspective

In India, the rampant use of Rhodamine B in food items has raised significant health concerns. The dye has been illegally employed to enhance the visual appeal of various consumables, posing serious health risks to consumers. Over the last few years, action has been taken by various Indian states and these highlight the growing awareness of these dangers. In February 2024, Tamil Nadu banned the production and sale of cotton candy after the Government Food Analysis Laboratory in Chennai detected Rhodamine B in samples collected from



Animal research has demonstrated tumour development in organs such as the liver and bladder following prolonged exposure to the dye. FILE PHOTO.

vendors. Health Minister Ma Subramanian emphasised that the use of Rhodamine B in food violates the Food Safety and Standards Act of 2006, categorising such products as unsafe. The ban aims to raise public awareness about the hazards associated with coloured candies and ensure that only safe, colour-free cotton candy is available.

Following Tamil Nadu's lead, other Indian states and territories have taken similar measures. Karnataka, in March 2024, prohibited the use of Rhodamine B in popular street foods like "Gobi Manchurian" and cotton candy. Minister for Health and Family Welfare in the Government of Karnataka, Dinesh Gundu Rao, announced stringent penalties for violators, including imprisonment of up to seven years and fines reaching ₹10 lakh. Laboratory tests revealed the presence of harmful chemicals in numerous samples collected across the state.

Puducherry also followed suit by banning the sale of cotton candy containing Rhodamine B. Food safety officers have been directed to conduct inspections and take strict action against violators to safeguard public health. In May 2024, Himachal Pradesh instituted a one-year ban on the production, sale, and storage of cotton candy after detecting Rhodamine B in samples. This preventive measure aims to protect consumers from the potential carcinogenic effects of the dye.

Mohammed Mithi, Consultant Surgical Oncologist at Saifee Hospital in Mumbai, explains, "Synthetic dyes, including Rhodamine B, may pose carcinogenic risks due to certain chemical components. Some dyes, like azo dyes,



Synthetic dyes, when used in concentrations approved by regulatory bodies, are generally safe. However, in sensitive individuals, they can lead to allergic reactions such as itching, redness, and skin thickening

can break down into aromatic amines, which are known carcinogens. Laboratory studies have shown that specific synthetic dyes can induce DNA damage, oxidative stress, and promote tumour growth in animal models. While concrete evidence in humans is limited, long-term exposure to unregulated products remains a concern." He further adds that certain groups, such as children, the elderly, and immunocompromised individuals, are more susceptible to these harmful effects due to their body's reduced ability to metabolise and detoxify harmful substances.

Abyramy Balasundaram, consultant dermatologist at Cosmediq Hair Transplant and Skin Clinic, Chennai, states, "Synthetic dyes, when used in concentrations approved by regulatory bodies, are generally safe. However, in sensitive individuals, they can lead to allergic reactions such as itching, redness, and skin thickening. Long-term exposure to synthetic dyes like Rhodamine B can result in chronic allergic reactions and permanent skin pigmentation changes. Although there is no definitive link to cancer in humans through topical application, it is always advisable to opt for products from reputable brands with

proper labeling."

She further notes, "The European Union was among the first to ban Rhodamine B in cosmetics in the early 1990s due to concerns about its potential carcinogenic effects and skin sensitisation risks. This move has paved the way for stricter global regulations on synthetic dyes in personal care products."

India's food safety ecosystem

Priyadarshini Chidambaram, Community Health Specialist and Researcher, Bengaluru, says, "The ecosystem in India for research into food dyes safety is weak. There is a need for proactive funding and commissioning of independent research by the Food Safety and Standards Authority of India (FSSAI) to study the impact of additives, especially synthetic dyes, on public health based on Indian diet practices through collaborations with academic and research institutions. We must build a robust system of rapid scientific reviews and proactive policy implementation to be on par with international recommendations on food safety instead of reacting to a public health crisis or just joining the bandwagon of international ban trends."

She adds, "There needs to be active testing for harmful food dyes and enforcement of strict action against errant big brands and smaller establishments and vendors. The fact that a state-level ban was necessary to bring attention to harmful dyes like Rhodamine B is a wake-up call. It underscores the need for FSSAI to play a more visible role in educating the public about unsafe food practices. There is a definite knowledge gap among the public on food standards. We must harness the growing digital and social media influence to disseminate information on safe food additives and food label warnings. Community education and engagement are needed to tackle the menace of harmful additives."

The case of Rhodamine B serves as an important reminder of the hidden dangers that lurk in seemingly innocuous products. It underscores the collective responsibility of governments, industries, and consumers to prioritise health over aesthetics. By staying informed and vigilant, we can ensure that the foods we enjoy are not only appealing but also safe. As medical professionals aptly put it, "The health of a nation begins with the safety of its food. It's time we prioritise long-term well-being over short-term convenience."

(Dr. Monisha Madhumita is a consultant dermatologist at Saveetha Medical College, Chennai and member of the International Alliance for Global Health Dermatology, London, UK. mail.monisha.m@gmail.com)

THE GIST

In the U.S., the FDA has long prohibited Rhodamine B in food due to evidence of its carcinogenic properties. The FDA cited growing concerns over children's exposure to high levels of the dye in candies, baked goods, and other processed foods.

In February 2024, Tamil Nadu banned production and sale of cotton candy after it detected Rhodamine B. Such products are graded as unsafe and substandard. The ban aims to raise public awareness and ensure only safe, colour-free cotton candy is available.

According to doctors: 'Specific synthetic dyes can induce DNA damage, oxidative stress, and promote tumour growth in animal models. While concrete evidence in humans is limited, long-term exposure to unregulated products remains a concern'

Rhodamine B serves as an important reminder of the hidden dangers that lurk in seemingly innocuous products. It underscores the collective responsibility of governments, industries, and consumers to prioritise health over aesthetics.

रोडामाइन बी का उपयोग और इसके स्वास्थ्य जोखिम

- रोडामाइन बी एक सिंथेटिक डार्ई है, जिसका व्यापक रूप से कपड़ा, कागज और चमड़े में उपयोग किया जाता है।
- यह खाद्य उत्पादों में भी पाया जाता है, हालांकि उपभोग्य सामग्रियों में इसका उपयोग गंभीर स्वास्थ्य जोखिम पैदा करता है।
- अध्ययनों से पता चलता है कि यह डीएनए क्षति, उत्परिवर्तन और संभावित रूप से कैंसर का कारण बन सकता है।
- पशु अध्ययनों ने यकृत और मूत्राशय जैसे अंगों में ट्यूमर के विकास के लिए लंबे समय तक संपर्क को जोड़ा है।

वैश्विक और भारतीय कार्रवाई

- ▶ अमेरिका में FDA ने इसके कैंसरकारी प्रभावों पर चिंताओं का हवाला देते हुए भोजन में रोडामाइन बी पर प्रतिबंध लगा दिया है।
- ▶ यूरोपीय संघ भी सौंदर्य प्रसाधनों और उपभोक्ता उत्पादों में इसके उपयोग को प्रतिबंधित करता है।
- ▶ भारत में, कई राज्यों ने भोजन में इसके उपयोग के खिलाफ कार्रवाई की है।
- ▶ तमिलनाडु ने नमूनों में डाई का पता लगाने के बाद फरवरी 2024 में कॉटन कैंडी पर प्रतिबंध लगा दिया।
- ▶ कर्नाटक ने भी ऐसा ही किया और उल्लंघन करने वालों पर कठोर दंड लगाया।
- ▶ पुडुचेरी और हिमाचल प्रदेश ने भी इसी तरह के प्रतिबंध लागू किए।

रोडामाइन बी के स्वास्थ्य जोखिम

- ▶ विशेषज्ञ रोडामाइन बी जैसे सिंथेटिक रंगों से जुड़े कैंसरजन्य जोखिमों के बारे में चेतावनी देते हैं, खासकर बच्चों, बुजुर्गों और कमजोर प्रतिरक्षा प्रणाली वाले लोगों के लिए।
- ▶ ऐसे रंगों के लंबे समय तक संपर्क में रहने से पुरानी एलर्जी और त्वचा संबंधी समस्याएं हो सकती हैं।
- ▶ विशेषज्ञों का सुझाव है कि भारत को खाद्य रंगों की सुरक्षा पर अधिक शोध की आवश्यकता है।

भारत की डिजिटल अर्थव्यवस्था समग्र अर्थव्यवस्था की दोगुनी दर से बढ़ेगी।

► डिजिटल अर्थव्यवस्था 2024-25 तक राष्ट्रीय आय का 13.42% तक पहुँच जाएगी, जो 2022-23 में 11.74% थी।

Digital economy to constitute fifth of Indian GDP by 2030: ICRIER report

Aroon Deep

NEW DELHI

India's digital economy will grow twice as fast as the rest of the economy, and constitute 13.42% of national income by the end of 2024-25, as against 11.74% in 2022-23, according to a report prepared by the Indian Council for Research on International Economic Relations (ICRIER) based on a study by the Ministry of Electronics and Information Technology.

By 2030, the report says, India's digital economy will account for nearly a fifth of overall GDP. This is the first such attempt by the government to quanti-

This is the first such attempt by the government to quantify the size of India's digital economy

fy the size of India's digital economy.

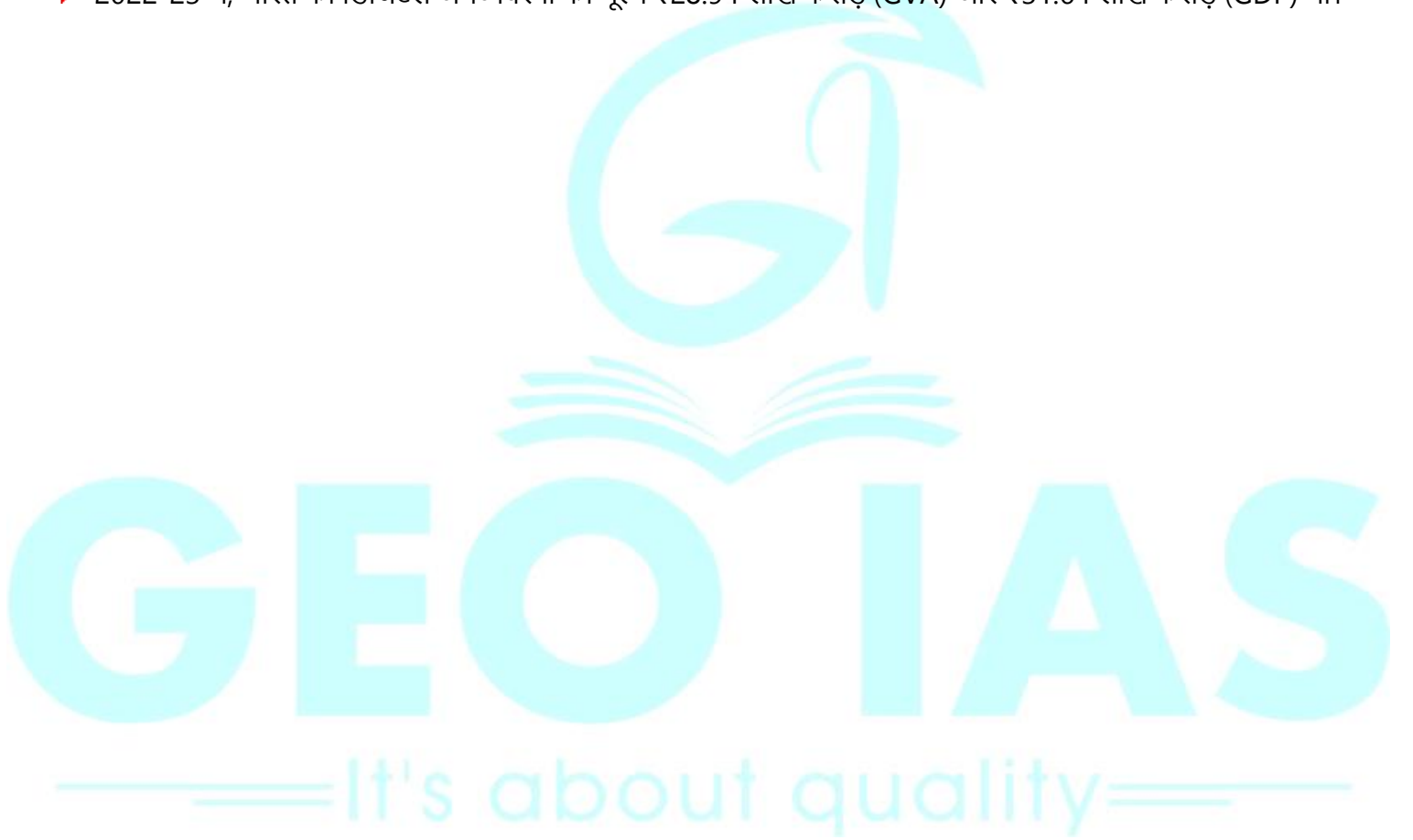
To quantify the size of the digital economy, ICRIER has combined definitions by the Organisation for Economic Co-operation and Development (OECD) and the Asian Development Bank (ADB), but also included the "Digital share of traditional industries like trade, bank-

ing, financial services, and insurance (BFSI) and education," essentially casting a wider net to measure the share that digitally-enabled services and activities have in the economy.

Under this framework, "The digital economy in 2022-23 was equivalent to ₹28.94 lakh crore (-\$368 billion) in [Gross Value Added (GVA)] and ₹31.64 lakh crore (-\$402 billion) in GDP," the report says. Even under the expanded definition that includes digitising industries, the "traditional ICT" sector remains the largest portion included in these measures and estimates.

समाचार का विश्लेषण:

- यह रिपोर्ट इलेक्ट्रॉनिक्स और सूचना प्रौद्योगिकी मंत्रालय के एक अध्ययन पर आधारित है और इसे भारतीय अंतर्राष्ट्रीय आर्थिक संबंध अनुसंधान परिषद (ICRIER) द्वारा तैयार किया गया है।
- 2030 तक, भारत की डिजिटल अर्थव्यवस्था सकल घरेलू उत्पाद का लगभग 20% हिस्सा होने की उम्मीद है।
- डिजिटल अर्थव्यवस्था के आकार को मापने का यह पहला सरकारी प्रयास है।
- ICRIER की परिभाषा OECD और ADB की परिभाषाओं को जोड़ती है, जबकि इसमें BFSI और शिक्षा जैसे डिजिटल रूप से सक्षम क्षेत्र भी शामिल हैं।
- 2022-23 में, भारत की डिजिटल अर्थव्यवस्था का मूल्य ₹28.94 लाख करोड़ (GVA) और ₹31.64 लाख करोड़ (GDP) था।



In News : India's Deep Ocean Mission

- ▶ भारत 2025 में अपना पहला मानव अंडरवाटर सबमर्सिबल, गहरे समुद्र में चलने वाला मानव वाहन लॉन्च करने के लिए तैयार है।

भारत का पहला मानव अंडरवाटर सबमर्सिबल

- ▶ यह सबमर्सिबल 500 मीटर की गहराई पर काम करेगा, जिसका लक्ष्य अगले साल तक 6,000 मीटर तक पहुंचना है।
- ▶ यह उपलब्धि भारत को ऐसे छह देशों में शामिल करेगी जिनके पास ऐसी महत्वाकांक्षी परियोजनाओं को शुरू करने की तकनीक है।

नीली अर्थव्यवस्था को बढ़ावा देना

- ▶ पनडुब्बी और गहरे समुद्र मिशन का उद्देश्य वैज्ञानिक क्षमताओं को आगे बढ़ाना और नीली अर्थव्यवस्था को मजबूत करना है, जिसमें सतत आर्थिक विकास के लिए समुद्री संसाधनों का उपयोग करना शामिल है।
- ▶ इस पहल को आर्थिक विकास और पर्यावरणीय स्थिरता के लिए महत्वपूर्ण खनिजों, दुर्लभ धातुओं और समुद्री जैव विविधता सहित विशाल पानी के नीचे के संसाधनों का पता लगाने के लिए डिज़ाइन किया गया है।
- ▶ यह परियोजना पूरी तरह से भारत में विकसित स्वदेशी तकनीक पर आधारित है, जो अत्याधुनिक विज्ञान में देश की आत्मनिर्भरता पर जोर देती है।

वैज्ञानिक अन्वेषण में दोहरी उपलब्धियाँ

- ▶ गहरे समुद्र में खोज करने का मिशन भारत के अन्य ऐतिहासिक मिशनों, जैसे गगनयान अंतरिक्ष मिशन के साथ संरेखित है, जो अंतरिक्ष और समुद्री अन्वेषण दोनों में महत्वपूर्ण उपलब्धियों को दर्शाता है।
- ▶ इस मिशन का उद्देश्य गहरे समुद्र के पारिस्थितिकी तंत्र की समझ को बढ़ाना है, जो टिकाऊ मत्स्य पालन और जैव विविधता संरक्षण में योगदान देता है।

निष्कर्ष

- ▶ महामारी के कारण मिशन में देरी हुई, लेकिन इसने उल्लेखनीय प्रगति की है।
- ▶ यह भारत की अर्थव्यवस्था, वैज्ञानिक समुदाय और पर्यावरणीय लचीलेपन के लिए दीर्घकालिक लाभ का वादा करता है।

UPSC Mains Practice Question

प्रश्न: भारत के डीप ओशन मिशन के उद्देश्यों और महत्व पर चर्चा करें। यह देश की वैज्ञानिक प्रगति और नीली अर्थव्यवस्था में कैसे योगदान देता है? (150 Words /10 marks)

Page : 08 Editorial Analysis
India's winding road to '#EndTB'

Last year, tuberculosis (TB) emerged, once again, as the leading infectious disease killer globally. The goals, i.e., End TB targets of 90% reduction in TB deaths, 80% reduction in new cases, and zero TB-affected families facing catastrophic costs by 2030, seem to be a distant dream. In 2018, India extended the highest level of political commitment for the cause by pledging to achieve End TB targets on an accelerated timeline by 2025. However, the COVID-19 pandemic was a huge pushback to the efforts.

According to the World Health Organization's Global Tuberculosis Report 2024, India continues to lead in the global TB burden (26% of cases) and is also the hub for drug-resistant TB (DR-TB) and TB deaths. While ambitious policies and initiatives are rolled out from the national level, the ground reality in India needs to be better understood to translate them into effective interventions.

Focus on vulnerable groups

India's National Tuberculosis Elimination Programme (NTEP) clearly defines the high-risk or vulnerable groups that are at risk of contracting TB and developing adverse outcomes.

Dr. Pavitra Mohan, paediatrician and founder of Basic Healthcare Services, a non-governmental organisation working in south Rajasthan, says, "We get around 1000 persons with TB in our clinics every year and many of them have severe lung damage owing to fine dust inhalation from mining and stone carving. They are at risk for TB due to contributory factors like silicosis, undernutrition, overcrowding, and uncontrolled co-morbidities like diabetes."

Migrant workers also have an added disadvantage of poor access to health-care facilities. Dr. Mohan says, "They prefer to go back to their native place if they fall ill and hence it is not easy for the healthcare delivery system also to keep track of their treatment."

While a lot of attention is being paid to tackling undernutrition among persons with TB (pwTB), a host of other contributory factors in each geography needs to be addressed, requiring multisectoral action.

TB is a curable disease with effective and free drugs from NTEP. A significant achievement for India is the treatment initiation in more than 95% of notified cases. This was possible, over the years, by establishing an exclusive procurement and supply chain system for the NTEP.



Swathi Krishna Njarekkattu-valappil

is a public health physician and researcher based in Pune, working in tuberculosis, health policy and systems research



Parth Sharma

is a community physician and public health researcher based in Delhi and is the founder of the public health advocacy organisation, Nivarana

The chances of ending TB by 2025 appear bleak, but there is some hope

However, in 2023, there was a country-wide break in the supply chain – it still continues in many parts. Shortage of key drugs in the centres, many of which are unavailable in the open market, left the beneficiaries and their families in a struggle. Nandita Venkatesan, data journalist and two-time TB survivor, says, "It takes many a mile for pwTB to reach the finishing line of treatment combating a wide range of side effects. Shortage of such critical medicines disrupts the treatment, risking resistance to antibiotics and poor disease outcomes. Moreover, having to buy drugs from outside leads to catastrophic health expenses."

On extrapulmonary TB

Extrapulmonary TB (EP-TB) affects any organ of the body – lymph nodes, the kidneys, the brain, the spinal cord, bones, joints, and skin. However, the NTEP's main focus has been on pulmonary TB affecting the lung, as it is most common and transmissible.

The share of EP-TB is about 24% of the notified cases, but with wide geographical variations. It is often missed/delayed from being diagnosed due to symptoms which are vague and mimic other diseases. Dr. Deepak Chandra Badhani, a surgeon working in rural Chhattisgarh, says, "Doctors in Indian settings should have a high index of suspicion for TB in the cases they see. Proper history taking, thorough clinical examination and simple tests such as pus staining from a non-healing ulcer can help diagnose TB. But sadly, we wait for expensive, advanced tests just to start treatment and depend heavily on specialists to diagnose, leading to substantial delays and advanced disease." He lays emphasis on the training of general practitioners to pick up EP-TB at the earliest and of the need to sensitise frontline workers and integrating EP-TB into their screening algorithms.

A study by Daniels and colleagues in Mumbai shows that only 35% of private practitioners and 75% of government doctors could correctly diagnose a patient presenting with classical symptoms of TB. Dr. Vasundhara Rangaswamy, a microbiologist working in rural Chhattisgarh, says the reluctance to notify the disease further impacts diagnosis as private practitioners prescribe antibiotics and refer without any diagnostic tests.

TB is an area where guidelines are updated quite frequently. However, studies done by Shah and colleagues and also Hiremath and colleagues show that a shortage of adequately trained

human resources is a major challenge affecting implementation of the NTEP. Dr. Rangaswamy says, "Molecular tests are expensive and often take time to access as they are mostly available only at district level. Results take time due to the heavy workload and shortage of trained staff. In effect, patients have to travel and incur more expenses."

Dr. Mohan says, "The CBNAAT [Cartridge-based Nucleic Acid Amplification Testing] and Truenat machines are not available at many places, [as they are] mostly placed at [the] district level. And very often, when a machine is available, the lab technician will not be there and if the lab technician is there, cartridge supply for the test would not be there." The staff pattern within the NTEP does not meet the growing demands, with most now having more work.

What needs to be done

Ownership at all levels is essential to make programmes work. Idukki district in Kerala collaborated with Kudumbashree, one of the largest women's self-help networks in the world, for their TB elimination efforts. This resulted in widespread community participation and advocacy by government/leadership levels created a huge impact. "It helped us achieve our targets and sustain the activities," says Dr. Cency B., former District TB Officer of Idukki district, and current Assistant Director, Kerala Health Services.

She says, "Advocacy by political leadership helps in providing platforms for cross learning from best practices across geographies. But programme implementers will have to go beyond their routine work scope to achieve this."

While the chances of ending TB by 2025 look bleak, there is some hope. India's case notification reached the highest level and deaths due to TB declined by 24% as compared to 2015, which is way more than the global decline.

The administrative levels of the NTEP are designed to adapt to the innumerable contextual challenges. New bodies of knowledge from different parts of the world need to be considered. Vietnam, a high burden country, recently showed the effective use of active case finding for TB (advocated for high-risk groups) among the general population, so that targeted interventions could work better. Perhaps India too needs to restructure and redefine its many conventional frameworks, to combat this deadly disease.

GS Paper 02 : सामाजिक न्याय – स्वास्थ्य

UPSC Mains Practice Question: महत्वपूर्ण प्रयासों के बावजूद, भारत क्षय रोग (टीबी) को समाप्त करने के लिए संघर्ष कर रहा है। चुनौतियों का विश्लेषण करें और 2025 तक टीबी उन्मूलन लक्ष्य प्राप्त करने के लिए उपाय सुझाएँ। (150 Words /10 marks)

संदर्भ:

- ▶ लेख में वैश्विक टीबी के उच्च बोझ, दवा प्रतिरोधी मामलों और प्रणालीगत स्वास्थ्य सेवा अंतराल के कारण भारत द्वारा अपने टीबी उन्मूलन लक्ष्यों को प्राप्त करने में आने वाली चुनौतियों पर चर्चा की गई है।

तपेदिक: एक वैश्विक और राष्ट्रीय चुनौती

- ▶ तपेदिक (टीबी) वैश्विक स्तर पर सबसे बड़ी संक्रामक बीमारी है।
- ▶ टीबी उन्मूलन लक्ष्य, जिसका उद्देश्य 2030 तक टीबी से होने वाली मौतों में 90% की कमी, नए मामलों में 80% की कमी और टीबी प्रभावित परिवारों के लिए शून्य भयावह लागत है, हासिल होने से बहुत दूर है।
- ▶ भारत ने 2018 में 2025 तक इन लक्ष्यों को प्राप्त करने का संकल्प लिया था, लेकिन कोविड-19 महामारी के कारण उसे असफलताओं का सामना करना पड़ा।
- ▶ डब्ल्यूएचओ ग्लोबल ट्यूबरकुलोसिस रिपोर्ट 2024 के अनुसार, भारत में वैश्विक टीबी के 26% मामले हैं और यह दवा प्रतिरोधी टीबी और टीबी से संबंधित मौतों का केंद्र बना हुआ है।

जोखिम में कमज़ोर समूह

- ▶ उच्च जोखिम वाले समूहों में सिलिकोसिस, कुपोषण, भीड़भाड़ और मधुमेह जैसी सहवर्ती बीमारियों जैसे कारकों के संपर्क में आने वाले व्यक्ति शामिल हैं।
- ▶ प्रवासी श्रमिकों को स्वास्थ्य सेवा तक खराब पहुँच और मूल स्थानों पर वापस जाने पर उपचार जारी रखने में कठिनाई के कारण चुनौतियों का सामना करना पड़ता है।
- ▶ कुपोषण को संबोधित करना एक प्राथमिकता है, लेकिन अन्य योगदान कारकों को विशिष्ट क्षेत्रों के अनुरूप बहुक्षेत्रीय कार्रवाई की आवश्यकता होती है।

टीबी उपचार में उपलब्धियाँ और चुनौतियाँ

- ▶ भारत का राष्ट्रीय क्षय रोग उन्मूलन कार्यक्रम (एनटीईपी) मुफ्त और प्रभावी दवाएँ प्रदान करता है, जिससे अधिसूचित मामलों में से 95% से अधिक में उपचार आरंभ हो जाता है।
- ▶ हालाँकि, 2023 में आपूर्ति श्रृंखला में व्यवधान के कारण प्रमुख दवाओं की कमी हो गई, जिससे उपचार में देरी, एंटीबायोटिक प्रतिरोध का जोखिम और भयावह स्वास्थ्य व्यय हुआ।

एक्स्ट्रापल्मोनरी टीबी (ईपी-टीबी) पर ध्यान दें

- ▶ एक्स्ट्रापल्मोनरी टीबी (ईपी-टीबी) फेफड़ों के अलावा अन्य अंगों जैसे लिम्फ नोड्स, किडनी, मस्तिष्क और हड्डियों को प्रभावित करती है, जो 24% मामलों में होती है।

- ईपी-टीबी का अक्सर पता नहीं चल पाता या अन्य बीमारियों से मिलते-जुलते अस्पष्ट लक्षणों के कारण इसका निदान देर से होता है।
- सामान्य चिकित्सकों को सरल परीक्षणों और गहन नैदानिक परीक्षाओं के माध्यम से ईपी-टीबी का जल्दी पता लगाने के लिए बेहतर प्रशिक्षण की आवश्यकता है।

निदान और स्वास्थ्य सेवा संसाधनों में कमी

- अध्ययनों से पता चलता है कि केवल 35% निजी चिकित्सक और 75% सरकारी चिकित्सक ही क्लासिकल टीबी लक्षणों का सही निदान कर सकते हैं।
- प्रशिक्षित कर्मचारियों की कमी और सीबीएनएएटी और टूनेट जैसे आणविक परीक्षणों तक सीमित पहुँच के कारण निदान में देरी होती है।
- कई परीक्षण सुविधाएँ जिला-आधारित हैं, और कार्ट्रिज की कमी और तकनीशियन की उपलब्धता जैसी रसद संबंधी समस्याएँ समस्या को और भी बदतर बना देती हैं।

सफल हस्तक्षेप और सर्वोत्तम अभ्यास

- केरल के इडुक्की में, महिलाओं के स्वयं सहायता नेटवर्क कुदुम्बश्री के साथ सहयोग से महत्वपूर्ण सामुदायिक भागीदारी और वकालत हुई, जिससे टीबी लक्ष्यों को प्राप्त करने में मदद मिली।
- राजनीतिक नेताओं द्वारा वकालत और क्षेत्रों में सफल प्रथाओं से परस्पर सीख टीबी उन्मूलन प्रयासों को बढ़ा सकती है।

प्रगति और भविष्य की दिशाएँ

- भारत ने 2015 की तुलना में टीबी से होने वाली मौतों में 24% की गिरावट हासिल की, जो वैश्विक गिरावट दर से अधिक है।
- वियतनाम जैसे देशों से सीखकर, जिन्होंने उच्च जोखिम वाले समूहों के बीच सक्रिय केस फाइंडिंग का उपयोग किया, हस्तक्षेपों में सुधार किया जा सकता है।
- भारत को क्षेत्रीय चुनौतियों का समाधान करने और टीबी उन्मूलन की दिशा में प्रगति में तेजी लाने के लिए अपनी रणनीतियों और रूपरेखाओं को अनुकूलित करना चाहिए।

निष्कर्ष

- प्रणालीगत मुद्दों के कारण 2025 तक टीबी उन्मूलन लक्ष्य प्राप्त करना चुनौतीपूर्ण बना हुआ है, लेकिन केस अधिसूचना और कम मृत्यु दर में प्रगति आशा प्रदान करती है।
- मजबूत स्वास्थ्य सेवा प्रणाली और समुदाय संचालित हस्तक्षेप टीबी को खत्म करने के लिए महत्वपूर्ण हैं।