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Idiopathic Pulmonary Fibrosis (IPF): A Closer Look

Context: Recently, renowned tabla maestro Zakir Hussain's has passed due to Idiopathic Pulmonary Fibrosis (IPF).

What is IPF:

- Idiopathic Pulmonary Fibrosis (IPF) is a progressive lung disease marked by scarring (fibrosis) of lung tissue. It leads to reduced lung function and causes breathlessness, fatigue, and poor quality of life.
- This condition specifically targets the interstitium, the tissue surrounding the air sacs (alveoli). Over time, it causes an irreversible loss of lung function.

Why Does IPF Occur?

- The exact cause of IPF remains unknown, which is why it is termed "idiopathic." However, researchers believe the scarring could result from:
 - Environmental factors such as dust, smoke, and infections.
 - Autoimmune responses, which may cause abnormal tissue repair.
- Abnormal healing mechanisms, where the body overproduces collagen, leading to excessive scarring instead of normal tissue regeneration.
- Genetic predisposition and prolonged exposure to irritants, such as wood or metal particles, may also play a role.

Symptoms of IPF:

- The primary symptoms of IPF include:
 - Persistent shortness of breath (dyspnea).
 - A dry, chronic cough.
 - Fatigue and unintentional weight loss.
- As the disease progresses, it can lead to complications like pulmonary hypertension, heart failure, or respiratory failure.

Treatment and Management:

- While there is no cure for IPF, treatments can help manage its progression:
 - Medications:** Antifibrotic drugs like pirfenidone and nintedanib slow the scarring process.
 - Oxygen therapy to maintain oxygen levels.
 - Pulmonary rehabilitation, including lung exercises.

- Lung transplantation for advanced cases.
- Early diagnosis and a multidisciplinary approach are critical in improving patient outcomes.

Open Prison

Context: A murder convict serving a life sentence escaped from the Yerawada open prison in Pune, marking the second such incident this year. The escape raises questions about the nature, selection process, and effectiveness of open prisons.

About Open Prison Concept:

- Open prisons are minimal-security facilities designed for rehabilitation through self-discipline, trust, and community engagement, rather than strict surveillance. The idea of open prisons was first seriously considered in the 1950s.
- Maharashtra's first open prison was established in 1956 at Yerawada Central Prison, followed by another in Paithan, Aurangabad, in 1968. Today, Maharashtra has 19 open prisons, second only to Rajasthan, which has 31.
- The Model Prison Manual classifies open prisons into three types: semi-open training institutions, open training institutions/work camps, and open colonies.
- Inmates eligible for open prisons must have good conduct and typically spend at least five years in a controlled jail. Open prisons are governed by state-specific rules, under the Prisons Act of 1894 and Prisoners Act of 1900.

How Inmates Are Selected:

- Inmates are carefully selected for open prisons based on long sentences in central prisons. A committee reviews the case histories and creates a list of eligible candidates.
- This list is presented to a selection committee, which includes the inspector general of prisons and other senior officials. Open prisons are designed to be minimal-security, relying on trust and preparing inmates for life after their sentence through various correctional activities.

The Role of Open Prisons:

- The primary goal of open prisons is rehabilitation, with inmates expected to work in agricultural or vocational

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settings.

- These facilities aim to prepare inmates for life after incarceration, providing them with work skills, responsibility, and social integration.
- Open prisons offer inmates a chance to prove their trustworthiness, which ideally reduces the likelihood of re-offending.
- However, open prisons face challenges, such as escapes, which highlight the risks associated with reduced supervision. Critics argue that reliance on self-discipline may be problematic, especially if there is insufficient oversight or weak enforcement of rules.

Jalvahak Scheme

Context: The Union government recently launched the 'Jalvahak' scheme, designed to promote the use of inland waterways for cargo transport. This initiative aims to reduce logistics costs, decongest road and rail networks, and unlock the trade potential of India's inland waterway system.

About the Jalvahak Scheme:

- The 'Jalvahak' scheme was inaugurated to incentivize cargo movement on National Waterways 1 (Ganga), 2 (Brahmaputra), and 16 (Barak river).
- Under this scheme, cargo owners transporting goods over distances exceeding 300 km will receive up to 35% reimbursement on operating costs. This scheme is valid for three years and aims to optimize supply chains for major shipping companies, freight forwarders, and trade bodies.
- As part of the scheme's rollout, three cargo vessels were flagged off, carrying cement, gypsum, and coal. These vessels will travel on fixed routes, including Kolkata-Patna-Varanasi and Kolkata-Pandu (Guwahati), highlighting the readiness of inland waterways for efficient and eco-friendly cargo transportation.
- **Projected Impact:** The scheme is expected to facilitate a modal shift of 800 million tonne-kilometres, with an estimated investment of ₹95.4 crore by 2027. This initiative is designed to provide a cost-effective solution to long-haul cargo transport.

Benefits and Implications:

- **The Jalvahak scheme brings several benefits:**

Improved Trade Efficiency: It provides a cost-effective alternative to road and rail transport, particularly for long-distance cargo movement.

- **Increased Cargo Volume:** Cargo volumes on national waterways have grown significantly, from 18.07 million tonnes in 2013-14 to 132.89 million tonnes in 2023-24. The government aims to reach 200 million tonnes by 2030 and 500 million tonnes by 2047.
- **Environmental Sustainability:** Waterways provide a more eco-friendly transport solution compared to other modes, helping to reduce carbon emissions.



Challenges:

- Despite its vast network of 20,236 km of inland waterways, India's freight potential remains underutilized compared to other countries like the US and China. Key challenges include developing the necessary infrastructure and ensuring reliable schedules for cargo movement.

Inland Waterways Authority of India (IWAI):

- The Inland Waterways Authority of India (IWAI), established in 1986, is responsible for developing and maintaining the National Waterways network in India. It works under the Ministry of Ports, Shipping and Waterways. Its key functions include:
 - » **Promoting Inland Water Transport (IWT):** IWAI encourages the use of waterways for both passenger and cargo transport as a sustainable and cost-effective solution.
 - » **Regulation and Safety:** IWAI sets operational standards and ensures safety measures for vessels operating on inland waterways.
 - » **Collaboration with Stakeholders:** IWAI works closely with entities like the Shipping Corporation of India to facilitate the growth of IWT in India.

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New Eastern Route

Context: The Chennai-Vladivostok sea route also known as Eastern Maritime Corridor has emerged as a game-changer in India's trade relations with Russia, particularly in the crude oil trade. This new maritime corridor has bridged the distance between India and Russia, resulting in significant time and cost savings for shipments.

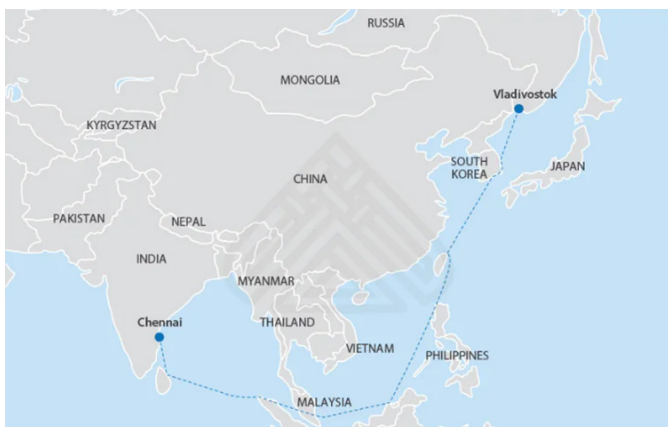
- The Eastern Maritime Corridor has played a pivotal role in India's rise as the top buyer of Russian oil. In July 2024, India surpassed China as the largest buyer of Russian oil, with the Chennai-Vladivostok sea route facilitating this shift.

About Chennai-Vladivostok Maritime Corridor (VCMC):

- The Chennai-Vladivostok Maritime Corridor (VCMC) is a sea route connecting Chennai (India) to Vladivostok (Russia) as part of the Eastern Maritime Corridor, aimed at enhancing trade and regional connectivity.

Key Details:

- **Background:** Formalized during Indian Prime Minister Narendra Modi's 2019 visit to Russia, the VCMC aims to boost trade between India and Russia, particularly in energy, minerals, and defense.
- **Route:** The route spans 5,600 nautical miles and passes through regions like the Sea of Japan, South China Sea, Strait of Malacca, Bay of Bengal, and the Andaman Islands.
- **Port Locations:** Vladivostok is Russia's largest Pacific port, near the China-Russia border. Chennai is a major Indian port on the eastern coast.



Benefits:

- **Reduced Transit Time:** Shipping time drops from 40+ days to just 16 days.
- **Cost-Efficiency:** Lower transport costs make it an attractive option for businesses.
- **Strategic Importance:** Strengthens economic ties between India and Russia, particularly in energy.

Geopolitical Implications:

- The corridor may shift regional dynamics, offering India greater influence in the Pacific while balancing China's growing power. However, its route through the South China Sea could spark security concerns.

Strategic Economic Gains for India:

- **Energy Security:** India, the third-largest global consumer of crude oil, relies on imports for over 85% of its energy needs. Access to discounted Russian oil supports India's energy strategy amid rising global prices.
- **Geopolitical Benefits:** India's growing ties with Russia help balance Russia's increasing relationship with China. Russia remains a crucial partner in defense, especially for maintaining India's armed forces and nuclear capabilities.
- **Strategic Leverage:** The partnership enhances India's geopolitical influence, allowing greater cooperation on defense technology and energy security.

Impact on Trade beyond Oil:

- **Diversification of Trade:** The new route boosts trade not only in crude oil but also in coal, fertilizers, metals, and containerized cargo.
- **Increased Exports to Russia:** Indian exports like processed minerals, iron and steel, tea, and marine products are growing due to faster, more cost-effective shipping.
- **Long-Term Trade Commitments:** The new sea route encourages long-term trade agreements between India and Russia, benefiting both nations.

Santa Ana wind

Context: A wildfire, the Franklin Fire, has been raging in Malibu, California, since December 9, burning over 4,000 acres and affecting about 22,000 people. The fire is expected to take several days to contain. Experts attribute

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its severity to the "Santa Ana" winds and climate change.

What are the 'Santa Ana' Winds?

- The Santa Ana winds are strong, dry downslope winds originating from cool, high-pressure air masses in the Great Basin, affecting coastal Southern California and northern Baja California. Santa Ana winds occur when high pressure builds over the Great Basin, creating a pressure difference with California's coast.
- This triggers strong winds from the inland deserts toward the Pacific Ocean. As the winds descend, they compress, heat up, and reduce humidity, making vegetation highly flammable. These winds typically occur from October to January. It is a local wind in the North America continent.

What is the Role of Climate Change?

- While Santa Ana-driven wildfires are natural, experts note that California's wildfire season has lengthened in recent years. A 2021 study showed that the state's burn season has shifted from August to July. Additionally, wildfires have grown more intense.
- A 2023 study found that the 10 largest wildfires in California's history occurred in the last 20 years, with five in 2020 alone. Climate change has caused warmer springs and summers, earlier snowmelt, and longer dry seasons, making vegetation more vulnerable to fires. With continued greenhouse gas emissions, the situation

is expected to worsen, leading to more extreme climate impacts.

Mains local winds in all over the world:

- **Mistral:** The Mistral is a cold, dry wind that blows from the north or northwest into the Mediterranean, especially in winter, significantly lowering temperatures. It is common in the Rhône Valley of southern France.
- **Foehn (Föhn):** The Foehn is a warm, dry wind descending from the Alps, particularly in Switzerland, Germany, Austria, and northern Italy. It causes sudden increases in temperature and dryness, often melting snow.
- **Sirocco:** The Sirocco is a hot, dry wind that originates from the Sahara Desert in North Africa, blowing across the Mediterranean. It is known for carrying sand and dust, which significantly reduces visibility and raises temperatures.
- **Bora:** The Bora is a cold, dry wind blowing from the northeast, particularly in the Adriatic Sea region, including Croatia and Italy. It is strong and gusty, often causing sharp temperature drops, especially in winter.
- **Harmattan:** The Harmattan is a dry, dusty trade wind from the Sahara, affecting West Africa, particularly the Sahel region and parts of Ghana, Nigeria and Senegal. It occurs mainly in winter and reduces visibility due to fine dust particles.

Power Packed News

Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)

- The UK recently joined the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The agreement aims to reduce trade barriers, promote economic growth, and strengthen international ties.
- The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) is a trade agreement signed on 8 March 2018 in Santiago, Chile. The agreement was become effective on 30 December 2018. It became effective 60 days after ratification by 50% of the signatories or once six signatories ratified it.
- As of December 2024, the CPTPP consists of 12 member countries: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United Kingdom and Vietnam.



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Collateral-Free Agricultural Loan

In a significant move to support the agricultural sector, the Reserve Bank of India (RBI) has increased the collateral-free loan limit for farmers from 1.6 lakh to 2 lakh. This change, effective from January 1, 2025, aims to address the rising input costs and inflation impacting farmers.

Key points:

- Banks are instructed to waive collateral and margin requirements for agricultural loans, including those for allied activities, up to 2 lakh per borrower.
- The revised guidelines focus on improving financial access for small and marginal farmers, who represent over 86% of the sector.
- The move is expected to enhance the uptake of Kisan Credit Card (KCC) loans, reducing borrowing costs and increasing investment in agricultural operations. It complements the Modified Interest Subvention Scheme, offering loans up to 3 lakh at a 4% interest rate, promoting financial inclusion and sustainable agricultural growth.



NCL Launches 'CHARAK' for Life-Threatening Diseases

- Northern Coalfields Limited (NCL) has introduced 'CHARAK' (Community Health: A Responsive Action for Koylanchal), a health-focused CSR initiative, to provide free treatment for economically weaker sections in Singrauli and Sonbhadra districts. Families with an annual income below 8 lakhs are eligible for the scheme.
- The initiative covers a range of life-threatening diseases, including cancer, tuberculosis, HIV, cardiovascular diseases, organ transplants, burns causing disability, neurological disorders, liver disorders, sudden vision or hearing loss, and acute surgical emergencies. Treatment will be offered at NCL's dedicated hospital or empanelled hospitals across the country.
- The scheme addresses healthcare challenges in remote areas, ensuring access to quality medical care and easing the financial burden on affected families. NCL's efforts aim to improve the socio-economic conditions of the region, with the company positively impacting 10 lakh people and spending over 1,000 crores on CSR initiatives in the past decade.
- 'CHARAK' symbolizes a significant step toward enhancing healthcare accessibility for the most vulnerable populations in the Koylanchal region.



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