

India-China Boundary Talks Resume After Five-Year Hiatus

INTERNATIONAL RELATIONS



Affirmation of Disengagement Agreement

India and China reaffirmed the implementation of the disengagement agreement on the Line of Actual Control (LAC) as National Security Adviser Ajit Doval met Chinese Foreign Minister Wang Yi in Beijing. This marked the first boundary talks between the Special Representatives (SRs) since 2019.

Importance of Lessons from Military Standoff

During the talks, Mr. Doval and Mr. Wang emphasized the need to draw lessons from the four-year-long military standoff to ensure peace and tranquillity along the border.

Discussions on Cross-Border Exchanges

The two sides also explored measures to revitalize ties disrupted by boundary tensions. Key areas of focus included:

- Resumption of Kailash Mansarovar Pilgrimage: Facilitating Indian pilgrims' travel to Tibet.
- Data Sharing on Trans-Border Rivers: Enhancing cooperation on water resources.
- Border Trade: Restoring economic exchanges.

Six-Point Consensus Reached

A statement by the Chinese Ministry of Foreign Affairs highlighted "substantive discussions" and a six-point consensus to maintain border peace and strengthen bilateral relations. However, the Indian Ministry of External Affairs (MEA) did not explicitly mention this consensus, reiterating similar points on promoting exchanges.

Absence of Talks on Direct Flights

The joint statement notably excluded discussions on resuming direct flights and journalist exchanges, topics previously raised during Mr. Wang's meeting with External Affairs Minister S. Jaishankar in Rio de Janeiro.

Meeting with Chinese Vice-President

Mr. Doval also met Chinese Vice-President Han Zheng, where the focus was on restoring exchanges in economic, cultural, and trade sectors. Mr. Han underlined the strategic importance of India-China relations as ancient civilizations and emerging global powers.

India's Commitment to Strategic Communication

Mr. Doval described the resumption of SR talks after a five-year gap as a significant step. He reaffirmed India's commitment to enhancing strategic communication and injecting fresh momentum into the bilateral relationship.

MEA Statement on Peace and Border Management

The MEA noted the importance of maintaining peace at the LAC, emphasizing that unresolved border issues should not hinder the normal development of bilateral ties. It also acknowledged the implementation of the October 2024 disengagement agreement, which restored patrolling and grazing rights in relevant areas.

Historic Significance of SR Process

The SR mechanism, established in 2003 to resolve the boundary dispute, has been revitalized, signaling a major step forward in addressing long-standing issues and fostering bilateral cooperation.

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Historic Milestone in Conservation: Ganges River Dolphin Tagged

ECOLOGY AND ENVIRONMENT



First-Ever Tagging of Ganges River Dolphin

In a groundbreaking initiative, a team of wildlife conservationists successfully tagged a Ganges river dolphin, marking the first instance of such an effort. A healthy male dolphin from Kulsī, a tributary of the Brahmaputra, was tagged and released under veterinary supervision.

Collaborative Conservation Effort

The tagging project, part of the Ministry of Environment, Forest, and Climate Change initiative under Project Dolphin, was executed by the Wildlife Institute of India (WII) in collaboration with the Assam Forest Department and Aaranyak, a biodiversity conservation organization.

Goals of the Tagging Initiative

This effort aims to gather critical data on the dolphin's:

- Seasonal and migratory patterns.
- Range and distribution.
- Habitat utilization, especially in fragmented or disturbed river systems.

The lightweight tags, designed to minimize interference with the dolphin's movements, emit signals compatible with Argos satellite systems, even during limited surfacing times.

Ministerial and Expert Endorsements

Environment Minister Bhupender Yadav described the tagging as a "historic milestone" for conserving India's national aquatic animal, emphasizing its role in evidence-based conservation strategies. Virendra R. Tiwari, Director of WII, highlighted the project's potential to deepen understanding of the species.

Unique Characteristics and Conservation Challenges

The Ganges river dolphin, known for its near-blindness and reliance on echolocation, is a unique and elusive species. India is home to about 90% of the global population, distributed across the Ganga-Brahmaputra-Meghna and Karnaphuli river systems.

Despite this, the dolphin's distribution has significantly declined over the past century. Its elusive behavior, including surfacing for only 5-30 seconds at a time, has led to knowledge gaps regarding its ecology and conservation needs.

Advancing Dolphin Conservation

The initiative, funded by the National CAMPA Authority, represents a critical step in addressing these challenges and enhancing conservation strategies for this endangered species.



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ISRO Begins Assembly for Gaganyaan Mission

SCIENCE AND TECHNOLOGY



Assembly of Human-Rated Launch Vehicle Mark-3 (HLVM3)

The Indian Space Research Organisation (ISRO) commenced the assembly of the Human-Rated Launch Vehicle Mark-3 (HLVM3) for the maiden uncrewed flight of the Gaganyaan mission. The assembly is taking place at the Satish Dhawan Space Centre (SDSC) in Sriharikota, with the uncrewed flight scheduled for early next year.

At 8:45 AM on December 18, 2024, the stacking of the nozzle end segment with the full-flex seal nozzle of the S200 motor marked the official launch campaign of the HLVM3-G1 / OM-1 mission.

Key Components in Preparation

ISRO is preparing various components for the mission, including:

- S200 Motors: Segment assembly, control systems, and avionics.
- L110 and C32 Stages: Ready at the launch complex.
- Crew Escape Systems: Delivered to SDSC.
- Crew Module: Integration in progress at the Vikram Sarabhai Space Centre (VSSC).
- Service Module: Under integration at the U.R. Rao Satellite Centre (URSC) in Bengaluru.
- Orbital Module (OM): Integration and testing to follow at URSC.

Project Overview

The Gaganyaan project aims to demonstrate human spaceflight capabilities by sending a three-member crew to a 400 km orbit for a three-day mission and safely returning them to Earth via a sea landing.

The programme includes three uncrewed missions and one crewed mission.

Coinciding with LVM3-X/CARE Anniversary

The assembly coincides with the 10th anniversary of the LVM3-X/CARE mission, which took place on December 18, 2014. On this date, the Indian Coast Guard recovered the Crew Module from the Bay of Bengal, 1,600 km from SDSC-SHAR. The LVM3-X, in its maiden flight, successfully launched a 3,775 kg Crew Module to a suborbital altitude of 126 km, where it was oriented for re-entry using thrusters.

This milestone serves as a foundation for the ambitious Gaganyaan mission, setting the stage for India's journey into human space exploration.

INS Nirdeshak Commissioned into Indian Navy

INTERNAL SECURITY



Commissioning Ceremony

INS Nirdeshak, the second ship of the Survey Vessel (Large) project, was commissioned into the Indian Navy at a ceremony held at the Visakhapatnam Naval Dockyard. The event was presided over by Union Minister of State for Defence Sanjay Seth, with Vice-Admiral Rajesh Pendharkar, Flag Officer Commanding-in-Chief of the Eastern Naval Command, hosting the ceremony.

Role and Capabilities

The ship is equipped to:

- Conduct hydrographic surveys.

- Aid navigation.
- Support maritime operations.

Importance of Survey Vessels

During the ceremony, Mr. Seth emphasized the crucial role of survey vessels in charting the oceans. He highlighted their ability to:

- Collect and process oceanic data with high precision.
- Generate reliable charts that enhance maritime safety and operations.
- Serve as tools for maritime diplomacy, strengthening India's strategic outreach.

Hydrographic Cooperation

The Union Minister also noted the increasing global interest in hydrographic cooperation with the Indian Navy, adding that the new survey ships bolster the Navy's capabilities and international partnerships.

Supreme Court Directs Comprehensive Policy for Sacred Groves

ECOLOGY AND ENVIRONMENT



Importance of Sacred Groves

Sacred groves are small patches of forests traditionally protected by local communities for their religious and cultural significance. These groves play a vital role in conserving local biodiversity and are predominantly found in states such as Tamil Nadu, Kerala, Karnataka, and Maharashtra.

Court's Directive to the Centre

The Supreme Court, led by a Special Bench of Justices B.R. Gavai, S.V.N. Bhatti, and Sandeep Mehta, has directed the Ministry of Environment, Forest, and Climate Change to create a comprehensive policy for the preservation and management of sacred groves. The

directive was issued in response to a petition highlighting the rapid disappearance of these groves, particularly in Rajasthan.

Nationwide Survey of Groves

The Court recommended a nationwide survey to:

- Identify the location, area, and extent of sacred groves.
- Clearly mark their boundaries while leaving room for future forest growth.
- Prevent unauthorized land use changes that threaten their existence.

Sacred Groves and Cultural Rights

The judgment emphasized the alignment of sacred grove preservation with the cultural and traditional rights of local communities. It highlighted the National Forest Policy of 1988, which encourages community-driven efforts to maintain forest patches.

Role of the States and Centre

While the management of wildlife and habitats is traditionally a state responsibility under the Wild Life (Protection) Act, 1972, the Court directed the Centre to take the lead in policy creation and implementation.

Inspiring Example: Piplantri Village

Justice Mehta highlighted the efforts of Piplantri village in Rajasthan, where community initiatives transformed barren land into lush green groves. The village serves as a model for addressing social, ecological, and environmental challenges through community-driven efforts.

Call for Action

The Court underscored the ecological value of sacred groves and recommended their recognition as community reserves to ensure long-term preservation and protection against unauthorized land use.

Carbon Markets and Indian Agriculture

ECOLOGY AND ENVIRONMENT



Turning Sustainable Farming into Opportunity

Carbon markets present a unique chance to transform Indian agriculture by incentivizing sustainable farming practices, reducing greenhouse gas (GHG) emissions, and offering financial rewards to farmers.

- **Compliance Carbon Markets:** Governed by international bodies like the UN, these impose emission caps on businesses. Companies exceeding these limits must purchase carbon credits or pay taxes.
- **Voluntary Carbon Markets:** Unregulated systems allowing organizations to trade credits through platforms such as the Clean Development Mechanism, Verra, and Gold Standard. Together, these markets aim to meet global climate targets

while supporting farmers.

Carbon Markets: Mechanisms and Principles

Key Developments

At COP29 (November 2024), a centralized UN carbon market was approved. India is also preparing to launch its own compliance and voluntary markets, with organizations like NABARD and ICAR piloting agricultural carbon credit projects under Verra.

Core Principles

1. **Additionality:** Farmers must adopt new sustainable practices; existing practitioners are ineligible.
2. **Permanence:** Ensures long-term benefits, like soil carbon retention through reduced tillage.

Adhering to these principles ensures projects generate reliable carbon credits and maintain trust.

Challenges in Carbon Credit Projects

Agricultural Carbon Projects in India

Over 50 projects covering 1.6 million hectares aim to produce 4.7 million credits annually, but none have been registered, leaving farmers unpaid.

Study Insights

A study examining projects in Haryana and Madhya Pradesh found:

- Marginalized groups and women were underrepresented.
- Smallholders were largely excluded.
- Sustainable practices such as zero tillage and micro-irrigation met additionality criteria.

However, 45% of farmers reported no communication, 60% lacked training, and 28% abandoned sustainable practices due to insufficient financial incentives. Alarmingly, 99% had not received payments.

Improving Carbon Markets

Inclusive and Sustainable Practices

To enhance participation and reliability:

- Higher credit prices for inclusive projects involving smallholders and marginalized communities.
- Regular training, effective communication, and timely payments.
- Collaboration with research institutions to identify suitable regions and prevent yield losses.

Technological Advancements

Emerging tools like remote sensing, satellite imagery, and drones improve monitoring and measurement of soil carbon and GHG emissions.

The Road Ahead

Building a robust agricultural carbon market in India requires a focus on inclusivity, transparency, and farmer rewards. Policymakers, researchers, and private entities must collaborate to address implementation challenges and ensure long-term success.

The Role of Generic Drugs in Healthcare Affordability

SCIENCE AND TECHNOLOGY



Affordable Solutions to Income Disparities

Generic drugs play a vital role in addressing healthcare affordability in India, a country marked by significant income disparities. Bioequivalent to branded drugs, generics provide cost-effective alternatives. India's ability to leverage economies of scale and low production costs has allowed it to supply affordable medication both domestically and internationally.

- **Impact on Healthcare Expenditure:** In 2021-22, out-of-pocket healthcare expenditure accounted for 39.4% of total health costs. By offering lower-priced alternatives, generics reduce financial burdens and improve treatment

adherence.

- **Government Initiatives:** Through the Pradhan Mantri Bhartiya Janaushadhi Pariyojana, generic medicines worth ₹5,600 crore have been sold over a decade, saving consumers an estimated ₹30,000 crore by August 2024.

Ensuring Quality in Generics

Challenges in Bioequivalence and Efficacy

While generics are bioequivalent to branded drugs, quality issues sometimes affect their efficacy and safety:

1. Case Study on Itraconazole:

- o A study by PGIMER, Chandigarh, found that innovator itraconazole achieved therapeutic drug levels in 73% of patients within two weeks, compared to only 29% for generics, which required dose escalation or prolonged treatment.
- o Issues included defective generic capsules with unevenly sized pellets, impacting drug absorption and bioavailability.

2. Factors Affecting Generic Efficacy:

- o **Excipients and Formulations:** Variations in binders, fillers, and coatings can alter dissolution rates and therapeutic outcomes.
- o **Manufacturing Processes:** Differences in compression force, granulation methods, and tablet hardness can influence absorption and stability.
- o **Bioequivalence Thresholds:** Regulatory standards allow for a 80%-125% range, which may be insufficient for drugs with a narrow therapeutic index.

Regulatory Challenges in India

Decentralized Drug Regulation

India's fragmented regulatory system contributes to inconsistent enforcement:

- State Drug Regulatory Authorities (SDRAs) hold significant authority, often leading to regulatory arbitrage.
- The Central Drugs Standard Control Organisation (CDSCO) lacks enforcement power, relying on recommendations to states.

Stability Testing Issues

- Introduced in 2018, stability testing ensures drug efficacy under diverse climatic conditions.
- However, inconsistent implementation and lack of retrospective application undermine compliance, leaving older generics unchecked.

Permissive Impurity Standards

- India's Pharmacopoeia allows higher impurity levels than international standards, citing costs. Stricter standards aligned with ICH guidelines are needed to ensure drug safety.

Strengthening Regulatory Oversight

Recommendations for Improvement

1. **Centralize Regulation:** Transfer authority from states to the CDSCO, enabling uniform enforcement.

2. Enhance CDSCO Resources: Invest in personnel and establish more central drug-testing laboratories.
3. Mandate Stability Testing: Enforce uniform protocols and periodic reassessment for all generics.
4. Align Impurity Standards: Adopt stricter international guidelines for drug impurities.

Historical Calls for Centralization

Decades-old recommendations from the Bhatia (1954), Hathi (1975), and Mashelkar (2003) committees emphasized centralizing oversight for improved drug quality.

Balancing Equity and Quality

Generic drugs are indispensable for ensuring equitable access to medicines. However, affordability should not compromise quality. By implementing robust regulatory reforms and addressing long-standing challenges, India can rebuild public confidence in generics and ensure their effectiveness in improving healthcare outcomes.

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