BIODIVERSITY MATTERS

Newsletter

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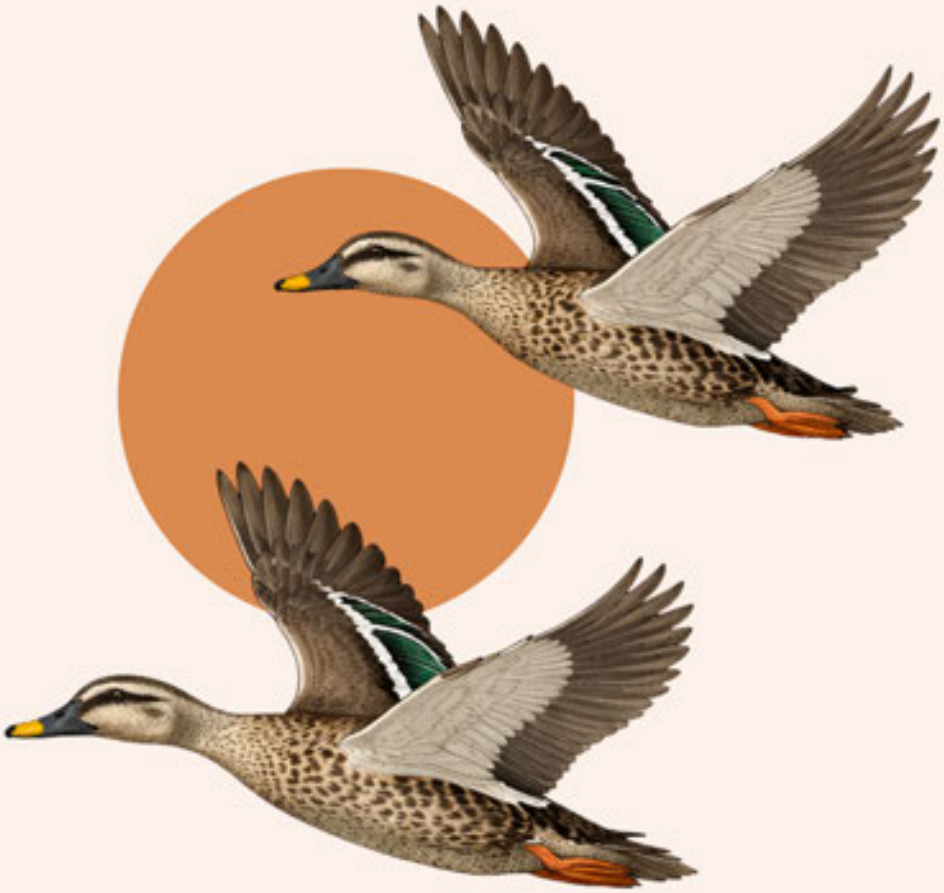

Indian spot billed duck

Anas poecilorhyncha

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MESSAGE FROM
THE CHAIRMAN'S DESK

It gives me immense pleasure to present the issue of Biodiversity Matters, a newsletter envisioned as a platform to reflect, communicate and strengthen the collective efforts of the National Biodiversity Authority (NBA) and its stakeholders. At a time when biodiversity conservation is intrinsically linked with sustainable development, climate resilience and human well-being, the need for informed dialogue and enhanced institutional visibility has become more important than ever. This newsletter has been conceived as part of a broader vision to promote transparency, systematically document progress, and foster a deeper understanding of India's biodiversity governance framework.

It brings together key developments, policy advancements, field-level initiatives and knowledge contributions in a coherent and accessible manner, thereby highlighting the multifaceted work of the NBA while also serving as a bridge between policymakers, practitioners, researchers and local communities. Over the years, India has demonstrated strong leadership in advancing the objectives of the Biological Diversity Act, 2002, and in contributing meaningfully to global biodiversity processes. The contents of this issue reflect the breadth of these efforts—from the implementation of Access and Benefit Sharing mechanisms and strengthening of institutional processes to India's active engagement in international deliberations under the Convention on Biological Diversity, alongside diverse community-based conservation initiatives and emerging policy perspectives.

It is my firm belief that effective biodiversity governance requires continuous learning, exchange of ideas and collaborative engagement; in this context, the newsletter is intended to evolve as a dynamic knowledge platform that captures both achievements and emerging challenges, while encouraging informed participation from all stakeholders. I commend the efforts of the editorial team and contributors in bringing out this publication, and I am confident that Biodiversity Matters will serve as a valuable resource in advancing our shared commitment to conserving India's rich biological heritage for present and future generations.

- VIRENDRA TIWARI, IFS (RETD.)

MESSAGE FROM
THE MEMBER SECRETARY

For the past one decade, the National Biodiversity Authority (NBA) has steadily strengthened India's biodiversity governance framework through consistent policy support, institutional development and effective implementation of the Biological Diversity Act, 2002. In recent years, this progress has been further accelerated through the operationalisation of legislative amendments, expansion of the Access and Benefit Sharing (ABS) mechanism, enhanced coordination with State Biodiversity Boards and Biodiversity Management Committees, and the adoption of digital platforms to improve transparency, efficiency and service delivery.

These efforts have contributed to ensuring that conservation outcomes are increasingly aligned with community participation, equitable benefit-sharing and sustainable use of biological resources. At the same time, India's active engagement in international processes under the Convention on Biological Diversity reflects a strong commitment to global environmental governance, supported by robust national reporting and policy alignment. Looking ahead, the NBA remains focused on consolidating these gains by strengthening institutional systems, leveraging technology-driven solutions, improving data and knowledge frameworks, and deepening stakeholder engagement across sectors.

In this context, Biodiversity Matters is envisaged as an important knowledge and communication platform that will document progress, disseminate key developments, and foster informed dialogue among policymakers, practitioners, researchers and local communities. The newsletter will play a vital role in enhancing transparency, promoting awareness, and creating a shared understanding of biodiversity-related issues, thereby supporting the Authority's broader vision of building an inclusive, responsive and forward-looking biodiversity governance system in the country.

- DR B. BALAJI, IFS

LEGACY & LAUNCH

CHAIRPERSON NBA COMPLETES TENURE

Shri C. Achalender Reddy, IFS (Retd.), successfully completed his tenure as Chairperson on July 1, 2025. During his tenure (2022 to 2025), he provided strong leadership in advancing the implementation of the Biological Diversity Act, 2002, and strengthening India's biodiversity governance framework. Notably, he represented India in several international biodiversity forums and led Indian delegations in key global negotiations under the Convention on Biological Diversity (CBD).

He served as Chair of the Fifth Meeting of the Subsidiary Body on Implementation (SBI-5), becoming the first representative from India to chair the SBI under the CBD, where he guided deliberations on critical issues relating to implementation, monitoring, and capacity-building under the global biodiversity framework. His tenure significantly enhanced the Authority's national and international engagement and reinforced India's leadership in biodiversity conservation and sustainable use.

NEW CHAIRPERSON OF NBA ASSUMES CHARGE

5th September, **Shri Virendra Tiwari, IFS (Retd.)**, joined as the 15th Chairperson of the NBA. A 1990-batch Indian Forest Service officer of the Maharashtra cadre, he brings over three decades of rich experience in forestry, wildlife conservation, and environmental governance. He served in various key assignments across territorial forestry, wildlife management, working plan, budget and planning, and mangrove conservation, Maharashtra.
He also served as APCCF, Mangrove Cell, Mumbai, contributing significantly to coastal ecosystem protection. Prior to joining the NBA, he served as the Director of the Wildlife Institute of India (2022–2025) which is one of the National Premier Institutions, where he provided leadership in wildlife research, training, and policy support.

AWARDS & RECOGNITION

FORMER CHAIRPERSON OF THE NBA RECEIVES PADMA SHRI AWARD

Dr. Prem Lal Gautam, former Chairperson of the National Biodiversity Authority of India, has been honoured with the Padma Shri in 2026 on the eve of Republic Day for his distinguished contributions in the field of Science and Engineering.

Hailing from Himachal Pradesh, he is recognized for his work in agricultural science, particularly in combining molecular breeding with conventional techniques and enhancing disease resistance in crops. He was a Professor at Govind Ballabh Pant University of Agriculture and Technology (GBPUAT), Pant Nagar, and has served as Vice-Chancellor of GBPUAT, Director of the National Bureau of Plant Genetic Resources (NBPGR), Deputy Director General (Crop Sciences) at the Indian Council of Agricultural Research (ICAR), and Chairperson of the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA), contributing significantly to India's agricultural progress.

MAJOR EVENTS & ACTIVITIES OF THE NBA

NBA CELEBRATES FOUNDATION DAY

The National Biodiversity Authority celebrated its 22nd Foundation Day on 1 October 2025 with great enthusiasm. Shri Srinivas R. Reddy, IFS, PCCF (HoFF), Tamil Nadu, graced the event as Chief Guest. On this occasion, the NBA showcased highlights of its 22-year journey, emphasising key milestones and achievements in biodiversity governance.

Shri Srinivas R. Reddy, appreciated the NBA's commendable work and suggested that NBA's activities be shared more widely. The celebration reaffirmed the NBA's continued commitment to conserving India's rich biodiversity and strengthening its institutional framework.

AUTHORITY MEETINGS

The National Biodiversity Authority (NBA) conducted four Authority meetings during 2025–2026 to review progress and provide strategic guidance on biodiversity governance in India. The 74th meeting was held on 10–11 June 2025 in New Delhi under the chairmanship of Shri C. Achalender Reddy, IFS (Retd.). The 75th meeting took place on 13 October 2025 in New Delhi, while the 76th and 77th meetings were held on 5 January 2026 and 23 March 2026 at the NBA under the chairmanship of Shri Virendra Tiwari. These meetings deliberated on key initiatives, policy matters, and actions relating to biodiversity conservation and the sustainable use of biological resources in the country.

INTERNATIONAL DAY FOR BIOLOGICAL DIVERSITY (IDB) CELEBRATION

The International Day for Biological Diversity (IDB) is observed annually on 22 May to raise awareness on biodiversity conservation and its vital role in human well-being. Proclaimed by the United Nations, the day commemorates the adoption of the Convention on Biological Diversity in 1992 and encourages collective action to safeguard ecosystems and prevent species loss. The Ministry of Environment, Forest and Climate Change (MoEFCC), in collaboration with the National Biodiversity Authority, Rajasthan Forest Department and the Rajasthan State Biodiversity Board, Rajasthan Forest Department and the Rajasthan State Biodiversity Board, organised the IDB 2025 national celebration under the theme 'Harmony with Nature and Sustainable Development'. Shri Tanmay Kumar, Secretary, MoEFCC, the Chief Guest of the function, inaugurated a biodiversity exhibition, launched a campaign on ending plastic pollution ahead of World Environment Day, and released key NBA publications.

The event featured participation from 12 State Biodiversity Boards, along with exhibitions of indigenous biodiversity products, medicinal plants and crop varieties. Biodiversity Management Committee members from various States also showcased their initiatives. The programme witnessed the participation of around 350 stakeholders, including government officials, experts, students and civil society organisations.

PROTECTION OF WOMEN FROM SEXUAL HARASSMENT AT THE WORK-PLACE (POSH)

In accordance with the provisions of the POSH Act, 2013, the National Biodiversity Authority organized quarterly meetings of the Internal Committee. As part of its ongoing commitment to fostering a safe and inclusive workplace, informal interactions are also organised with Committee members and women staff to encourage open dialogue and address concerns in a supportive environment. During POSH Awareness Week (10–17 December 2025), NBA conducted a series of activities, including an anonymous reflective exercise inviting staff to identify 'green' and 'red' flags that respectively strengthen or undermine a safe workplace. The initiative aimed to further enhance institutional systems and workplace culture. Additionally, a workshop on "Prevention of Sexual Harassment (POSH) at Workplace" was organised on 27 January 2026, graced by Hon'ble Dr. Justice S. Vimala (Retd.) as the Chief Guest.

"Prevention of Sexual Harassment (POSH) at Workplace" was organised on 27 January 2026, graced by Hon'ble Dr. Justice S. Vimala (Retd.) as the Chief Guest.

SWACHH BHARAT ABHIYAN

As part of the nationwide Swachh Bharat Abhiyan and Swachhata Campaign 5.0, the NBA undertook a series of cleanliness and awareness activities at its premises.

Officials and staff actively participated in cleaning office spaces, parks, visitor areas, parking facilities and record rooms, while also ensuring improved waste management through segregation of e-waste. Staff planted saplings at the TICEL Bio Park, and safety gear was distributed to housekeeping and gardening staff. Through these initiatives, NBA reaffirmed its commitment to cleanliness, responsible waste management and a sustainable workplace.

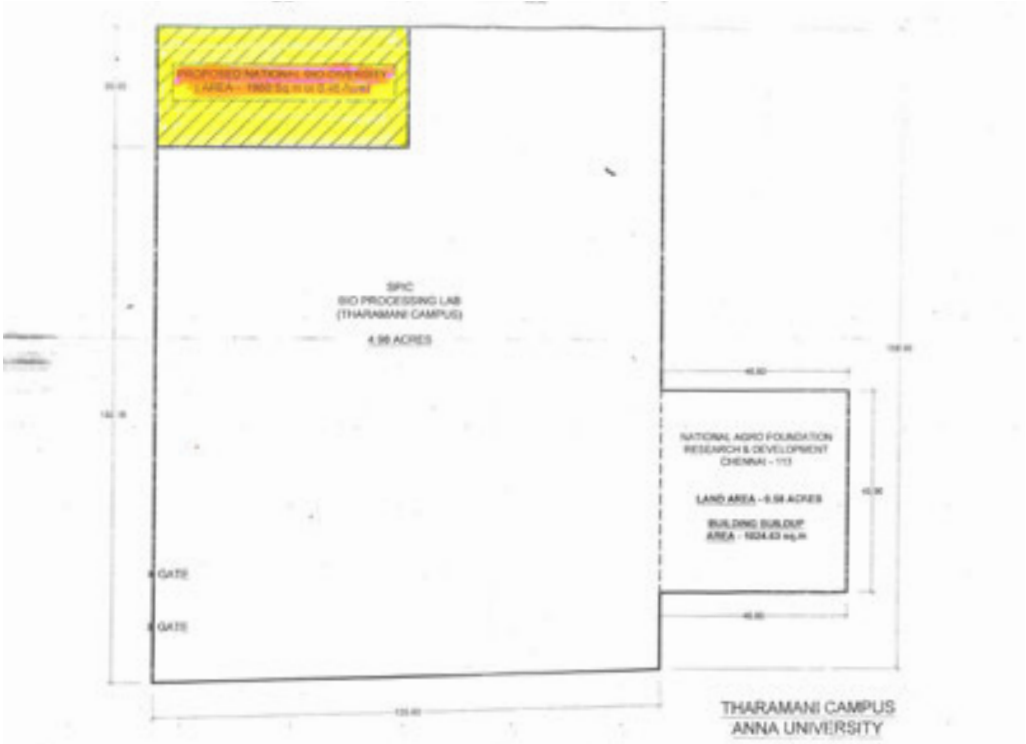
HINDI DIWAS

The National Biodiversity Authority celebrated Hindi Diwas with a week-long Hindi Week programme at its Chennai office from 15 to 23 September 2025. Various competitions were organised from 15–19 September to encourage the use of Hindi in official communication. The programme concluded with a prize distribution ceremony chaired by the Chairperson, who appreciated the enthusiastic participation of staff and encouraged continued promotion of Hindi in official functioning. Winners were felicitated, marking a vibrant celebration of the Hindi language and culture.

LAND ALLOTTED TO NBA'S OFFICE BUILDING

NBA is pleased to announce that around 46 cents of land has been allotted for the construction of its own office building as per the Order dated February 12, 2026 received from Anna University. The University has expressed its readiness to hand over possession of its land at Taramani campus, Chennai to NBA once the necessary approvals are obtained.

The allocation of a dedicated site and office building shall considerably augment the NBA's functional efficacy, enhance its infrastructural framework, and provide essential support for its broadening mandate in biodiversity conservation and governance. On this momentous occasion, the NBA wishes to record its sincere gratitude to Anna University, alongside all those who rendered invaluable assistance in facilitating this allotment.



NBA ANNUAL REPORTING, FUND ALLOCATION, & KEY INITIATIVES

NBA ANNUAL REPORT TABLED IN PARLIAMENT

The Annual Report of the National Biodiversity Authority for 2024–2025 has been submitted to Parliament under Section 28 of the Biological Diversity (Amendment) Act, 2023. This was tabled in Lok Sabha on December 15, 2025 and in Rajya Sabha on December 18, 2025. The report outlines key activities and achievements in implementing the Biological Diversity Act, 2002.

Major highlights include development of the Biodiversity Management Information System (BIOMIS) portal for electronic People's Biodiversity Registers (e-PBRs) with pilot studies in 12 State Biodiversity Boards, processing 933 ABS applications and executing 568 agreements, implementation of NIRANTAR initiatives, biodiversity publications, and expert committee progress. During the year, the Biological Diversity Rules, 2024 were operationalized, the ABS Regulations, 2025 drafted, and guidelines for OECMs advanced.

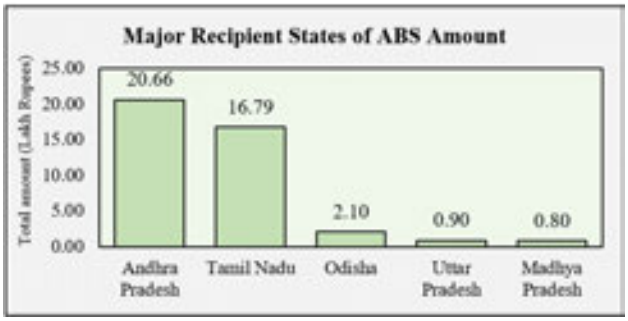
NBA DISBURSED ₹78 CRORE ABS

NBA continues to strengthen its Access and Benefit Sharing (ABS) mechanism, through which benefits from the use of biological resources are shared with the people and communities who help conserve them. So far, India's total ABS benefit-sharing amount has reached ₹143.46 crore includes ₹78 crore (approximately USD 8.5 million) during the period September 2025 to March 2026. The ABS system ensures that when companies or researchers use biological resources such as plants, animals, or traditional knowledge, a fair share of the benefits is given back to the local communities and farmers who protect and maintain these resources. This framework also encourages the sustainable use of biodiversity, helping to prevent illegal trade and over-exploitation of natural resources. Through the continued efforts of the NBA, the ABS funds are returned to beneficiaries, which helps support biodiversity conservation, scientific research, and the socio-economic development of farmers and local communities across the country.

FUNDS TO ESTABLISH NURSERY FOR RED SANDERS

NBA has sanctioned ₹2 crores to the Andhra Pradesh State Biodiversity Board for conserving the endemic Red Sanders (*Pterocarpus santalinus*) ABS mechanism of the Biological Diversity Act, 2002. The initiative aims to promote the conservation and sustainable use of this valuable tree species through raising of one lakh saplings.

These saplings will be distributed to farmers under the Trees Outside Forests (TOF) programme. The project will be implemented with the involvement of local communities and Biodiversity Management Committees, empowering them, ensuring that benefits arising from the use of biological resources are shared fairly while also supporting conservation efforts.

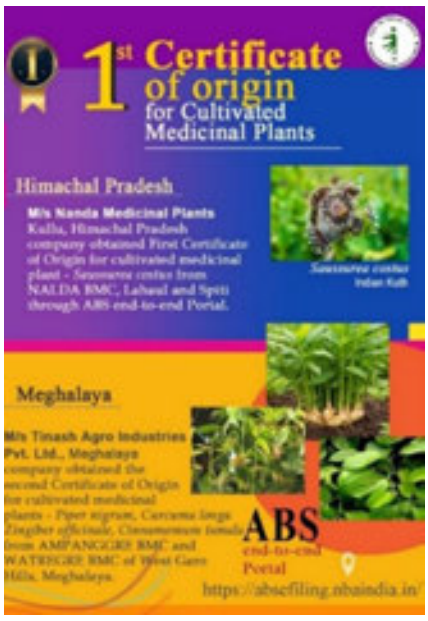


NBA RELEASES PATENT-LINKED ACCESS BENEFIT-SHARING OF ₹43.22 LAKH TO THE BENEFIT CLAIMERS FOR THE FIRST TIME

In a significant initiative, the National Biodiversity Authority released patent-linked Access and Benefit Sharing (ABS) funds amounting to ₹43.22 lakh. The funds were generated from Intellectual Property Rights (IPR) applications involving the use of Indian biological resources for patents and commercialisation. This marks an important step towards ensuring equitable sharing of benefits with local communities, traditional knowledge holders, and custodians who have conserved these resources over generations. The ABS amount has been disbursed to 16 State Biodiversity Boards, namely Andhra Pradesh, Chhattisgarh, Goa, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand and West Bengal, for onward distribution to the respective benefit claimers. Upon transfer to the Biodiversity Management Committees (BMCs), the funds will support biodiversity conservation, sustainable resource management and community-based livelihood enhancement, including activities such as preparation and updating of People's Biodiversity Registers (PBRs), documentation of traditional knowledge and other local conservation initiatives. This milestone further reinforces India's commitment to fair and equitable benefit sharing under the Nagoya Protocol, while strengthening grassroots-level biodiversity governance across the country.

CERTIFICATE OF ORIGIN (CoO) THROUGH ABS END-TO-END PORTAL

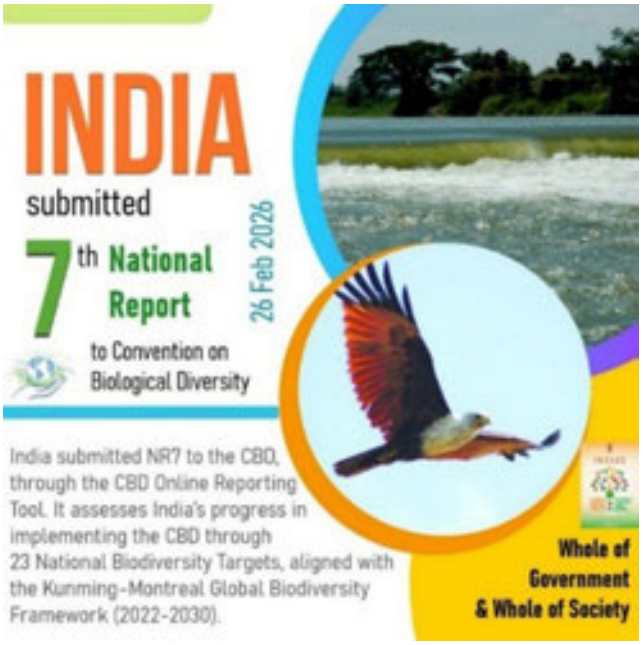
To operationalise the provisions of the amended Act and address procedural requirements across stakeholder groups, including the AYUSH sector, seed sector and research institutions, the Ministry of Environment, Forest and Climate Change notified the relevant rules under the Biological Diversity (Amendment) Act, 2023. In this context, the National Biodiversity Authority launched the ABS, End-to-End Portal (https://absefiling.nbaindia.in/) on 1 November 2025 to facilitate the electronic issuance of Certificates of Origin (CoO) for stakeholders seeking ABS exemptions for cultivated medicinal plants from Biodiversity Management Committees (BMCs). The portal functions as a single-window system, enabling faster and more transparent processing of applications.



Significantly, the BMC of Nalda in Himachal Pradesh issued the first CoO for cultivated medicinal plants under Section 19 of the Biological Diversity Rules, 2024. This was followed by the issuance of CoOs by Ampanggree and Watregere BMCs from West Garo Hills, Meghalaya, to companies on 11 February 2026. This initiative enhances traceability and strengthens the authenticity and credibility of biological materials.

INDIA'S KEY SUBMISSIONS AND STRATEGIC UPDATES TO THE CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

SEVENTH NATIONAL REPORT TO THE CBD (NR-7)

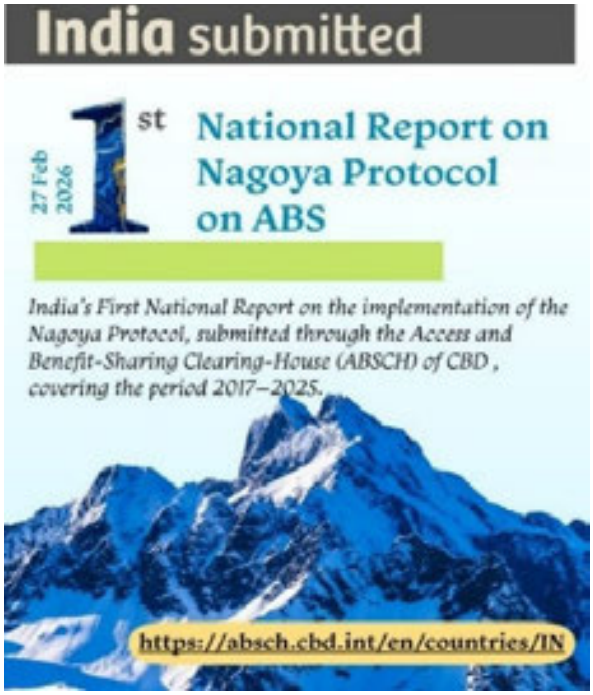


India has successfully submitted its Seventh National Report (NR7) to the Convention on Biological Diversity (CBD) on 26 February 2026, underscoring its steadfast commitment to global biodiversity governance and the principles of transparency and accountability.The report has been meticulously prepared by the Ministry of Environment, Forest and Climate Change, in close coordination with the National Biodiversity Authority (NBA), drawing upon extensive consultations with various ministries, State-level stakeholders, and eminent technical experts across the country, with the valued support of the United Nations Development Programme under the GEF-8 Umbrella Programme.

The NR7 provides a comprehensive assessment of India's progress in implementing the Kunming–Montreal Global Biodiversity Framework and the National Biodiversity Strategies and Action Plans (NBSAPs). It stands as a testament to India's proactive and leadership-oriented approach, and will significantly contribute to the global review process at the seventeenth meeting of the Conference of the Parties (CBD COP 17) scheduled for October 2026.

The full report can be accessed through the CBD Clearing-House Mechanism (CHM) at: https://ort.cbd.int/national-reports/nr7/359D8BAC-9FD6-0ACE-BB25-309292A6A97D

FIRST NATIONAL REPORT ON NAGOYA PROTOCOL TO THE CBD (NR-1)



India successfully submitted its First National Report (NR1) on the implementation of the Nagoya Protocol, covering the period 2017–2025, through the Access and Benefit-Sharing Clearing-House (ABSCH) of the Convention on Biological Diversity on 27 February 2026. This significant milestone reflects India's enduring commitment to ensuring the fair and equitable sharing of benefits arising from the utilisation of genetic resources. The report presents a comprehensive account of legislative, administrative, and policy measures undertaken under the Biological Diversity Act, 2002. It highlights robust institutional mechanisms, regulatory frameworks, capacity-building initiatives, stakeholder engagement, and practical experiences in the implementation of access and benefit-sharing (ABS).

Submission through the ABS-CH further reinforces transparency and facilitates global exchange of information. As a megadiverse country and an early and steadfast advocate of ABS principles, India reaffirms its leadership in advancing strong biodiversity governance and fostering equitable and mutually beneficial partnerships in the sustainable use of biological resources.

For more information on India's First National Report to the CBD on the implementation of the Nagoya Protocol, please visit the Access and Benefit-Sharing Clearing-House of the CBD : https://absch.cbd.int/en/countries/IN

CBD EVENTS: CONVENTION ON BIOLOGICAL DIVERSITY (CBD) AND ITS MEETINGS

India, as a Party to the Convention on Biological Diversity, regularly deputes an official delegation led by the Ministry of Environment, Forest and Climate Change (MoEFCC), in close coordination with the National Biodiversity Authority, to participate in meetings CBD, thereby representing national interests and contributing to global biodiversity negotiations; in the intersessional period, a range of subsidiary and technical meetings are convened to inform COP deliberations, aligned with the Convention's three core objectives conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of benefits arising from the utilisation of genetic resources while addressing thematic areas such as sustainable wildlife management, climate change, agriculture and human health; the Convention is further complemented by the Cartagena Protocol on Biosafety and the Nagoya Protocol on Access and Benefit Sharing, whose governing bodies (MOPs) are typically held alongside COP sessions; a concise account of the key outcomes of these meetings is presented below, and, to strengthen institutional coordination and support India's effective engagement, a dedicated CBD Cell was established in September 2024 to facilitate preparations for international meetings and assist related activities of the NBA.

SBSTTA-27

The twenty-seventh meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-27), held in Panama from 20–24 October 2025 under the Convention on Biological Diversity, served as a key preparatory platform for COP-17, wherein India emphasised that national data, particularly the Seventh National Reports, should form the primary basis for global stocktaking while cautioning against reliance on external datasets; it further advocated greater coherence among the Rio Conventions on biodiversity and climate change, while maintaining that legal interpretations fall outside SBSTTA's technical mandate. In negotiations on Invasive Alien Species, India secured the inclusion

Indian delegation at SBSTTA-27: Shri Virendra Tiwari, Shri Raghu Kumar Kodali and Dr. Achuta Nand Shukla

of the term "capabilities" alongside "national circumstances and priorities," reinforcing differentiated capacities, and, together with Brazil and the Russian Federation, proposed that the Subsidiary Body "take note" of the IPBES Nexus Assessment rather than "welcome" it, thereby preserving analytical flexibility. Across discussions on biodiversity and health, living modified organisms, agriculture, and scientific and technical needs, India consistently promoted voluntary guidance, capacity-building, and technology transfer over prescriptive approaches, while embedding principles of equity, proportionality, and common but differentiated responsibilities.

SB8(J)-01: OPERATIONALIZING ARTICLE 8(J) AND TRADITIONAL KNOWLEDGE

Indian delegation-SB 8(j) Meeting

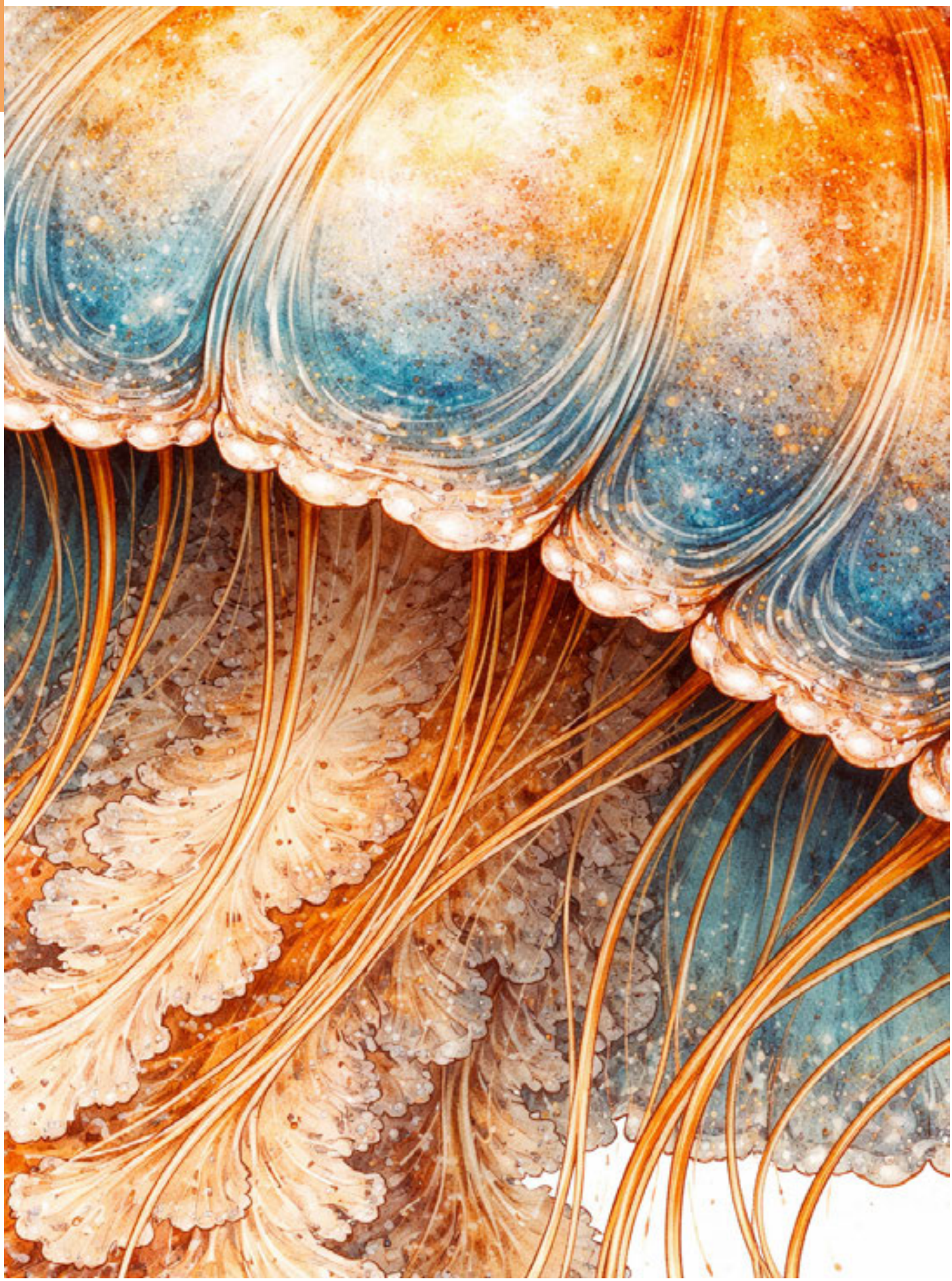
The first meeting of the Subsidiary Body on Article 8(j) (SB8j-1), held in Panama from 27–30 October 2025 under the Convention on Biological Diversity, marked the formal integration of Indigenous Peoples and Local Communities (IPLCs) into the Convention's institutional framework. India adopted a balanced, sovereignty-oriented stance, supporting a dual Co-Chair arrangement of Parties and IPLCs while emphasising that the body should remain Party-led and avoid mandate duplication. It successfully secured language ensuring that resource mobilisation for IPLCs aligns with national circumstances and legislation, thereby reinforcing state oversight and policy coherence.

On traditional knowledge, India advocated its inclusion in Global Biodiversity Framework reporting, subject to Free, Prior and Informed Consent (FPIC) and safeguards against misappropriation, while highlighting the need for data sovereignty and nationally coordinated governance mechanisms. India also supported retaining the unified term "IPLCs" to ensure consistency and uphold the Convention's legal and institutional integrity.

SBI-06: STRENGTHENING IMPLEMENTATION, REPORTING AND EQUITY

The sixth meeting of the Subsidiary Body on Implementation (SBI-6), held from 16–19 February 2026 under the Convention on Biological Diversity, focused on advancing reporting, finance, and capacity-building mechanisms under the Kunming-Montreal Global Biodiversity Framework (KMGBF), while highlighting challenges faced by developing countries in preparing Seventh National Reports, aligning NBSAPs, and accessing adequate finance. India emphasised that implementation and monitoring processes must remain evidence-based, flexible, and aligned with national circumstances, priorities, and capacities, cautioning against one-size-fits-all approaches. It also supported strengthening community-based monitoring systems and called for equitable access to finance for Least Developed Countries and Small Island Developing States, while consistently underscoring the interlinkages between biodiversity conservation, poverty eradication, livelihood security, and sustainable consumption and production within the broader development context.

ARTICLES



BIODIVERSITY AS REFLECTED IN NATIONAL FLAGS

Joyson Joe Jeevamani J, Scientific Consultant, CBD CELL, NBA
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National flags appear simple but often reflect how societies perceive nature and biodiversity. Analysing all 193 UN member flags reveals how symbols and colours represent ecosystems, species, and human–nature relationships.The findings are striking. About 58% of flags show no biodiversity or ecosystems at all. Only around 21% display plants or animals, either alone or alongside symbolic colours. Another 21% use only colours to represent ecosystems such as forests, oceans, or farmland. Only two depict habitats (volcanoes in Nicaragua and mountains in Slovakia), highlighting nature's limited representation in flags.

Examples of national flags depicting biodiversity and/or ecosystems

Animals or their parts appear on 26 flags, mostly birds like eagles. Plants or its parts appear on 24 flags, especially laurel, olive, and palm. Colours symbolise ecosystems: blue/white for water, green for vegetation, yellow for agriculture, red/green/blue for mountains, gold/orange for deserts, and black for soil, acting as simple visual representations of nature.

Interestingly, countries including Ecuador and Fiji feature more than five biodiversity or ecosystem elements through colours or symbols, making their flags especially rich in nature imagery. Most life forms like insects, fungi, and marine organisms are rarely shown on flags. Countries usually choose large or familiar species, showing that people value what feels meaningful, useful, or symbolic.

Looking at flags through biodiversity shows that nature is part of national identity, even if shown only by colours or symbols. It turns a simple flag into a way to discuss ecology, culture, and values. Flags provide an intuitive way to understand how societies frame nature. Sometimes highlighting it, sometimes simplifying it, and often overlooking it.

National emblems, coats of arms (distinctive visual designs), and state or provincial symbols often show more biodiversity than flags. Studying them may reveal even more about how cultures interpret and value the living world around them. Biodiversity is not only in nature, but also in the symbols we display.

WHY BIODIVERSITY MATTERS FOR PUBLIC HEALTH

R. Sugantha Sakthivel, Scientific Consultant, CBD CELL, NBA
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In recent years, scientists and policymakers have increasingly recognised that the health of people is deeply connected to the health of nature. Biodiversity—the variety of life on Earth, from genes and species to ecosystems—is not only an environmental concern but also a public health priority. As climate change, land-use change and pollution accelerate biodiversity loss, the consequences for human well-being are becoming more visible and more urgent. A landmark call for action in the Lancet Child & Adolescent Health stresses that limiting global warming, restoring biodiversity, and protecting health must go hand in hand, reflecting growing evidence that environmental deterioration threatens the life-support systems of human societies. One of the most debated links between biodiversity and health concerns infectious diseases.

When ecosystems are disturbed—through deforestation, habitat fragmentation, or agricultural intensification—pathogens can more easily spill over from animals to humans. Over the past 20 years, there has been an increase in early warnings about wildlife diseases that pose a threat to both human health and biodiversity. These warnings emphasize how biodiversity loss can alter disease ecology, sometimes increasing the risk of transmission.

However, the relationship is complex. Researchers argue that stronger causal evidence is needed to determine when and how biodiversity conservation reduces disease burden. They propose evaluating conservation as a public health intervention by examining whether it lowers Disability-Adjusted Life Years (DALYs), improves nutrition, and enhances overall well-being compared to conventional health strategies.

They further stress the need for common ground in the biodiversity–disease debate, recognising that outcomes depend on the ecological context. They further stress the need for common ground in the biodiversity–disease debate, recognising that outcomes depend on the ecological context. One of the most debated links between biodiversity and health concerns infectious diseases. When ecosystems are disturbed—through deforestation, habitat fragmentation, or agricultural intensification—pathogens can more easily spill over from animals to humans. Over the past 20 years, there has been an increase in early warnings about wildlife diseases that pose a threat to both human health and biodiversity. These warnings emphasize how biodiversity loss can alter disease ecology, sometimes increasing the risk of transmission.

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According to research, a high level of biodiversity frequently lowers the risk of disease in humans, animals, livestock, and plants, as well as the rates of pathogen transmission. Most pathogens are naturally host generalists and can infect more than one host at a time. These host species vary in their transmission potential and may spread infections to other species. Such species are referred to as reservoir hosts; they are typically more abundant, widespread, and resilient to anthropogenic disturbances. Ecological communities with higher diversity dilute the effects of reservoir species and thereby reduce disease risk.

Beyond infectious diseases, biodiversity supports human health in subtle but important ways by reducing stress, improving mental health, and strengthening immune regulation. Urban green spaces are vital for lower socioeconomic groups, and creating multiple small, biodiverse areas alongside larger parks can improve equity and support preventive healthcare through urban design.

Four pathways link biodiversity and human health: it can reduce harm by regulating infectious diseases and buffering climate extremes; restore capacities by improving mental health and reducing stress; build capacities by supporting nutrition, livelihoods, and food security; and, in some cases, cause harm by enabling zoonotic spillover or exposure to harmful species. Recognising these pathways helps policymakers design balanced, evidence-based strategies, viewing biodiversity as a dynamic system that must be managed wisely.

Science-based indicators such as DALYs, nutrition, life expectancy, and ecological measures like species diversity and habitat quality—are key to understanding how environmental change affects well-being and resilience, while evidence shows that biodiversity underpins clean air, safe water, food, and disease regulation, making its protection a prudent investment in human health. As temperatures rise and ecosystems face growing pressures, safeguarding biodiversity is essential for human health and requires closer collaboration across disciplines to make it a central public health priority. In an era defined by pandemics and climate change, recognising that human health depends on the health of nature may be one of the most important insights of our time.

NATIVE LIVESTOCK AND PASTORALISM IN TAMIL NADU

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Agrobiodiversity refers to the variety and variability of micro-organisms, plants, and animals that are essential for sustaining agro-ecosystems and ensuring food production and security. It encompasses crop varieties, livestock breeds, fish species, and wild biological resources found across agricultural fields, forests, and rangelands.

Pastoralist communities, who herd native livestock, are spread across 24 states and Union Territories in India. The 21st Livestock Census (2024) defined pastoralists as those whose livestock move outside their village for at least a month annually or who depend on common resources such as village commons, pastures, and water bodies.

Tamil Nadu is home to several native breeds, including cattle, buffalo, sheep, goats, and dogs. The state has both transhumant and migratory livestock systems, involving seasonal movement between lowland, riverine and highland areas. These movements respond to climate variability and resource scarcity and are closely linked to biodiversity and landscapes. Indigenous breeds like *Bargur* and *Pulikulam* travel long distances for grazing in the Western Ghats. Other herds follow traditional routes connected to former dry forests, now degraded into scrub forests. Historically, these regions supported livestock- centred livelihoods, with evidence such as hero stones indicating past cattle raids. Tamil Nadu also exhibits new forms of nomadism, such as duck rearing linked to paddy fields and agricultural intensification triggered post - Green Revolution.

Bargur cattle

Pulikulam cattle

Access to commons is crucial for migratory pastoralism. Key requirements include water availability from natural sources like rivers and ponds, and fodder from multiple resources such as fallow agricultural lands, village commons, and forest lands. Migratory routes

(*Thadavu*) are often ancient pathways but may change based on resource availability. Today, herds increasingly use highways, leading to risks such as accidents and loss of livestock and human life. Pastoralism in Tamil Nadu faces several challenges, including shrinking commons due to dams, encroachments, legal restrictions, urbanisation, and industrialisation. Additional issues include declining interest among younger generations and rising labour costs.

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Despite these challenges, pastoralism contributes positively to the environment. It improves soil health through livestock penning, reduces weeds in paddy fields using pigs, and converts waste grains into valuable products through duck rearing. It also preserves traditional ecological knowledge related to livestock and landscapes and supports cultural practices like Jallikattu and Rekhla. The Biological Diversity Act (2002, as amended in 2023) provides for the constitution of Biodiversity Management Committees to promote the conservation, sustainable use, and documentation of biological diversity, including domesticated livestock breeds and associated traditional knowledge. The preparation of People's Biodiversity Registers (PBRs) forms a key responsibility of these committees. In this context, the inclusion of data on pastoral communities, migratory routes, and grazing practices in PBRs is essential for effective conservation and sustainable management across Tamil Nadu and India.

ENVIRONMENTAL COMPENSATION :

GENESIS AND MANDATE OF THE NATIONAL GREEN TRIBUNAL IN DETERMINING COMPENSATION

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Environmental compensation, simply stated, is about taking action to cover the costs of pollution and environmental damage. It operates on the "polluter pays" principle by imposing monetary penalties on individuals, companies, or entities that pollute the environment.

Environmental Compensation – Recent trends in the role of NGT

In Indian environmental jurisprudence, the Supreme Court's verdict given in M/s Rhythm County v. Satish Sanjay Hegde & Ors. with M/s Key stone properties v. Shashikant Vithalkamble & Ors. (2026 INSC 102) on Jan 30, 2026 marks an important landmark in the quantification of environmental compensation by the National Green Tribunal (NGT). The Supreme Court Division Bench comprising Justice Dipankar Datta and Justice Vijay Bishnoi, upheld the NGT's orders directing two real estate developers to pay extensive environmental compensation for constructions carried out without the required environmental clearances, thereby violating environmental norms and related permissions. The Apex Court held that, NGT, in exercise of its powers under Sections 15, 17, and 20 of the National Green Tribunal Act, 2010, is competent in law to adopt the turnover or project cost of a project proponent, inter alia, as a relevant yardstick for the computation of environmental compensation.

The Appellants argued that the Tribunal lacked statutory formula for computing environmental compensation and therefore, could not quantify it by relying on 'project cost' or 'turnover' without defined param eters. They also contended that the CPCB's (Central Pollution Control Board) compensation framework, developed primarily for industrial pollution violations, was inapplicable to residential real estate construction. The argument that the NGT is denuded of authority to quantify compensation in the absence of a legislatively prescribed or delegated formula, although persuasively advanced (attractively canvassed), falters when tested against the plain statutory text. Accordingly, the Apex Court held that, even in the absence of a legislatively prescribed framework for quantification of environmental compensation, the NGT is empowered to enhance compensation on the basis of project costs. It further held that, "This Court has consistently underscored that environmental compensation must rest on a foundation of rationality, proportionality, and reasoned assessment. While project turnover or cost cannot be applied mechanically as a blunt instrument, it nevertheless remains a relevant and permissible factor where the factual matrix so warrants."

The Supreme Court's ruling in this landmark case emphasized that the National Green Tribunal possesses the discretion to adopt structured and scientifically informed mechanisms while exercising its suo motu and restorative jurisdiction under the NGT Act, consistent with the "polluter pays" and precautionary principles. The judgment clearly is a set precedent for assessing and computing environmental damage based on a violator's capacity and lays down guidelines for principle-based remedies, enhancing the future scope for environmental governance in India.

JUSTICE MEETS NATURE

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Green rulings reshape India's eco-legal landscape, with notable gains for wildlife protection and institutional transparency.

India's environmental tribunals issued pivotal rulings in May 2025 and January 2026, strengthening wildlife conservation, biodiversity safeguards, and institutional accountability. These cases demonstrate the judiciary's proactive role in addressing ecological vulnerabilities through targeted legal interventions.

Tribunal Intervention: Lifeline for Assam's Feral Horse Population

Triggered by Mongabay's November 2024 exposé "The Last Feral Horses in India," the NGT Eastern Zone Bench (O.A. No. 08/2025/EZ, formerly 1372/2024/PB) initiated suo motu proceedings to protect 175-250 feral horses in Assam's Dibru-Saikhowa National Park. Lacking scheduled status under the Wildlife Protection Act, 1972, this enigmatic herd—possibly WWI remnants or tea garden escapees—confronts Brahmaputra floods eroding grasslands, smuggling attempts, cattle grazing, and absence of formal census data. Assam's Chief Wildlife Warden affirmed no poaching due to vigilant patrols but emphasized flood-induced habitat shrinkage; MoEF&CC highlighted Sections 33 and 35(6) for warden-led controls, proposing flood refuges and Wildlife Institute of India (WII) assessments. On May 9, 2025, Justices B. Amit Sthalekar and Dr. Arun Kumar Verma issued clear directives: Chief Wildlife Warden to embed protections in the park's management plan; MoEF&CC to commission WII for population and habitat studies. This bridges protection gaps for feral species, establishing precedents for flood-prone wildlife in dynamic ecosystems.

Invasive Fish Under Scrutiny: NGT Calls for Ecological Assessment

The NGT Principal Bench (O.A. No. 25/2025) ordered expert scrutiny of *Gambusia affinis* (Mosquitofish) and *Poecilia reticulata* (Guppy) in mosquito vector control. Applicant Yashweer Singh challenged their deployment, noting National Biodiversity Authority designation as invasives—one ranking among IUCN's "100 worst"—which outcompete native aquatic life in ponds and rivers. The Ministry of Health and Family Welfare defended their legacy: introduced in 1904 Bombay, proven in 1980s Gujarat, and endorsed by WHO global trials as sustainable larval predators. On May 6, the bench headed by Chairperson Justice Prakash Shrivastava bench, post-April 8 inter-agency talks, constituted a Joint Expert Committee to evaluate Singh's IA No. 290/2025 within six months, thereby emphasising the precautionary principle and balancing public health objectives with biodiversity conservation.

NBA RTI Row Resolved: CIC Affirms Open Books

The Central Information Commission (CIC/NBDAT/C/2024/638412) on January 22, 2026, dismissed complaints against the National Biodiversity Authority (NBA). It upheld the responses provided by the Central Public Information Officer (CPIO) under the RTI Act, 2005 responses, citing Supreme Court precedent in Chief Information Commissioner vs. State of Manipur (2011) to reject Section 18 mala fide denial claims. No penalties were levied, thereby reinforcing the NBA's commitment to transparency and accountability.

DIGITAL SEQUENCE INFORMATION AND BIODIVERSITY GOVERNANCE : EMERGING ISSUES FOR INDIA

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Rapid advances in genomics, synthetic biology, and bioinformatics have transformed how biological resources are accessed and utilized. Increasingly, research and industry rely not on physical genetic material but on Digital Sequence Information (DSI)—digital representations of genetic sequences stored in global databases. These platforms enable open scientific collaboration, accelerate innovation, and support sectors such as pharmaceuticals, agriculture, and environmental monitoring while also strengthening biodiversity conservation through improved species identification, ecosystem monitoring, and evidence-based policymaking. DSI presents significant opportunities for India. The country's expanding genomics infrastructure and biodiversity research initiatives position it as a major contributor to global sequence databases. India's experience with digital public infrastructure further provides useful insights for designing equitable and scalable data governance systems.

However, the growing reliance on DSI raises complex policy questions regarding access and benefit-sharing (ABS), as existing international frameworks were designed around tangible biological resources.DSI generally includes DNA, RNA, and protein sequence data, along with associated biological information such as gene expression data. These are hosted in global repositories like GenBank, EMBL-EBI, and DDBJ under the International Nucleotide Sequence Database Collaboration (INSDC), which operates on open-access principles. While this system has enabled rapid advances in science—ranging from vaccine development to crop improvement—it challenges traditional ABS mechanisms that are triggered by the physical transfer of biological material.

The governance of DSI has therefore become a key issue in global biodiversity negotiations. Concerns have been raised that unrestricted access to sequence data may bypass ABS frameworks and undermine equitable benefit-sharing. In response, Parties to the Convention on Biological Diversity (CBD), at COP15, agreed to develop a **multilateral benefit-sharing mechanism** for DSI under Target 13 of the Kunming–Montreal Global Biodiversity Framework (KMGBF). The decision 16/2 at COP16 further advances this effort by outlining modalities for implementation, including institutional arrangements, funding mechanisms, capacity building, and improved metadata standards, while maintaining open access for research and innovation.

In India, the Biological Diversity Act, 2002 provides a comprehensive ABS framework implemented through the National Biodiversity Authority, State Biodiversity Boards, and Biodiversity Management Committees. Recent policy developments, including the Biological Diversity (Amendment) Act, 2023, the Biological Diversity Rules, 2024, and ABS Regulations 2025 reflect growing recognition of emerging technologies and digital biology. Nevertheless, questions remain regarding how DSI use—particularly when accessed through global databases—should be addressed within the national ABS framework. The key challenges include limited traceability of sequence data due to inadequate metadata, lack of a universally agreed definition of DSI, and difficulties in monitoring downstream utilization in research, product development, and intellectual property systems. Policymakers must also strike a balance between maintaining open scientific access and ensuring equitable benefit-sharing.

In conclusion, DSI has emerged as a transformative element at the confluence of scientific innovation, biodiversity conservation, and policy frameworks. For India, the priority lies in balancing open access with equity and benefit-sharing. With its strong institutional framework and technological capabilities, India is well placed to contribute to shaping a fair, practical, and forward-looking global governance framework for DSI.

FIELD NOTES

Painting by Niveditha R. K

ALONG THE TRAIL WITH THE GIANT:
A FIELD NOTE

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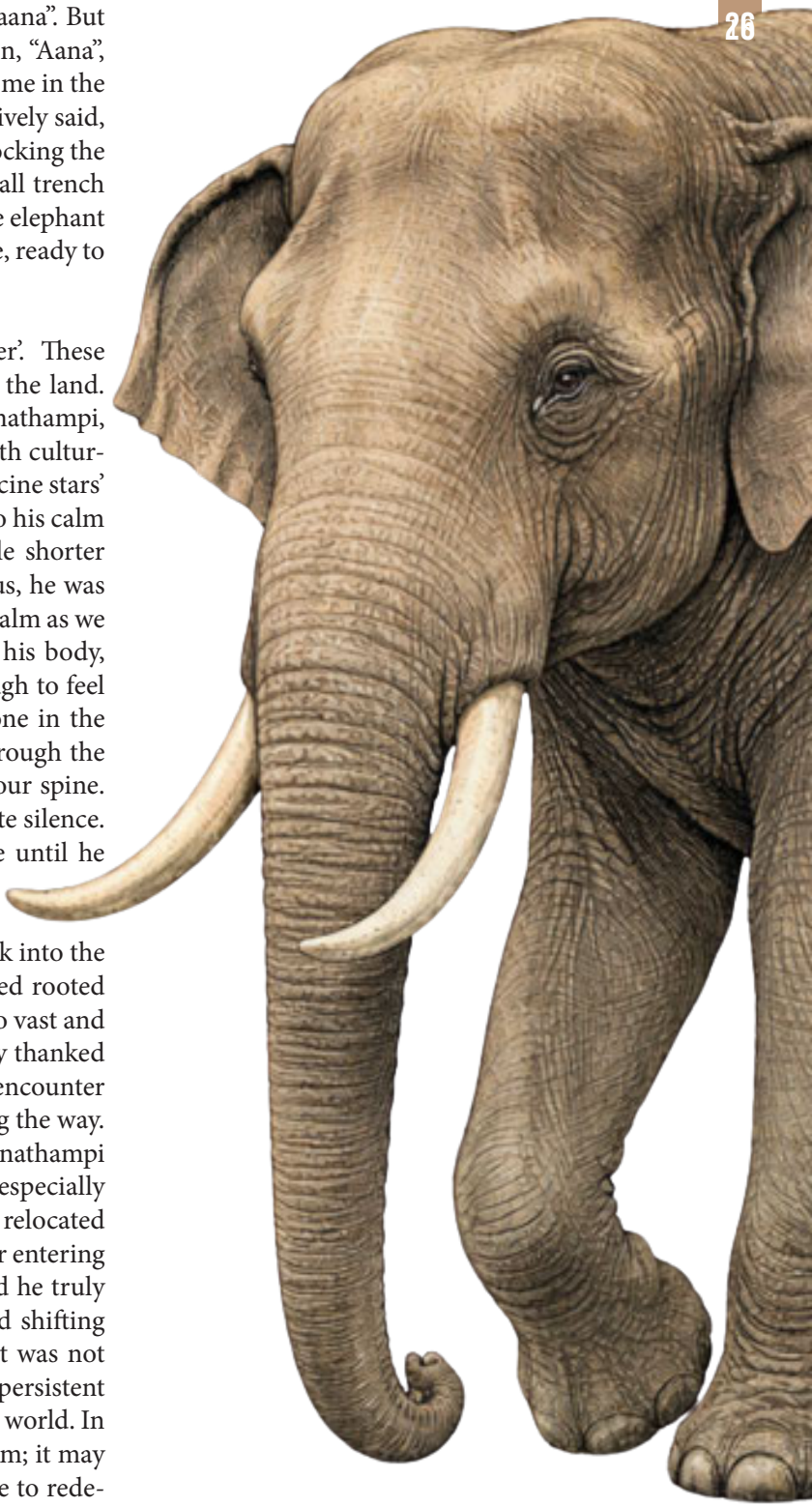
It was a calm and quiet morning in March, 2018. Winter had just made way for Summer and in the company of my colleague Angel, I decided to go for a birding session in the trails along the foothills of Anaikatti (Coimbatore), the blue hills as I call it. We planned to walk along the road and then explore some narrow trails that cut through reserve forests like nerves. The layered blue mountains, the yellow and green tones of the dry deciduous forest, a peafowl calling from the thickets, spotted deer leaping across the trail, Ioras whistling their varied tunes, and a Paradise Flycatcher darting past with its ribbon-like tail are the familiar sights that keep a morning walk in these hills fresh in memory lane.

As we continued along the road, a Shikra's sharp call echoed from the top of a dead tree. A slight disturbance in the leaf litter near a bush drew us closer and revealed three tiny Yellow-legged Buttonquails, almost invisible against the ground. Much of the native shrub cover here has been replaced by lantana, which now dominates the terrain, yet bulbuls, babblers, Malabar Parakeets, and prinias were actively foraging among it, feeding on its fruits and unintentionally aiding its spread in the Western Ghats. On the trail leading to a waterhole, we moved quietly and spotted a few Grey Francolins feeding nearby. Farther ahead, a Golden Oriole flashed across the trees, its bright yellow plumage glowing against the green forest. Near the pond, the silence deepened; damp mud near the pond had hoofmarks of deer and wild pigs. We stood quietly watching the birds and tadpoles in the still water, To swiftly scan the surroundings, I turned around. To my awe, I spotted a

gigantic elephant walking towards us from the route, only ten feet behind. With unhurried and unperturbed pace, he was slowly approaching us while wiggling his tail and ears. I froze for a moment. I whispered to Angel with a trembling voice, "Aaana". But she could not hear at first and I said a little louder, again, "Aana", an elephant is behind us, she turned around and joined me in the deep freeze mode. With no time left to think, I instinctively said, "Run." But with dense forest ahead and steep terrain blocking the right, escape seemed impossible until we noticed a small trench to the left. We quickly and carefully crossed it just as the elephant reached the waterhole. We watched him from a distance, ready to run again at any moment.

We identified him as Chinnathampi, 'Small brother'. These names for elephants are given by the native people of the land. The names are given based on their morphology, (Chinnathampi, Periyathampi), behaviour (Maharaj) and sometimes with cultural connections (Vinayagan). Some elephants even have cine stars' monickers. Chinnathampi got his name probably due to his calm attitude around humans and the fact that he is a little shorter for a male elephant of adulthood. Even after spotting us, he was clearly not bothered about our presence. He remained calm as we watched. He drank some water and sprayed some on his body, all the while keeping an eye on us. We were close enough to feel his breath. The water dripping from his eyelashes shone in the golden rays of the rising sun. A soft trumpet rolled through the air mixed with elephant rumbles, sending a shiver in our spine. I took a deep breath, we both did, and stood in complete silence. Without exchanging a word, we decided not to move until he chose to leave.

After the refreshment, he turned and made his way back into the forest, gradually dissolving into the green. We remained rooted to the spot, overwhelmed with awe at how something so vast and majestic could also be so profoundly gentle. We silently thanked him and slowly left the forest, carrying the thrill of the encounter with us and proudly sharing it with others we met along the way. Though we had many more encounters later with Chinnathampi and other elephants of the region, this one remained especially close to our hearts. Years later, hearing that he had been relocated to an elephant camp after being labelled troublesome for entering human spaces. It left me with a lingering question: had he truly changed, or was it our ever-expanding boundaries and shifting attitudes that had quietly transformed him? Perhaps it was not instinct alone that altered his course, but the silent and persistent pressure of human presence that gradually reshaped his world. In the end, the change may not have belonged solely to him; it may well have been a reflection of how our actions continue to redefine the fragile balance between nature and coexistence.



BIODIVERSITY
MATTERS