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BEYOND FOREST RIGHTS: RECOGNISING TRADITIONAL ECOLOGICAL KNOWLEDGE IN CLIMATE GOVERNANCE

~ *Swetlana Parida & Tarini Prasanna Si*

ABSTRACT

The indigenous communities across the globe, including in India, have safeguarded their forests, water systems and biodiversity for generations. Yet the new-age environmental laws only recognise these communities by their forest rights and some general regulations applicable to them. It measurably fails to acknowledge their traditional ecological knowledge as an independent legal interest.

This article traces how such knowledge about sustainable practices in agroforestry, biodiversity conservation and disaster preparedness has continued to grow through decades in different regions. It also examines how the statutory consent requirements from the indigenous community on large development projects has diminished from genuine participation to a performing formality only. Further, it reveals the unbalanced approach of courts in environmental dispute matters, rarely engaging with traditional knowledge on its own terms. As a result of which valuable ecological knowledge continues to remain vulnerable despite existing legal safeguards.

The article suggests that climate governance should be backed by the knowledge of those indigenous communities who have preserved the ecosystem over time. Such an approach would definitely strengthen environmental justice and promote a more sustainable legal framework.

I. INTRODUCTION

In 2026, the world relies on artificial intelligence, satellites and climate models to understand the changing planet. Yet, deep within India's forests, an indigenous elder can anticipate changing rains through the behaviour of insects, detect biodiversity loss through the silence of

birds, or detect an approaching drought from the flowering of a tree. These knowledge holders are constitutionally recognised as Scheduled Tribes and other forest-dwelling and traditional communities who lived alongside the forest and protected it long before environmental law emerged as a formal discipline.

Yet a paradox remains. The law has recognised the importance of indigenous knowledge, but it only protects its knowledge indirectly through forest rights, participation and environmental regulation; it seldomly recognises Traditional Ecological Knowledge (TEK) as the independent legal interest. When a forest is diverted for development purposes, the law measures the loss of trees, etc., but who measures the loss of knowledge that enabled these ecosystems to flourish?

Traditional Ecological Knowledge basically refers to the sophisticated understanding of water systems, agriculture, biodiversity and ecosystems management that has sustained landscapes long before the emergence of environment law, that should not merely be documented or celebrated but it must also be recognised as a distinct legal interest that deserves an independent protection. However, before recognising TEK, we have to look how this knowledge generated through generations.

II. THE FOREST REMEMBERS: HISTORIES OF RESISTANCE

Long before any conferences or meetings on environmental protection and making it a subject of statutory regulation, indigenous communities all over India had already developed enduring traditions of ecology stewardship. Their relationship with forests, land, trees, and mountains was not merely economic; it was cultural, spiritual and deeply rooted in community survival. Consequently, whenever the environment is threatened, resistances emerge not as a political strategy but as an act of preserving a way of life.

One of the earliest and most powerful examples can be traced back to the village of *Khejarli* in Rajasthan in *1730*. When the royal soldiers arrived to cut khejri trees for the construction needs of the Jodhpur Kingdom, a Bishnoi woman, *Amrita Devi*, refused to allow the felling of the trees. She embraced the tree and chose death over its destruction. Later, these ideals found expression in **Art. 51A(g)**, “*imposing a fundamental duty upon citizens to protect forests and wildlife*”.

The nineteenth century witnessed another dimension of this struggle through the movement led by *Birsa Munda (1889-1900)*. Colonial policies disrupted customary systems of resource

management. For tribal communities, protection of their land was not merely a protection of ownership but a preservation of knowledge, livelihoods and cultural identity also. This influenced the constitutional recognition of “***Schedule Areas***” under **Art. 244** read with the **5th Schedule**, acknowledging indigenous communities’ legal protection over their traditional territories and governance institutions.

More than seven decades later, in **1973**, villagers in Uttarakhand, led largely by the women under the leadership of **Gaura Devi**, physically embraced trees to prevent commercial logging. The **Chipko movement** demonstrated an ecological practice that was later validated by modern science and was also reflected in judicial expansion of **Art. 21** that also includes ‘*right to a healthy environment*’.

This historical trajectory continued into the twenty-first century (*around the 2000s-2013*) when the **Dongria Kondh community** resisted mining activities in the **Niyamgiri Hills of Odisha**. This demonstrated the practical operation of the **Forest Rights Act, 2006**. The Supreme Court also recognised the importance of **Gram Sabha’s consent** and necessity for any project that would affect their *religious, cultural and community forest rights*.

The common thread that connects all these movements is that indigenous communities consistently protected the environment long before environmental governance emerged as a formal study of law and policies. Their history is not merely a history of protection. It is the history of resilience and environmental knowledge that continues to hold valuable lessons for the contemporary world. These historical movements discussed above also reflected deeper ecological knowledge that indigenous communities had cultivated over generations. Thus, it is necessary to examine the knowledge systems that have enabled these communities to sustain ecosystems for centuries.

III. INDIGENOUS KNOWLEDGE AS CLIMATE KNOWLEDGE

Long before the concepts of sustainability, climate adaptation and climate resilience entered by policies and agreements, indigenous communities had developed practices that enabled them to co-exist with nature while ensuring sustainable use of resources. These practices include-

- **Forest Governance and Biodiversity Conservation**

This is the contribution of **Dongria Kondh of Odisha** who practice **Podu Chasa (Shifting Cultivation)** and **Biodiverse intercropping**. In the former practice, they practice rational, low-

intensity shifting cultivation by selectively clearing vegetation, using ash as natural fertilisers and allowing forest and soil nutrients to completely regenerate. While the latter practice includes growing 50 intermixed crop varieties grown in the single farm that prevents soil erosion and also creates a resilient food system that survives droughts and pest outbreaks.

The ***Khasi and Jaintia communities of Meghalaya***, also have a similar kind of practice that is ***Jhum, or Bun Cultivation***, that includes burning it just before the monsoon to provide organic ash fertilizer. This controls soil erosion and retains moisture. Further, most importantly, they preserve ***Sacred Groves [Law Kyntang]***. These sacred groves function as vital watersheds and act as natural reservoirs for pollinators and regional biodiversity.

- **Sustainable Agriculture**

This was mainly the practice of the ***Apatani Community of Arunachal Pradesh***; they follow ***Fish-cum-Paddy culture***. Here at the time of the sowing of paddy seeds they throw small fishes into the field which they buy at subsidised rates from the government-owned fish farms. By the time paddy grows, these fish become large in size to be sold in the market, which in return gives a handsome amount. Fish enhances productivity by 10-15% as, by providing input through fish excreta, it controls the growth of algae and weeds and promotes tillering of rice through movement of fish inside the field. Thus, the system requires minimal external inputs, efficiently utilises available water resources and supports both food production and ecological balance.

- **Water Conservation and Climate Adaptation**

For generations communities living in drought-prone regions have relied upon local knowledge to manage scarcity of water resources. Among them are the ***Bhill communities of Rajasthan and Madhya Pradesh***. They practise ***Gravity based irrigation*** i.e., in hilly areas the Bhil communities cut running streams to create channels that direct stream water to their fields. Thus, they utilise gravity to irrigate their fields. This method efficiently allows water channels to flow to the crops using the natural topography of the land.

They also practise ***Bunding and Gully Plugging***, in which farmers collectively identify and block small, developing channels caused by seasonal rainwater run-off. It acts as check dams and reduces the velocity of flash dams.

- **Coastal Resilience and Disaster Preparedness**

The relevance of indigenous knowledge is not only limited to forest and agriculture but also extends to disaster preparedness and coastal resilience that is acquired through generations of close interactions with ecosystems. The *Nicobareese communities*, for instance, have relied upon observations of environmental changes, coastal patterns, water quality, and ecological signals to navigate risks associated with the sea. Such knowledge highlights the value of integrating traditional ecological knowledge into contemporary disaster-risk deduction strategies.

Collectively, these examples challenge the assumption that climate solutions only arise from modern science and technology. These practices disclose that indigenous knowledge is not merely cultural heritage; it is a living repository of climate knowledge that would help humans to co-exist sustainably with nature. As per a report issued by IPCC in 2014 it stated *"indigenous, local, and traditional knowledge systems and practices, including indigenous peoples' holistic view of community and environment, are a major resource for adapting to climate change"*¹. It further additionally acknowledged that *"indigenous and local knowledge can contribute to overcoming the combined challenges of climate change, food security, biodiversity conservation, combating desertification and land degradation"*².

IV. CONTEMPORARY CHALLENGES

Despite increasing global acceptance of Traditional Ecological Knowledge by scientific institutions, the development projects continue to treat the indigenous communities' lands as sites for economic exploitation that could be compensated merely through money and houses instead of treating them as the repositories of wisdom that have been acquired through generations. This reality is reflected in two contemporary controversies which expose the limitations of India's present legal framework.

A. HASDEO ARAND FOREST PROTESTS: CHHATTISGARH

- Ecological Significance

It is a sprawling forest in the northern part of Chattisgarh. A powerful metaphor used by the environmental activist i.e, *"If Madhya Pradesh is the heart of India, then Hasdeo Arand is its lungs"*, which shows its ecological importance. As per the reports of **Indian Council of Forestry Research and Education (ICFRE)** and **Wildlife Institute of India (WII)** states

¹ Fifth Assessment Report (AR5): Climate Change, IPCC, 2014

² Special Report on Climate Change and Land, IPCC, 2019

about “640 *distinct floral species* are recorded here. It also consists of 25 *mammal species* out of which 9 *species* fall into *Endangered Zone* and 92 *species of bird* and home to about 10,000-12,000 *indigenous people* such as Gond, Oraon etc. The forest also serves as a vital habitat and migratory passage for an estimated 40 to 50 endangered *Asian Elephants* moving across the central Indian landscape”³. The Hasdeo Arand has also been termed as “***largest unfragmented forests***” in central India consisting of Pristine Sal and Teak Forests as per 2021 report on the region by ICFRE.

- Community Resistance

Despite being of such ecological importance, a biodiversity hotspot and home to thousands of species, forest clearance was allowed for mining activities. To this, indigenous communities responded through sustained and largely non-violent resistance. Such as-

- I. Around 350 tribal men, women and children led the ***Padayatra***, walking from Surjuga District to Raipur on foot, walking for about 10 days, covering 300-330 km.
- II. They also recreated the famous ***Chipko Movement*** as the Adivasi women rushed into the woods at dawn and wrapped their arms tightly around the ancient sal and teak trees.
- III. ***Continuous Sit-Ins*** were done by physically sitting or sleeping on the main driveway of coal blocks and preventing the heavy machinery from foming out.

- Consent or Compliance?

As per the ‘***Forest Rights Act (FRA) 2006***’⁴ and the ‘***Panchayats (Extension to Scheduled Areas) Act 1996***’⁵, “*prior recommendation and consultation with Gram Sabha is required before mining operations.*” And as per the statutory authorities, all the due process has been followed and all the consultation process has been complied with. But as per a press conference in Delhi, “***By friends of Hasdeo Arand***” alleged that “***fake gram sabhas were constituted to indicate ‘consent’ by the tribal people for mining activities.***”⁶

³ Wildlife Institute of India (2021). Biodiversity assessment with emphasis on select faunal groups in the Hasdeo Arand Coal Field, Chhattisgarh: Technical report. Wildlife Institute of India, Dehradun.

⁴ The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, §3(1)(i), 6(1), No. 2, Acts of Parliament, 2007 (India).

⁵ The Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996, § 4(i), 4(k), 4(l), No. 40, Acts of Parliament, 1996 (India).

⁶ Press Release, All India Kisan Sabha, Adivasis of Hasdeo Aranya Engaged in a Historic Decade-Long Struggle to Save Their Forests, Life, Livelihood & Identity (May 26, 2022),

Thus, Hasdeo Arand is more than a mere local environmental issue. It symbolises a broader paradox: *indigenous communities are celebrated as custodians of the environment*, yet they continue to *struggle for meaningful participation in decisions concerning the lands they have protected for generations*.

B. THE GREAT NICOBAR DEVELOPMENT PROJECT CONTROVERSY

- Knowledge rooted in the Island

The Shompen and Nicobarese communities have lived within one of India's most fragile ecosystems. They have adapted their lifestyles to the rhythms of the forest and the sea. For centuries, generations living in dense tropical forests have enabled them to understand the *seasonal availability of resources, wildlife behaviour, medicinal plants*, etc. Further, the Nicobarese possess knowledge regarding *tides, currents, weather patterns, and coastal changes* that helps them to deal with natural disasters. Such ways of life represent traditional ecological knowledge developed through generations of observation and interaction with nature.

- Custodians of Fragile Ecosystem

The ecological significance of Great Nicobar extends far beyond its strategic location. The creatures that have been living since the time of dinosaurs are the **Leatherback Sea Turtle**. These are the world's largest turtle species, and their biggest nesting ground is located at **Galathea Bay**, which is in the Great Nicobar Islands. The island also consists of **Nicobar Long-Tail Macaque, Nicobar Megapore, Tree Shrew** and about **16,150 coral colonies**. Thus, it was declared as a *Biosphere Reserve* in 2013 by UNESCO.

- Whose voice counts?

The controversy surrounding the Great Nicobar Project Development Project extends to not only ecological concerns but also to questions of indigenous participation.

As per several independent reports:-

- “The massive project covers around **166 sq km** of land out of which about **84 sq km** of project land falls within a notified Tribal reserve under the

Andaman and Nicobar Islands (Protection of Aboriginal Tribes) Regulation, 1956.”⁷

- Survival International argued before the United Nations that the project would act as a “*death knell to Shompen people*”, ⁸and thus the genocide experts urging the President to stop the Great Nicobar Project.
- “In regard to **Gram Sabha consent**, there had been allegations that mandatory representation of Scheduled Tribe members under the **Forest Rights Act, 2006**, and **quorum requirements** were not fully satisfied⁹.”
- The independent analysis also revealed that the **Environmental Impact Assessment Report** that paved the way for the mega project was prepared merely within a span of 7 days. “The *EIA report was short and incomplete, and it was selectively presented.*”¹⁰

When communities who have lived together with forests and coasts have lost meaningful participation in decisions affecting their homelands, traditional ecological knowledge is also placed at risk. Climate governance cannot claim to protect biodiversity while overlooking the communities whose ways of life have contributed towards its preservation and protection.

V. JUDICIAL PROTECTION: BETWEEN CONSERVATION AND DEVELOPMENT

The environmental jurisprudence in India has been showing two contrasting trends of conservation and development.

- Courts Upholding Environment Protection

In **Samatha v. State of A.P. & Ors**¹¹, the bench struck down mining leases granted to private companies in the Scheduled Areas, holding that even though the State itself grants mining leases to non-tribals in tribal agency tracts, they'll be null and void, and that tribal land constitutes the communities' “*primary source of social, economic and cultural dignity, protected under the 5th schedule*”. Although the judgement did not expressly mention

⁷ Vaishnavi Rathore, *On the Great Nicobar Island, Why the Future Is Fearful*, Scroll.in (Nov. 9, 2024)

⁸ 'Death Knell for Shompen People': Genocide Experts Urge President to Stop Great Nicobar Mega Project, The Wire (Feb. 7, 2024)

⁹ Abhinay Lakshman, *Gram Sabhas that gave nod to Nicobar project did not have mandatory 50% quorum*, The Hindu (May 6, 2026)

¹⁰ Aathira Perinchery, *In Great Nicobar, an EIA Points the Way for a Megaproject*, The Wire Science (Jan. 11, 2022)

¹¹ *Samatha v. State of A.P.*, (1997) 8 S.C.C. 191 (India).

traditional ecological knowledge, the protection of ancestral territories indirectly safeguarded the knowledge systems that coexisted with these landscapes. Likewise, in **Orissa Mining Corporation Ltd. v. Union of India & Ors.**¹², the Supreme Court held that mining could not be proceeded with in scheduled areas without the *prior approval of the Gram Sabha*, as it is authorised to determine the nature and extent of individual and community forest rights that may be given to the forest-dwelling STs and other TFDs within that jurisdiction. The Court observed that their forest rights on ancestral lands and habitat were not adequately recognised, resulting in a long-standing injustice to these communities, *“who are integral to the very survival and sustainability of the forest ecosystem.”*

However, this pro-environment approach has not been consistent.

- Courts Prioritising Development

In **Narmada Bachao Andolan vs Union Of India & Ors.**¹³, the Court, with a 2:1 majority, held that the Sardar Sarovar Dam on the Narmada has a valid environmental clearance. It opined that the *‘displacement of the tribals and others would not per se result in violation of their fundamental rights;’* and the fact that relocation would cut off the relationship of such communities with their environment and ultimately erode generations of traditional ecological knowledge was not even considered by the Court. In **Hasdeo Aranya Bachao Sangharsh Samiti vs Union Of India & Ors.**¹⁴, the bench dismissed the petition by Samiti and the villagers of Ghatbarra, holding that the Central government had already approved the use of forest land for mining purposes back in 2012, and *giving tribal communities their 'Community forest rights' in 2013 was a legal mistake*. A right given by mistake is void ab initio, and hence the Court ruled that the tribal people could not fight for land they technically 'never owned' under state paperwork, and any loss of their ancestral land would simply be compensated in monetary terms. Recently in **Ashish Kothari v. Ministry of Environment, Forest and Climate Change & Ors.**¹⁵, the NGT set aside allegations against the Great Nicobar Port and Township Project and held that the forest and environmental clearances already complied with

¹² *Orissa Mining Corp. v. Ministry of Env't & Forests*, (2013) 6 S.C.C. 476 (India).

¹³ *Narmada Bachao Andolan v. Union of India*, (2000) 10 S.C.C. 664 (India).

¹⁴ *Hasdeo Aranya Bachao Sangharsh Samiti v. Union of India*, W.P. (C) No. 1346 of 2016 (Chhat. H.C. Oct. 8, 2025) (India).

¹⁵ *Ashish Kothari v. Ministry of Env't, Forest & Climate Change*, Original Application No. 93/2024/EZ (N.G.T. Feb. 16, 2026) (India).

the prescribed conditions. On tribal welfare, the Tribunal completely relied on the EAC's findings that all the statutory safeguards had been satisfied. But the long-standing relationship of the environment with indigenous communities and their traditional ecological knowledge remained outside the court's consideration.

Taken together, these cases reveal a deeper question that whether the courts should merely verify whether the statutory procedures have been followed, or should they also examine whether environmental justice has genuinely been achieved?

VI. THE MISSING LINK IN INDIA'S LEGAL FRAMEWORK

If India's environmental laws recognise indigenous communities, why do conflicts like Hasdeo Arand and Great Nicobar continue to exist? Thus, here the problem is not the implementation of environmental laws but the absence of legal recognition of **Traditional Ecological Knowledge (TEK)**. This omission has profound consequences.

When forests are cut, the law measures hectares lost. When wildlife habitats are destroyed, the law records the species at risk. When the communities are displaced, it provides compensation and rehabilitation. *What it doesn't measure is the centuries-old ecological wisdom* that includes the knowledge of forests, sustainable harvesting, medicinal plants, climate adaptation, etc.

Thus, India's climate governance suffers from a fundamental paradox, i.e., it celebrates indigenous knowledge in policy decisions while failing to protect the very condition that allows that knowledge to exist and continue. Therefore, *recognising TEK as a legally protected right would shift the indigenous communities from the margins to the centre of climate governance*, which would ensure that not only the landscape but also the knowledge systems that have sustained the environment would also be protected.

VII. REIMAGINING INDIA'S ENVIRONMENTAL LAW

From our above discussion we thus come to know that if climate governance wants to preserve ecosystems, then it also has to preserve the knowledge systems that have sustained these ecosystems for centuries. Thus,

- **Firstly**, India should expressly recognise “**Traditional Ecological Knowledge**”¹⁶ as an independent *environmental asset*. The Environmental Impact Assessments should not only evaluate biodiversity loss and carbon emissions but also the loss of ecological wisdom embedded within them.
- **Secondly**, mere consultation should transform into *co-governance*. Gram sabhas should not merely be consulted before the granting of environmental clearances; rather, they should participate throughout the lifecycle of the project, i.e., from the project appraisal to post-clearance compliance.

Finally, India can draw solutions from global experiences. In **New Zealand**, the **Māori** are integrated into environmental governance, as it recognised ‘*the Whanganui River as a legal person and is governed jointly by the State and Māori guardians*’¹⁷. Similarly, **Australia**, through its ‘**Indigenous Ranger Programme**’,¹⁸ allows **Aboriginal and Torres Strait Islander Communities** to ‘*manage forests, biodiversity and wildfire risks using traditional ecological knowledge*’. India can similarly transform indigenous communities from mere consultees to co-governors by following these types of models.

VIII. CONCLUSION

Perhaps the sharpest irony in climate governance is that the world keeps searching for solutions in policies, papers and labs while indigenous communities have been carrying the unwritten answers for centuries. Their due care flourished the forests and preserved the fauna long before any authority drafted a climate plan. Over the years, law has started creating room for their participation in climate governance, yet it treats the knowledge behind that stewardship as an afterthought and not as its foundation.

Can a forest really be protected while neglecting its custodians? The knowledge which keeps rivers clean and soil fertile is not a mere cultural heritage but an active discipline that continues to be practised and refined.

Though better technology and stronger institutions matter, they are not the whole answer. Before any lab-produced climate model, that expertise already existed. It was passed down

¹⁶ Rawshan Ara Begum et al., *Point of Departure and Key Concepts*, in Climate Change 2022: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change 121 (Hans-Otto Pörtner et al. eds., 2022),

¹⁷ Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, § 14 and 18 (N.Z.)

¹⁸ *Indigenous Rangers Program (IRP)*, Nat’l Indigenous Australians Agency

through generations who read the land like a living instrument, long before anyone called it a science. The Convention on Biological Diversity recognised the same in 1992 and committed member states to preserve and maintain such traditional knowledge. Three decades later, that commitment still waits to be recognised.

The law has begun to recognise the custodians. It must now recognise their knowledge.