

Traditional Knowledge and Indigenous Practices in India: Preservation, Promotion, and Pandit Deendayal Upadhyaya's Vision as an Alternative Development Model

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Abstract: This article examines India's traditional knowledge systems and indigenous practices, covering traditional agriculture, craftwork, Ayurveda, and community-based environmental management, through the twin lenses of preservation and contemporary policy engagement. It situates these practices within Pandit Deendayal Upadhyaya's idea of Integral Humanism, which valorizes indigenous knowledge not only as cultural heritage but as a viable alternative to Western-driven development paradigms. Drawing on national initiatives, international frameworks, and scholarship on intellectual-property challenges and biopiracy, the article argues for pluralistic, community-centred governance of traditional knowledge systems. It concludes with policy recommendations to strengthen community rights, participatory documentation, equitable benefit-sharing, and integrative research that respects epistemic pluralism.

Keywords: Traditional Knowledge Systems, Integral Humanism, Development Model

1. Introduction:

Traditional Knowledge Systems (TKS) represent locally rooted bodies of knowledge, skills, and practices transmitted orally and experientially across generations. In India, such systems are deeply embedded in everyday life and have historically sustained livelihoods, health care, cultural identity, and ecological balance (Chakrabarty & Kaur, 2021). They include a wide range of domains: traditional agricultural practices such as mixed cropping, seed conservation, and water harvesting; craft and artisanal skills in textiles, pottery, and metallurgy; indigenous health systems including Ayurveda, Siddha, and Unani; and environmental knowledge based on the observation of seasonal cycles, soil fertility, and biodiversity (EAC-PM, 2022). Beyond their utilitarian value, these systems reflect an epistemology that emphasizes harmony between human beings, society, and nature.

Closely related to this discourse is the contemporary field of Indian Knowledge Systems (IKS), which has gained renewed attention in both policy and academia. The IKS framework seeks to recognize and institutionalize India's vast reservoir of indigenous knowledge, ranging from Vedic mathematics and ancient sciences to sustainable architecture, food practices, and philosophical traditions, as a foundation for innovation and nation-building (AICTE, 2020). By situating these systems within educational curricula and research institutions, IKS initiatives aim to bridge historical knowledge with contemporary challenges, promoting self-reliance (*Atmanirbharta*) and epistemic plurality (NITI Aayog, 2022).

What distinguishes both TKS and IKS from dominant Western-driven models of knowledge and development is their holistic, community-centered, and ecologically sensitive orientation. Unlike linear progress models privileging industrialized production, these systems emphasize sustainability, reciprocity with the environment, and cultural continuity (UNESCO, 2017). Such perspectives are increasingly relevant in addressing contemporary crises, climate change, biodiversity erosion, and widening health inequities, where conventional development paradigms show clear limitations.

In recognition of their potential, Indian policymakers have taken several steps to document, safeguard, and promote traditional and indigenous knowledge. The Traditional Knowledge Digital Library provides a defensive mechanism against biopiracy by codifying Ayurvedic and other medicinal formulations for international patent examiners (Yadav, 2024). The National Innovation Foundation works to identify, support, and scale grassroots innovations rooted in community knowledge (NIF, 2023). At the same time, IKS divisions under the Ministry of Education have sought to integrate indigenous epistemologies into higher education and research (AICTE, 2020). While these initiatives signal progress, challenges remain in intellectual property rights, equitable benefit sharing, and the ethics of documentation, particularly given that much of this knowledge is orally transmitted and collectively owned (Dasmohapatra, 2020).

This article also situates the debate within Pandit Deendayal Upadhyaya's philosophy of Integral Humanism. Upadhyaya argued that India's development trajectory must be rooted in its indigenous values and knowledge systems, which he considered not relics of the past but living resources for holistic development (Upadhyaya, 1965/2017; Singh, 2023). For him, traditional knowledge represented a synthesis of material, social, and spiritual well-being, an approach aligning cultural identity with ecological responsibility.

By examining institutional initiatives, philosophical underpinnings, and ongoing challenges, this article contends that the revitalization of TKS and IKS is essential not only for safeguarding cultural heritage but also for advancing sustainable, inclusive, and future-ready development.

2. Conceptual and Theoretical Framing: Integral Humanism and the Value of Indigenous Knowledge

Pandit Deendayal Upadhyaya, a prominent political thinker and philosopher, articulated the doctrine of Integral Humanism as a critique of both Western liberalism and Marxist materialism. Formally adopted as the guiding philosophy of the Bharatiya Jana Sangh in 1965, Integral Humanism advocates for development rooted in India's civilizational values, emphasizing harmony between material progress and spiritual well-being (Singh, 2023). Unlike Western development paradigms, which often privilege economic growth and industrialization, Upadhyaya envisioned a balanced model addressing the needs of the individual, society, and environment simultaneously.

A core aspect of Integral Humanism is its privileging of home-grown institutions and practices over the wholesale importation of foreign models. In this context, TKS are not treated as antiquated relics or folklore but as living, evolving repositories of contextually adapted technologies, social ethics, and cultural practices. Whether in agriculture, craft traditions, or indigenous medicine, these knowledge systems embody ecological restraint, community solidarity, and self-reliance, principles central to Upadhyaya's vision of a decentralized and plural economy (Dharmalingam, 2025).

Contemporary scholars argue that Upadhyaya's framework validates culturally embedded knowledge systems as integral to India's political economy and moral imagination (Singh, 2023). This perspective aligns with broader debates in development studies that critique the hegemony of reductionist modernization theories. For instance, scholars in post-development and decolonial studies highlight the importance of epistemic diversity, where indigenous and local knowledges are recognized as legitimate and valuable systems of thought (Escobar, 2018). By situating TKS within the framework of Integral Humanism, one can see them not only as heritage but also as viable alternatives that enhance sustainability, resilience, and social justice.

Furthermore, epistemic pluralism, the recognition that multiple systems of knowledge can coexist and inform policy, creates openings for integrating TKS into modern governance. In food security, for example, farmer-managed seed systems and agroecological practices preserve biodiversity and enhance resilience to climate variability (EAC-PM, 2022). In healthcare, Ayurveda and other indigenous systems provide affordable, culturally resonant approaches that complement biomedicine. Such integration reflects Upadhyaya's insistence on development that is endogenous, ethically grounded, and responsive to India's social realities.

In this way, Integral Humanism provides not only a philosophical foundation but also a practical framework for valuing indigenous knowledge. It underscores the idea that authentic development cannot be achieved through imitation of Western paradigms alone but must draw strength from India's own intellectual and cultural traditions.

3. National Institutional Responses: Documentation, Protection, and Promotion

India has pioneered several institutional and programmatic responses to document, protect, and promote TKS, reflecting both defensive strategies against misappropriation and proactive initiatives for revitalization. These interventions aim to balance intellectual property concerns, community participation, and cultural preservation. Three key mechanisms stand out: the Traditional Knowledge Digital Library, the National Innovation Foundation, and the role of UNESCO's international safeguarding frameworks.

The Traditional Knowledge Digital Library (TKDL)

Launched in 2001 as a collaboration between the Council of Scientific and Industrial Research (CSIR) and the Ministry of AYUSH, the TKDL marked a watershed moment in India's approach to protecting indigenous

knowledge (TKDL, 2023). TKDL was conceived as a defensive intellectual property (IP) tool to prevent biopiracy, particularly the misappropriation of Ayurvedic, Siddha, Unani, and Sowa Rigpa medicinal knowledge by multinational corporations and foreign patent offices. By systematically translating over 200,000 formulations into five major international languages (English, French, German, Japanese, and Spanish), TKDL ensured that traditional medicinal knowledge could be recognized as “prior art” during patent examinations worldwide (Yadav, 2024).

The effectiveness of TKDL has been demonstrated in several high-profile cases where questionable patent claims on turmeric, neem, and basmati rice were successfully contested (Raza & Parween, 2025). Importantly, TKDL illustrates how documentation, if undertaken with sensitivity to provenance, can serve dual purposes: it protects communities from exploitation and simultaneously asserts India’s sovereignty over its cultural and intellectual heritage. However, scholars have noted challenges, including concerns about whether community consent is adequately secured and whether codification risks decontextualizing living knowledge traditions (Meena & Dhayal, 2025).

National Innovation Foundation (NIF) and Grassroots Recognition

While TKDL adopts a defensive posture, the National Innovation Foundation–India (NIF) promotes proactive valorization of grassroots knowledge. Established in 2000 under the Department of Science and Technology, NIF identifies, documents, validates, and scales local innovations and traditional practices (NIF, 2023). Its initiatives include the Honeybee Network, which connects grassroots innovators, and mechanisms for securing intellectual property rights, such as patents or plant variety protection, for local practitioners.

Unlike TKDL, which focuses primarily on medicinal systems, NIF’s scope spans agriculture, biodiversity, crafts, and everyday technologies. The foundation emphasizes benefit-sharing, fair recognition, and community empowerment, turning traditional creativity into sustainable livelihoods. For example, NIF has supported herbal healers in securing formal recognition and farmers in scaling low-cost, ecologically adapted innovations (Gupta, 2016). This model highlights the importance of inclusivity, ensuring that knowledge holders are not reduced to data providers but are instead acknowledged as innovators and beneficiaries.

UNESCO and International Safeguarding Frameworks

At the international level, UNESCO’s Convention for the Safeguarding of the Intangible Cultural Heritage (2003) provides normative frameworks for the recognition and protection of TKS. India, a signatory since 2005, has inscribed several practices on UNESCO’s Representative List of Intangible Cultural Heritage, including yoga, Kumbh Mela, and certain craft traditions (UNESCO, 2017). Such recognition not only affirms cultural value but also mobilizes resources for capacity building, transmission, and revitalization of traditions that might otherwise face decline due to economic pressures or generational discontinuity.

These global mechanisms complement national efforts by situating Indian TKS within broader discussions on cultural diversity, sustainability, and human rights. They encourage states to create safeguarding plans, community-based inventories, and educational programs. However, critiques point out that international recognition, while symbolically powerful, must be coupled with local institutional support to ensure living practices remain viable in their social contexts (Kurin, 2007).

Together, TKDL, NIF, and UNESCO frameworks illustrate a layered approach to traditional knowledge governance: defensive protection, grassroots valorization, and international recognition. While challenges remain, particularly around equitable benefit-sharing, community participation, and avoiding the commodification of culture, India’s institutional architecture demonstrates a dynamic balance between safeguarding heritage and enabling innovation. These efforts, when viewed through the lens of epistemic pluralism and Integral Humanism, underline the enduring value of indigenous knowledge in shaping sustainable and inclusive futures.

4. Case Studies: Traditional Agriculture, Craftwork, and Ayurveda

Traditional Agricultural Practices

India’s agricultural heritage is deeply rooted in localized systems of ecological knowledge that sustain productivity, biodiversity, and resilience. Practices such as mixed cropping, crop rotation, agroforestry, and

indigenous water-harvesting systems embody centuries of empirical experimentation (Rosset & Altieri, 2017). Seed-saving traditions, particularly through the preservation of landraces, enable farmers to cultivate varieties resilient to pests, drought, and climatic fluctuations. Community seed banks, such as those pioneered in states like Odisha and Andhra Pradesh, not only conserve genetic diversity but also ensure that farmers retain agency over their planting material (Vernooy, Shrestha, & Sthapit, 2015). These practices align with global calls for agroecological transitions and climate adaptation, emphasizing participatory research led by farmers rather than imposed top-down interventions (National Innovation Foundation, 2023). The resilience embedded in such systems underscores the value of traditional agricultural knowledge as a critical complement to scientific approaches in food security and sustainability discourses.

Craftwork and Artisanal Knowledge

India's artisanal craft traditions, ranging from handloom weaving and pottery to metalwork and woodcraft, are not only aesthetic expressions but also repositories of indigenous knowledge systems. These crafts are often transmitted through apprenticeship and kinship-based learning, embedding intangible cultural values within tangible products (UNESCO, 2013). Protecting craft knowledge requires a multi-pronged approach: intellectual property rights such as geographical indications (e.g., Banarasi sarees, Kanchipuram silk), support for design innovation, and sustainable market access mechanisms (EAC-PM, 2020). Initiatives like rural craft clusters and design incubation centers have sought to bridge tradition and modern markets, providing artisans with fair-trade opportunities and exposure to contemporary consumer preferences (Dhamija & Jain, 1989). Yet, challenges persist, particularly in ensuring that artisans capture equitable economic value without cultural dilution. Preservation of craftwork therefore involves safeguarding traditional skills while innovating livelihood frameworks that make artisanry attractive for younger generations.

Ayurveda and Traditional Medicine

Ayurveda, one of the world's oldest structured medical systems, continues to play a central role in India's pluralistic health landscape. Rooted in holistic philosophies of balance and preventive care, Ayurveda encompasses detailed pharmacopoeia, materia medica, and lifestyle regimens tied to specific ecologies (Mukherjee et al., 2017). The Traditional Knowledge Digital Library has been instrumental in codifying Ayurvedic formulations in patent-searchable formats, preventing biopiracy and wrongful patenting of common knowledge (TKDL, 2023). Beyond documentation, state initiatives focus on quality standardization, clinical validation, and integration into broader public health frameworks through the Ministry of AYUSH. However, a delicate balance must be maintained: while scientific validation is necessary for broader acceptance, it should not erase the epistemological foundations of Ayurveda or dispossess local practitioners (Roberti & Tassinari, 2015). The challenge lies in enabling evidence-based pluralism in healthcare that respects community rights, ensures benefit-sharing, and avoids commodification of traditional healing systems.

Together, these case studies illustrate the vibrancy of traditional knowledge systems in agriculture, crafts, and medicine, and highlight their continued relevance to sustainability, livelihoods, and cultural identity in India. They also demonstrate the necessity of institutional safeguards and participatory frameworks to ensure that such knowledge systems are not only preserved but dynamically sustained.

5. Challenges: Appropriation, Documentation Ethics, and Legal Gaps

Biopiracy and Misappropriation

One of the most pressing challenges facing traditional knowledge systems in India is biopiracy, where corporations or researchers extract medicinal, agricultural, or cultural knowledge without community consent or equitable benefit sharing. Cases such as the patents on turmeric, neem, and basmati rice illustrate how indigenous formulations can be wrongly claimed as novel inventions in global intellectual-property regimes (Shiva, 2001). The Traditional Knowledge Digital Library has provided an effective defensive mechanism by translating codified knowledge from Ayurveda, Siddha, Unani, and Sowa Rigpa into formats accessible to patent examiners, thereby preventing wrongful grants (TKDL, 2023). However, TKDL primarily protects codified knowledge, leaving non-codified, orally transmitted practices more vulnerable to appropriation (Venugopal, 2025). Critics argue that questions remain regarding whose knowledge is digitized, the extent of community consultation, and who ultimately controls access to and benefits from such databases (Dasmohapatra, 2020).

Intellectual Property Rights (IPR) and the Limits of Current Law

Conventional IPR regimes, particularly patents, are poorly suited to TKS because they privilege individual novelty, exclusivity, and time-bound claims. By contrast, TKS are often collective, incremental, and intergenerational (Gupta, 2016). India has introduced alternative mechanisms, including geographical indications (GIs) for crafts and agricultural products, the Protection of Plant Varieties and Farmers' Rights Act (2001), and sui generis databases like TKDL. Yet, there is still no comprehensive statutory framework dedicated to safeguarding TKS or traditional cultural expressions as community-owned rights (EAC-PM, 2020). Key gaps remain around prior informed consent (PIC), equitable benefit sharing, and enforcement across transnational jurisdictions. These lacunae mean that communities often lack legal recourse when their knowledge is commercialized without authorization.

Documentation Ethics and Community Agency

Efforts to document TKS must balance the need for visibility and protection with the risk of exposure to exploitation. Digitization projects, if conducted without adequate safeguards, can decontextualize living traditions into data points, stripping them of cultural meanings and community control (Seth, 2025). Ethical protocols, covering free, prior, and informed consent, data sovereignty, and community participation as co-authors, are essential to ensure that documentation strengthens rather than disempowers knowledge holders. Participatory models, such as those adopted by grassroots innovation networks, demonstrate that communities should be recognized as stewards of their knowledge, with authority over how it is used, shared, and commercialized (Gupta, 2016). Without embedding ethics and agency into documentation frameworks, protective efforts risk reproducing extractive logics that traditional knowledge initiatives were meant to resist.

6. Reframing Development: Upadhyaya's Vision and Contemporary Relevance

Pandit Deendayal Upadhyaya's philosophy of Integral Humanism offers a compelling normative framework for reimagining development in ways that integrate traditional knowledge systems into policy and practice. Integral Humanism emphasizes holistic well-being by balancing material, social, and spiritual dimensions of life, while grounding progress in India's civilizational ethos (Upadhyaya, 1965/2017). This vision aligns with contemporary debates on decolonizing development, which critique the dominance of Western-centric, growth-driven paradigms and instead recognize plural pathways of modernity (Escobar, 2018).

From this perspective, TKS are not vestiges of a bygone past but dynamic, context-sensitive systems of knowledge that can inform sustainable and equitable futures. Upadhyaya's emphasis on *swadeshi* (endogenous solutions) and community self-reliance resonates with current advocacy for local food systems, decentralized health care, and circular economies (Gupta, 2016). Operationalizing his framework requires institutional pluralism, supporting community knowledge incubators, fostering academic partnerships that respect indigenous epistemologies, and creating hybrid governance models that combine legal protections with cultural recognition and equitable market facilitation (EAC-PM, 2020).

Crucially, Integral Humanism does not demand uncritical revivalism. Rather, it advocates the selective and dynamic incorporation of practices that demonstrate ecological sustainability, social justice, and reparative potential, while subjecting them to scientific dialogue and ethical evaluation (Rout, 2024). Recent scholarship has mapped Upadhyaya's vision onto the United Nations Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 12 (Responsible Consumption and Production), and SDG 15 (Life on Land). In these alignments, TKS offer tools for enhancing resilience, conserving biodiversity, and advancing equitable resource governance.

Thus, Upadhyaya's Integral Humanism remains highly relevant today: it reframes development as a culturally embedded, ethically grounded, and ecologically balanced pursuit, bridging India's traditional wisdom with global sustainability imperatives.

7. Policy Recommendations

Community-Led Documentation with Data Sovereignty

Documentation of traditional knowledge must prioritize community agency. While databases like the Traditional Knowledge Digital Library have demonstrated the utility of defensive documentation against biopiracy (TKDL, 2023), future initiatives should adopt community-led models. These should incorporate explicit consent, co-ownership of data, and locally governed access protocols to prevent decontextualization or exploitation. Community repositories, managed by local institutions, can complement national efforts by ensuring knowledge holders retain authority over how their knowledge is accessed and used (Dasmohapatra, 2020).

Sui Generis Legal Frameworks and Benefit Sharing

India requires a robust sui generis legal system that explicitly recognizes the collective, intergenerational nature of TKS. While the Patent Act, the Protection of Plant Varieties and Farmers' Rights Act (2001), and the Biological Diversity Act (2002) offer partial protections, significant gaps persist around prior informed consent (PIC) and equitable benefit sharing (EAC-PM, 2020). A dedicated TKS law could address these shortcomings by integrating international frameworks such as the Nagoya Protocol, ensuring both defensive protection and fair commercialization pathways (Yadav, 2024).

Support for Indigenous Innovation Economies

Institutions like the National Innovation Foundation provide a model for linking grassroots innovations with markets, design incubators, and micro-finance (NIF, 2023). Scaling such initiatives can foster indigenous innovation economies where knowledge holders capture the economic benefits, reducing dependency on intermediaries. Targeted policies should strengthen community enterprises and innovation clusters to ensure livelihood security.

Interdisciplinary Research with Epistemic Respect

Collaborative research must be designed as a partnership between scientists and knowledge holders, with epistemic respect at its core. Methodological pluralism, valuing oral, qualitative, and contextual knowledge alongside laboratory validation, should be institutionalized in research funding frameworks (UNESCO, 2013). Such co-designed studies enhance credibility while safeguarding cultural integrity.

Education, Transmission, and Apprenticeship

Preservation requires intergenerational transmission. Policies should support community-based agricultural schools, accredited training for traditional healers, and apprenticeship systems for artisans. Embedding TKS into curricula, without divorcing it from cultural protocols, ensures both livelihood sustainability and cultural continuity (EAC-PM, 2020).

Ethical Commercialization Pathways

Finally, commercialization must be pursued ethically. Regulatory frameworks should promote cooperative brands, geographical indications, and fair-trade models that guarantee traceability, fair pricing, and reinvestment into community capacities (Gupta, 2016). This approach balances market opportunities with cultural safeguarding.

8. Conclusion

India's traditional knowledge systems embody centuries of ecological adaptation, sustainable technologies, and community-based solidarities. Far from being relics of the past, they represent living reservoirs of cultural and practical significance that can enrich contemporary development thinking. Pandit Deendayal Upadhyaya's philosophy of Integral Humanism provides a compelling framework for engaging with these systems, urging that they be understood not as static heritage but as vital contributors to alternative, locally rooted paradigms of development (Upadhyaya, 1965/2017). By emphasizing self-reliance, moral-cultural continuity, and holistic well-being, Integral Humanism aligns with present-day debates on decolonizing development and advancing epistemic plurality (Escobar, 2018).

Institutional interventions such as the Traditional Knowledge Digital Library, the National Innovation Foundation, and UNESCO's Intangible Cultural Heritage mechanisms have established important precedents for documentation, safeguarding, and recognition (TKDL, 2023; NIF, 2023; UNESCO, 2013). Yet, these mechanisms often fall short when they operate in isolation from community governance, equitable benefit sharing, or comprehensive legal frameworks (Dasmohapatra, 2020). Without embedding local agency, defensive databases risk becoming extractive, and recognition without livelihood support can leave practitioners vulnerable.

A forward-looking policy approach must therefore combine defensive measures with proactive strategies of empowerment. Community-led documentation, sui generis legal protections, and ethical commercialization pathways can ensure that knowledge holders are not passive subjects of preservation but active agents of innovation and development (Gupta, 2016). Ethical markets, apprenticeship systems, and interdisciplinary research further create conditions for adaptive revival of TKS in ways that are both culturally grounded and globally relevant.

By respecting epistemic diversity and embedding community authority, India has the opportunity to craft a development trajectory that integrates tradition and modernity. In such a model, multiple knowledges collectively contribute to resilient, equitable, and sustainable futures.

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