



RESEARCH ARTICLE

Building Sustainable Livelihoods through Traditional Knowledge Systems in Indian Higher Education: An Integrative Theoretical Framework

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ABSTRACT

The marginalisation of indigenous and traditional knowledge systems within India's higher education landscape represents a critical gap at the intersection of epistemological justice, sustainable development, and rural livelihoods. This paper synthesises evidence from ecological, pedagogical, and economic literatures to construct an integrative framework for embedding Traditional Knowledge Systems (TKS) into higher education curricula as a vehicle for building sustainable livelihoods. Drawing on Sen's Capability Approach, Shiva's Ethnoscience paradigm, and Freire's Critical Pedagogy, the paper advances the TKS-SL Nexus Model, a five-pillar architecture that bridges epistemic plurality, community-embedded learning, bio-cultural conservation, entrepreneurial incubation, and policy co-creation. The paper identifies structural barriers, including curricular rigidity, credentialist hierarchies, and colonial epistemological residue, that systematically exclude traditional knowledge holders from the formal knowledge economy. Three pathways are theorised: (i) institutionalising TKS as accredited disciplinary modules within the National Education Policy 2020 framework; (ii) establishing Living Knowledge Laboratories as hybrid community–university interfaces; and (iii) deploying knowledge co-production protocols that valorise practitioner expertise alongside academic credentials. The framework carries implications for the United Nations Sustainable Development Goals (SDGs 4, 8, and 15) and contributes to emerging discourses on decolonised, pluriversal universities. This paper positions TKS integration not as cultural preservation alone, but as a transformative economic and ecological strategy for twenty-first century India.

Keywords: *Traditional Knowledge Systems; Sustainable Livelihoods; Indian Higher Education; National Education Policy 2020; Sustainable Development Goals; Bio-cultural Diversity*

INTRODUCTION

India's intellectual heritage is a vast, plurilingual, and ecologically embedded corpus spanning Ayurvedic pharmacology, Vedic mathematics, Vastu architecture, tribal agroforestry, artisanal craft technologies, and an extraordinary diversity of community-specific environmental knowledge systems accumulated over millennia. Yet the dominant architecture of Indian higher education, shaped through colonial standardisation, post-independence technocratic planning, and contemporary global rankings logic, has rendered this heritage epistemologically invisible. Traditional knowledge is taught, if at all, as folklore, heritage, or ethnographic curiosity, rather than as a rigorous, living system capable of generating contemporary livelihoods and ecological sustainability. This marginalisation has profound socioeconomic consequences. According to the Knowledge, Innovation and Enterprise (KIE) Report (UNCTAD, 2010), approximately 80 percent of the developing world's population depends on traditional knowledge for primary healthcare, food security, and environmental resource management. In India, the Ministry of Tribal Affairs estimates that over 700 Scheduled Tribes representing nearly 104 million individuals sustain

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DOI: <https://doi.org/10.63856/ijis/v2i8/00002>

How to cite this article: Ghosh A., (2026). Building Sustainable Livelihoods through Traditional Knowledge Systems in Indian Higher Education: An Integrative Theoretical Framework. *International Journal of Integrative Studies*, 2(8), 13-20.

Source of support: Nil

Conflict of interest: None.

Received: 25/07/2026 **Revised:** 05/08/2026 **Accepted:** 15/08/2026

Published: 19/08/2026

livelihoods almost entirely through knowledge systems transmitted outside formal institutional channels. The systematic exclusion of these systems from higher education not only constitutes an epistemic injustice (Fricker, 2007) but also an economic inefficiency of extraordinary magnitude: a wealth of bio-cultural capital that could anchor green economies, local enterprise ecosystems, and culturally resonant health and ecological systems remains uncertified, undervalued, and commercially non-remunerative.

The promulgation of the National Education Policy 2020 (NEP, 2020) offers an unprecedented, if underexplored, opportunity for structural redress. NEP 2020 explicitly mandates the integration of Indian knowledge traditions, vocational education, and community engagement into higher education, creating a policy window within which TKS-centred curricula can be legitimised, institutionalised, and economically operationalised. However, no comprehensive theoretical framework has been developed to guide such integration in a manner that simultaneously respects epistemic sovereignty, ensures livelihood viability, and satisfies pedagogical rigour. This theoretical review addresses this gap. It analysis cross-disciplinary insights from sustainability science, educational theory, cultural economics, and indigenous studies to construct the TKS-SL Nexus Model, an integrative framework that positions TKS not as supplementary cultural content but as a foundational epistemic resource for sustainable livelihood generation within and beyond the university.

2. Theoretical Foundations: Framing Traditional Knowledge in the Academy

2.1 Reconceptualising Traditional Knowledge: Beyond Folklorism

The term 'traditional knowledge' carries significant definitional instability. The World Intellectual Property Organization (WIPO) defines it as knowledge, know-how, skills, and practices developed and sustained by indigenous and local communities in a cycle of accumulation, refinement, and intergenerational transmission (WIPO, 2017). This definition, however, inadequately captures TKS as *episteme* as a self-consistent, internally coherent way of knowing rather than as merely a technical practice. Agrawal (1995) argues that the conventional binary between 'scientific' and 'traditional' knowledge reproduces colonial hierarchies of reason, dismissing non-Western epistemologies as pre-scientific approximations rather than genuinely rival ontological frameworks.

A more productive theoretical approach positions TKS as what Mignolo (2009) calls '*border thinking*', knowledge produced at the interface of subaltern experience and dominant systems, and as what Escobar (2018) theorises as '*relational ontologies*', in which humans, species, and ecological systems are understood as constitutively co-produced rather than separately existing. From this perspective, TKS encodes sophisticated empirical

knowledge: watershed hydrology in tank irrigation systems of Tamil Nadu, pharmacognosy in Manipuri Meitei medicine, or polyvarietal seed selection in Andhra Pradesh's Deccan dryland farming. These are not pre-modern survivals but active, adaptive knowledge systems that continue to evolve in response to ecological and social change. Critically, TKS must also be understood as dynamic rather than static. The assumption that traditional knowledge is fixed, timeless, and pre-modern is itself a colonial construction that has been used to deny its contemporary validity (Smith, 1999). Contemporary TKS practitioners in India are actively hybridising traditional ecological knowledge with digital documentation, mobile-based market access, and precision measurement, demonstrating that traditional and modern knowledge modes are not mutually exclusive but can form productive epistemic alliances.

2.2 Sustainable Livelihoods and Knowledge Economies

The Sustainable Livelihoods Framework (SLF), developed by Chambers and Conway (1992) and later operationalised through DFID's influential framework, defines a livelihood as sustainable when it can cope with and recover from stress and shocks while maintaining or enhancing capabilities, assets, and activities both currently and in the future without undermining the natural resource base. The SLF has been critiqued for its technocratic orientation (Ashley & Hussein, 2000) and its insufficient attention to power relations and epistemological factors. This paper extends the SLF through what we term the Epistemic Livelihood Asset (ELA), a sixth capital alongside human, social, natural, physical, and financial assets representing the stock of traditional, experiential, and community-embedded knowledge that individuals and communities can mobilise for livelihood generation.

The knowledge economy literature (Drucker, 1993; World Bank, 1999) has tended to equate knowledge with codified, accredited, institutional knowledge, a conflation that systematically devalues TKS as an economic resource. Against this tendency, Coombe (2001) and Srinivas (2012) have demonstrated that traditional knowledge can constitute a substantial competitive advantage in niche markets, green supply chains, pharmaceutical bioprospecting, and cultural tourism. The commercial success of GI-tagged products, Darjeeling tea, Kanchipuram silk, Kolhapuri chappals, attests to the market viability of TKS-rooted production when institutionally supported. Yet this commercialisation is itself contested, as Shiva (1993) has documented in the context of bio-piracy, highlighting the need for ethical frameworks governing TKS valorisation.

2.3 Theoretical Anchors: Sen, Freire, and Shiva

Three theoretical traditions anchor the TKS-SL Nexus Model developed in this paper. First, Amartya Sen's *Capability Approach* (1999) provides a normative

framework for evaluating TKS integration not by income generation alone but by its contribution to expanding the real freedoms, the capabilities that people have reason to value. Sen's framework rejects welfarist reductionism and insists on evaluating development interventions by whether they expand substantive freedoms: access to knowledge, meaningful work, cultural belonging, and ecological dignity. TKS-centred education, on this account, is valuable not merely instrumentally (for producing green entrepreneurs) but intrinsically, as an expansion of epistemic and cultural capabilities. Second, Paulo Freire's *Critical Pedagogy* (1970) provides the pedagogical architecture for TKS integration. Freire's critique of the 'banking model' of education, in which knowledge is deposited into passive recipients, resonates powerfully with conventional approaches to including traditional knowledge in curricula as museum pieces or appendices. Freirean pedagogy, by contrast, insists on *praxis*: the dialectical integration of reflection and action, of theoretical abstraction and lived practice. TKS integration, in this framework, requires not the transmission of fixed traditional content but the creation of genuine dialogical spaces in which traditional knowledge holders and academic institutions co-create understanding. Third, Vandana Shiva's *Ethnoscience* framework (1988) provides an epistemological defence of TKS validity. Shiva argues that modern Western science functions not as the only legitimate form of systematic inquiry but as one epistemological tradition among many, distinguished by its institutionalisation, accreditation, and claim to universality. Ethnoscience recovers the rigour, systematicity, and empirical grounding of traditional knowledge across domains from ecology to metallurgy to nutrition, arguing that its exclusion from formal knowledge institutions reflects political economy rather than epistemic inadequacy.

3. Structural Barriers to TKS Integration in Indian Higher Education

3.1 Colonial Epistemological Residue in Curriculum Design

India's higher education system bears the deep imprint of Macaulayan colonial curriculum design, whose explicit purpose was to produce administrative intermediaries conversant with Western knowledge and indifferent to indigenous intellectual traditions. While post-independence nationalist discourse valorised select traditional knowledge domains (most notably Sanskrit scholarship and Ayurveda), the broader architecture of curriculum, empirical method, disciplinary boundaries, and credentialist hierarchies, remained colonial in structure. Gupta (2006) demonstrates that the disciplines constituting Indian higher education, economics, physics, biology, law, are overwhelmingly organised around Euro-American disciplinary canons, with indigenous knowledge appearing, where it appears at all, as ethnographic data rather than

theoretical resource. This residue manifests in curricular design through what Quijano (2000) terms *coloniality of power*: the persistence of colonial hierarchies of knowledge and being long after formal colonial administration has ended. In the Indian higher education context, this means that TKS is structurally positioned as the object of academic inquiry (ethnobotany, anthropology, development studies) rather than as its subject, the source of theoretical categories, research questions, and methodological norms. Even in disciplines where TKS has direct relevance, such as agriculture, medicine, environmental science, and architecture, it is typically excluded from core disciplinary training and sequestered in elective or supplementary modules.

3.2 Credentialist Hierarchies and Knowledge Gatekeeping

A second structural barrier is the credentialist hierarchy that governs knowledge recognition in Indian higher education. The UGC's regulatory framework ties curriculum validity, faculty appointments, research funding, and institutional ranking to credentialed, peer-reviewed, English-language academic production, a framework that systematically disadvantages TKS knowledge holders, who typically possess deep experiential expertise without formal academic credentials. Karlekar (2018) has documented how this credentialist logic excludes master artisans, folk healers, and ecological practitioners from formal institutional roles even when their knowledge domains are directly relevant to institutional curricula. This credentialist gatekeeping operates not only at the level of faculty appointments but also at the level of knowledge validation: TKS-derived insights must typically be 'translated' into academic discourse, empirically tested using laboratory protocols, documented in peer-reviewed publications, integrated into recognised taxonomies, before they achieve institutional legitimacy. This translation process, while not inherently problematic, frequently involves epistemic violence: the stripping of contextual, relational, and spiritual dimensions that are constitutive of TKS meaning, leaving a residue of decontextualised empirical claims that may satisfy academic reviewers but misrepresent the original knowledge system.

3.3 Commodification Tensions and Intellectual Property Ambiguities

A third barrier concerns the complex intellectual property landscape governing TKS. India's Protection of Plant Varieties and Farmers' Rights Act (2001) and Biological Diversity Act (2002) provide some institutional protection for community-held traditional knowledge, and India's Traditional Knowledge Digital Library (TKDL) represents an important preventive documentation effort against bio-piracy. However, the integration of TKS into higher education curricula creates new and complex IP questions:

when universities build curricula around community-held traditional knowledge, who benefits economically from the resulting educational products, patents, and commercial innovations?

Shiva and Holla-Bhar (1996) have argued that institutional TKS integration frequently functions as a form of epistemic extraction, extracting knowledge value from

communities without adequate benefit-sharing, attribution, or community consent. The absence of robust community-university partnership frameworks governing benefit-sharing, co-authorship, and knowledge sovereignty represents a significant ethical and legal barrier to TKS integration at scale.

Table 1. Structural Barriers to TKS Integration in Indian Higher Education

Barrier Domain	Manifestation	Theoretical Reference
Epistemological	Colonial curriculum architecture; TKS as object, not subject of inquiry	Quijano (2000); Mignolo (2009); Gupta (2006)
Credentialist	UGC regulatory framework excludes non-credentialed knowledge holders from formal roles	Karlekar (2018); Fricker (2007)
Intellectual Property	Ambiguous ownership of community-held knowledge; bio-piracy risk; inadequate benefit-sharing	Shiva & Holla-Bhar (1996); WIPO (2017)
Pedagogical	Banking model incompatible with experiential, place-based TKS transmission	Freire (1970); Smith (1999)
Institutional	Rigid disciplinary boundaries; ranking metrics reward Euro-American knowledge production	Agrawal (1995); Escobar (2018)
Economic	Market access deficits; GI protection underutilised; value chain gaps for TKS-based products	Coombe (2001); Srinivas (2012)

4. The TKS-SL Nexus Model: An Integrative Theoretical Framework

The Traditional Knowledge Systems Sustainable Livelihoods Nexus Model (TKS-SL Nexus Model) proposed here represents a five-pillar architecture for integrating TKS into Indian higher education as a vehicle

for sustainable livelihood generation. The model is grounded in the three theoretical traditions identified in Section 2, responds to the structural barriers documented in Section 3, and is designed for operationalisation within the NEP 2020 policy framework

Table 2. The TKS-SL Nexus Model Five-Pillar Architecture

No.	Pillar	Core Principle	Institutional Mechanism	SDG Linkage
1	Epistemic Pluralism	Co-validity of TKS and Western science as legitimate epistemic systems	Pluriversal curriculum design; bilingual/multilingual course delivery	SDG 4.7: Education for Sustainable Development
2	Community-Embedded Learning	University-community interface as primary pedagogical site	Living Knowledge Laboratories; Community-as-Faculty protocols	SDG 4.4; SDG 8.3: Inclusive economic growth
3	Bio-Cultural Conservation	TKS integration as ecological and cultural heritage protection	Biocultural Field Schools; TKDL-university partnerships	SDG 15.9: Biodiversity mainstreaming
4	Entrepreneurial Incubation	TKS as competitive advantage in green and cultural economies	TKS Business Incubators; GI Commercialisation Cells	SDG 8.3; SDG 9: Innovation and industry
5	Policy Co-Creation	Knowledge holders as co-architects of educational and development policy	Community Advisory Boards; Traditional Knowledge Councils	SDG 16.7: Inclusive decision-making

4.1 Pillar One: Epistemic Pluralism

The first pillar, Epistemic Pluralism, addresses the foundational epistemological barrier: the assumption that Western scientific knowledge constitutes the only legitimate framework for higher education. Drawing on De Sousa Santos' (2014) concept of the *ecology of knowledges*, this pillar proposes that Indian universities operate from an explicit commitment to the co-validity of multiple knowledge traditions not as a concession to multiculturalism but as an epistemological principle grounded in the recognition that no single knowledge

tradition possesses comprehensive access to a complex, diverse, and dynamically evolving world. Operationally, epistemic pluralism requires curricular redesign at both the level of content (what is taught) and pedagogy (how it is taught). At the content level, this means embedding TKS-derived categories, *Panchabhuta* ecological ontology, *Rasa* theory in nutritional science, Vastu principles in built environment design as legitimate theoretical frameworks alongside Western scientific counterparts, not as exotic alternatives but as genuine intellectual tools with their own empirical grounding, logical coherence, and applied

relevance. At the pedagogical level, it requires what Grosfoguel (2011) calls ‘epistemic disobedience’: a willingness to teach from the global south and from below, using vernacular languages, oral formats, and community contexts as legitimate pedagogical modes.

4.2 Pillar Two: Community-Embedded Learning

The second pillar reconfigures the spatial and relational architecture of higher education by repositioning the university-community interface as a primary pedagogical site. This pillar is grounded in Freirean praxis and operationalised through two institutional innovations: Living Knowledge Laboratories (LKLs) and Community-as-Faculty (CAF) protocols. Living Knowledge Laboratories are hybrid community-university spaces located in villages, tribal settlements, urban artisan quarters, and agricultural communities where formal students and traditional knowledge practitioners engage in joint inquiry, documentation, and innovation. Unlike conventional fieldwork or community service learning, LKLs are designed as genuinely bidirectional learning spaces: students receive accredited academic credit for TKS-based learning, while community members receive skills in documentation, IP protection, market access, and business development. The LKL model draws on successful precedents, including the Honey Bee Network’s Grassroots Innovation Augmentation Network and the Barefoot College’s model of non-formal higher education. Community-as-Faculty protocols address the credentialist barrier by creating formal institutional roles for traditional knowledge holders within university structures, not as informants or consultants but as faculty members with rights to design curriculum, assess student work, and direct research. These protocols require regulatory innovation at the UGC level, including provisions for non-credentialed expert appointment analogous to industry practitioners’ provisions already in existence within some technical institutions.

4.3 Pillar Three: Bio-Cultural Conservation

The third pillar addresses the ecological dimension of TKS-based livelihoods, recognising that many traditional knowledge systems are constitutively linked to specific bio-cultural landscapes whose degradation makes TKS practice impossible. The integration of TKS into higher education thus has an important conservation function: by creating institutional demand for bio-cultural knowledge and material heirloom seed varieties, medicinal plant populations, traditional fishing grounds, forest commons, universities can contribute to maintaining the ecological conditions on which TKS-based livelihoods depend. Similarly, Biocultural Field Schools are proposed as the primary institutional mechanism for this pillar: residential learning programmes co-designed by universities, forest communities, and conservation organisations, in which

students spend extended periods in bio-culturally rich landscapes, learning TKS practices while contributing to documentation, ecological monitoring, and community-based conservation management. These schools connect to the TKDL and to international frameworks, including the Convention on Biological Diversity’s Nagoya Protocol on Access and Benefit Sharing, which provides legal infrastructure for equitable TKS utilisation.

4.4 Pillar Four: Entrepreneurial Incubation

The fourth pillar operationalises TKS as an economic resource by embedding entrepreneurial infrastructure within TKS-centred education. This pillar responds to the market access deficits that constrain TKS-based livelihoods: many traditional knowledge practitioners produce goods and services of genuine market value but lack the business skills, market intelligence, capital access, and IP protection needed to capture that value commercially. TKS Business Incubators housed within universities but operationally connected to community knowledge ecosystems provide infrastructure for product development, design prototyping, market research, GI tag applications, fair-trade certification, e-commerce platform access, and impact investment linkages. These incubators differ from conventional technology business incubators in three respects: they begin from community knowledge sovereignty rather than individual intellectual property; they incorporate non-market value (ecological, cultural, spiritual) alongside commercial value; and they adopt benefit-sharing governance structures that distribute economic returns to knowledge-holding communities rather than primarily to individual entrepreneurs.

4.5 Pillar Five: Policy Co-Creation

The fifth pillar addresses the governance architecture of TKS integration by insisting that traditional knowledge holders must be positioned as co-architects of educational and development policy rather than as beneficiaries or consultants. This pillar is grounded in Ostrom’s (1990) principles for common pool resource governance and operationalised through Traditional Knowledge Councils (TKCs), formally constituted advisory bodies within universities, UGC policy committees, and state higher education planning bodies, composed of traditional knowledge practitioners, community representatives, and academic researchers. Traditional Knowledge Councils provide institutional voice to communities in decisions affecting TKS curriculum design, research priorities, IP governance, benefit-sharing arrangements, and commercial development. This pillar addresses not only the justice dimension of TKS integration, ensuring that communities benefit from and have authority over their knowledge, but also the quality dimension: TKS-centred education that is not governed by knowledge holders risks distortion, misrepresentation, and epistemological dilution.

5. Implementation Pathways within the NEP 2020 Framework

The NEP 2020 document offers substantial, though as yet underutilised, scaffolding for TKS integration. It explicitly mandates the inclusion of Indian Knowledge Systems (IKS) as a core element of higher education, calls for multidisciplinary and holistic education, promotes community engagement, endorses multilingual instruction, and envisions universities as hubs of knowledge creation relevant to local and national development challenges. However, NEP 2020's IKS provisions remain at the level of aspiration: no detailed curriculum framework, no revised regulatory provisions for TKS-qualified faculty, no dedicated funding stream, and no monitoring framework for TKS integration have been formally articulated.

This paper proposes three implementation pathways through which the TKS-SL Nexus Model can be operationalised within the NEP 2020 framework:

- **Curricular Institutionalisation:** Developing TKS as accredited disciplinary modules within multidisciplinary university programmes, with UGC-approved syllabi, assessment frameworks, and credit equivalencies. This pathway requires regulatory innovation, including provisions for community-based

practical assessment, multilingual submission of coursework, and the incorporation of oral and performative knowledge transmission.

- **Living Knowledge Laboratories (LKLs):** Establishing a national network of LKLs as NEP 2020-mandated community engagement hubs, with dedicated funding under the Higher Education Financing Agency (HEFA) and governance co-shared with Traditional Knowledge Councils. An initial pilot of 25 LKLs across ecologically and culturally diverse regions, tribal forest communities, coastal fishing communities, dryland agricultural communities, artisan clusters, would provide an evidence base for national scaling.
- **Knowledge Co-Production Protocols:** Developing standardised protocols, endorsed by UGC and based on the Nagoya Protocol model, for community-university knowledge co-production, specifying community consent requirements, benefit-sharing formulas, authorship norms, and IP governance arrangements. These protocols would provide the regulatory and ethical infrastructure within which TKS integration can proceed equitably and at scale.

Table 3. TKS-SL Nexus Model Implementation Matrix within NEP 2020

Pillar	NEP 2020 Provision	Proposed Mechanism	Key Stakeholders
Epistemic Pluralism	IKS integration mandate (Cl. 4.27)	Pluriversal curriculum design; multilingual delivery	UGC; NCERT; State HE Depts.
Community-Embedded Learning	Community engagement (Cl. 11)	Living Knowledge Laboratories	Universities; Gram Panchayats; Tribal Councils
Bio-Cultural Conservation	Environmental education (Cl. 22.9)	Biocultural Field Schools; TKDL partnerships	MoEFCC; MoTA; Conservation NGOs
Entrepreneurial Incubation	Vocational education integration (Cl. 16)	TKS Business Incubators; GI Cells	MoMSME; SIDBI; Impact investors
Policy Co-Creation	Institutional autonomy (Cl. 10)	Traditional Knowledge Councils	UGC; AICTE; Community Leaders

6. Implications, Limitations, and Future Research

6.1 Theoretical Implications

The TKS-SL Nexus Model makes three primary contributions to theoretical discourse. First, it extends the Sustainable Livelihoods Framework by introducing the Epistemic Livelihood Asset as a sixth capital, providing conceptual infrastructure for recognising knowledge, and specifically traditional knowledge, as a resource that can be accumulated, deployed, and diminished in livelihood strategies. Second, it operationalises De Sousa Santos' 'ecology of knowledges' within the concrete institutional context of Indian higher education, translating an abstract epistemological commitment into a five-pillar programmatic architecture. Third, it enriches the capability approach literature by identifying epistemic capability, the freedom to know, teach, and innovate from one's own knowledge tradition, as a distinct human capability with

intrinsic value and instrumental importance for sustainable development.

6.2 Policy Implications

For policymakers, the TKS-SL Nexus Model suggests the urgent need for regulatory innovation within the UGC framework to create accreditation pathways for TKS-centred programmes, faculty appointment provisions for traditional knowledge holders, and IP governance standards for community-university knowledge partnerships. It further recommends that the Ministry of Education's IKS Division develop a dedicated TKS-Livelihoods Programme, analogous to but more structurally ambitious than the existing National Mission for Manuscripts, with dedicated funding, monitoring frameworks, and community governance requirements.

6.3 Limitations and Future Research

This theoretical review carries several limitations that future empirical research should address. First, the TKS-SL Nexus Model is developed primarily from secondary literature and theoretical synthesis; empirical testing through case studies, quasi-experimental designs, and participatory action research is essential to assess model validity and refine its components. Second, the paper's theoretical references draw heavily on Latin American decolonial scholarship and African epistemological frameworks; future work should engage more deeply with South and Southeast Asian theoretical traditions, including Indian philosophical epistemology, Buddhist pedagogical traditions, and Dravidian knowledge philosophy, as theoretical resources in their own right rather than simply objects of study.

Third, the paper has not addressed the significant internal diversity of TKS in India: the knowledge systems of Scheduled Tribes, artisan castes, pastoral communities, fishing communities, and highland cultivators are not equivalent but embed different epistemological commitments, institutional structures, and livelihood logics. Future research should develop domain-specific TKS integration models that are sensitive to this diversity, avoiding the homogenising tendencies that have characterised much 'indigenous knowledge' discourse. Fourth, the gendered dimensions of TKS, particularly the significant but frequently underdocumented role of women as primary TKS holders in domains from seed saving to herbal healing, warrant dedicated theoretical and empirical attention.

7. Conclusion

This paper has argued that the integration of Traditional Knowledge Systems into Indian higher education

represents not merely a cultural aspiration but a strategically vital educational and economic intervention. The systematic exclusion of TKS from formal higher education constitutes a double injustice: epistemological, in its denial of the validity and rigour of non-Western knowledge traditions; and economic, in its failure to mobilise an extraordinary stock of bio-cultural capital in support of sustainable livelihoods for India's most economically marginalised communities.

The TKS-SL Nexus Model provides an integrative five-pillar framework grounded in the Capability Approach, Critical Pedagogy, and Ethnoscience for reversing this exclusion. By institutionalising epistemic pluralism, creating community-embedded learning environments, protecting bio-cultural ecosystems, incubating TKS-based enterprises, and empowering traditional knowledge communities in educational governance, Indian universities can become genuine pluriversal institutions: sites of knowledge co-creation that honour the depth and diversity of India's intellectual heritage while generating the sustainable livelihoods and ecological resilience that twenty-first century development demands.

The urgency of this agenda is amplified by converging crises: the ecological limits that make conventional industrial development pathways increasingly untenable; the climate vulnerabilities that make traditional ecological knowledge increasingly indispensable; and the youth employment challenge that makes sustainable livelihood generation from India's rural knowledge heritage not merely desirable but essential. The National Education Policy 2020 has opened a policy window; the TKS-SL Nexus Model provides a theoretical map; what remains is the political will, institutional innovation, and genuine respect for India's knowledge plurality to walk through it.

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