

From Abandonment to Revival: Ghost Villages, Rural Out-Migration, and Sustainable Tourism Pathways in the Indian Himalayas — A Secondary Data Synthesis

Abstract

Uttarakhand, one of India's youngest Himalayan states, confronts a demographic crisis of profound socio-ecological consequence: over 1,700 villages now stand completely abandoned, with an additional 3,946 settlements reduced to fewer than ten households. This phenomenon — colloquially termed "ghost villages" — is not an isolated rural depopulation trend but a systemic manifestation of policy neglect, infrastructural deficit, agricultural non-viability, wildlife conflict, and climate stress that collectively render mountain livelihoods unsustainable for a majority of hill communities. Drawing exclusively on a synthesis of secondary data sources — including Census of India records, government commission reports, peer-reviewed studies, investigative journalism, and program evaluation documents — this paper proposes the Abandoned Settlement Revival through Sustainable Tourism (ARST) Framework, a conceptual model that integrates six interdependent revival dimensions: tourism infrastructure, community ownership, digital connectivity, cultural heritage preservation, policy reform, and ecological management. The ARST Framework is grounded in carrying capacity theory, community-based tourism (CBT) principles, sustainable livelihoods theory, and the political ecology of mountain depopulation. Secondary evidence demonstrates that while Uttarakhand's ₹27,000 crore tourism economy (2022–23) currently generates less than 10% local benefit capture, targeted homestay tourism initiatives at pilot sites (Khati and Wachham villages, Pithoragarh) have generated ₹90,000 per family within two months — evidence that the latent tourism potential of ghost village landscapes can be realised through community-owned enterprise models. The paper documents that 43% of migrated youth (ages 25–35) are returning to home villages when economic alternatives exist, and that 21.5% of returnees establish tourism-related enterprises, suggesting that sustainable tourism can function as a viable reverse migration catalyst. Critically, the paper identifies a structural implementation gap in existing policy instruments — the Vibrant Villages Programme, the UIDB Ghost Village Master Plan, and the Homestay Tourism Initiative — and argues that without community governance of tourism revenue and grassroots ecological stewardship, revival strategies risk replicating the economic extraction patterns that initially generated abandonment. The findings have implications for mountain tourism governance across the broader Hindu Kush Himalayan region.

Keywords: ghost villages; rural out-migration; sustainable tourism; Uttarakhand; Himalayas; community-based tourism; homestay tourism; reverse migration; mountain depopulation; ecological management; ARST Framework

1. INTRODUCTION

The Indian Himalayan state of Uttarakhand presents a paradox that lies at the intersection of tourism prosperity and demographic crisis. As a destination generating ₹27,000 crore in tourism revenue in 2022–23 and receiving millions of pilgrims, trekkers, and nature tourists annually, Uttarakhand projects an image of a thriving mountain tourism economy. Simultaneously, the state is witnessing one of the most severe rural depopulation processes in South Asian history: over 1,700 of its 16,793 villages now stand completely uninhabited, with an additional 3,946 settlements on the verge of extinction, having fewer than ten



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households remaining (Sharma, 2026; Uttarakhand News 24, 2026). These ghost villages — settlements that persist on revenue maps but are demographically extinct — are not marginal footnotes in Uttarakhand's development story; they are its defining challenge.

The scale and acceleration of village abandonment in Uttarakhand is sobering. Census of India data reveals that 1,048 villages were already uninhabited in 2011; by 2022, this figure had grown to between 1,700 and 1,792 — a 62–71% increase in eleven years (Dainik Tribune Online, 2026; Uttarakhand News 24, 2026). Approximately 300,000 houses across the state now stand locked and abandoned, their traditional stone architecture — paathar slate roofs and kaath-kholi wood carvings — slowly collapsing in the absence of occupants and maintenance (Dainik Tribune Online, 2026). Perhaps most alarmingly, 75% of youth from hill districts have migrated by age 25, severing the generational continuity of mountain farming communities and the ecological knowledge systems that sustained them (Sharma, 2026).

The intersection of ghost village depopulation with sustainable tourism is theoretically rich and practically urgent. Tourism researchers have increasingly recognised abandoned rural landscapes as distinctive heritage tourism products, attracting visitors seeking authenticity, solitude, and ecological immersion (Timothy, 2011; Tucker, 2016). Community-based tourism (CBT) scholarship has documented the potential of tourism enterprise to catalyse reverse migration in depopulated rural areas (Wearing & Neil, 2009; Scheyvens, 2002). Yet Uttarakhand's case presents a more complex challenge: the very conditions that create ghost village tourism appeal — remoteness, abandonment aesthetics, ecological recovery — are also the conditions that make tourism infrastructure development technically difficult and governance of tourism revenue structurally prone to external capture. The paradox is acute: if tourism development in ghost villages replicates the economic extraction patterns of Uttarakhand's existing tourism economy — where less than 10% of revenue accrues locally — it risks becoming another mechanism of exploitation rather than revival (Sharma, 2026).

This paper responds to this challenge through a secondary data synthesis methodology, drawing on Census records, government policy documents, program evaluations, investigative journalism, and available empirical studies to propose the Abandoned Settlement Revival through Sustainable Tourism (ARST) Framework. The framework integrates six interdependent revival dimensions and is positioned as a conceptual contribution to the emerging literature on ghost village tourism, mountain depopulation, and sustainable livelihoods in the Hindu Kush Himalayan region. The paper is structured as follows: Section 2 presents the secondary data methodology; Section 3 provides the theoretical foundation; Section 4 documents the scale and causes of abandonment; Section 5 analyses government revival initiatives; Section 6 presents the ARST Framework; Section 7 discusses ecological and cultural dimensions; Section 8 develops policy implications; and Section 9 presents the conclusion and future research agenda.

2. Methodology: Secondary Data Synthesis Approach

2.1. Rationale and Design

This paper employs a systematic secondary data synthesis methodology for framework development. Secondary data synthesis is epistemologically appropriate when three conditions are met: the research objective is conceptual framework building rather than hypothesis testing; the existing data landscape is sufficiently varied to support triangulation across source types; and the phenomenon under investigation is too geographically dispersed and politically sensitive for rapid primary data collection (Tranfield et al., 2003; Petticrew & Roberts, 2006). All three conditions characterise the ghost village research context: the ARST Framework is a conceptual contribution; secondary data sources span Census records, government

commissions, NGO evaluations, and investigative journalism; and ghost village access requires sustained fieldwork that this paper positions as a future research priority.

2.2. Data Sources and Selection

Secondary data were sourced from six categories: (1) official government documents, including Census of India 2011 data, Migration Commission reports, and state tourism policy documents; (2) investigative and long-form journalism from India Today, Deutsche Welle, Himalayan Geographic, and Dainik Tribune Online, selected for empirical specificity and documentary evidence; (3) program evaluations of government revival initiatives, including the Vibrant Villages Programme and UIDB Ghost Village Master Plan; (4) peer-reviewed academic literature on community-based tourism, mountain depopulation, and sustainable livelihoods; (5) NGO documentation from organizations active in Himalayan village revival (Spiti Ecosphere); and (6) industry and development reports on Uttarakhand tourism economics. Data were included if they met criteria of: specificity (named villages, quantified statistics), recency (2011–2026, with classic theoretical texts included regardless of date), and triangulability (claims verifiable across at least two independent source types). Aggregate tourism revenue figures and government budget allocations were accepted from single authoritative sources where no alternative existed.

2.3. Analytical Approach

Data were analysed through thematic synthesis (Thomas & Harden, 2008), iteratively mapping empirical findings onto emerging theoretical categories until analytical saturation — the point at which additional sources yielded no new framework dimensions — was reached. The resulting ARST Framework represents a grounded conceptual architecture in which each dimension is anchored in secondary empirical evidence rather than theoretical speculation. Framework dimensions were stress-tested against documented case study evidence — both successful (Kaza, Spiti Valley; Kibithoo, Arunachal Pradesh) and failed (Dungri, Uttarakhand) revival attempts — to ensure that the framework was generative of practical distinctions rather than merely descriptive of aspirations.

3. Theoretical Foundations

3.1. Political Ecology of Mountain Depopulation

The political ecology tradition provides the foundational lens through which ghost village formation is theorised in this paper. Blaikie and Brookfield's (1987) landmark work on land degradation and society established that rural abandonment is never simply a natural response to environmental marginality but is always mediated by political-economic structures that determine who bears the costs of ecological risk and who captures the benefits of resource extraction. Applied to Uttarakhand, political ecology directs attention to the structural conditions — centralised revenue allocation, plains-biased infrastructure investment, urban-centric employment policy — that systematically disadvantage mountain communities and generate the rational calculus of out-migration.

More recent political ecology work on mountain regions (Zimmerer & Bassett, 2003; Forsyth & Walker, 2008) emphasises the role of traditional ecological knowledge (TEK) systems in sustaining mountain livelihoods, and the cascading ecological consequences of their loss. The collapse of Van Panchayat (community forest council) governance in ghost villages — documented by Sharma (2026) as a direct consequence of depopulation — exemplifies this mechanism: as human stewardship withdraws, forest succession proceeds without traditional management, generating fire risk, altering water cycles, and ultimately undermining the ecological quality that makes ghost village landscapes attractive to tourists. Political ecology thus reveals the

paradox at the heart of ghost village tourism: the abandonment that creates tourism appeal simultaneously destroys the ecological governance capacity that would make sustainable tourism viable.

3.2. Sustainable Livelihoods Theory

The Sustainable Livelihoods Framework (SLF; Chambers & Conway, 1992; DFID, 1999) provides the analytical vocabulary for understanding why mountain livelihoods collapse and under what conditions they can be reconstructed. The SLF conceptualises livelihoods as portfolios of capital assets — human, social, natural, physical, and financial — that households deploy within a vulnerability context (shocks, trends, seasonality) to pursue livelihood outcomes through a set of strategies (activities that generate income, food security, and well-being). Ghost village formation represents a catastrophic household-level assessment that available capital assets, within the prevailing vulnerability context, cannot sustain viable livelihood outcomes in situ — and that migration offers superior expected returns.

SLF analysis of the Uttarakhand migration crisis reveals systematic deficits across all five capital types: human capital is eroded by the absence of schools and healthcare (1,600 schools closed in Pauri alone; nearest hospital 40+ km from many villages); social capital is depleted as communities fragment across urban and rural locations; natural capital is simultaneously degraded (terraced field erosion, spring failure) and unmanaged (expanding uncontrolled forests); physical capital is absent (inadequate roads, no electricity, no internet); and financial capital is inaccessible (no agricultural markets, no financial services). Sustainable tourism, in the SLF framework, functions as a livelihood diversification strategy that can rebuild all five capital types simultaneously — if, and only if, the governance structure ensures that capital accumulation occurs at the community rather than the extractive operator level (Scheyvens, 2002).

3.3. Community-Based Tourism and Carrying Capacity

Community-based tourism (CBT) theory — developed through foundational work by Wearing and Neil (2009), Scheyvens (2002), and Telfer and Sharpley (2015) — provides the normative framework for the ARST model's community ownership dimension. CBT posits that sustainable tourism in ecologically sensitive and culturally significant destinations requires that local communities exercise ownership and governance of tourism enterprises, rather than functioning as passive attractions for externally organised tourism supply chains. The ghost village context intensifies this requirement: because ghost village landscapes are simultaneously heritage sites, ecological recovery zones, and potential living communities, the introduction of external tourism capital without community governance structures risks generating a fourth driver of abandonment — commodification of the remaining landscape without economic benefit to its rightful custodians.

Carrying capacity theory (Butler, 1980; Lindberg et al., 1997) provides the operational framework for managing tourist flows in ghost village landscapes. The Tourism Area Life Cycle (TALC; Butler, 1980) model suggests that without proactive carrying capacity management, ghost village destinations — once discovered — will follow an accelerated development-stagnation-decline trajectory, reaching the decline phase faster than mainstream destinations because their attraction is inherently fragile: the moment authentic abandonment aesthetics are overwhelmed by tourism infrastructure, the core product is destroyed. Carrying capacity-based management — specifying visitor ceilings, seasonal closures, and core/buffer zone designations — is therefore not an optional conservation add-on but the foundational governance mechanism without which ghost village tourism destroys its own product.

4. The Scale of Abandonment: Secondary Data Evidence

4.1. State-Level Statistics

Table 1 presents the secondary data evidence on the scale of ghost village abandonment in Uttarakhand, synthesised from Census of India records, state government commission reports, and investigative documentation.

Table 1: State-Level Statistics on Ghost Village Abandonment in Uttarakhand and Sustainable Tourism Implications

Indicator	Value	Implication for Sustainable Tourism
Total villages in Uttarakhand (2011 Census)	16,793	Baseline for ghost village ratio calculation
Ghost villages (2011 Census)	1,048	6.2% of total villages already abandoned at time of last census
Ghost villages (2022 estimate)	1,700–1,792	Abandonment accelerating post-COVID; 62–71% increase in 11 years
Villages with fewer than 10 households	3,946	Critical risk zone; likely ghost villages by 2030 without intervention
Locked/abandoned houses	~300,000	Latent homestay and heritage tourism inventory worth an estimated ₹45,000 crore if activated
Youth migration rate (hill districts)	75% by age 25	Near-complete generational break in mountain livelihood traditions
Uttarakhand tourism revenue (2022–23)	₹27,000 crore	Local benefit capture rate below 10%; economic leakage to plains-based operators
Homestay adoption among returnees	21.5%	Viable diversification pathway; scales with connectivity and policy support
Reverse migration rate (age 25–35)	43%	Tourism and digital livelihoods emerging as pull factors for return
Border villages depopulated (within 50 km of LAC)	60%	National security dimension compounding socio-economic urgency

The most significant trend revealed by Table 1 is the acceleration of abandonment between the 2011 Census and 2022 estimates: from 1,048 to 1,700–1,792 ghost villages, representing a 62–71% increase in eleven years. This acceleration suggests that abandonment is not a linear secular trend but an accelerating process driven by positive feedback mechanisms: as households leave, remaining households face worsening service

ratios (fewer people to maintain infrastructure, lower political weight for infrastructure investment), triggering further departures. This cascade dynamic — documented by Mishra (2025) through detailed village-level case studies — implies that the window for intervention is shorter than linear projection models suggest, and that the 3,946 villages with fewer than ten households represent an imminent second wave of ghost village formation rather than a stable intermediate category.

4.2. District-Level Variation and Spatial Patterns

Table 2 presents district-level secondary data on ghost village distribution and dominant migration drivers, revealing significant spatial heterogeneity in both the scale and causation of abandonment across Uttarakhand's thirteen districts.

Table 2: District-Wise Ghost Village Distribution, Abandonment Rates, and Dominant Migration Drivers (2011 Census Data)

District	Total villages	Ghost villages	% Abandoned	Dominant Migration Drivers
Pauri Garhwal	3,473	331	9.5%	Lack of healthcare, school closures (1,600 schools closed), wildlife conflict
Haridwar	612	94	15.4%	Urban pull to plains; highest % despite plains location due to seasonal flooding
Almora	2,289	105	4.6%	Agricultural non-viability; terraced field erosion; leopard/boar attacks
Pithoragarh	1,675	103	6.1%	Border remoteness; inadequate road connectivity; LAC proximity
Chamoli	1,246	76	6.1%	Flash flood risk (2021 Chamoli disaster); GLOF threat; water scarcity
Bageshwar	947	73	7.7%	Agricultural market failure; produce cannot reach urban buyers
Champawat	717	55	7.7%	Aspirational urban migration; festival-only return patterns
Tehri Garhwal	1,862	88	4.7%	Displacement legacy from Tehri Dam; women-only households
Rudraprayag	688	35	5.1%	Char Dham corridor tourism bypasses local villages
Uttarkashi	707	13	1.8%	Relatively stable; border tourism and

				trekking economy cushioning
Nainital	1,141	44	3.9%	Proximity to tourism hub sustains some villages; others depopulated
Dehradun	748	17	2.3%	Capital proximity; employment alternatives reduce outmigration
Udham Singh Nagar	688	14	2.0%	Industrial zone nearby; agricultural alternatives absorb rural labour

The district-level data reveal three analytically significant spatial patterns. First, Pauri Garhwal's dominance — 331 ghost villages, nearly one-third of the state total — reflects a compound deprivation syndrome: school closures (1,600 schools in Pauri alone, per YouTube documentary evidence), healthcare inaccessibility, and severe wildlife conflict (900+ wildlife-related deaths statewide since 2000, disproportionately in Pauri) have interacted to create a district-level abandonment crisis that no single policy intervention can address. Second, Haridwar's anomalously high percentage abandonment (15.4% of villages) despite being a plains district reflects a different mechanism — seasonal flooding and agricultural disruption — that confounds simple highland-versus-lowland analytical distinctions. Third, Uttarkashi's relative stability (1.8% abandonment) is attributable to the district's border trekking and pilgrimage economy, which provides sufficient livelihood alternatives to retain population — a pattern that directly validates the ARST Framework's positioning of sustainable tourism as a reverse migration catalyst.

4.3. Root Causes: A Multi-Factor Analysis

Secondary data synthesis reveals four interacting causal categories that together constitute the structural determinants of ghost village formation in Uttarakhand. These are not independent variables but a recursive system in which each factor amplifies the others through positive feedback mechanisms.

Infrastructural Deficit: The most immediately tangible driver of migration is the absence of basic services. Secondary evidence documents that in many ghost-prone villages, the nearest hospital is 40 or more kilometres away, with pregnant women walking six hours through snow to access maternal care (Sharma, 2026). The closure of 1,600 schools in Pauri Garhwal alone due to zero enrollment illustrates the self-reinforcing nature of infrastructural decline: as families leave, enrollment falls; as schools close, remaining families lose the central institutional justification for staying, accelerating departure (KK Create, 2026). Connectivity deficits compound this dynamic: 4–6 hours from the nearest medical facility means that acute health events — snake bites, complications in childbirth, cardiac events — are effectively death sentences in isolated villages.

Agricultural Non-Viability: Uttarakhand's terraced agriculture, which sustained mountain communities for millennia, has become economically unviable under the joint pressure of wildlife crop damage (leopards, wild boar), unpredictable monsoon patterns linked to climate change, market inaccessibility (produce rots before reaching buyers), and the collapse of cooperative agricultural institutions (Van Panchayats) as populations thin (Uttarakhand Explorer, 2025). The ₹27,000 crore tourism economy that now dominates Uttarakhand's economic identity has actively accelerated agricultural decline by drawing labor to service sector employment in Haridwar, Rishikesh, and Dehradun, while providing no mechanisms for agricultural market

integration that would allow mountain farmers to benefit from the tourist-generated demand for local food products.

Environmental and Wildlife Conflict: Over 900 wildlife-related deaths have occurred in Uttarakhand since 2000, primarily from leopard attacks in villages already weakened by population decline (KK Create, 2026). As human settlements thin and agricultural activity reduces, wildlife populations expand into formerly inhabited territories, creating a dangerous cycle: wildlife conflict drives migration, depopulation enables wildlife expansion, wildlife expansion triggers further conflict and flight. The 2021 Chamoli disaster — a glacial lake outburst flood (GLOF) that caused catastrophic loss of life and infrastructure — is directly linked by analysts to the absence of traditional ecological stewardship in upper watershed villages, illustrating the lethal consequences of abandoning mountain communities (Sharma, 2026).

Aspirational and Social Migration: Beyond material deprivation, secondary evidence documents a powerful aspirational dimension to Uttarakhand's migration crisis. Urban lifestyles — digital connectivity, consumer culture, peer networks, formal employment — exercise powerful attraction on youth who have grown up in villages where the only visible economic future is subsistence farming (Uttarakhand Explorer, 2025; Mishra, 2025). The transition from primarily male breadwinner migration to whole-family relocation — now the dominant pattern — represents a qualitative shift that makes return far more complex: the village house is locked, the children enroll in urban schools, and the social networks that sustained village community life dissolve. Festival-only return patterns (weddings, rituals, death anniversaries) constitute the attenuated remnant of community belonging in ghost village landscapes (India Today, 2025).

5. GOVERNMENT REVIVAL INITIATIVES: EVIDENCE-BASED ASSESSMENT

Table 3 presents a systematic assessment of the five major government policy instruments targeting ghost village revival, evaluating each against evidence of implementation gaps and tourism relevance.

Table 3: Government Ghost Village Revival Policy Instruments: Components, Implementation Gaps, and Tourism Relevance

Policy Instrument	Budget/Scale	Key Components	Implementation Gap	Tourism Relevance
Vibrant Villages Programme (VVP)	₹4,800 crore (2023)	Roads, solar power, 4G connectivity, housing, livelihood support for border villages	Funds routed through state bureaucracies; outside contractors capture tenders; minimal community ownership	Direct: improves accessibility for tourism; Indirect: reverses depopulation that reduces destination viability
Uttarakhand Infrastructure Development	Not disclosed	Phase 1: basic infrastructure; Phase 2: heritage architecture	Census mapping only initiated April 2026; no	Central: explicitly converts ghost

Board (UIDB) Ghost Village Plan		restoration; Phase 3: homestays, eco- tourism, wedding venues	fund disbursement reported; master plan remains aspirational	villages to tourism assets; luxury wedding destination strategy targets premium segment
Homestay Tourism Initiative	State-level subsidies	Governor's vision to convert ghost villages to host villages; training, marketing support	Coverage limited; Khati/Wachham success not replicated systematically; no dedicated marketing fund	High: 21.5% returnee homestay adoption; ₹90,000/family income in 2 months at pilot sites
Rural Development & Migration Commission	Operational budget	Tracking 1,792 ghost villages; reverse migration monitoring; livelihood diversification (tourism, organic farming, digital work)	Data collection precedes intervention; no direct fund disbursement mechanism; advisory role only	Moderate: identifies tourism as primary livelihood for returnees but lacks implementation mandate
Census 2026 Ghost Village Mapping	Census allocation	Systematic count of locked/abandoned houses; baseline data for master plan	Launched April 25, 2026; results pending; previous census (2011) severely underestimated abandonment	Foundational: without accurate data, targeting tourism revival investment is impossible

The policy assessment presented in Table 3 reveals a consistent structural pattern across all five instruments: a significant gap between policy ambition and implementation effectiveness, rooted in three recurring

governance failures. First, community exclusion from program design and governance means that infrastructure investments generate benefit streams that accrue to external contractors and operators rather than resident or returning villagers. The Vibrant Villages Programme's documented tendency for tenders to be captured by plains-based contractors — who build infrastructure without local employment or supply chain linkages — exemplifies this pattern (Sharma, 2026). Second, sequential phasing of revival plans (infrastructure first, tourism later) fails to leverage the motivational power of tourism revenue as a pull factor for reverse migration; the evidence from Kaza, Spiti Valley demonstrates that entrepreneurial return preceded and drove infrastructure improvement, suggesting that CBT enterprise support should lead rather than follow infrastructure investment. Third, data-policy gaps — epitomized by the initiation of Census 2026 ghost village mapping forty-five years after the phenomenon became visible — mean that policy targeting has been systematically imprecise, with resources allocated to districts based on political rather than deprivation criteria.

The Homestay Tourism Initiative represents the most promising policy instrument by secondary evidence metrics: the documented outcome of ₹90,000 per family in two months at the Khati/Wachham pilot sites in Pithoragarh (Sharma, 2026), and the 21.5% returnee homestay adoption rate recorded by the Migration Commission (OB News, 2025), provide empirical validation of tourism as a viable livelihood alternative. However, this success has not been systematically replicated across the state's 1,700+ ghost villages, suggesting that pilot success has not been accompanied by the institutional infrastructure training programs, marketing platforms, quality certification, supply chain integration required for scale-up.

6. THE ABANDONED SETTLEMENT REVIVAL THROUGH SUSTAINABLE TOURISM (ARST) FRAMEWORK

Drawing on the theoretical foundations reviewed in Section 3 and the secondary evidence analysed in Sections 4 and 5, this section proposes the Abandoned Settlement Revival through Sustainable Tourism (ARST) Framework. The ARST Framework is a six-dimensional conceptual architecture for ghost village revival that is explicitly grounded in secondary data evidence and positioned for primary empirical validation in future research. Table 4 presents the framework with its evidence base and expected outcomes.

Table 4: The ARST Framework: Six Dimensions of Ghost Village Revival through Sustainable Tourism

Revival Dimension	Strategy	Secondary Evidence Base	Expected Outcome
Tourism Infrastructure	Carrying capacity-based management; heritage zones with buffer hospitality zones; seasonal visitor caps	UIDB three-phase restoration plan; Kaza, Spiti Valley model (NGO + government entrepreneur collaboration)	Controlled tourism growth preventing overtourism; preservation of aesthetics that attract visitors
Community	Homestay	Khati/Wachham	Reduced economic

Ownership	cooperatives with pilot: leakage; local benefit village-level ₹90,000/family in 2 capture rising from ownership; Van months; 21.5% <10% toward 40– Panchayat revival returnee homestay 60%; women's under Forest Rights adoption rate; Spiti economic Act 2006; organic Ecosphere NGO empowerment farming collectives model connecting to urban markets
Digital Connectivity	4G/fibre guarantee to VVP connectivity Remote work as every inhabited component; Kaza alternative to plains village by 2027; co- revival triggered by migration; e- working spaces in internet arrival 2019; commerce reducing renovated buildings; digital work as 3rd market access e-commerce for livelihood for barriers for Himalayan products returnees agricultural produce (mandua, rajma, medicinal herbs)
Cultural Heritage	Living museum Uttarakhand Differentiated model for ghost Explorer tourism product; villages; documentation authenticity documentation of projects; premium; intangible folk songs, dialects, architectural survey heritage preservation traditional of ~300,000 locked alongside economic architecture (paathar houses; cultural revival roofs, kaath-kholi tourism demand data carvings); festival revival incentives (Harela, Phooldei)
Policy Governance	& 10-year tax holiday Migration Reduced policy- for returnee Commission reverse implementation gap; enterprises; land title migration tracking; grassroots simplification; VVP implementation governance of

	national priority gap analysis; tourism revenue; status for ghost constitutional inclusive economic village restoration; amendment participation community- proposals controlled tourism boards
Ecological Management	Traditional water Chamoli 2021 Reduced flash flood channel (gul/kuhl) disaster linked to and fire risk; restoration; Van absence of traditional biodiversity Panchayat ecological conservation empowerment to stewardship; forest alongside human manage expanding fire statistics; leopard habitation; climate forests; fire risk corridor data adaptation resilience management through human reoccupation of strategic locations

6.1. Tourism Infrastructure: Carrying Capacity as Governance Foundation:

The ARST Framework's first dimension establishes carrying capacity management as the foundational governance mechanism for ghost village tourism, rather than an optional conservation constraint. Butler's (1980) TALC model predicts that ghost village destinations — once socially discovered through social media or travel writing — will experience rapid visitor growth that overwhelms fragile abandonment aesthetics within two to three seasons without proactive management. Secondary evidence supports this concern: the Uttarakhand Explorer (2025) documentation of ghost villages in the Almora belt (Bana, Bhainsi, Khanadhar, Dunagiri) already attracting trekkers suggests that an informal ghost village tourism market is emerging in advance of any management framework.

The ARST Framework proposes a core-buffer spatial model adapted from heritage site management principles (ICOMOS, 2008): ghost village cores (abandoned structures, terraced fields, temples) are designated as heritage observation zones with strict visitor caps and no overnight accommodation; buffer hospitality zones, positioned in adjacent settlements or purpose-built eco-lodges, accommodate homestay tourism and visitor services. This spatial separation protects the authenticity of the abandonment landscape the primary tourism resource while enabling the economic activity required to fund its conservation and incentivize resident return.

6.2. Community Ownership: Closing the Local Benefit Capture Gap

The ARST Framework's most critical dimension addresses the structural economic leakage that currently characterizes Uttarakhand's tourism economy: the less than 10% local benefit capture rate documented by Sharma (2026) from a ₹27,000 crore revenue base is the definitive evidence that conventional tourism development models are not viable frameworks for ghost village revival. If the tourism economy that

generates this revenue cannot sustain mountain communities as viable living settlements, then a tourism revival strategy that replicates this economy's ownership structures will generate tourist footfall without generating community resilience.

The CBT-grounded community ownership dimension of the ARST Framework proposes three institutional mechanisms for closing the benefit capture gap. Homestay cooperatives village-level ownership structures that pool accommodation inventory, share marketing costs, and distribute revenue according to community-determined rules — have been demonstrated to achieve 40–60% local benefit capture at comparable Himalayan sites (Spiti Ecosphere, cited in Sharma, 2026), compared to the sub-10% capture rate of externally owned hotels. Van Panchayat revival, empowered through the Forest Rights Act 2006, restores community legal authority over natural capital assets (forests, water sources, wildlife corridors) that constitute the tourism product's ecological foundation. Organic farming collectives connecting mountain producers of mandua (finger millet), rajma (kidney beans), and medicinal herbs directly to urban consumers via e-commerce create a second revenue stream that reduces community dependence on tourism seasonality while strengthening food sovereignty.

6.3. Digital Connectivity: The Prerequisite Enabler

The ARST Framework treats digital connectivity not as a supplementary infrastructure investment but as the prerequisite enabler of all other revival dimensions. Evidence from the Kaza, Spiti Valley case study — where internet arrival in 2019 triggered a cascade of entrepreneurial returns that no government program had previously generated — demonstrates that connectivity is the single most efficient infrastructure investment for ghost village revival (Sharma, 2026). Digital connectivity enables the three livelihood streams most critical to the ARST Framework: homestay tourism marketing (guests cannot book what they cannot discover); e-commerce for Himalayan agricultural products; and remote digital work that allows returnees to maintain urban income streams while living in mountain villages.

The Vibrant Villages Programme's 4G connectivity component represents the policy acknowledgment of this logic, and the ARST Framework recommends that connectivity investment precede, rather than follow, physical infrastructure restoration in ghost village revival sequencing. Co-working facilities in renovated village buildings — a concept piloted in several European depopulated village revival programs (Caramelo, 2022) — represent an additional connectivity dividend: by positioning ghost villages as remote work destinations for urban professionals, they generate a tourist typology (the "work-cation" visitor) whose spending profile and length of stay are substantially higher than conventional overnight tourists, and whose digital professions are compatible with village working conditions.

6.4. Cultural Heritage: Authenticity as Competitive Advantage

The ARST Framework's cultural heritage dimension is grounded in the theoretical insight that ghost village tourism's competitive advantage relative to mainstream Himalayan destinations such as Mussoorie, Nainital, or Rishikesh — is authenticity: the unmediated encounter with a landscape that holds the material evidence of a way of life that has largely disappeared from the modern Indian experience. Paathar slate roofs, kaath-kholi wood-carved doors, gul irrigation channels, terraced fields slowly being reclaimed by forest, and temples whose last regular worshippers departed decades ago constitute an authentic heritage product that mass tourism infrastructure destroys as surely as physical demolition.

Living museum models in which ghost village sites are interpreted as experiential heritage landscapes rather than merely photographed ruins offer a framework for converting this authenticity into sustainable tourism value. The Uttarakhand Explorer's (2025) documentation of ghost villages in the Almora belt as trekking

destinations represents an embryonic version of this model, but without the interpretation, visitor management, or revenue generation mechanisms that would make it sustainable. The ARST Framework recommends systematic documentation of intangible cultural heritage folk songs, traditional agricultural calendars, water management knowledge, medicinal plant traditions as the foundational investment for living museum development, with documentation projects creating employment for community members and building the archival resource base that interpretation programs require.

7. ECOLOGICAL AND SECURITY DIMENSIONS OF GHOST VILLAGE REVIVAL

Ghost village revival cannot be framed exclusively as a sustainable tourism problem; it is simultaneously an ecological management challenge and a national security concern whose resolution requires integrated governance across multiple policy domains. Secondary evidence documents three ecological dynamics of ghost village landscapes that are directly relevant to tourism viability and management.

First, the ecological paradox of abandonment: while depopulation reduces direct human pressure on fragile Himalayan ecosystems leading to forest expansion and wildlife population recovery unmanaged forest succession generates its own ecological risks. The 2021 Chamoli GLOF disaster is directly linked by analysts to the degradation of traditional watershed management practices in upper-valley villages whose depopulation had removed the human stewardship capacity that historically maintained drainage infrastructure and monitored glacial lake formation (Sharma, 2026). Similarly, expanding forests without Van Panchayat management become fire-prone, as demonstrated by the severe forest fires that affected Uttarakhand in 2021 and 2022. The ARST Framework's ecological management dimension specifically addresses this paradox by proposing strategic human reoccupation of ecologically critical locations not maximum repopulation, but sufficient presence to maintain traditional ecological stewardship functions.

Second, the national security dimension of ghost village depopulation adds urgency that purely economic or ecological frameworks fail to capture. Secondary evidence documents that 60% of villages within 50 kilometres of the Line of Actual Control (LAC) with China have been depopulated (Sharma, 2026). This demographic vacuum creates vulnerabilities in border monitoring that India's strategic community has explicitly identified, particularly in the context of China's Xiaokang village construction program, which has built permanent infrastructure and resettled Han Chinese families in Tibetan villages immediately across the border. Tourism development in border ghost villages — by providing economic justification for year-round habitation serves simultaneously as sustainable livelihood creation and border security reinforcement, a dual-purpose value proposition that should strengthen the political case for policy prioritization and budgetary allocation.

Third, the cultural ecology of ghost villages the traditional knowledge embedded in Van Panchayat governance, gul irrigation engineering, terrace cultivation practices, and medicinal plant management — represents a form of ecological heritage that is disappearing with the communities that hold it. This knowledge is not merely culturally significant; it is ecologically functional. Traditional gul water channels precisely engineered gravity-fed irrigation systems that distribute water from mountain springs to terraced fields represent millennia of hydrological knowledge that modern engineering cannot easily replicate. Their collapse, as documented by Sharma (2026), is causing water stress in villages that were historically self-sufficient in water, creating a material driver of continued abandonment that tourism-led revival must address by funding gul restoration as a cultural heritage project with direct livelihood implications.

8. POLICY IMPLICATIONS AND RECOMMENDATIONS

The ARST Framework generates five specific policy recommendations, each grounded in secondary evidence and directed at the identified implementation gaps in existing government instruments:

Community Tourism Governance Boards. The primary structural reform required to close Uttarakhand's local benefit capture gap is the mandatory establishment of Village Tourism Governance Boards democratically elected community bodies with legal authority to approve, reject, and regulate tourism enterprises in their village territories, collect and distribute tourism levies, and oversee homestay quality standards. Secondary evidence from comparable Himalayan CBT programs (Spiti Ecosphere; Kibithoo, Arunachal Pradesh) demonstrates that community governance is the single most reliable predictor of equitable benefit distribution. National policy frameworks including the Forest Rights Act 2006 and the Panchayati Raj system provide the legal architecture for such boards; their establishment requires political will and administrative implementation rather than new legislation.

Reverse Migration Tourism Incubator. The 43% reverse migration rate and 21.5% tourism enterprise adoption rate documented by the Migration Commission (OB News, 2025) provide the empirical basis for a dedicated tourism entrepreneurship incubator targeting returnee migrants aged 25–35. Modeled on the Kaza, Spiti Valley entrepreneurial ecosystem where returned youth operate homestays, cafes, guiding services, and e-commerce businesses with NGO support the incubator would provide business planning, digital marketing, quality certification, and supply chain integration support. A 10-year tax holiday for returnee enterprises in ghost-prone districts proposed by Sharma (2026) would provide the financial incentive complement to the incubator's technical support.

Sequential Investment Inversion. The ARST Framework recommends inverting the current policy sequencing which positions infrastructure restoration as a prerequisite for tourism development in favor of tourism enterprise support as the driver of infrastructure investment. Evidence from Kaza demonstrates that entrepreneurial return triggered by economic opportunity preceded and motivated infrastructure improvement, while the infrastructure-first model implemented through VVP has generated construction activity without reverse migration. The practical implication is that homestay enterprise grants and marketing support should be deployed immediately in the most tourism-viable ghost villages, with infrastructure investment following the demonstrated economic case rather than preceding it.

Cultural Heritage Documentation as Employment. The documentation of intangible cultural heritage folk music, traditional ecological knowledge, architectural surveys of paathar and kaath-kholi structures, gul irrigation mapping should be commissioned as paid employment for community members, particularly elderly residents who hold irreplaceable knowledge. This approach generates three simultaneous benefits: archival preservation of heritage at risk of permanent loss; income for the most economically vulnerable ghost village residents; and the raw material for interpretation programs that will differentiate ghost village tourism products from mainstream Himalayan destinations. Census 2026's ghost village mapping exercise provides an institutional vehicle for incorporating cultural heritage documentation alongside demographic data collection.

Cross-Himalayan Policy Learning Platform. Secondary evidence consistently demonstrates that the most instructive models for Uttarakhand's ghost village revival are found outside the state: Kaza (Himachal Pradesh), Kibithoo (Arunachal Pradesh), and analogous programs in Sikkim and Ladakh offer transferable lessons in community governance, digital connectivity sequencing, and NGO-government-entrepreneur collaboration. A dedicated cross-Himalayan policy learning platform facilitated by the Ministry of Tourism and

the ICIMOD regional research centre would systematize lesson transfer, enable comparative evaluation of revival strategies, and build the evidence base that secondary data synthesis alone cannot provide.

9. LIMITATIONS, FUTURE RESEARCH DIRECTIONS, AND CONCLUSION

9.1. Limitations

Four limitations of this secondary data synthesis require acknowledgment. First, the paper's data landscape is characterized by significant unevenness: quantitative statistics (Census data, government program budgets, tourism revenue figures) are available at state and district levels, but village-level qualitative evidence the lived experience of migration, the decision-making processes of returnees, the social dynamics of ghost village communities is available only through journalistic accounts that, while empirically specific, have not been collected through systematic social science methods. The ARST Framework's community ownership and cultural heritage dimensions are therefore grounded in logic and comparative evidence more than in Uttarakhand-specific primary data. Second, the acceleration of abandonment post-2011 means that the most current available Census data (2011) is now fifteen years old, and the 2022 estimates cited are projections rather than enumerated counts; Census 2026 data, when available, will substantially update the empirical foundation of this framework. Third, the paper cannot assess implementation quality of ongoing government programs the actual, on-the-ground delivery of VVP infrastructure, for instance because program evaluation data are not publicly available. Fourth, the framework does not disaggregate gender dimensions of ghost village migration and revival, despite secondary evidence suggesting that women face distinctively different migration drivers and face different constraints on tourism entrepreneurship; this gap is identified as a priority for future research.

9.2. Future Research Directions

The ARST Framework generates a structured future research agenda organized around six priorities. First, primary empirical validation of the framework through longitudinal ethnographic and survey research in contrasting ghost village sites including at least one successful revival case, one failed revival case, and one untreated baseline case would test the causal mechanisms and relative importance of the six framework dimensions. Second, gender-disaggregated analysis of migration and return decisions is essential for understanding the full complexity of ghost village demographics: secondary evidence consistently reports on male migration patterns while the reality of elderly women as the last permanent residents of many ghost villages suggests a gendered geography of abandonment that the ARST Framework must ultimately incorporate. Third, tourist behavior and motivation research investigating why tourists visit ghost villages, what they seek, how they differ from mainstream Himalayan tourists, and what they are willing to pay is foundational for product development and pricing strategy. Fourth, ecological carrying capacity assessments, specific to the fragile landscapes of ghost village sites, are required to operationalize the ARST Framework's first dimension with scientific precision rather than general principle. Fifth, comparative Himalayan analysis across Uttarakhand, Himachal Pradesh, Arunachal Pradesh, Sikkim, and Ladakh would test the generalizability of the ARST Framework across varied political and ecological contexts. Sixth, the role of artificial intelligence and digital platforms in connecting ghost village tourism products to urban consumers including social media influencer-driven destination discovery and platform-based homestay marketing represents an emerging research frontier with direct implications for the digital connectivity dimension of the ARST Framework.

10. Conclusion

Uttarakhand's ghost villages are not simply empty spaces. They are, as this paper has argued, simultaneously the symptoms of a systemic governance failure, the repositories of irreplaceable ecological and cultural heritage, and the latent assets of a sustainable tourism economy that has yet to be built on equitable foundations. The 1,700+ villages that now stand abandoned across Uttarakhand's hills represent the accumulated cost of decades of plains-centric development policy, urban-biased employment structures, and agricultural market failures costs borne by mountain communities whose departure has left both a demographic vacuum and an ecological governance gap with consequences that extend far beyond the villages themselves to river systems, forest fire regimes, border security, and the cultural patrimony of the Indian Himalayan civilization.

The Abandoned Settlement Revival through Sustainable Tourism (ARST) Framework proposed in this paper offers a theoretically grounded, secondary evidence-substantiated, and practically oriented conceptual architecture for reversing this trajectory. Its six dimensions tourism infrastructure, community ownership, digital connectivity, cultural heritage, policy reform, and ecological management are not a sequential checklist but a simultaneously deployed governance system whose power derives from the interaction effects between dimensions: connectivity enables marketing; community governance ensures benefit retention; ecological management protects the tourism product; cultural documentation enriches the visitor experience; and policy reform creates the institutional environment within which all other dimensions can function at scale.

The secondary evidence that motivates this framework is ultimately hopeful: 43% of migrated youth are returning when economic alternatives exist; 21.5% of returnees establish tourism enterprises; ₹90,000 per family in two months at pilot homestay sites demonstrates that the latent economic potential of ghost village landscapes is real and realizable. The challenge is not whether sustainable tourism can catalyze ghost village revival the evidence suggests it can but whether the governance structures can be built quickly enough, and with sufficient community ownership, to ensure that the revival is genuinely sustainable: economically equitable, ecologically responsible, and culturally authentic. This paper offers the ARST Framework as a contribution to that urgent governance challenge, and invites the Scopus-indexed tourism and regional studies research community to subject its propositions to the empirical scrutiny they require and deserve.

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