

TRANSHUMANT HERDERS OF THE INDIAN HIMALAYAN REGION: LIVELIHOODS, ECOLOGICAL ROLES, AND CONTEMPORARY CHALLENGES

PASTORES TRASHUMANANTES DE LA REGIÓN HIMALAYA INDIA: MEDIOS DE VIDA, ROLES ECOLÓGICOS Y DESAFÍOS CONTEMPORÁNEOS

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ABSTRACT

The Indian Himalayan Region (IHR) supports several distinct transhumant pastoral communities whose seasonal migrations between lowland winter pastures and high-altitude summer grazing grounds have shaped ecological and cultural landscapes for centuries. The study identifies six main groups which include Gujjar Bakarwal Gaddi Bhotia Changpa Van Gujjar and other communities who inhabit the regions of Jammu and Kashmir Ladakh Himachal Pradesh Uttarakhand and the north-eastern hills. The paper uses published ethnographic studies and ecological survey literature and government reports to analyze migration patterns and herd management practices and livelihood systems and biodiversity maintenance. The study analyzes different kinds of pressures which cause system instability and assesses whether current policies can effectively address these challenges. The paper presents transhumant pastoralism as an environmentally sustainable practice which requires specialized policy backing.

Keywords: *Transhumance, Himalayan, pastoralism, alpine meadows, bugyal,, climate change*

RESUMEN

La Región del Himalaya Indio (RHI) alberga diversas comunidades pastorales trashumantes cuyos desplazamientos estacionales entre pastizales invernales en tierras bajas y zonas de pastoreo estival en alta montaña han configurado paisajes ecológicos y culturales durante siglos. El estudio identifica seis grupos principales: Gujjar, Bakarwal, Gaddi, Bhotia, Changpa, Van Gujjar y otras comunidades que habitan las regiones de Jammu y Cachemira, Ladakh, Himachal Pradesh, Uttarakhand y las colinas del noreste. El artículo emplea estudios etnográficos publicados, literatura de estudios ecológicos e informes gubernamentales para analizar los patrones de migración, las prácticas de manejo de rebaños, los sistemas de sustento y el mantenimiento de la biodiversidad. El estudio examina los distintos tipos de presiones que generan inestabilidad en el sistema y evalúa si las políticas actuales pueden abordar eficazmente estos desafíos. El artículo presenta el pastoralismo trashumante como una práctica ambientalmente sostenible que requiere un respaldo político especializado.

Palabras clave: comunidades nómadas, Himalaya, Pastoreo, praderas alpinas, Bugyal, cambio climático

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1. INTRODUCTION

The northern Indian Himalayan mountain range extends over 2500 kilometers. The region contains one of the world's most diverse areas which includes both its ecological systems and its cultural traditions (Palni and Rawal, 2010). Many communities established transhumance systems which enable their livestock herders to move their animals according to seasonal changes while utilizing different elevation zones for pasture access throughout the year. The migrations follow specific patterns. The movements follow precise systems which require substantial expertise and knowledge of ecological systems that people learned through their environmental studies and social interactions and traditional customs. Transhumance in the IHR involves cyclical movement between two or more ecologically distinct grazing zones (Singh et. al., 2025). The Himalayan mountain systems require herders to move their livestock from lower-altitude winter pastures to high-altitude summer pastures which exist as bugyals in Uttarakhand and margs in Kashmir and payars in parts of Himachal Pradesh. The communities and states show different practices about when to travel and which paths to follow and what types of livestock to use and how to arrange their social structures. The communities maintain their relationship with mountain grassland ecosystems while they face severe risks from any disruptions to their established travel patterns and ecological system functions (Kumar et. al., 2026). The academic field shows increased interest in these communities since the 1990s.

The pioneering ethnographic studies carried out by Saberwal (1999) on the Gaddi people of Himachal Pradesh, Gooch (1998) on the Van Gujjars of Uttarakhand, Rao (1995) on the Bakrwal people of Kashmir, and Bhasin (2011) on various Himalayan communities resulted in a comprehensive research on pastoral communities, which till then remained less explored. The research shows that transhumant pastoralism functions as a complex system which adapts to its environment through sophisticated methods rather than existing as a basic survival system from ancient times. The increased scholarly interest hasn't resulted much in an improvement in the political position of the groups that remain invisible to the public eye, whose legal position remains unclear, and whose economic position remains unstable. The Forest Rights Act of 2006 has brought a range of new options for pastoral land rights, and these have been implemented across the country, although with great variation (Banerjee and Madhurima, 2013). The majority of herding groups continue to face difficult conditions in their lives. This paper will discuss a research on the transhumant herding groups who live in the IHR. It will include information on their geographic distribution, their migration, their ecological role, their economic activities, and the range of threats and current policies affecting them.

2. GEOGRAPHIC AND ECOLOGICAL CONTEXT

2.1. *The Indian Himalayan Region.*

The Indian Himalayan Region covers 13 Indian States/Union Territories (Jammu & Kashmir, Ladakh, Uttarakhand, Himachal Pradesh, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, hill district of Assam and West Bengal), stretching across 2500 km. (Figure 1). Around 50 million population resides in this region, and it is characterized by a diverse demographic profile and versatile economic, environmental, social, and political systems. The area contains three major types of land which people use for grazing purposes, permanent pastures and alpine meadows which remain under permanent use (Kumar et. al., 2023). The agencies which study land use develop distinct estimation methods because they apply different definitions for land-use categories. Transhumant herders cross through multiple ecological zones which extend across a wide spectrum of ecological environments. The Shiwalik foothills and terai grasslands in the south give way to the middle Himalayan zone of temperate forests between roughly 1,500 and 3,000 metres, above which lies the sub-alpine zone of coniferous forest and shrubland, and then the alpine meadow zone between approximately 3,000 and 4,500 metres (Nandy et.al., 2006; Aryal et. al., 2018).

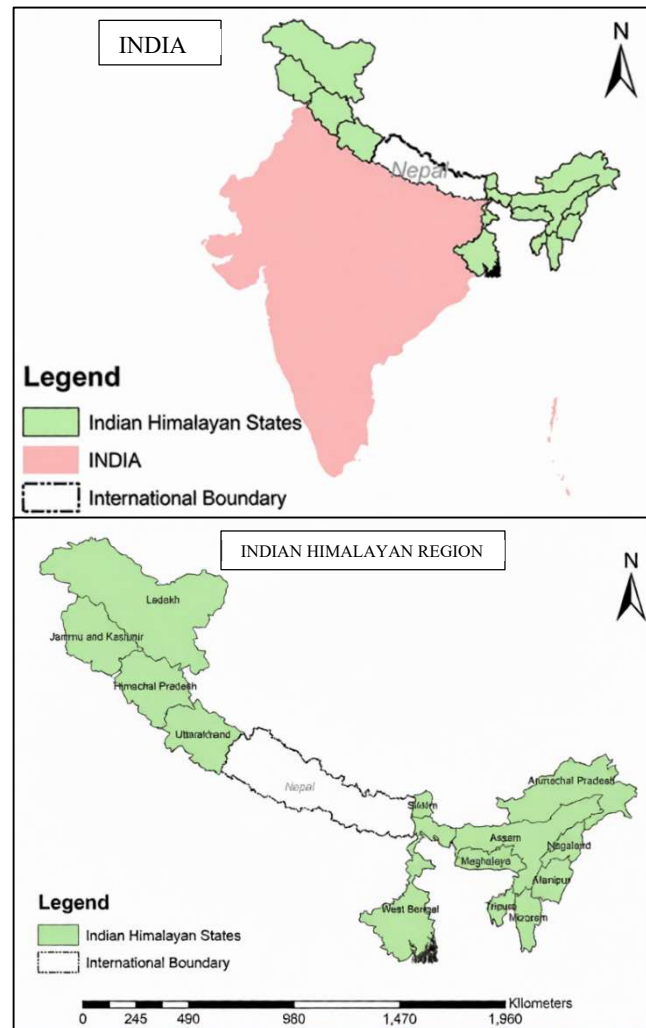


Figure 1: Indian Himalayan Region.

The cold arid trans-Himalayan steppe extends beyond this point into Ladakh and Spiti. Different zones operate according to their own seasonal periods of productivity which depend on snowmelt patterns, and transhumant systems use this pattern by moving livestock to different zones when new forage becomes available. The alpine meadows of hold great ecological value (Basak and Sarkar, 2025). The area contains various plant species which include grasses and sedges and alpine forbs and it has developed through the years because of traditional livestock grazing practices (Basak and Sarkar, 2025). The area exists as both a cultural space and a natural environment according to its significance. Research by Wang et. al., 2019 documented that moderate, well-timed grazing was associated with maintenance of plant species diversity in the meadows, while both overgrazing and total exclusion of grazing were associated with changes in species composition. The relationship between pastoralism and biodiversity in alpine zones is therefore not a simple one of conflict, but of co-evolution (Maiti et. al., 2022).

2.2. The Logic of Altitudinal Migration.

Transhumance in the Himalayas operates according to altitudinal plant biomass production which varies throughout the year. Fresh grazing opportunities become available at each elevation level when snow begins to melt during the spring and early summer period (Mishra, 2001). Experienced herders read this gradient with precision, following the productive edge of the snowline upward through the season. Bakarwal herders from Kashmir moved between the Jammu foothills and the high margs of the Kashmir Valley during March to July, before reversing their path in autumn (Rashid et. al., 2025). The round trip required travelers to cover several hundred kilometers while crossing multiple mountain passes that exceeded 3,500 meters

in elevation (Rao, 1995). The migration process requires more than simple back-and-forth travel; it needs the strategic grazing of localities which herders name because of their seasonal productivity. The spatial and temporal understanding of indigenous people represents indigenous ecological knowledge (IEK) which exists separately from external resource management systems (Hyalmo et. al., 2024).

3. MAJOR TRANSHUMANT COMMUNITIES

Table 1 shows the main transhumant communities that exist in the IHR region. Different studies give different figures for the same communities, and the Census itself has known limitations in capturing nomadic households.

Table 1: Major Transhumant Herding Communities of the Indian Himalayan Region.

Community	Primary State(s)	Population (approx.)	Primary Livestock	Seasonal Range
Gujjar	J&K, HP, Uttarakhand	~500,000–700,000*	Buffalo, Cattle	Foothills to mid-hills
Bakarwal	J&K, HP	~100,000–135,000*	Goat, Sheep	Plains to alpine margs
Gaddi	Himachal Pradesh	~130,000–160,000*	Sheep, Goat	Kangra to Lahaul/Spiti
Bhotia (incl. Marchha, Tolchha)	Uttarakhand	~55,000–80,000*	Yak, Sheep, Dzo	Inner valleys to Tibet border passes
Changpa	Ladakh (UT)	~7,000–14,000*	Pashmina Goat, Yak	Changtang Plateau (4,000–5,200 m)
Van Gujjar	Uttarakhand, UP	~60,000–100,000*	Buffalo	Terai to Shiwalik forests
Drokpa	Ladakh, Arunachal	~5,000–10,000*	Yak, Sheep	High trans-Himalayan pastures

** Population figures are ranges compiled from several sources. Figures vary across sources due to difficulties in enumerating mobile populations. The Gujjar and Bakarwal are often counted together; here they are separated where source data permits.*

3.1. Gujjar and Bakarwal.

The distinct characteristics of the Gujjar and Bakarwal communities lead to their classification as a single group which people refer to as the Gujjar-Bakarwal community. The Gujjars are primarily buffalo and cattle herders, while the Bakarwal specialise in goat and sheep. The western Himalayas contain their largest transhumant community which extends through the regions of Jammu & Kashmir and Himachal Pradesh and the Uttarakhand hills (Ahmed et. al., 2023). The people of this community possess Scheduled Tribe status in both J&K and various other states. The local community refers to Bakarwal migration routes as raths which serve as traditional pathways used by their ancestors throughout their history. A family group, or kafila, typically manages herds running into the hundreds of animals, sustained entirely on grazing throughout the year with minimal supplementary feeding. The community depends on milk and ghee for their basic needs while they use young animals and wool for their income generation purposes (Ahmed et. al., 2025). The researchers Casimir and Rao (1985) conducted their ecological research about Bakarwal transhumance in the Kashmir Himalaya region which documented both the spatial patterns of migration and the social structures which controlled herd management and route selection. The Kashmir conflict which began in the late 1980s has caused major disruptions to the existing migration paths. Forest regulations which control land use and the creation of protected areas introduce additional limitations (Rao, 2002). Many

research provides qualitative documentation of the existing pressures but very few published literature contains exact quantification of reduced grazing areas.

3.2. *Gaddi*.

The Gaddi people represent the main pastoral group in Himachal Pradesh, which they inhabit through their settlements in Chamba and Kangra districts. Their primary livelihood involves herding sheep and goats (Sharan, 2025). The 2011 Census records their population between 130000 and 160000 which makes them a major ethnic group in HP who possess Scheduled Tribe recognition. Gaddi transhumance follows a clear bimodal pattern. During winter herders move down to the lower Shiwalik hills and the Kangra valley. In spring they begin their ascent through the Dhauladhar range by crossing passes which include Indrahara Pass that reaches an elevation of 4300 metres to access the high pastures of Lahaul Spiti and the Kugti-Tindi area. The complete journey requires a duration of two to three months (Tonk and Kaur, 2025). Saberwal's (1999) study of the Gaddi presents the most thorough examination of this pastoral system which shows its ecological justification and its development through colonial and post-colonial forest governance restrictions. Gaddi herders establish territorial grazing rights through social institutions which include traditional recognition of named grazing units known as dhaars and their use of community panchayats to settle disputes. Saberwal (1999) documents in detail how these institutions came under pressure with the introduction of forest department management of the same land. The Gaddi literature establishes its main focus on the conflict that exists between traditional pastoral governance and governmental forest management practices.

3.3. *Bhotia*.

The Bhotia is an umbrella term for several Tibetan-origin agro-pastoral groups in the high valleys of Uttarakhand, including the Marchha, Tolchha, Johari, and Shaukas. They practice valley-floor cultivation while raising sheep, goats, yaks, and dzo (yak-cattle crosses) during seasonal herding periods (Kumar et. al., 2025a). Their migrations cross the main Himalayan divide, using high passes such as Niti, Mana, and Lampiya Dhura, which historically led Tibetan borderland pastures into summer pastures. The Bhotia communities across Tibet maintained extensive trading relationships until the 1962 India-China war created a complete border closure which destroyed their traditional economy. The closure of the border ended this economy. Many Bhotia families settled permanently in villages. Bhotia who stayed with their pastoral lifestyle continued to herd within a limited area on the Indian side of the border (Bergman et. al., 2008). There is a transition from a combined pastoral-trading economy to a more restricted agro-pastoral one among Bhotia pastoralists.

3.4. *Changpa*.

The Changpa people form a small community which holds international importance because they practice nomadic herding on the Changtang Plateau in Ladakh where they live at altitudes between 4000 and 5200 meters. Their distinctiveness rests on the Pashmina goat, which produces ultra-fine fibre, the raw material for Kashmir shawls (Bahuguna and Ramaswamy, 2022). Population estimates for the Changpa range from around 7,000 to 14,000 in published sources, a range that reflects both the genuine difficulty of counting nomadic households and definitional differences in who is classified as Changpa. The Changpa people establish their seasonal movement patterns between different altitude zones which contain various weather conditions. Winter temperatures in the Changtang region of the cold desert climate drop to temperatures below minus 20 degrees Celsius. The seasonal distances between summer lakeside pastures and winter valley encampments require multiple logistical steps to achieve their movement goals. The entire ecosystem has low biomass and slow vegetation recovery, which makes it highly sensitive to changes in stocking pressure (Dolkar et. al., 2017). The Changpa Pashmina received a Geographical Indication (GI) tag in 2013, which has helped maintain price premiums in niche markets (Malhotra and Saravanan, 2025).

3.5. *Van Gujjar*.

The Van Gujjars are a unique subsection of the larger Gujjar community who practice buffalo herding in the forested areas of the Shiwalik hills and the terai-bhabar region of Uttarakhand and Uttar Pradesh (Gooch, 2004). The Van Gujjars transhumant practice of moving through forest areas creates special difficulties

because they need to access different forest territories. Gooch's (1998) study remains the most detailed published account of Van Gujjar life. The study shows how a household economy depends mostly on buffalo herds because the family uses dairy products as their main food source and main method of earning money. The research shows how Rajaji National Park creation brought severe disruptions to Van Gujjar seasonal grazing areas because the park established boundaries that restricted human access to protected areas. The case demonstrated how conservation policies in India created a conflict with the traditional ways of life that pastoral people followed and maintained for several centuries.

4. MIGRATION PATTERNS AND SEASONAL CALENDARS

In the case of transhumant systems, there is the need to study the spatial as well as the temporal aspects. The season calendar dictates the time for herds to move, time for breeding, time for wool collection, time for milk collection, time for social events, etc. The herder groups in Table 2 provide an outline of the general season calendar, which represents the main seasons for herder activities. The herders choose the time according to the actual weather conditions observed during the year in the geographical location and altitude.

Table 2: Seasonal Migration Calendar for Himalayan Transhumant Herders

Season	Months (approx.)	Activity	Altitude Zone	Primary Groups
Winter	Nov – Feb/Mar	Winter grazing, lambing/calving, wool sorting	300–900 m	Gaddi, Bakarwal, Van Gujjar
Spring (ascent)	Mar – May	Upward migration; use of mid-hill forests and pastures	900–2,500 m	Gaddi, Gujjar-Bakarwal
Early Summer	May – Jun	Crossing of high passes; shearing of sheep	2,500–3,500 m	Gaddi, Bhotia
Summer	Jun – Sep	Alpine grazing (bugyals/margs); milking; pashmina combing	3,500–5,200 m	All groups; Changpa year-round
Autumn (descent)	Sep – Nov	Downward migration; sale of animals at lowland markets	900–3,000 m	Gaddi, Bakarwal, Bhotia

Note: Timings are approximate and vary by location, altitude, and inter-annual variation in snowfall. Changpa of Ladakh do not follow this calendar; their movements are compressed within the Changtang Plateau throughout the year.

The process of migration does not follow a direct path which leads to sequential movements between two points. The actual procedure requires multiple stops which include herding through designated pasture areas and shared paths with other herding groups and adaption to the actual conditions which exist (Kumar et. al., 2025a). Herders possess complete knowledge about the land, which includes their understanding of where they can find optimal grazing areas before snowmelt occurs and the location of dependable water points and the paths which enable them to steer clear of predator territories and their ability to predict when certain mountain passes will become accessible (Rao et. al., 2003). The transmission of spatial and temporal knowledge occurs through oral traditions which families and communities maintain, and through the learning process which children undergo by following their elders during migratory journeys. The researchers who studied this knowledge system documented it as an advanced form of indigenous environmental understanding (Saberwal, 1999; Rao et. al., 2003; Kumar et. al., 2025a). The information remains unrecorded in written management documents, and when herders stop their migration process, the family loses this information within one generation. The Migration Patterns for Himalayan Transhumant Herders can be seen in the table 3 below.

Table 3: Migration Patterns for Himalayan Transhumant Herders

Community	Winter Zone	Winter Locations	Summer Zone	Summer Locations	Key Passes / Route Corridors
Gujjar (J&K, HP)	Siwaliks / Jammu plains & lower Jammu hill districts	Kathua, Udhampur, Doda, Jammu plains, Reasi, Samba (J&K Siwaliks & lower hills).	Kashmir Valley & Pir Panjal mid-altitude meadows	Kashmir Valley meadows, Pir Panjal pastures (dhoks); summer base above treeline	Pir Panjal Pass route (primary); Banihal Pass route (secondary — via Kirangyal, Verinag, Daksum pastures)
Bakarwal (J&K, HP)	Lower valleys of Jammu / Pir Panjal foothills	Jammu plains, Udhampur, Kathua, Reasi; Siwalik range forests	High-altitude meadows of Kashmir & into Ladakh	Suru Valley, Kargil (Ladakh); Pir Panjal highland meadows; range extends from Pir Panjal to Zaskar	Pir Panjal and Banihal passes; journey to summer pastures can take up to 60 days
Gaddi (Himachal Pradesh)	Kangra Valley (lower HP)	Lower hills of HP and adjacent	Una, Bilaspur, Kangra, Hamirpur, Sirmour districts (HP)	Dhauladhar meadows, Chamba, Lahaul-Spiti & Kinnaur high pastures	Dhauladhar, Chhota Bhangal, Bara Bhangal, Lahaul & Spiti, Kinnaur, parts of Chamba district
Bhotia – Marchha & Tolchha (Uttarakhand)	Lower-altitude winter villages, Chamoli foothills; Lower-altitude winter villages, Chamoli foothills	Ghingran, Negwad, Lambagad (Chamoli district)	Mana Valley, Niti Valley (Chamoli), alpine pastures near Tibet border	Niti and Mana valleys, Chamoli, Garhwal	Mana Pass (Chongnyi La, ~5,610 m); Alaknanda valley route; Niti Pass (Kiunglang La, ~5,800 m); Dhauliganga river valley route
Changpa (Ladakh UT)	Lower valley encampments within Changthang plateau	Low-elevation valley sites in Rupshu-Kharnak area	High Changthang plateau pastures (same climatic zone — short-range moves)	Rupshu, Kharnak, Tso Moriri areas	Established fixed routes within plateau; movements typically 10–40 miles (unlike other groups, do not cross climatic zones)
Van Gujjar (Uttarakhand, UP)	Shivalik hill forests / Bhabar plains	Rajaji National Park / Shivalik forest; Mohand range (UP); Doon Valley	Upper Himalayan alpine forests and meadows	Sankri, Supin, Rupin ranges of Govind Pashu Vihar (Uttarkashi); upper Yamuna basin	Shakumbhari Pass and other Shivalik notches; cross from UP plains northward over Shivaliks into Garhwal Himalayas
Drokpa / Brokpa – Ladakh (DhaHanu, Leh district)	Indus valley floor villages (agropastoral base)	Dha, Hanu, Darchik, Garkon (lower Indus, ~2,800–3,000 m)	High-altitude summer meadows (limited vertical range)	Pastures above 3,000 m along Indus tributaries	Along Indus tributaries above Dha-Hanu villages; limited vertical range compared to other groups
Drokpa / Brokpa – Arunachal (West Kameng & Tawang;	Lower and mid-altitude villages (winter base)	Villages in West Kameng and Tawang districts (~9,000–10,000 ft)	High Himalayan pastures near Tibet border	High-altitude grazing grounds in West Kameng and Tawang; route via Sela Pass area	Routes through Tawang district toward Tibet border; Sela Pass corridor documented for some groups.

Community	Winter Zone	Winter Locations	Summer Zone	Summer Locations	Key Passes / Route Corridors
Monpa sub-tribe)				through Bhutan corridor	

5. LIVESTOCK SYSTEMS AND ECONOMIC CONTRIBUTIONS

5.1. Livestock Diversity.

Himalayan transhumant herders maintain a diversity of livestock species that reflects both ecological adaptation to specific altitude zones and livelihood diversification across product types. Table 4 summarises the major livestock types, their primary uses, and key economic notes.

Table 4: Livestock Types, Management Practices, and Economic Roles by Herder Group

Livestock	Herder Group	Typical Herd Size	Primary Product & Yield	Economic Note
Pashmina Goat	Changpa	200–400 animals	~150–200 g fibre/animal/yr (hand-combed)	GI tag granted 2013; premium market; price volatile
Sheep (wool)	Gaddi	300–600 animals	Wool, meat, manure; sheared once/twice yearly	Raw wool prices low; value-addition weak
Yak	Bhotia, Changpa	30–80 animals	Milk, butter, fibre (khullu), draught, transport	Multi-use animal; declining numbers documented in Uttarakhand
Buffalo	Van Gujjar, Gujjar	10–30 animals	Milk and dairy (primary subsistence and sale product)	Dairy central to household nutrition
Dzo (Yak × Cattle cross)	Bhotia	Variable	Milk, draught; more tractable than pure yak	Used at intermediate altitudes; practical hybrid

Note: Precise per-animal yield figures and herd-level income data are not consistently available across communities in the published literature. The yield range for Pashmina fibre (150–200 g/animal/year) is a widely cited industry figure. Economic assessments of Gaddi and Van Gujjar herding are largely qualitative in the ethnographic literature.

The yak serves as the main symbol for the entire high Himalayan and trans-Himalayan regions. Yaks possess physiological features which enable them to survive in cold environments with low oxygen levels while they consume rough grass at high altitudes which no other domestic animals can reach (Choephel, 2019). The animals supply milk and meat together with coarse outer coat and fine inner down wool and they function as pack animals who traverse through high mountain passes. The yak populations in Uttarakhand have declined during recent decades because of two main factors which resulted in decreased nomadic herding patterns and more Bhotia people opting to settle down and the border trade market lost its ability to support sustainable business operations (Joshi et. al., 2025). The Pashmina goat occupies a unique global niche, no other domestic animal produces fibre of comparable fineness at commercial scale. The hand-combing process in spring, when the goat naturally sheds its undercoat, requires extensive work but produces minimal results from each goat. The Changpa economy has sustained its existence because of the extraordinary value which their special fibre generates. The introduction of mass-produced Chinese cashmere into global markets during the 1990s and 2000s resulted in severe price reductions which Bhasin (2011) described as the GI tag has fixed partially.

5.2. Non-Market Dimensions of the Pastoral Economy

About 90 percent of transhumant economic activities operate outside market systems which makes their economic impact impossible to measure through conventional economic evaluation methods. Direct dairy consumption by herding families represents a major component of their family dietary needs (Wani et. al., 2009). Gooch (1998) describes the Van Gujjar household as fundamentally structured around the buffalo herd because dairy products provide families with essential food security which protects them from market price changes. The herd also functions as a savings and insurance mechanism, as animals accumulated in productive years, sold in times of crisis. Dung from migrating herds gets spread throughout summer grazing areas which helps alpine meadows maintain their nutrient cycling patterns. Pastoral communities provide ecological services that improve mountain landscape productivity but these benefits remain unrecognized by current income measurements of their pastoral activities (Huntsinger and Oviedo, 2014).

6. ECOLOGICAL ROLES AND BIODIVERSITY

Transhumant pastoralism operates as an economic system while also functioning as an ecological process. The movement of large herds through varied ecosystems leads to seed dispersal and nutrient cycling which also affects vegetation structure and landscape heterogeneity resulting in multiple effects on biodiversity (Floate, 1981). The alpine meadows of the IHR support distinctive flora, including many endemic species, and a diverse invertebrate and bird fauna. Research conducted by Singh and Gaur (2008) states that moderate grazing maintained higher plant species diversity than both intensive grazing and complete exclusion of animals from grazing areas. The finding supports the intermediate disturbance hypothesis because it shows that pastoral systems managed according to best practices preserve biodiversity in their natural habitats. The critical variables include stocking rate and grazing duration and timing of pasture access which constitute the fundamental elements that traditional transhumant herders have managed through established customs and negotiation practices. The snow leopard (*Panthera uncia*) serves as the top predator which rules the high Himalayan zone while it stands as an important conservation species for international protection. Research in Spiti valley and Ladakh has shown that snow leopards use the same territories which herders create for their animals. Herders observe snow leopard behavior and presence in their territory because livestock predation creates conflicts between herders and snow leopards. Several community-based conservation programmes in Ladakh and Spiti have built on this relationship, engaging herders as monitors and conservation advocates (Ghoshal, 2017; Chetri, 2018). The continuation of pastoral livelihoods in these landscapes is therefore not simply compatible with snow leopard conservation but may be part of its foundation. The Changtang wetlands of Ladakh, which Changpa herders use as seasonal grazing and watering grounds, have received designation as Ramsar wetlands. The area maintains breeding populations of black-necked cranes (*Grus nigricollis*) and bar-headed geese (*Anser indicus*) together with various migratory waterfowl species (Jamwal et. al., 2020). The low-intensity pastoral use of these wetland margins does not harm bird populations, but both groups show sensitivity to climate-related hydrological changes.

7. THREATS TO TRANSHUMANT SYSTEMS

7.1. Climate Change.

The Himalayan transhumant systems face their most severe danger from climate change, which represents an enduring environmental threat. The IHR experiences a faster rate of warming, which several studies repeatedly confirm (TERI, 2018). Glaciers retreat, which leads to changes in alpine zone hydrological systems. The timing and depth of snowpack are displaying changes that cause disruptions to the seasonal calendar, which herders use for migration. The herders in several documented studies report that traditional migration dates no longer match conditions on the ground, requiring improvised adjustments that increase risk (Kumar et. al., 2025a). Remote sensing studies of the IHR have shown that the vegetation in the region develops an upward movement pattern which researchers refer to as the 'greening of the Himalaya' that occurs due to rising temperatures. The ecological interpretation of this trend shows a complicated pattern (Kumar et. al., 2022). The area experiences less palatable shrub species spreading into former meadow spaces, which results in reduced fodder quality. The territory might extend its productive season throughout high-altitude periods. The process results in increased yearly fluctuations that affect vegetation growth, which makes it difficult to manage grazing activities. Herder reports from the IHR describe extreme events that include late spring snowstorms and sudden early winter onset, with case studies providing some documentation of these occurrences that lead to substantial livestock deaths (Kumar et. al., 2025b). Diseases represent another aspect of climate change that brings health effects. Several studies across

Himalayan states that livestock diseases, which used to affect only lower-altitude areas, have started to move into higher zones, which now threatens herds that lack previous immune protection. The recognition of disease vector range expansion in warming mountain regions worldwide matches this pattern, yet the IHR lacks sufficient systematic surveillance data for herder livestock (Akram, 2022).

7.2. Legal and Regulatory Pressures.

The establishment of national parks and wildlife sanctuaries through the Wildlife Protection Act of 1972 has reduced traditional grazing rights for pastoralists. The initial Act created protected area management standards which prohibited all types of human land activities including pastoralism. Protected areas have become areas where forest officials treat herder access as encroachment activities (Mehra and Mathur, 2021). The legal basis for this treatment is contested, the Forest Rights Act of 2006 enables communities to assert their grazing rights plus other rights, yet some courts have recognized pastoral rights within protected areas but the actual enforcement of these rights remains irregular. The Forest Rights Act (FRA) stands as an important piece of legislation. The law established a legal framework which allowed pastoral and nomadic groups to obtain community forest rights for the first time. The FRA does not provide solutions for transhumant communities because it was developed to solve different problems. The legal rights of indigenous people are not limited to particular geographic territories. The indigenous people practice seasonal land usage which extends over potentially 100 kilometers of land that includes various administrative zones, state boundaries, and protected territories. The FRA defines community forest rights through rights which apply to stationary communities, excluding rights of mobile herders. Pastoral groups have experienced rejection for numerous FRA claims because technicalities which showcase design limitations operate as rejection reasons (NITI Aayog, 2017).

7.3. Sedentarisation and Demographic Change.

Nomadic communities have experienced continuous government policies since Independence which support their transition to permanent settlement. The administrative rationale established that governments could better manage taxes and service delivery processes when citizens had established permanent residence. The developmental rationale established that permanent farming operations delivered higher economic benefits than temporary farming activities. The security rationale established that border area communities which moved between territories were treated as dangerous groups. These motivations led to the development of policies which provided strong advantages to people who chose to live permanently in one location. People who want to access housing programs and educational institutions and government support services and medical facilities need to establish permanent residential status. A herding family spending six months on migration faces practical exclusion from many of these systems unless one part of the family remains behind. The partial sedentarisation pattern which Gaddi and Bakarwal families increasingly show has two main effects because it leads to fewer available herding workers and it causes herding operations to decline and complete transhumant practices to transition into permanent settlements (Rao, 1998; Saberwal, 1999). The generational dimension is critical. Young people in herding communities face a genuine and rational choice between the physically demanding and economically uncertain life of transhumance, and the opportunities available through education and non-pastoral employment. The Gaddi traditional system establishes a choice which Saberwal (1999) explains through his research because younger herders demonstrate doubt about their future role in the pastoral system. The decline in herding as a vocation shows two main sources of responsibility because external forces impact herding jobs while people choose their career paths based on their available options.

Table 5: Threats and Policy Instruments Relevant to Himalayan Transhumant Communities

Threat	Nature of Impact	Relevant Policy Instrument / Status
Climate variability	Erratic snowmelt, pasture phenology shifts, disease range expansion	State Action Plans exist; pastoral-specific adaptation absent
Protected area restrictions	Closure of traditional grazing corridors within national parks and sanctuaries	Wildlife Protection Act 1972; FRA 2006 offers partial remedy but implementation uneven

Threat	Nature of Impact	Relevant Policy Instrument / Status
Sedentarisation incentives	Housing, schooling, ration systems favour settled populations	PMAY, PDS not designed for mobile households; no portability of entitlements
Infrastructure development	Roads, hydropower dams, border infrastructure fragmenting migration routes	EIA regulations do not systematically assess pastoral corridor impacts
Market marginalisation	Middlemen capture most wool/fibre value; no direct market access	Pashmina GI tag (2013) is positive precedent; wool value chain unreformed
Legal ambiguity	Pastoral land rights unrecognised; no inter-state corridor legal status	No dedicated national pastoral policy; FRA community rights claims pending in many states

Sources: *Wildlife Protection Act (1972)*; *Forest Rights Act (2006)*

8. POLICY FRAMEWORK AND RECOMMENDATIONS

8.1. Existing Legal and Policy Instruments.

India lacks a unified national policy framework which addresses both pastoralism and nomadic livelihood systems. The ministries which manage forestry and agriculture and animal husbandry and tribal affairs have operated independently without the required special cross-sector collaboration needed by transhumant communities. NITI Aayog reports on the Indian Himalayan Region acknowledge that nomadic and transhumant communities experience particular livelihood vulnerabilities which existing poverty reduction programs and tribal welfare schemes fail to address (NITI Aayog, 2017). The Forest Rights Act of 2006 represents the primary legal framework which currently applies to pastoral communities. The Act establishes grazing rights for settled and transhumant herding as well as traditional seasonal resource access which nomadic and pastoralist people. Recognition requires a formal process because it does not happen automatically. The Gram Sabha and Sub-Divisional Level Committee and District Level Committee must oversee the entire process which involves claim initiation and adjudication. This situation has created many difficulties for transhumant communities who require mobility-based seasonal patterns. Their seasonal mobility prevents them from entering disputed territories during months of absence. Their land use spans potentially hundreds of kilometres across administrative and state boundaries, and documentation requirements were designed with sedentary communities in mind. The FRA framework lacks any system to coordinate activities between different states. Pastoral communities have shown minimal interest in the Act because it requires them to follow complicated procedures which result in multiple barriers. The percentage of approved claims remains low because only 2.4 percent of claims filed in Uttarakhand receive approval which makes it one of the lowest approval rates in India (Ministry of Tribal Affairs, 2021). State-level progress has occurred in an inconsistent pattern which began to develop only in recent times. The Himachal Pradesh government has implemented two major administrative actions. The Forest Department of Himachal Pradesh issued a notification in January 2025 which officially recognized 1,637 traditional pastoral routes while prohibiting tree planting along these routes. The state's 2026-27 budget introduced a PEHEL scheme which aimed to support pastoral families. These administrative actions serve as important achievements for the organization but they do not function as legal rights for land ownership. In Uttarakhand, Van Panchayats have official control over community forest yet the authority of these councils has been diminished through three successive rule changes which occurred in 1976, 2001, and 2005 (Negi et al., 2012). The organizations operate as Forest Department implementers instead of functioning as independent governance entities which transhumant communities have seldom utilized to obtain rights for seasonal grazing.

8.2. Directions for Policy Reform.

Multiple reforms would create higher benefits for transhumant herders who work in the IHR. The national policy on pastoralism needs to include seasonal migration as an acceptable land use system. The policy needs to establish legal frameworks which protect pastoral corridors and enable inter-state access rights and allow welfare benefits to move between states. The technical requirements for FRA implementation

need to undergo reform because mobile pastoralists require different solutions. The process requires development of claim documentation procedures which need seasonal use evidence through migration route maps and seasonal calendars and oral testimony from community elders instead of using continuous documentation requirements which agricultural communities need. The civil society organisations have created draft frameworks which state governments still need to approve. Transhumant communities require climate adaptation support which should include extreme weather early warning systems that can be used by mobile herders through their mobile devices and emergency veterinary services which should be available along important migration paths and which should include both adaptive knowledge systems documentation and operational support. The value chain for Himalayan pastoral products such as wool, dairy, fibre requires policy attention to reduce dependence on exploitative intermediaries. The Pashmina GI tag creates a useful legal foundation which should be developed further. Service delivery systems need to undergo fundamental redesigning because their current model requires people to establish permanent residence before they can access essential services which include schools and health facilities and ration distribution and identity documentation. Pastoral rights advocates have long pushed for this demand which has seen minimal progress but administrative implementation of the solution would decrease transhumance-related family hardships.

9. CONCLUSION

Transhumant herders represent a unique group of people who inhabit the Indian Himalayan Region through their distinct ecological and cultural practices. The migration systems of this community demonstrate their accumulated knowledge which they have developed over generations to understand mountain ecosystems and manage livestock and handle their need to transition between high-altitude areas during different times of the year. The community produces high-value products through pashmina and wool and dairy while they protect alpine meadow ecosystems and create wildlife habitats and preserve their deep-rooted cultural traditions. The group stands as one of the most politically oppressed communities throughout India. The combined effects of climate change together with government regulations and the force of people moving to permanent settlements and their experience of market exclusion create a critical danger for the survival of these systems. The disappearance of transhumant pastoralism would result in both a substantial cultural loss and an essential cultural loss which people have yet to realize. The process will result in two outcomes: first, alpine meadow ecosystems will suffer degradation because seasonal grazing will stop and second, all indigenous ecological knowledge will vanish without any potential replacements. The process will end wool and fiber-based employment which supports thousands of mountain families and it will show that the Indian government failed to protect land rights of its most defenceless citizens. The legal system must recognize pastoral mobility while the Forest Rights Act needs its implementation process to undergo complete reform and climate adaptation needs to receive funding support through service delivery system redesign. The demands represent reasonable requirements which organizations can execute through affordable resources. The question needs to be addressed through political assessment.

Note on Data: *Population figures for nomadic and semi-nomadic communities are inherently imprecise. Census methodology struggles to capture mobile households. All population estimates in this paper are presented as ranges drawn from multiple published sources and should be treated as orders of magnitude, not precise counts. Where a specific claim from a source could not be directly verified, it is attributed qualitatively rather than given as a precise figure.*

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