IRJEMS International Research Journal of Economics and Management Studies
ISSN: 2583 – 5238 / Volume 5 Issue 2 February 2026 / Pg. No: 185-202
Paper Id: IRJEMS-V5I2P120, Doi: 10.56472/25835238/IRJEMS-V5I2P122

Original Article

Sustainability Challenges of Transhumance Community in Churah Tehsil, Chamba District: An Empirical Study of Sheep and Goat Farming in Himachal Pradesh

[1]Yaseen Mohd, [2]Manoj Sharma
[1,2]Department of Economics, Himachal Pradesh University, Shimla, Himachal Pradesh, India.

Received Date: 22 January 2025 Revised Date: 16 February 2026 Accepted Date: 19 February 2026 Published Date: 22 February 2026

Abstract: *The paper focuses on the sustainability of transhumance-based sheep and goat herding among the pastoralists in Churah tehsil of the Chamba district in Himachal Pradesh. In order to determine the economic feasibility, continuity of the generations and environmental consciousness, 100 transhumance herders were surveyed using structured schedules as primary data. The results demonstrate very challenging sustainability issues: 94 percent of the participants said that profitability was at a standstill, 73 percent of the surveyed said the profession had lost youth appeal, and 62 percent said they were pessimistic that transhumance would have a future. Although 99 percent of the current practitioners uphold the intention of continuing with farming, 38 percent of them would not attract the next generation to get into farming as a source of livelihood. Moreover, 90 percent of the respondents had observed significant climate changes that had an impact on their pastoral activities. These results indicate that even though transhumance is an effective short-term livelihood strategy, the long-term sustainability of the ways of life faces a threat due to economic stagnation, weakening intergenerational knowledge transfer, youth, lack of interest, and climate variability. The paper finds that urgent policy measures of income, youth, educational, and climate adaptation measures are necessary to sustain this traditional pastoral system that is critical to both the management of mountain ecosystems and livelihoods in the rural setting of the Himalayan region.*

Keywords: *Transhumance, Pastoral Sustainability, Sheep Farming, Goat Farming, Himachal Pradesh, Generational Continuity, Climate Change.*

I. INTRODUCTION

One of the oldest and most ecologically sustainable forms of livestock production in mountainous ecological regions of the world is transhumance pastoralism, where livestock is seasonally displaced/moved between various ecological zones. The centuries-old tradition of transhumance-based sheep and goat production in the Indian Himalayan area has been a significant livelihood measure for the indigenous populations and has also been associated with conservation of biodiversity, carbon sequestration, and rangeland management (Choudhary and Garkoti, 2021; Sharifian et al., 2022). It is the strategic relocation of herds between winter pastures in the lower elevations and summer grazing areas in the alpine meadows, using the spatially and temporally heterogeneous resources of forage in the most effective format (Bhasin, 2018).

Transhumance pastoralism is a part of the socio-economic and cultural organization of the mountain communities in Himachal Pradesh, especially in the Chamba district. There are a few transhumant groups that are based in the state, such as Gaddis, Gujjars, and other pastoral groups that raise sheep and goats in vertical migration patterns (Bulgheroni & Axelby, 2023). A key benefit of this traditional activity is the supply of needed protein sources and wool production in addition to preserving traditional ecological knowledge systems with generations of growth (Moktan et al., 2008).

Nevertheless, modern transhumance structures all over the world present unprecedented challenges of unexpectedness towards their sustainability and viability. International research shows that there are fewer pastoral practitioners, downsizing of herd sizes, a break in traditional migration pathways, and that youths are becoming less and less interested in the practice (Manzano et al., 2021; Scoones, 2021). Pastoral communities in the Himalayan setting have their own multidimensional challenges in the form of the effects of climate change, policies, land use, difficulties in integrating into the market, and socio-economic changes (Aryal et al., 2014; Axelby and Bulgheroni, 2021).

The Churah tehsil in the Chamba district is one of the important transhumance regions in Himachal Pradesh, where pastoralists have long been engaged in seasonal sheep and goat rearing by migration. The topography of the region is highly diverse, with foothill forests and alpine pastures located at high altitudes, which are also the best zones that have been historically exploited by transhumant herders to produce their livestock optimally. The region is typified by severe winters,

which force the downward migration to warmer regions, after which the region ascends to high levels in its grasslands in summer seasons.

Although transhumance is an important ecological and economic activity in the Churah tehsil, there have been scant formal studies to examine the sustainability of this activity as perceived by the participants. To comprehend the feasibility of transhumance systems, it is necessary to consider various aspects such as the economic profitability, the continuation, and the evolution of the environment, as well as the socio-demographic features of pastoral societies (Ouali et al., 2023).

A) Research Gap and Contribution of the Present Study

Although there is considerably extensive literature on transhumance systems in other locations in the Himalayan region, specifically about Gaddi pastoralists in the tehsil of Bharmour in the Chamba district (Bhasin, 2008, 2011, 2018), there is limited empirical research specifically considering the sustainability aspects of transhumance communities in Churah tehsil. This knowledge vacuum is especially imperative considering that the socio-ecological conditions and pastoral activities in various sub-regions of the Chamba district are unique.

This study is important in that it may provide evidence-based policy interventions and development policies to the pastoral communities. The self-evaluations of the profitability trend, readiness to stay in the profession, intentions to motivate the new generation, the level of youth interest, and the perception of climate changes may be important factors to consider when designing the right support mechanisms to ensure the sustainability of systems of transhumance (Verma & Khadka, 2016).

II. LITERATURE REVIEW

A) Global Perspectives on Transhumance Sustainability

Transhumance pastoralism is a world-important production system that is implemented in a variety of geographical settings, from the Mediterranean to Central Asia, and from the Andes to the Himalayas (Manzano et al., 2021). At the international level, there has been a growing interest to learn about the adaptive capacity and resilience of pastoral orders to meet the current challenges, such as globalization, climate change, market integration, and policy changes (Galvin, 2009; Scoones, 2021).

The trends on the viability of pastoralism are reported in recent research studies in other regions. Ocak Yetişgin et al. (2025) determined the following six main drivers transforming goat transhumance in the Mediterranean Turkey: rural urbanization, economic pressures, governmental policies, the effects of climate change, the effects of the pandemic, and the development of the green economy frameworks. In the same way, studies in West Africa show that pastoral changes to sedentarization are complex relationships between agro-ecological, infrastructural, institutional, and socio-economic factors (Koutchoro et al., 2025).

B) Transhumance in the Himalayan Region

About 25-30 million people live in the Hindu Kush Himalayan area, with their livelihood being based on livestock production, and transhumance is one of the most important adaptation tools to the extreme weather conditions and vulnerable habitats (Verma & Khadka, 2016). Himalayan transhumance regimes are unique features that are conditioned by the severe altitudinal gradients, high seasonality, and cultural heterogeneity of pastoral populations.

The studies along the Himalayan arc report on the ongoing importance and increasingly difficult challenges of transhumance. In Nepal, research findings indicate that pastoral people have been on the defensive due to institutional reforms, economic shifts, weather fluctuations, and governmental limitations on the right to graze (Banjade and Paudel, 2008; Aryal et al., 2014). The study of the Kailash Sacred Landscape revealed that although 90% of the herders were planning to carry on with transhumance, financial returns were low, the number of laborers was low, and the younger generation was not interested in the system (Pasakhala et al., 2021).

Transhumance is still common among the people in the Indian Himalayan states like Gaddis, Gujjars, Bakarwals, and Kinnauras. Nonetheless, studies show that the participation rates go down substantially. Choudhary and Garkoti (2021) reported a 44 percent drop in herd size, a 60 percent decrease in the sheep and goat population, and a 25 percent decrease in the families that practiced transhumance in a 35-year time span in the Kinnaur district of Himachal Pradesh. These decreases are associated with socio-economic transitions such as the emergence of horticulture, tourism infrastructure, and alternative livelihoods.

C) Economic Viability and Profitability

One of the key pillars of the viability of pastoral systems is economic sustainability. Studies have shown that the issue of profitability has a huge impact on the pastoral paths. As Schulz et al. (2018) revealed, the profitability of Swiss alpine farms

is attained to critically dependent on the size of herd, value addition in terms of innovative product development, and efficient direct marketing. Smaller operations have a specific challenge of generating sufficient income per labor hour.

Research has shown in pastoral systems disastrous tendencies in which terms of trade are slowly turning against pastoral producers, with prices of livestock products not keeping up with the cost of inputs and inflation (Swift, 1982; FAO, 2001). It is a kind of economic squeeze that compels various pastoral households to diversify their source of income or opt out of pastoralism altogether (Bezu & Holden, 2014).

D) Generational Continuity and Youth Disengagement

The most alarming pattern that could endanger the pastoral sustainability of the world at large might be the decreasing interest of young people in carrying on the transhumance lifestyles. This phenomenon is recorded in various geographical situations in several studies. In Kenya, a study discovered that there was growing youth migration towards urban centers in the pastoral areas due to the belief that pastoralism was only providing them with fewer economic opportunities (Pastres, 2019).

Verma and Khadka (2016) observe in the context of the Himalaya that the issue of labor shortages caused by youth leaving the region to pursue education and alternative economic ventures is a significant problem to the continuation of transhumance. Similar trends were reported by Namgay et al. (2013) in Bhutan, where younger generations indicate that they are less interested in transhumance even though it remains economically relevant.

E) Climate Change Impacts

Climate change is another very pressing issue that influences the sustainability of pastoralists in the mountain areas. The warming rates in the Himalayan region are higher than the global ones, and there are considerable changes in the distribution of precipitation (Ahmed et al., 2023). Studies identify a variety of ways in which climate change can impact transhumance systems, such as the poor quality of the grasslands, the shift in the migration schedule, the prevalence of extreme weather patterns, and the broken regularity of the seasons (Axelby and Bulgheroni, 2021).

III. METHODOLOGY

The current research is anchored on primary data that was gathered by the researcher himself about 100 non-Gaddi transhumant sheep and goat herders in Churah tehsil of Chamba district of Himachal Pradesh. The observations were conducted in May and June 2025 when the majority of transhumance were available prior to their start of an upward movement. The descriptive research design was followed to determine the sustainability of this traditional livelihood in economic, social, and environmental aspects.

Purposive sampling was used to select the respondents, all of whom were active transhumants who undertook seasonal migration. A structured schedule was used to gather information and included interviews on the demographic characteristics, trends in profitability, continuity across generations, as well as perceptions of climate change. A pilot test was conducted in a close village to determine whether the schedule to be used is clear and reliable for use in the actual survey.

The analysis of data was conducted with the help of simple statistical methods like frequency and percentage distribution, and the results were corroborated by qualitative field observations that were made in the form of notes when conducting interviews. This subjective style of description was useful in revealing both quantifiable tendencies and contextual information concerning the evolving dynamics of transhumance. Field practices were adhered to strictly, and informed verbal consent was obtained from all respondents before taking part.

IV. RESULTS

A) Socio-demographic Profile of Respondents

It is imperative to know the socio-demographic background of respondents in order to understand their sustainability perceptions. The respondents were a mixed cross-section of the transhumant population of the Churah tehsil. The respondents of the current study were all men, which demonstrates the gender aspect of transhumance in Himachal Pradesh, where men do the migratory animal rearing, whereas women were engaged in household and agricultural work in the villages. Such a male-dominated organization highlights the physically taxing consequences of transhumant life.

As per age, the percentage distribution was as 12% was 18 to 24 years, 22% was between 25 to 34 years, 26% between 35 to 44 years, 21% between 45 to 54 years, 15% between 55 to 64 years, and 4% for those above 65 years. On marital status, 77% were married, 21% single, and 2% divorced. Respondents had a low level of education, with a majority of 47% of the respondents being illiterate, 20% received primary education, 15% upper primary, 7% secondary, and 11% higher secondary education. On the basis of caste, 80 percent were General, 2 percent were OBC, and 18 percent were SC.

Regarding the family structure, 45% were living in nuclear families, and 55 percent were living in joint families. Regarding landholding, 8% had land up to 1 bigha, 46% between 1–5 bighas, 33% between 6–10 bighas, and 13% above 10

bighas. The annual household income ranged from up to ₹50,000 (9%) to above ₹2,00,000 (10%), with the majority (53%) earning between ₹50,000–₹1,00,000 annually.

B) Perceptions of Sustainability among Respondents

The respondents were asked a series of questions related to profitability, continuity, intergenerational transfer, and perceived climate change. The responses are summarized in Table 1.

Table 1: Perceptions Related to Sustainability of Transhumance (N = 100)

Sr. No.	Question	Response Category	Percentage (%)
1.	Have you noticed any Change in the profitability of the profession over the years?	Increased	02%
		Decreased	04%
		No Change	94%
2.	Are you planning to continue sheep and goat farming in the future?	Yes	99%
		No	00%
		Uncertain	01%
3.	Would you encourage the next generation to continue livestock farming?	Yes	38%
		No	33%
		Uncertain	29%
4.	Is the younger generation in your family interested in continuing the profession?	Yes	19%
		No	08%
		Uncertain	73%
5.	Do you think transhumance will continue in the future?	Yes	14%
		No	24%
		Uncertain	62%
6.	Have you noticed any changes in the climate over the years?	Yes	90%
		No	10%
		Uncertain	00%

According to the findings, the majority of the respondents do not see much change concerning the profitability, but nearly all respondents plan to remain in the sheep and goat farming business in the near future. Nevertheless, merely 38% would recommend their own children to follow the same, and two out of three (67) said that the younger generations showed no interest. Moreover, only 14 percent of people think that transhumance will continue in the future, and a high percentage (62) are pessimistic. Almost every respondent (90 percent) has observed any changes in climate, implying that these communities directly experience the changes within the environment.

V. DISCUSSION

A) Integrated Analysis of Sustainability Challenges

The results of Churah tehsil indicate that there is a transhumance system that has several interrelated sustainability issues that, when cumulated, pose a threat to long-term viability even though short-term sustainability is ensured. The fact that near-universal continuation intentions (99%) in current participants are almost universally low compared to majority youth disinterest (73) and pessimism about future viability (62) suggests that the system is in its transition stage and may eventually slide down the slope without serious actions.

B) The Economic Sustainability Crisis

The fact that profitability stands at stagnation, reported by 94% of respondents, is arguably the most debilitating factor to transhumance sustainability. The fact that practically no practitioners claim that they are actually making more profits, existing in an environment where the national economy was growing, and inflation remains, is an indicator of real income reduction. This economic stagnation is indicative of more general structural issues in the pastoral systems around the world, where the terms of trade between livestock products and purchased goods tend to turn negative with time (Swift, 1982; FAO, 2001).

The economic problems are complicated by the demographic profile. 47 percent of the population is illiterate, and only 11 percent have higher secondary education, which means that a large number of practitioners will not have market negotiation skills, value addition, or alternative business diversification. The fact that 62 percent of the respondents represented the low-income groups (less than 1,00,000 per annum) is an indication that transhumance produces subsistence, but not much to invest in more productive activities.

Comparative studies provide possible ways of economic improvement. Schulz et al. (2018) also revealed that more extensive operations and those that pursue value addition by innovative products are much more profitable. Such measures, however, need capital investment, skills training, and market access, which many Churah transhumance practitioners do not have.

C) The Generational Continuity Crisis

The very deep generational dismemberment expressed through youth disinterest and practitioners' ambivalence over promoting continuity is perhaps the most worrying to long-term sustainability. When 73 percent of the young generation express no desire in the practice of transhumance and only one out of every three transhumance practitioners will recommend the practice to the upcoming generation, this is the meaning: unless there are considerable changes in the upcoming generation, transhumance will experience a succession crisis in the next generation.

This is a trend in accordance with the world trends in pastoral systems. Other studies, including Kenya, Nepal, and Bhutan, focus on decreased interest of youth in mobile pastoralism (Pastres, 2019; Verma and Khadka, 2016; Namgay et al., 2013). The motivation of its drivers seems to be exceptionally stable: hard labor, low economic benefits, social derision of pastoral professions, education, and the lure of urban living.

It is not just the practice of transhumance but also the traditional ecological knowledge over generations that are threatened by the generational discontinuity. Knowledge related to pastoral practices, such as the methods of animal husbandry, rangelands management practices, the timing of migration, the selection of migration routes, etc., cannot be successfully transferred without a long-term apprenticeship (Sharifian et al., 2022). This information base is lost when young people are not involved at an early age.

D) The Climate Change Dimension

The climate change awareness rate of 90 percent means that the changes that happen to the environment are accepted facts that influence pastoral activities. Although this study lacked the specifics of individual climate effects, other studies on Himalayan pastoral set-ups show several avenues through which climate change has impacted transhumance, including varied precipitation levels impacting production of forage stocks, rising temperature damaging high-altitude grasslands, altered patterns of snowfall affecting the timing of transhumance, and more frequency of extreme weather events (Axelby and Bulgheroni, 2021; Ahmed et al., 2023).

Sustainability issues are increased by climate change in some respects. To begin with, the environmental uncertainty erodes the traditional ecological knowledge systems established through various generations in conditions of rather stable climatic conditions. Second, there can be a need to change herd composition, migration patterns, and management practices that need new knowledge and investments due to changing conditions. Third, the enhancement of climate risks can also strengthen the view of transhumance as increasingly risky in the minds of the youth.

E) Intersecting Marginalization

The demographic description indicates that transhumance practitioners in Churah tehsil are in a multiply marginalized status. Illiteracy (47 percent), concentration in the lower income (62 percent below 1,00,000), insignificant landholdings (54 percent below 5 bigha), and occupation with a socially undervalued occupation all predetermine agency and opportunity. This overlapping marginalization restrains the ability to adapt on one’s own and requires the support of external factors towards sustainable pastoral development.

Sustainability is especially limited by educational marginalization. Poor literacy restricts participation in the market, claiming rights, taking advantage of government welfare programs, and diversification of livelihood. Providing educational opportunities in pastoral settings, such as flexible learning approaches, mobile learning, and curriculum tailored to pastoral ways of life, is a valuable aspect of sustainability assistance.

F) Contextualizing Findings in Broader Research

The sustainability issues reported in the Churah tehsil are indicative of general trends that impact the transhumance system in the entire Himalayan region. The data reported by Choudhary and Garkoti (2021) on 44% decrease in herds and 25% in families practicing transhumance in the Kinnaur district implies that the trends experienced in Churah might be present in Himachal Pradesh in general.

Nonetheless, there is also research that discloses diversity in pastoral paths. The fact that Gaddi pastoralists were termed by Bulgheroni and Axelby (2023) as surprisingly tenacious underlines the persistence of vitality in a pastoral regime in some Himalayan pastoral systems despite the adversities. This variety implies that pastoral sustainability is not predetermined, but it is determined by ecological, economic, policy, and social contexts.

G) Policy Implications

Results indicate that some policy interventions could have the following priorities to facilitate transhumance sustainability:

- Economic Support Mechanisms: To cope with the stagnation in profitability, the policies should be put in place to increase the returns to transhumance practice. Some possible interventions include the establishment of fair price systems for pastoral products, cooperative marketing to enhance bargaining power, value addition through product innovation, subsidized inputs, and market infrastructure in pastoral localities.
- Secure Grazing Rights and Mobility: Studies in pastoral systems highlight that the fundamental requirements for transhumance sustainability are access to grazing areas and freedom of movement (Manzano et al., 2021). Pastoral land rights should be incorporated into policy frameworks, traditional migration routes must be safeguarded, and conservation policies should not excessively limit pastoral movements.
- Youth Engagement and Education: To address generational discontinuity, transhumance should be more appealing to younger generations and, at the same time, be used to educate them. The possible solutions are the creation of mobile schools or seasonal hostels, the creation of vocational training courses that combine traditional pastoral education with modern skills, the creation of mentoring programs, and communication campaigns glorifying pastoral achievement in the field of food security and environmental sustainability.
- Climate Adaptation Support: The 90% climate change awareness shows that the policies should be favorable to pastoral adaptations in climate by enhancing better climate information, research on climate resilient practices, infrastructure that is conducive to adaptive flexibility, and insurance mechanisms to cover losses caused by the climate.
- Integrated Development Approach: Sustainability is probably in need of comprehensive solutions that impact more than one dimension of sustainability. Combined pastoral development initiatives ought to encompass economic assistance, access to education, medical treatment, development of infrastructure, protection of rights, and capacity building, which is participatorily designed with pastoral societies.

VI. CONCLUSION

This research paper shows that sheep and goat rearing in transhumance in the Churah tehsil, Chamba district, is experiencing a problem with long-term sustainability, even as the practice is still being pursued by the present-day practitioners. The economic stagnation, the lack of continuity between generations, the general pessimism regarding the sustainability of these systems, and the climate change facts all pose a severe challenge to the sustainability of this traditionally strong system.

Interestingly, 99% of the people will continue with transhumance; however, 73% of respondents were found to show a lack of interest among youths, and 62% lacked confidence in the future of the livelihood. Almost half of the sample is illiterate, most of them live in moderate income categories, which supports the restriction of independent adaptation and the necessity to provide specific assistance. These issues, however, are not insoluble. The high level of cultural adherence to transhumance and an understanding of the dangers posed by climate is a point of access to an intervention. Policies based on rights, equitable access to the market, education, training, and adaptation support are necessary to counter current weaknesses.

Maintaining transhumance in Himachal Pradesh is not just a matter of maintaining a way of life, but a part of the local culture, conservation of the environment, and history. It will be imperative to address these multidimensional issues through concerted policies and development initiatives that support the viability and survival of pastoral communities in the Himalayan region in the future.

VII. REFERENCES

[1] Ahmed, S., Shah, K. A., & Bhat, G. M. (2023). Impact of climate change on nomadic herders' livelihoods: Evidence from Bakarwal community in the Western Himalayas in India. *Livestock Science*, *267*, 105136. https://doi.org/10.1016/j.livsci.2022.105136

[2] Aryal, S., Cockfield, G., & Maraseni, T. N. (2014). Vulnerability of Himalayan transhumant communities to climate change. *Climatic Change*, *125*(2), 193-208. https://doi.org/10.1007/s10584-014-1157-5

[3] Axelby, R., & Bulgheroni, M. (2021). Old ways and new routes: Climate threats and adaptive possibilities in the Indian Himalayas. *Himalaya*, *41*(2), 83-97.

[4] Banjade, M. R., & Paudel, N. S. (2008). Mobile pastoralism in crisis: Challenges, conflicts and status of pasture tenure in Nepal mountains. *Journal of Forest and Livelihood*, *7*(1), 49-57.

[5] Bezu, S., & Holden, S. (2014). Are rural youth in Ethiopia abandoning agriculture? *World Development*, *64*, 259-272. https://doi.org/10.1016/j.worlddev.2014.06.013

[6] Bhasin, V. (2008). *Himalayan ecology, transhumance, and social organisation: Gaddis of Himachal Pradesh*. Kamla-Raj Enterprises.

[7] Bhasin, V. (2011). Pastoralists of Himalayas. *Journal of Human Ecology*, *33*(3), 147-177. https://doi.org/10.1080/09709274.2011.11906353

[8] Bhasin, V. (2018). Gaddis of Himachal Pradesh. *Journal of Human Ecology*, *64*(1-3), 10-43. https://doi.org/10.1080/09709274.2018.11907110

[9] Bulgheroni, M., & Axelby, R. (2023). Research highlights tenacious pastoralists of the Himalayas. *China Dialogue*. Retrieved from https://dialogue.earth/en/climate/research-highlights-tenacious-pastoralists-of-the-himalayas/

[10] Choudhary, D. K., & Garkoti, S. C. (2021). Sustainability of transhumant pastoralism in Kinnaur district, Himachal Pradesh, India. *International Journal of Ecology and Environmental Sciences*, *47*(2), 91-100.

[11] Food and Agriculture Organization. (2001). *Pastoralism in the new millennium*. Rome: FAO. Retrieved from https://www.fao.org/4/y2647e/y2647e00.htm

[12] Galvin, K. A. (2009). Transitions: Pastoralists living with change. *Annual Review of Anthropology*, *38*, 185-198. https://doi.org/10.1146/annurev-anthro-091908-164442
[13] Koutchoro, A. M., Tente, B. A. H., Ezin, V., & Sinsin, B. (2025). Pastoral transitions in West Africa: Analysis of factors driving changes in livestock mobility in northern Benin. *Pastoralism: Research, Policy and Practice*, *15*, 2. https://doi.org/10.3389/past.2025.15199
[14] Manzano, P., Burgas, D., Cadahía, L., Eronen, J. T., Fernández-Llamazares, Á., Bencherifa, S., ... & Molnár, Z. (2021). Toward a holistic understanding of pastoralism. *One Earth*, *4*(5), 651-665. https://doi.org/10.1016/j.oneear.2021.04.012
[15] Moktan, M. R., Norbu, L., & Nirola, H. (2008). An ecological and socio-economic assessment of the transhumant system in Bhutan. *Mountain Research and Development*, *28*(1), 41-48. https://doi.org/10.1659/mrd.0963
[16] Namgay, K., Millar, J. E., Black, R. S., & Samdup, T. (2013). Changes in transhumant agro-pastoralism in Bhutan: A disappearing livelihood? *Human Ecology*, *42*(5), 779-792. https://doi.org/10.1007/s10745-013-9623-0
[17] Ocak Yetişgin, S., Sariözkan, S., & Ertuğrul, M. (2025). Goat transhumance in Mediterranean Turkey: Characterization, transformation, and sustainability challenges. *Pastoralism: Research, Policy and Practice*, *15*, 3. https://doi.org/10.3389/past.2025.14939
[18] Ouali, M., Abdelguerfi, A., Benniou, R., & Huguenin, J. (2023). Sustainability evaluation of pastoral livestock systems in the steppe regions of Algeria. *Sustainability*, *15*(8), 6809. https://doi.org/10.3390/su15086809
[19] Pasakhala, B., Ranabhat, S., & Nepal, N. (2021). Against the tide: The future of transhumant herders in the Kailash Sacred Landscape, Nepal. *Mountain Research and Development*, *41*(4), R8-R15. https://doi.org/10.1659/MRD-JOURNAL-D-20-00073.1
[20] Pastres. (2019). *Youth moving to town: A major cause of uncertainty among the pastoralists of Isiolo, Kenya*. Retrieved from https://pastres.org/2019/03/01/youth-moving-to-town-a-major-cause-of-uncertainty-among-the-pastoralists-of-isiolo-kenya/
[21] Schulz, T., Weiss, M., & Mann, S. (2018). Summer farms in Switzerland: Profitability and public financial support. *Mountain Research and Development*, *38*(1), 68-79. https://doi.org/10.1659/MRD-JOURNAL-D-16-00118.1
[22] Scoones, I. (2021). Pastoralists and peasants: Perspectives on agrarian change. *Journal of Peasant Studies*, *48*(1), 1-47. https://doi.org/10.1080/03066150.2020.1802249
[23] Sharifian, A., Ghorbani, M., Zarei, H., & Rosenfeld, M. (2022). Dynamics of pastoral traditional ecological knowledge: A global review. *Ecology and Society*, *27*(1), 14. https://doi.org/10.5751/ES-12918-270114
[24] Swift, J. (1982). The future of African hunter-gatherer and pastoral peoples. *Development and Change*, *13*(2), 159-181. https://doi.org/10.1111/j.1467-7660.1982.tb00116.x
[25] Verma, R., & Khadka, D. (2016). Yaks and yak herding in the Hindu Kush Himalayas. In D. J. Miller & S. R. Ale (Eds.), *Yak on the move: Transboundary challenges and opportunities for yak raising in a changing Hindu Kush Himalayan region* (pp. 89-104). International Centre for Integrated Mountain Development.