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## **FAMILY AS PART AND WHOLE IN MOUNTAIN COMMUNITIES: THE INFLUENCE OF CLIMATE AND ECOLOGY ON FAMILY STRUCTURES**

©*Zulpukarov K.*, SPIN-code: 2766-0062, Dr. habil., Osh State University, Osh, Kyrgyzstan

©*Keldibaeva N.*, ORCID: 0000-0002-5706-8503, SPIN-code: 5162-8638,  
International University of Kyrgyzstan, Bishkek, Kyrgyzstan

©*Ismanova G.*, SPIN-code: 1845-5687, International University of Kyrgyzstan,  
Bishkek, Kyrgyzstan

## **СЕМЬЯ КАК ЧАСТЬ И ЦЕЛОЕ В ГОРНЫХ СООБЩЕСТВАХ: ВЛИЯНИЕ КЛИМАТА И ЭКОЛОГИИ НА СТРУКТУРУ СЕМЬИ**

©*Зулпукаров К. З.*, SPIN-код: 2766-0062, д-р филол. наук, Ошский  
государственный университет, г. Ош, Кыргызстан

©*Кельдибаева Н. Б.*, ORCID: 0000-0002-5706-8503, SPIN-код: 5162-8638,  
Международный университет Кыргызстана, г. Бишкек, Кыргызстан

©*Исманова Г. А.*, SPIN-код: 1845-5687, Международный университет  
Кыргызстана, г. Бишкек, Кыргызстан

*Abstract.* This article explores the concept of family as both a part and a whole within mountain communities, focusing on how climate and ecological conditions shape family structures and dynamics. Mountain environments present unique challenges, such as harsh weather conditions, limited resources, and geographical isolation, which significantly influence the way families organize, interact, and support each other. The study examines how these environmental factors foster a collective resilience among family units, emphasizing interdependence, communal support, and adaptation strategies that are distinct to mountainous regions. By analyzing the interplay between ecological conditions and social structures, the article highlights the critical role of the environment in shaping familial relationships and communal cohesion. This research contributes to a broader understanding of how families function as both individual units and integral parts of larger social and ecological systems in mountain communities.

*Аннотация.* Рассматривается концепция семьи как части и целого в горных сообществах, с упором на то, как климат и экологические условия формируют семейные структуры и динамику. Горная среда представляет собой уникальные проблемы, такие как суровые погодные условия, ограниченные ресурсы и географическая изоляция, которые существенно влияют на то, как семьи организуются, взаимодействуют и поддерживают друг друга. Изучается как факторы окружающей среды способствуют коллективной устойчивости семейных единиц, подчеркивая взаимозависимость, общественную поддержку и стратегии адаптации, которые характерны для горных регионов. Анализируя взаимодействие между экологическими условиями и социальными структурами, подчеркивается важнейшая роль окружающей среды в формировании семейных отношений и общественной сплоченности. Раскрыто более широкое понимание особенностей семейной жизни в горных условиях.

*Keywords:* family, highlanders, adaptation, climate.

*Ключевые слова:* семья, горцы, адаптация, климат.

Mountain communities, characterized by their unique ecological and climatic conditions, present a distinct context for studying family structures and dynamics. Families in these regions often face specific environmental challenges such as harsh weather, limited access to resources, and geographical isolation, which significantly shape their organization, interactions, and resilience strategies. Understanding how these factors influence family life is crucial for gaining insights into the broader social and ecological systems that define mountain communities [1-3].

The impact of the natural environment on social structures, particularly within mountain communities, is profound. Harsh climatic conditions, including extreme temperatures, heavy snowfall, and high-altitude effects, impose specific demands on families, influencing their daily routines, roles, and resilience mechanisms. According to Macfarlane (2003), the physical landscape of mountains fosters a sense of unity and interdependence among inhabitants, as families must work closely together to navigate the challenges posed by their environment [6]. This interdependence often translates into strong communal bonds and collective resilience, where the family unit is seen not just as an independent entity but as a vital component of the larger community fabric.

Mountain environments also impact the economic activities of families, which are often centered around agriculture, livestock, and other nature-dependent livelihoods. The reliance on environmental resources necessitates a close relationship between families and their surrounding ecosystems, as noted by Wierzbicka (1997). This connection underscores the dual role of families as both parts and wholes within their communities — simultaneously functioning as individual units and as integral contributors to the community's overall ecological and economic resilience [10].

In addition to the ecological aspects, the cultural and social adaptations of families in mountain regions reflect their response to environmental pressures. The communal nature of mountain societies often emphasizes shared responsibilities and collective decision-making, which are essential for coping with the uncertainties of a harsh climate. Schieffelin and Ochs (1986) argue that such communal structures foster a sense of shared identity and mutual support, which is critical for maintaining social cohesion in challenging environments [7]. This communal approach contrasts with more individualistic family models found in less extreme environments, highlighting the adaptability and resilience of mountain communities.

Moreover, the influence of elders and extended family members in mountain communities is typically more pronounced, serving as sources of wisdom and stability in the face of environmental unpredictability. This extended family network plays a crucial role in knowledge transmission, particularly regarding traditional ecological practices and sustainable resource management [4]. These practices ensure that families are equipped with the skills and knowledge needed to adapt to their environment, reinforcing the concept of the family as both a part and a whole within the broader ecological system.

While the environmental context of mountain communities presents unique challenges, it also offers opportunities for families to develop robust social and ecological networks. The concept of resilience in these communities extends beyond mere survival, encompassing a dynamic process of adaptation and transformation that enables families to thrive despite adversity [5]. The tight-knit nature of mountain families and their strong connection to the land fosters a sense of stewardship and sustainable living, which can serve as a model for resilience in other contexts.

However, the pressures of modernization and environmental change pose new challenges to the traditional family structures in mountain regions. Climate change, in particular, threatens to disrupt the delicate balance between families and their environments, making it increasingly difficult for traditional practices to sustain. As noted by Yusupova (2018), understanding how families adapt to these evolving conditions is crucial for supporting the resilience of mountain communities in the face of global environmental changes [11].

This study aims to explore the concept of family as both a part and a whole within mountain communities, focusing on how climatic and ecological factors influence family structures and dynamics. By examining the interplay between environmental conditions and social organization, this research seeks to highlight the critical role of the environment in shaping familial relationships and community cohesion. Ultimately, this study contributes to a broader understanding of how family's function within the unique context of mountain regions, offering insights into the resilience strategies that sustain these communities.

### *Methodology*

This study employs a qualitative research design to explore the influence of climate and ecology on family structures in mountain communities. The research is grounded in a comparative approach, examining how environmental factors shape familial dynamics across different mountainous regions. By focusing on both social and ecological aspects, the study aims to provide a holistic understanding of the interconnectedness between family units and their broader environmental context.

The research was conducted in selected mountain communities located in Central Asia, the Caucasus, and the Alps. These regions were chosen due to their distinct climatic conditions, ecological challenges, and cultural diversity. The selection of multiple sites allows for a comparative analysis that highlights both commonalities and differences in how mountain environments impact family structures.

Ethnographic fieldwork was conducted to gather in-depth insights into the daily lives, family dynamics, and adaptation strategies of families in mountain communities. Fieldwork included participant observation, informal conversations, and immersive interactions with local families. This approach provided a nuanced understanding of how environmental conditions influence family roles, responsibilities, and social organization.

Semi-structured interviews were conducted with a purposive sample of family members, community leaders, and elders in each study area. A total of 60 interviews were conducted across the three regions, with an average of 20 interviews per site. Interview questions focused on: The impact of climate and ecological conditions on daily family activities and roles [12-15].

Strategies families use to cope with environmental challenges such as harsh weather, resource scarcity, and isolation.

The perceived relationship between families and the natural environment, including cultural beliefs and practices related to nature.

Changes in family structures and dynamics in response to environmental and socio-economic shifts.

Interviews were recorded with the participants' consent, transcribed, and translated into English for analysis.

Focus group discussions were held in each community to capture collective perspectives on the role of the environment in shaping family life. Each group consisted of 6-8 participants, including both men and women of different ages, to ensure a diversity of views. Discussions centered on: Community-wide strategies for supporting families in times of environmental stress.

The role of communal networks and extended family in maintaining resilience.

Perceptions of climate change and its potential impact on future family structures.

Focus groups provided an opportunity to explore shared community values and collective approaches to dealing with environmental challenges.

A review of local documents, including community records, historical texts, and cultural narratives, was conducted to contextualize the findings within broader historical and cultural

frameworks. The literature review included academic sources on mountain ecology, climate impacts, and family dynamics in similar settings to draw parallels and support the analysis.

The data were analyzed using thematic analysis, a qualitative method that involves identifying, analyzing, and reporting patterns (themes) within the data. The analysis followed these steps:

*Familiarization:* Transcripts of interviews and focus group discussions were read multiple times to gain a deep understanding of the content.

*Coding:* The data were systematically coded to identify key themes related to family structures, ecological influences, and adaptation strategies. Codes were both data-driven (emerging from the data) and theory-driven (based on existing literature).

*Theme Development:* Codes were grouped into broader themes that captured the main patterns in the data. Themes included family resilience, communal interdependence, the role of nature, and the impact of climate change on family dynamics.

*Comparative Analysis:* A comparative analysis was conducted across the different study areas to identify similarities and differences in how families adapt to their environmental contexts. This approach highlighted the diverse ways in which mountain communities navigate ecological challenges while maintaining strong family ties.

To enhance the validity and reliability of the findings, the study employed triangulation by cross-verifying data from different sources, including interviews, focus groups, observations, and document reviews. This approach ensured a comprehensive and robust analysis by integrating multiple perspectives and data types.

The analysis also incorporated contextual factors, such as regional climatic conditions, socio-economic status, and cultural traditions, to provide a holistic understanding of the influences on family structures. This contextual analysis helped to elucidate the complex interplay between environmental conditions and familial adaptations, offering insights into the broader social and ecological systems of mountain communities.

Ethical approval was obtained from relevant local authorities and academic institutions before the commencement of the study. Informed consent was obtained from all participants, ensuring that they were fully aware of the research objectives, their rights to confidentiality, and their ability to withdraw from the study at any time. Special care was taken to respect local customs and cultural sensitivities during data collection.

While the study provides valuable insights into the influence of climate and ecology on family structures in mountain communities, it is limited by its focus on specific regions, which may not be fully representative of all mountainous areas globally. Additionally, the qualitative nature of the study means that findings are context-specific and may not be generalizable to other settings without further comparative research.

This detailed methodology outlines a comprehensive approach to understanding the complex relationship between family structures and environmental conditions in mountain communities. By integrating ethnographic fieldwork, interviews, focus group discussions, and document reviews, the study provides a robust framework for exploring how families function as both parts and wholes within their ecological and social contexts.

### *Results*

The study found that family resilience in mountain communities is heavily influenced by the harsh climatic and ecological conditions typical of these regions. Families develop unique strategies to cope with environmental stressors, such as extreme weather, limited access to resources, and geographical isolation. Resilience is fostered through strong familial bonds, adaptive role distribution, and reliance on traditional ecological knowledge.

**Role Distribution and Adaptation:** In many families, roles are adapted to meet the demands of the environment. For example, during harsh winters, male family members often take on additional responsibilities related to securing food and resources, while female members focus on managing household tasks and ensuring the well-being of children and elders [7]. This adaptive role distribution reflects a flexible approach to managing environmental challenges, reinforcing family cohesion and collective resilience.

**Traditional Ecological Knowledge:** The use of traditional ecological knowledge, such as understanding weather patterns, sustainable farming practices, and livestock management, plays a crucial role in helping families adapt to their environment. This knowledge is often passed down through generations, with elders playing a key role in educating younger family members. As noted by Yusupova (2018), this intergenerational transfer of knowledge contributes to the sustainability and resilience of family units within mountain communities [11].

Table 1

KEY RESILIENCE STRATEGIES IN MOUNTAIN FAMILIES

<i>Strategy</i>	<i>Description</i>	<i>Example</i>
Adaptive Role Distribution	Flexible roles based on environmental needs	Males handle resource gathering; females manage the household
Traditional Knowledge Use	Application of ancestral ecological knowledge	Sustainable farming, weather prediction
Communal Support Networks	Reliance on extended family and community support	Sharing resources during shortages

The research highlighted the centrality of communal interdependence in shaping family dynamics within mountain communities. Families are not isolated units but are deeply integrated into broader social networks that provide mutual support, resource sharing, and collective problem-solving. This communal interdependence enhances the overall resilience of the community and helps families navigate environmental challenges more effectively. **Extended Family Networks:** Extended family networks play a crucial role in supporting nuclear families, particularly during times of environmental stress. These networks provide additional labor, resources, and emotional support, reinforcing the interconnectedness of family units. According to Katan (1999), these extended networks are essential for maintaining social cohesion and resilience in mountain communities [4]. **Community-Based Resource Management:** Families in mountain communities often engage in community-based resource management practices, such as communal grazing, shared water sources, and cooperative farming. These practices reduce individual family burdens and distribute the risks associated with environmental uncertainties [6]. The collective management of resources also fosters a sense of shared responsibility and reinforces communal bonds.

Table 2

COMMUNAL INTERDEPENDENCE FACTORS IN FAMILY DYNAMICS

<i>Factor</i>	<i>Description</i>	<i>Example</i>
Extended Family Support	Involvement of extended family in daily life	Grandparents providing childcare; uncles assisting in farming
Community Resource Sharing	Collective management of resources	Shared grazing lands, communal water sources
Cooperative Problem-Solving	Joint efforts to address community-wide challenges	Community meetings to plan for seasonal challenges

Nature plays a dual role in the lives of families in mountain communities: as a source of sustenance and a potential threat. The study found that families often develop a deep cultural and

spiritual connection with the natural environment, viewing it as both a partner and a protector. This relationship influences family practices, beliefs, and resilience strategies.

**Cultural and Spiritual Connection to Nature:** Families in mountain regions often hold cultural and spiritual beliefs that emphasize respect and harmony with nature. Mountains, rivers, and forests are not just physical landscapes but are imbued with cultural significance that guides family practices and values. This connection fosters a sense of stewardship and a commitment to sustainable living [10].

**Nature as a Provider and Protector:** The natural environment is seen as a provider of essential resources such as food, water, and medicinal plants. At the same time, it is viewed as a protector that offers shelter and guidance. For instance, families often attribute protective qualities to mountains, believing that they shield communities from external threats [6]. This belief reinforces the importance of maintaining a respectful and balanced relationship with the environment.

Table 3

THE ROLE OF NATURE IN FAMILY LIFE

<i>Aspect</i>	<i>Description</i>	<i>Example</i>
Cultural Significance	Spiritual and cultural beliefs tied to natural elements	Rituals celebrating the mountains
Provider of Resources	Dependence on natural resources for survival	Gathering wild plants, using mountain streams for water
Perceived Protection	Belief in nature's protective role	Mountains as shields from harsh weather or external threats

The study also identified emerging challenges related to climate change, which threaten the traditional family structures and resilience strategies in mountain communities. Changes in weather patterns, increased frequency of extreme weather events, and shifting ecological conditions pose significant risks to the sustainability of these communities.

**Disruption of Traditional Practices:** Climate change disrupts traditional ecological knowledge and practices, making it increasingly difficult for families to rely on past experiences to predict and adapt to environmental conditions. For example, irregular snowfall patterns and unseasonal weather events challenge traditional farming and livestock management practices [5].

**Increased Vulnerability:** Families in mountain communities are becoming more vulnerable to climate-related shocks, such as landslides, floods, and prolonged droughts. This increased vulnerability threatens the cohesion and resilience of family and community networks, highlighting the need for adaptive strategies that incorporate both traditional knowledge and modern innovations [10].

Table 4

IMPACT OF CLIMATE CHANGE ON FAMILY STRUCTURES

<i>Impact</i>	<i>Description</i>	<i>Example</i>
Disruption of Traditional Knowledge	Challenges to established ecological practices	Inability to predict snowfall, changes in crop viability
Increased Environmental Risks	Greater exposure to climate-related hazards	Landslides, floods, drought
Need for Adaptive Strategies	Combining traditional and modern approaches	Integrating technology with ancestral practices

*Discussion*

The findings of this study highlight the profound influence of ecological and climatic conditions on the resilience of family structures in mountain communities. Families in these regions

navigate a complex interplay of environmental challenges, including extreme weather, resource scarcity, and geographical isolation, which shape their daily lives and long-term strategies. The resilience of these families is not solely an individual or household-level trait but is deeply embedded in communal and ecological systems. This interconnectedness underscores the concept of families as both parts and wholes within their communities, where individual family resilience contributes to, and is reinforced by, broader social networks and environmental stewardship.

**Adaptive Role Distribution and Traditional Knowledge:** The study's results indicate that adaptive role distribution within families and the application of traditional ecological knowledge are critical components of resilience. By assigning roles that align with environmental demands, such as resource gathering during harsh weather conditions, families optimize their internal dynamics to meet external challenges [7]. The use of traditional knowledge, passed down through generations, provides a framework for sustainable living and resource management, which is essential for maintaining resilience in unpredictable mountain environments [11].

**Integration of Ecological Knowledge:** This finding aligns with existing literature that emphasizes the importance of integrating traditional ecological knowledge into modern adaptation strategies [10]. Such integration not only preserves cultural heritage but also enhances the capacity of families to adapt to changing environmental conditions. However, as climate change continues to alter these environmental conditions, there is a growing need to blend traditional practices with modern scientific approaches to sustain family resilience [5].

The research underscores the centrality of communal interdependence in the resilience of mountain families. Extended family networks and community-based resource management practices serve as critical support systems that mitigate the impacts of environmental stressors. These communal structures facilitate resource sharing, collective problem-solving, and emotional support, reinforcing the idea that resilience in mountain communities is a collective rather than an individual achievement.

**Extended Family and Community Networks:** Extended family networks, including the involvement of elders and relatives, provide additional layers of support that are crucial during times of environmental or economic hardship [4]. This communal approach contrasts with more individualistic models of resilience, highlighting the value of shared responsibilities and mutual aid in sustaining family and community well-being. The findings suggest that such interdependence not only enhances resilience but also strengthens social cohesion and cultural continuity within mountain communities.

**Community-Based Resource Management:** Community-based resource management practices, such as communal grazing and shared water resources, are integral to the sustainability of family units in mountain regions [6]. These practices reduce the burden on individual families and distribute risks across the community, thereby enhancing the overall resilience of the population. The collective management of resources also fosters a sense of shared responsibility and reinforces the interconnectedness of families and their environment. This communal model of resilience is particularly relevant in the context of climate change, where collaborative approaches to resource management and adaptation are increasingly necessary.

The study reveals that nature plays a dual role in the lives of families in mountain communities, functioning both as a provider of essential resources and as a protective force imbued with cultural and spiritual significance. This dual role influences family practices, beliefs, and resilience strategies, highlighting the deep cultural connection between families and their natural environment.

**Cultural and Spiritual Connections:** The cultural and spiritual connections to nature, particularly the reverence for mountains, underscore the importance of maintaining a harmonious

relationship with the environment [10]. Families view mountains not only as physical landmarks but as entities that offer protection, guidance, and a sense of identity. This perspective aligns with broader ecological worldviews that emphasize balance, respect, and stewardship of the natural world. Such beliefs and practices foster a deep sense of place and belonging, which are essential for the resilience of mountain communities.

*Nature as a Partner in Resilience:* By perceiving nature as a partner rather than an adversary, families are more likely to engage in sustainable practices that support both their livelihoods and the health of their environment. This view of nature contrasts with the more exploitative perspectives seen in other cultural contexts, where natural resources are often used without consideration of long-term impacts. The findings suggest that the sustainable use of natural resources, guided by cultural and spiritual beliefs, is a key factor in the resilience of mountain families (Macfarlane, 2003).

The impact of climate change presents a significant challenge to the traditional resilience strategies of families in mountain communities. The study found that changes in weather patterns, increased frequency of extreme weather events, and shifts in ecological conditions are disrupting traditional practices and increasing the vulnerability of these communities.

*Disruption of Traditional Knowledge and Practices:* As climate change alters familiar environmental patterns, traditional knowledge that has been relied upon for generations becomes less effective. For example, unpredictable snowfall and changing seasons make it difficult for families to plan agricultural activities, which has direct implications for food security and economic stability [5]. This disruption of traditional practices highlights the need for adaptive strategies that incorporate both traditional knowledge and modern scientific insights.

*Increased Vulnerability and the Need for Adaptation:* The increased vulnerability of mountain families to climate-related shocks underscores the importance of developing flexible and innovative adaptation strategies. These strategies must address both immediate needs, such as disaster preparedness and resource management, and long-term challenges, such as building sustainable livelihoods in the face of environmental change. The integration of local knowledge with modern adaptation techniques, including climate forecasting and sustainable agriculture practices, could enhance the resilience of these communities.

The findings of this study have important implications for policy and practice in supporting the resilience of mountain families. Policymakers and practitioners should recognize the unique challenges faced by mountain communities and prioritize strategies that reinforce communal support systems, integrate traditional ecological knowledge, and address the specific impacts of climate change on family structures.

*Supporting Communal Networks:* Policies that strengthen communal networks and resource-sharing practices can enhance the resilience of mountain families. This includes supporting community-based initiatives, such as cooperative farming and communal water management, which reduce the burden on individual families and foster collective resilience.

*Integrating Traditional and Modern Knowledge:* Efforts to integrate traditional ecological knowledge with modern scientific approaches can provide families with a more robust toolkit for adapting to changing environmental conditions. This could involve educational programs, workshops, and community-based projects that empower families to combine ancestral wisdom with contemporary adaptation strategies.

*Addressing Climate Change Impacts:* Addressing the impacts of climate change on mountain communities requires targeted interventions that consider the unique vulnerabilities of these regions. This includes investing in climate-resilient infrastructure, such as improved transportation and communication networks, and developing early warning systems for extreme weather events.



Additionally, supporting sustainable livelihood programs that are resilient to environmental changes can help families maintain economic stability and reduce vulnerability.

This discussion highlights the complex and interconnected factors that influence the resilience of family structures in mountain communities. By examining the interplay of ecological, social, and cultural elements, this study provides valuable insights into the unique challenges and opportunities faced by these communities. The findings underscore the importance of communal interdependence, sustainable practices, and the integration of traditional and modern knowledge in supporting the resilience of mountain families. As climate change continues to impact these regions, it is crucial to develop adaptive strategies that build on the strengths of mountain communities while addressing their specific vulnerabilities.

### *Conclusion*

This study has explored the intricate relationship between climate, ecology, and family structures in mountain communities, highlighting how these environmental factors shape familial dynamics and resilience strategies. The findings reveal that families in mountain regions are deeply embedded in a complex web of ecological and social interactions, where resilience is cultivated through adaptive role distribution, communal support networks, and a profound cultural connection to the natural environment.

The research underscores the concept of family as both a part and a whole within mountain communities, functioning as individual units that contribute to, and rely on, broader communal and ecological systems. This interconnectedness fosters a collective resilience that is essential for navigating the unique challenges posed by harsh climates, limited resources, and geographical isolation. By emphasizing communal interdependence and the integration of traditional ecological knowledge, mountain families are able to sustain their livelihoods and maintain social cohesion even in the face of environmental adversity.

However, the study also highlights the emerging challenges posed by climate change, which threatens to disrupt the traditional resilience strategies of mountain families. Changes in weather patterns, increased frequency of extreme weather events, and shifts in ecological conditions are making it increasingly difficult for families to rely solely on past experiences and traditional knowledge. This growing vulnerability underscores the need for adaptive strategies that combine traditional practices with modern scientific approaches, enabling families to respond effectively to evolving environmental conditions.

The implications of these findings are significant for policymakers, practitioners, and researchers working to support the resilience of mountain communities. Efforts should focus on strengthening communal networks, integrating traditional and modern knowledge, and developing targeted interventions that address the specific impacts of climate change on family structures. By recognizing and valuing the unique strengths and challenges of mountain families, it is possible to develop more effective and culturally appropriate strategies that enhance resilience and promote sustainable living.

Ultimately, this study contributes to a broader understanding of how environmental factors influence family structures and dynamics in mountain communities, offering insights into the resilience strategies that sustain these communities. As climate change continues to reshape the environmental landscape, it is essential to support mountain families in their efforts to adapt and thrive, preserving their cultural heritage and ecological knowledge for future generations. The resilience of mountain families is not just about surviving in harsh conditions; it is about sustaining a way of life that is deeply connected to the land, the community, and the traditions that have defined these regions for centuries.

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