



Clío

Revista de Historia, Ciencias Humanas
y Pensamiento Crítico



ISSN 2660-9037



Adscrita a:

Fundación Ediciones Clío

Academia de Historia del
estado Zulia

Centro Zuliano de
Investigaciones
Genealógicas

Sección: Artículo científico | 2025, julio-diciembre, año 5, No. 10, 1382-1420

Strategies for the preservation and enhancement of traditional knowledge in Kyrgyzstan

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DOI: <https://doi.org/10.5281/zenodo.15453963>

Abstract

The purpose of this study is to examine the features and strategies for preserving, enhancing and disseminating traditional knowledge in the modern information space. The comparative analysis conducted identified traditional knowledge as the knowledge of communities passed down through generations, characterised by subjectivity, reliance on qualitative data, oral transmission from the older generation to the younger, and the exploration of objects within their natural context. Many aspects of traditional knowledge have stood the test of time and can be utilized to address current challenges, including limited access to formal healthcare and the preservation of biodiversity. The preservation and enhancement of traditional knowledge are among the Kyrgyz government's priorities, because such knowledge shapes the nation's self-identity and enables the preservation of its uniqueness in a rapidly changing world. However, preserving traditional knowledge is a complex task that involves overcoming a number of challenges, including legal conflicts regarding the protection of traditional knowledge through

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Recibido: 2025-03-03 **Aceptado:** 2025-05-07

copyright or patenting; insufficient public awareness of the role of traditional knowledge in preserving national identity; and biased attitudes towards certain communities and custodians of traditional knowledge.

Keywords: traditional knowledge, globalization, continuity, collective memory, self-identity, intangible heritage, Kyrgyzstan.

Estrategias de conservación y mejora de los conocimientos tradicionales en Kirguistán

Resumen

El objetivo de este estudio es examinar las características y estrategias de conservación, mejora y difusión de los conocimientos tradicionales en el espacio moderno de la información. El análisis comparativo realizado identificó el conocimiento tradicional como el conocimiento de las comunidades transmitido de generación en generación, caracterizado por la subjetividad, la dependencia de datos cualitativos, la transmisión oral de la generación más antigua a la más joven y la exploración de objetos dentro de su contexto natural. Muchos aspectos de los conocimientos tradicionales han resistido el paso del tiempo y pueden utilizarse para afrontar retos actuales, como el acceso limitado a la atención sanitaria oficial y la conservación de la biodiversidad. La conservación y mejora de los conocimientos tradicionales es una de las prioridades del gobierno kirguís, ya que estos conocimientos conforman la identidad de la nación y permiten preservar su singularidad en un mundo que cambia rápidamente. Sin embargo, preservar los conocimientos tradicionales es una tarea compleja que implica superar una serie de retos, como los conflictos legales relativos a la protección de los conocimientos tradicionales mediante derechos de autor o patentes; la insuficiente concienciación pública sobre el papel de los conocimientos tradicionales en la preservación de la identidad nacional; y las actitudes sesgadas hacia determinadas comunidades y custodios de los conocimientos tradicionales.

Palabras clave: conocimientos tradicionales, globalización, continuidad, memoria colectiva, identidad propia, patrimonio inmaterial, Kirguistán.

Introduction

In recent years, and especially in the post-Covid period, the problem of systematisation and dissemination of traditional knowledge has been recognised and discussed at the international level. In particular, the importance of traditional knowledge has been addressed by such international organisations as the Equator Initiative (2024), the Rural Development Fund (2024a, 2024b, 2024c), and the World Intellectual Property Organization (2024). In their reports, representatives of these organisations emphasise the necessity of preserving and enhancing traditional knowledge.

This necessity is driven by rapid changes in the modern information space and the gradual replacement of older skills and knowledge with contemporary ones. While this trend is inevitable in today's world, it nonetheless raises concerns about the preservation of national identity. In a rapidly evolving society, the question of uniqueness grounded in traditional knowledge arises (Rakhymzhan et al., 2024).

Todd et al. (2023) defined traditional knowledge as a qualitative and quantitative body of information that has been accumulated, expanded, and transmitted across generations. Paul (2023) refined this definition, adding that traditional knowledge encompasses the knowledge of indigenous communities recognised by the World Intellectual Property Organisation. The existence of a legislatively recognised classification emphasises the importance of traditional knowledge in the modern informational paradigm.

It is important to note that traditional knowledge can take diverse forms. According to the report by the Intergovernmental Committee on Intellectual

Property and Genetic Resources, Traditional Knowledge and Folklore (Secretariat, 2019), traditional knowledge includes folk medicine, knowledge of the medicinal use of certain genetic resources, and medical treatment methods that exclude genetic resources. Todd et al. (2023) argued that traditional knowledge also encompasses such fields as geoscience, the study of the Earth. A similar view was held by Nunn et al. (2023), who asserted that traditional knowledge provides profound insights into rational natural resource management and environmental protection.

Given the diversity of forms of traditional knowledge, the need has arisen for its systematisation and classification. In particular, experts from the Indigenous Navigator Consortium (2023) proposed four indicators for preserving and disseminating knowledge: linguistic diversity and the number of indigenous languages; land use and land ownership in traditional territories and lands belonging to indigenous peoples and local communities; the practice of traditional crafts; and the degree of respect for traditional knowledge and practices, their place in national strategies, and their integration into the modern knowledge system.

Nunn et al. (2023) emphasised the importance of traditional knowledge in the modern informational environment. Drawing on the case of the Pacific Islands, the researchers asserted that this relatively small and remote landmass has been inhabited for 3,000 years by people who have experienced various climatic and environmental changes. Thus, the knowledge accumulated over an extended period can be utilised to address a number of ecological problems and challenges currently faced by the region (Shumka et al., 2020b).

Another example illustrating the relevance of traditional knowledge is the rich cultural tradition of the Kyrgyz people. According to the State Agency of Intellectual Property and Innovation under the Cabinet of Ministers of the Kyrgyz Republic (2023), the people of Kyrgyzstan have accumulated a vast body of traditional knowledge, which falls into one or more of the following categories: housing and household organisation; material culture and decorative arts; pastoral knowledge; traditional medicine; national games and folklore. Many of these, such as the production of felt or chiya products, remain an integral part of contemporary cultural tradition.

Despite the examples provided above, preserving traditional knowledge is a non-trivial task. Paul (2023) highlighted that one of the key challenges in preserving and transmitting traditional knowledge lies in its dynamic nature. This assertion points to the continuous development of existing knowledge and the emergence of new traditional knowledge, posing a range of complex challenges for international organisations such as the World Intellectual Property Organization (2024). Kariuki (2019) elaborated on these challenges, asserting that exploring the essence and purpose of protecting and promoting traditional knowledge among its holders highlights the difficulties in distinguishing between the justification for its preservation and its classification as intellectual property. The lack of clear differentiation between these concepts generates epistemological, ideological, methodological, technical, and other problems in the preservation and dissemination of traditional knowledge. In turn, Tegizbekova (2018) analysed the existing national policies and strategies and identified the main challenges in the preservation, enhancement, and dissemination of traditional knowledge in the Kyrgyz Republic. According to the researcher, the

following challenges can be identified: the need to revise state regulation of traditional knowledge to establish timeframes, create new funds, and make amendments to certain provisions of the Law of the Kyrgyz Republic No. 116 “On the Protection of Traditional Knowledge” (2007); the creation of an electronic database for the systematisation of traditional knowledge; the establishment of coordination within the “state-science-business” system to promote national initiatives and strengthen the community’s capacity to accumulate and disseminate traditional knowledge; the promotion of initiatives by the Intellectual Property Office of the Kyrgyz Republic to raise public awareness of the importance of traditional knowledge and efforts aimed at its preservation; and the creation of a regional legislative instrument to protect traditional knowledge both within and beyond the country.

The purpose of this study is to analyse existing strategies and propose new ones for the preservation, enhancement, and subsequent transmission of traditional knowledge in Kyrgyzstan.

1. Materials and methods

To achieve the set purpose, a secondary analysis was conducted on qualitative and quantitative research data collected since 2017. According to the National Statistical Committee of the Kyrgyz Republic (2024), during this period, there was an increase in the share of tourism in the national GDP. The conducted study included several stages, one of which was a comparative analysis that resulted in a synthesised definition of traditional knowledge. The presented definition was based on the analysis of reports from international organisations, including the Intergovernmental Committee on Intellectual Property and Genetic

Resources, Traditional Knowledge and Folklore (Secretariat, 2019), and academic papers. The secondary analysis of sources also allowed for the determination of the place and role of traditional knowledge for its further contextualisation in the modern information space.

The next stage of the study involved analysing the place and role of traditional knowledge in the development of Kyrgyzstan. This analysis considered key aspects such as the origin and history of the Kyrgyz people and certain conditions for the development of national identity, in particular, the nomadic lifestyle. A comparative analysis was conducted based on reports from the following organisations: the State Agency of Intellectual Property and Innovation under the Cabinet of Ministers of the Kyrgyz Republic (2023), the National Statistical Committee of the Kyrgyz Republic (2024), the Indigenous Navigator Consortium (2023), the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (Secretariat, 2019), the Rural Development Fund (2024a, 2024b, 2024c), and the World Intellectual Property Organization (2024).

All of the listed sources were analysed to contextualise traditional knowledge. The contextualisation of traditional knowledge in Kyrgyzstan was also supported by case studies, including the operation of the network of traditional knowledge keepers Kyrgyz El Akyl Kazyna (Secretariat, 2019), the eco-farm operation in the Jalal-Abad region (Rural Development Fund, 2024a), the preservation of the snow leopard population in the mountainous regions of the country (Rural Development Fund, 2024c), and the use of herbal remedies during the peak of the COVID-19 pandemic (Indigenous Navigator Consortium, 2023; Rural Development Fund, 2024b). At this stage of the study, traditional

knowledge, that is, the transmission of information from generation to generation, was considered as one of the factors in the development of various sciences and interdisciplinary collaboration. The methods and tools mentioned were applied for the qualitative analysis of characteristics of traditional knowledge, such as immediacy, intuitiveness, type, and experience. The analysis was conducted to form a better understanding and a more accurate assessment of the role and importance of traditional knowledge in the modern world and to develop approaches to the accumulation and dissemination of such knowledge.

The final stage of the study was an analysis of external and internal factors that decelerate the accumulation, transfer, and preservation of traditional knowledge in Kyrgyzstan. Drawing on the experience of the Kingdom of Eswatini and Madagascar (countries with limited resources where traditional knowledge often serves as an alternative to modern scientific knowledge), as well as the European Union, the priorities of which are the preservation and popularisation of traditional knowledge, a series of recommendations for the preservation of traditional knowledge and its successful integration into the information and cultural space of the 21st century were proposed.

2. Results and discussion

2.1. The essence and role of traditional knowledge in the modern information paradigm

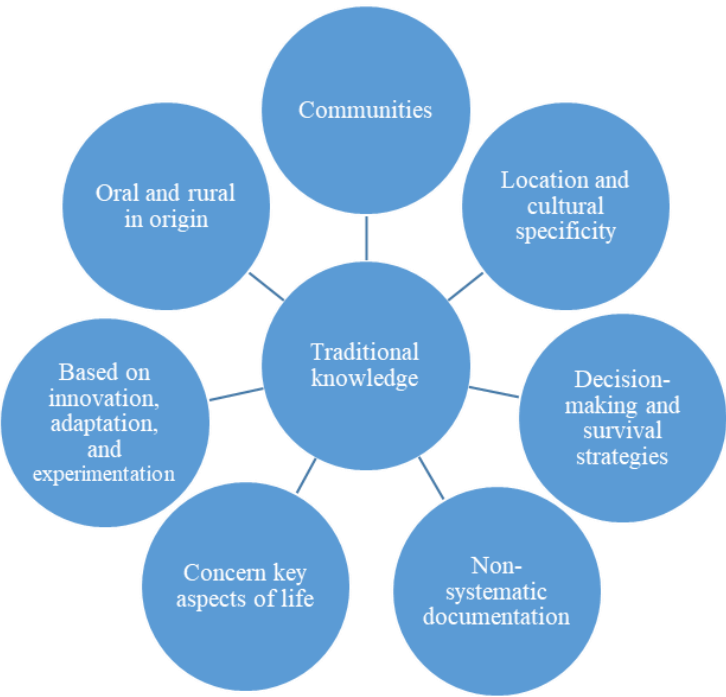
The development of indigenous peoples was accompanied by the emergence, accumulation, and transmission of traditional knowledge from the older generation to the younger one. According to Hossain and Ballardini (2021), this system of knowledge transformed into what is now known as traditional

knowledge. This opinion is supported by Manna et al. (2022), who defined traditional knowledge as a collective form of consciousness and understanding of the behaviour and beliefs of the local population. Experts from the World Intellectual Property Organization (2024) assert that a key feature of traditional knowledge is its resilience, that is, accumulated knowledge and practices are passed down from generation to generation, ultimately becoming part of national identity.

The issue of defining traditional knowledge was addressed by many researchers, including Nugroho et al. (2023), Ray (2023) and Sreenath (2023). Ray defined traditional knowledge as local knowledge characteristic of a specific culture or community. A more detailed definition was found by Nugroho et al., who argued that traditional knowledge arises during the adaptive transition from a group community to collective consciousness. A similar idea appears in the study by Sreenath, who emphasised the historical aspect of traditional knowledge. Analysing the experience of India, the first country in the world to create an Electronic Library of Traditional Knowledge, the researcher highlighted the need to document and preserve knowledge accumulated over many years, or even centuries. The synthesis of the provided definitions allows traditional knowledge to be characterised as a body of information accumulated by members of a specific community or culture over a long period of time and verbally passed on from generation to generation.

The given definition highlights the uniqueness of traditional knowledge, determined by its inherent characteristics. The multifaceted nature of traditional knowledge is presented in Figure 1.

Figure 1: The nature of traditional knowledge



Source: prepared by the authors (2025)

As seen from the figure, traditional knowledge represents a complex, multi-component concept. Moreover, a number of researchers, including Lauter (2023) and Singer et al. (2023), emphasised that traditional knowledge constitutes a distinct layer of information, different from what is typically referred to as scientific knowledge. Singer et al. identified and analysed the key differences between traditional and scientific knowledge in the context of biodiversity assessment in the north-western territories of Canada. In turn, Lauter examined the differences between knowledge systems through the exploration and

conservation of the Anchorage ecosystem in Alaska. Although the cited authors point to the necessity of interaction between the two knowledge systems, they nonetheless emphasise significant differences between them. Based on these studies, traditional and scientific knowledge differ in key parameters such as the nature, source, and context of knowledge. The values of these parameters are explicated in Table 1.

Table 1: Comparative analysis of traditional knowledge and scientific knowledge

Criteria	Traditional knowledge	Scientific knowledge
Nature of knowledge	Subjective, quantitative data	Objective, qualitative data
Source of knowledge	Oral transmission from senior to junior	Studies, written transmission
Context of knowledge	The object is being studied in its natural environment	Object of study typically placed in a simplified and controlled experimental environment

Source: prepared by the authors (2025)

The unique characteristics of traditional knowledge make it possible to use it to solve the unique problems of local communities. Confirmation of this assertion was found in the study by Tfwala et al. (2023), who addressed the application of traditional knowledge in the Kingdom of Eswatini, South Africa. Using weather forecasting as a context, the researchers argued that traditional knowledge helps prepare for upcoming changes better, thus strengthening community resilience. According to Tfwala et al. (2023), local farmers pay great attention to observing locusts, which are a precursor to drought, and try to plan their decisions in such a way as to minimise potential risks. For example, the

ploughing season may be moved from September to December-January, when there is sufficient moisture in the soil, and the likelihood of crop germination is higher. Some farmers also use no-till farming, which helps preserve moisture. Finally, during particularly dry years, communities may decide to sell cattle or purchase goats, which are more feasible to maintain in drought conditions.

The examples provided confirm that knowledge passed down through generations has not lost its relevance and continues to be used for the benefit of local communities. It can also be argued that such knowledge is especially relevant in remote and rural communities that have limited access to modern information systems and tools (Khilya et al., 2024). Nevertheless, the accuracy of traditional knowledge, for example, used for weather prediction, is quite high, which allows it to be used to support the sustainable development of communities. In other words, relying on traditional knowledge helps communities maintain flexibility and sustain development in conditions of limited resources (Trusova et al., 2021).

Another reason for the preservation and enhancement of traditional knowledge is its connection to collective memory, analysed by Ilin (2023), Roediger (2021) and Schwartz (2018). According to Ilin, collective memory consists of recollections that are present among people as members of a group to which they belong, whether it be family, community, or nation. The expert emphasised the importance of collective memory in self-identification, as it helps the individual understand and accept their place within the group. The importance of collective memory in self-identification was also highlighted by Schwartz, who surveyed university students in South Korea to identify events that come to their minds when they think of themselves as citizens of their country. After analysing the responses, he compiled a list of the most frequently mentioned events,

including Japanese colonial rule, a loan from the International Monetary Fund, the Korean War, and the Seongsu Bridge disaster. Thus, Schwartz confirmed the importance of collective memory, noting that members of a group tend to associate themselves with certain events, even if these occurred long before their birth.

The phenomenon of collective memory was analysed by Roediger (2021), who identified three main aspects of it. Firstly, collective memory refers to a body of knowledge about specific events, such as the collapse of a bridge that resulted in dozens of casualties, as indicated above. Secondly, collective memory creates an image of an individual as a member of a particular group. For example, Almakuchukov et al. (2024) noted that Kyrgyz people often associate themselves with the nomadic history of their people, meaning they tend to view their character through the lens of qualities such as strength and endurance. Thirdly, Roediger (2021) emphasised that collective memory is a process in which disagreements may arise within a group regarding what should be remembered. Confirmation of this assertion can be found in the study by Liao and Dai (2020), who covered the characteristics of the Winter Jasmine Flower Fair in Guangzhou, China. According to the researchers, such festivals influence the development of collective memory and subsequent self-identification, as they focus on aspects such as soil cultivation, crop growing, and the connection to nature, while ignoring the mass migration to urban areas in the second half of the 20th century.

The analysed studies indicate a connection between traditional knowledge, collective memory, and self-identification as a key aspect of national identity. Therefore, the preservation and enhancement of traditional knowledge is one of the priority tasks for national development. However, the fulfilment of this task is

complicated by the nature of traditional knowledge, which differs from scientific knowledge in the contemporary global world.

2.2. The place and role of traditional knowledge in the development of Kyrgyzstan

Experts, in particular Ji and Zhang (2023), Kersting and Wolf (2024), and Stovpets et al. (2023), emphasised that rethinking the history of the people provides a deeper understanding of the factors influencing the development of the nation, and predetermining its sustainable future. According to Kaliev et al. (2024), the lifestyle of the Kyrgyz people, including their transition from nomadism to settled life, has shaped their national identity, including their attitude towards traditional knowledge. On the one hand, the Kyrgyz people demonstrate a high level of trust in traditional knowledge and its bearers, which is evident in the development of eco-farms, herbal medicine, and so on. On the other hand, the Kyrgyz people show a tendency towards integration with the Western community and partnerships with various international organisations, such as the European Union (Bekmuratov et al., 2024). This aspiration is also expressed in the adoption of Western norms and values, as well as the desire to become part of the Western culture. Thus, the people face the task of maintaining a balance between integration into the Western community and preservation of their own identity.

Considering the rich history of the Kyrgyz people, the traditional knowledge they have accumulated is not only extensive but also diverse. This assertion was confirmed through a comparative analysis of information from official state and non-state sources, including the State Agency of Intellectual Property and Innovation under the Cabinet of Ministers of the Kyrgyz Republic (2023), Rural Development Fund (2024a, 2024b, 2024c), and Equator Initiative (2024). Based

on these sources, the main areas of traditional knowledge of the Kyrgyz people were identified (Table 2).

Table 2: Traditional knowledge of the Kyrgyz people

The field of traditional knowledge	Example
National cuisine	• Horse meat sausage “chuchuk” • Fermented milk “kymyz” • Drink made of cereal grains “maksym”, “jarma” • Dairy products: ayran, kurut, suzmo
Housing and household items	• Yurt construction • Children’s cradle “beshik”
Material culture/decorative art	• Interior and exterior decoration of the yurt • Felt products: shyrdak, ala kiyiz • Items made from chiya
Pastoral knowledge	• Biodiversity conservation • Rotation of pastures • Hunting • Animal husbandry
Traditional medicine	• Herbal medicine • Decoctions • Treatment with animal products • Natural minerals
National games/folklore	• Kok booru • Toguz korgool • Top tash • Epics • Fairy tales • Proverbs

Source: prepared by the authors (2025)

A number of cases proving the relevance of traditional knowledge in the contemporary Kyrgyz society were observed. One such case is the resurgence of interest in herbal medicine in the wake of the coronavirus pandemic. Interviews with bearers of traditional knowledge from the Kyrgyz El Akyl Kazyna network, conducted since September 2022 in the Issyk-Kul, Naryn, and Chui regions,

revealed a growing public interest in folk remedies for treating the coronavirus infection, including the use of herbs such as mint, chamomile, and nettle. The interviews also highlighted an increased level of trust in herbalists, who are the bearers of traditional knowledge (Rural Development Fund, 2024a).

A likely reason for the renewed interest in herbal treatment is the difficulties in accessing official medicine (Lisiecka, 2024). According to a study by the Rural Development Fund (2024b), 62% of households, in which at least one person contracted the coronavirus, experienced difficulties in accessing healthcare services, and 58% faced challenges in obtaining necessary medications. Traditional treatments using herbal decoctions and tinctures were viewed by such families as an alternative to official medicine, highlighting the continued relevance of traditional knowledge in modern society.

Notably, the growing trust in traditional knowledge amidst the crisis in official medicine was observed not only in Kyrgyzstan but also in other countries (Hansson et al., 2024). The use of herbs and decoctions to combat infection was examined by Beladiya et al. (2024), Cordoba-Tovar et al. (2022) and Latarissa et al. (2024). The latter analysed eight case studies and concluded that the use of certain herbs indeed makes the body more resilient to infections and helps shorten the illness period. That is, official medicine acknowledges the validity of traditional knowledge and the effectiveness of its application in treating specific diseases (Buletsa et al., 2018; Hukova-Kushnir, 2023).

Another case of using traditional knowledge to solve pressing issues can be cited from the project Snow Leopard as a Part of the Biological and Cultural Heritage of the Kyrgyz Republic (Rural Development Fund, 2024c). The project, launched with the support of the Silicon Valley Community Foundation and the

Christensen Fund, aims to develop and disseminate information about rare animal species, including snow leopards. Within this project, an interactive map was created to illustrate the habitat of the snow leopard and its interactions with other elements of the ecosystem, including plants and animals. The information used in this project was gathered from representatives of the Kyrgyz El Akyl Kazyna network, which operates in seven regions of the country. Thus, the knowledge accumulated by generations of Kyrgyz people has not lost its relevance and is effectively used to address the challenges faced by contemporary society.

Recognising the importance of traditional knowledge in supporting the sustainable development of modern society, the government of the country initiated a number of projects aimed at preserving and transmitting traditions to the younger generations of Kyrgyz people. One of the successful initiatives is the project titled Further Steps to Preserve Biological and Cultural Diversity Through Traditional Knowledge in the Kyrgyz Republic, implemented between 2016 and 2018 (Rural Development Fund, 2024a). The main objective of the project was to contribute to the sustainable development of local communities by preserving traditional knowledge, ensuring the rational use of resources, and implementing Access and Benefit Sharing (ABS) mechanisms. The partners of this project were numerous governmental and public organisations, including the State Agency for Environmental Protection and Forestry (SAEPF) under the Government of the Kyrgyz Republic, the National Academy of Sciences (NAS) of the Kyrgyz Republic, the Pastoral Network of Keepers and Practitioners of Traditional Knowledge Kyrgyz El Akyl Kazyna, the Association of Pasture Users of the Kyrgyz Republic, the Department of Pastures of the Ministry of Agriculture and

Irrigation of the Kyrgyz Republic, the Association of Craftsmen of the Kyrgyz Republic, the Association of Farmers, Livestock Breeders, and others.

The cooperation of these organisations during the project led to results that highlight the relevance of traditional knowledge in addressing contemporary challenges. The most significant outcomes were as follows:

- Training of representatives of Kyrgyz El Akyl Kazyna on the collection, documentation, and georeferencing of information and traditional knowledge on the genetic and cultural diversity of the Kyrgyz people;
- Implementation of small grant projects aimed at raising awareness and encouraging the contribution of knowledge keepers in the preservation and dissemination of traditional knowledge;
- Development of a list of genetic biological resources with further linkage to traditional knowledge, cultural and landscape resources in collaboration with Kyrgyz El Akyl Kazyna;
- Launch of a platform for introducing and piloting the Access and Benefit Sharing (ABS) mechanism in the country;
- Increased awareness and interest among the general public, local communities, organisations, and individuals in ABS as a tool for preserving and enhancing traditional knowledge.

A number of cases also demonstrate the value of relying on traditional knowledge to address issues across various areas of national life. One such case is the Golden Bee project, implemented in the Ak Dobo, near the Issyk-Kul State Nature Reserve, since 2014. According to the Equator Initiative (2024), the project

was developed to solve two problems that remained relevant for the Kyrgyzstan since the collapse of the Soviet Union. One of these problems is the rupture of economic ties and, as a result, a sharp deterioration in the material well-being, especially of rural residents. The loss of jobs led to a series of challenges, including a transition to extensive farming methods, which posed a threat to the region's biodiversity.

As part of the Golden Bee project, the residents of the village of Ak Dobo were awarded a grant of USD 15,000, which they used to purchase bee colonies and equipment, thus transitioning from resource-intensive livestock farming to more eco-friendly beekeeping. One of the key features of Golden Bee is its reliance on traditional knowledge, including the use of eco-technologies such as waste sorting and composting. The farm also features self-assembling solar barrels for water heating, which significantly reduces electricity consumption. It is also important to note that the Golden Bee eco-farm is open to tourists, which raises public awareness about traditional knowledge and its relevance in addressing contemporary issues.

An analysis of the farm's operation demonstrates that relying on traditional knowledge yields tangible results and has the potential to transform modern society. The farm's existence fosters collaboration between the nature reserve and local residents, thus reducing instances of poaching and positively impacting more than 300 hectares of natural wilderness. As the Golden Bee project gains popularity, the number of people wanting to join is also increasing, thereby addressing unemployment in the region. Thanks to the grant support for the initiative, about 60 residents of Ak Dobo village were trained in constructing solar water-heating barrels, improving their chances of employment. Thus, the Golden

Bee project demonstrates that reliance on traditional knowledge can resolve a number of socio-economic issues without jeopardising the region's biodiversity.

A prominent example of the preservation and dissemination of traditional knowledge is the work of the Centre for Biocultural Diversity (CBD) at the Kyrgyz National Agrarian University named after K.I. Skryabin, which has been operating since 2010. The Centre's main mission is to revive traditional knowledge in the fields of animal husbandry and crop production and to integrate it into the academic process of higher education institutions. The Centre's key activities include integrating traditional knowledge with academic knowledge, preparing educational materials on pastoral knowledge, and developing and promoting an interdisciplinary course on the traditional knowledge of the Kyrgyz people within the education system. The functioning of the CBD contributed to the enrichment and strengthening of traditional ecological awareness and culture among students and young researchers.

Thus, it can be stated that traditional knowledge occupies an important place in the contemporary information paradigm of the Kyrgyz people. In the context of economic and social turbulence, more and more people are turning to knowledge passed down from generation to generation, which has withstood the test of time (Nunes & Sytnychenko, 2024). Traditional knowledge is becoming the foundation for solving medical, environmental, and other challenges faced by modern society (Shumka et al., 2020a). Furthermore, political leaders who recognise the relevance of traditional knowledge initiate and support collaboration with national and international organisations aimed at preserving, enhancing, and transmitting traditional knowledge. To date, a number of international projects have been implemented to involve local communities in the accumulation and dissemination

of traditional knowledge (Gritsuk et al., 2017; Gutarevych et al., 2020). However, it should not be overlooked that, in implementing these projects, the parties involved encounter a range of challenges that could reduce the effectiveness of preserving and transmitting traditional knowledge.

Equally important is the fact that projects such as the one described above are replicable, meaning that traditional knowledge can be scaled. According to the Equator Initiative (2024), the successful case of the Golden Bee led to the establishment of at least two farms in different parts of the country. Specifically, in 2017, an eco-farm was launched in the Jalal-Abad region in the south of the country. One of the priority objectives of this farm is the conservation and restoration of the population of wild Kyrgyz bees inhabiting the walnut-fruit forests of Arslanbob. This project is being implemented in collaboration with the Dashman Nature Reserve, thus highlighting the state's involvement in the accumulation and dissemination of traditional knowledge. In 2017, another bee eco-farm was established in the Osh region in southern Kyrgyzstan. The operation of this farm was made possible through cooperation with the state Kara-Shoro National Nature Park.

2.3. Challenges in preserving traditional knowledge and strategies for overcoming them

A comparative analysis of academic sources over the past few years has demonstrated several key obstacles to preserving and enhancing traditional knowledge within communities around the world. According to Aiseng (2023), one pressing issue is the disappearance of traditional knowledge in an increasingly dynamic modern world. The arguments presented in this paper highlight at least two reasons why traditional knowledge is under threat. The first reason lies in the

diminished necessity of knowledge that ensures community survival. Modern society possesses a variety of tools that facilitate the harmonious and safe development of individuals and groups, rendering the question of survival less acute (Zakharchyn & Sytnyk, 2023). As a result, some forms of traditional knowledge become irrelevant and gradually disappear. The second reason is linked to the globalisation and digitalisation of the modern socio-cultural space, where traditional knowledge is often perceived as a relic of the past. Communities adopt new behavioural models and traditions, thereby neglecting knowledge accumulated over many generations (Davydiuk et al., 2024).

It can be argued that the disappearance of traditional knowledge poses a threat to the existence of the community that is its source. This conclusion is drawn from a comparative analysis by Dhar (2018), Jakes (2024) and Petosky (2020). These researchers highlighted the connection between traditional knowledge and the self-identity of a community. Thus, the disappearance of traditional knowledge implies the community's renunciation of its unique characteristics, the blurring of boundaries, and eventual integration into the global community.

While the threat of disappearance is the most substantial, it is also essential to consider other potential challenges, including those related to the legal aspects of preserving traditional community knowledge. The secondary analysis of a study conducted by Goswami (2017) identified a number of legal challenges, including copyright law and patenting. In the case of copyright law, its application as a tool for preserving and enhancing traditional knowledge comes with several caveats. Firstly, applying for copyright protection assumes that the object of protection has an author or creator. In the case of traditional knowledge, identifying an author or creator is a complex task, as such knowledge belongs to the entire community and

is passed down through generations. Secondly, copyright protection is granted for a specific, limited period, which contradicts the interests of communities that would prefer long-term or perpetual protection of their knowledge. It is also worth noting that copyright protection requires the object to have a fixed form (Yesimov & Borovikova, 2022). Traditional community knowledge, however, rarely meets this criterion, as it is typically oral and informal.

Challenges also arise when it comes to preserving and enhancing traditional knowledge through patenting. According to Goswami (2017), obtaining a patent is possible if there is an inventor applying for ownership of the patent. Based on the aforementioned analysis of traditional knowledge, it can be argued that obtaining a patent is complicated by the inability to determine when a specific idea originated and who its author was. Even if this process proves successful, many indigenous communities lack sufficient knowledge about how to protect their intellectual property from illegal copying and distribution. In addition to the aforementioned barriers, patenting traditional knowledge implies a limited period for protection. As with copyright protection, this limitation is significant for indigenous communities, whose members think in terms of generations, centuries, and beyond.

Beyond the barriers already mentioned, difficulties in preserving and enhancing traditional knowledge may also be related to the characteristics of the communities in which this knowledge originated and developed. According to Bello-Bravo (2023), an example of such a community is the renin-jaza (midwives) practising in Madagascar. One of the challenges faced by members of this community is the insufficient understanding of their activities by members of other communities, who tend to conflate notions of renin-jaza with obstetrics.

Another challenge is the prejudice against members of the community practising renin-jaza, whose practices may be perceived as impractical and outdated in a rapidly changing world.

Drawing on the experience of various countries and nations worldwide, recommendations can be proposed for overcoming the difficulties in preserving and enhancing traditional knowledge. The main proposals for achieving this goal are presented in Figure 2.

Figure 2: Strategies for the preservation of traditional knowledge



Source: prepared by the authors (2025)

The outlined objectives were considered through the prism of comparative and contextual analysis. Documentation is one of the simplest yet most effective strategies for preserving traditional knowledge. Perera (2023) argued that documentation involves recording, cataloguing, and listing both tangible and intangible elements of a community's cultural heritage. One example is the use of

Terrestrial Laser Scanning Systems to detail three-dimensional data obtained from objects such as historic buildings. According to Baik et al. (2021), such documentation was used in Saudi Arabia to collect detailed information about the Hazazi House and other structures in the old part of Jeddah. Experts noted the high efficiency of the method, which, at relatively low cost, can generate both governmental and private support for initiatives aimed at preserving cultural heritage.

The importance of documentation as a means of preserving and enhancing traditional knowledge is also recognised in the Kyrgyzstan (Khamzaeva et al., 2020). According to the State Agency of Intellectual Property and Innovation under the Cabinet of Ministers of the Kyrgyz Republic (2023), the country is a member of the World Intellectual Property Organisation and has been cooperating with its Intergovernmental Committee on Intellectual Property, Genetic Resources, Traditional Knowledge, and Folklore since 2001. This collaboration assists the country in creating a detailed inventory of traditional knowledge for its further preservation and dissemination.

Education and awareness-raising are another effective strategy for preserving and enhancing traditional knowledge (Khilya et al., 2023). According to Todd et al. (2023), the importance of this strategy stems from the fact that individuals and communities often hold misconceptions about traditional knowledge, perceiving it as outdated, irrelevant, and so forth. However, the analysis conducted above, including the discussion of the resurgence of interest in traditional healing methods during the pandemic, indicates that this perception is misguided. Thus, there is a discrepancy between the relevance of traditional knowledge and community awareness of it.

Perera (2023) proposed addressing this discrepancy through awareness-raising initiatives. According to the expert, such initiatives may take the form of seminars, workshops, educational events, and similar activities.

In Kyrgyzstan, awareness-raising activities aimed at preserving and enhancing traditional knowledge are often supported by international organisations (Uzenbaev et al., 2019). For instance, the Rural Development Fund (2024a) launched the project “Promoting the Preservation and Transmission of Pastoral Traditional Knowledge in the Kyrgyz Republic,” achieving notable results in just two years. Within this educational project, the pastoral network Kyrgyz El Akyl Kazyna was also established, currently uniting over 3,000 individuals across the country. As bearers of traditional knowledge, members of the network demonstrate to their fellow citizens how this knowledge can be applied in modern contexts. For example, members of the “Baibiche Club” learn traditional crafts and their use in creating and maintaining a comfortable household. Meanwhile, youth clubs organise festivals that popularise nomadic customs and traditions.

When discussing preservation and restoration, this refers to a set of strategies aimed at maintaining the proper condition of cultural heritage objects. According to Perera (2023), these strategies involve repairing damaged or worn elements of cultural heritage, such as monuments, artefacts, or works of art. These same strategies can also be effective in preserving intangible heritage, such as natural biodiversity.

An analysis of the results of a project aimed at preserving snow leopards and their ecosystems in the Northern and Western Tian Shan serves as evidence of this assertion. The project, initiated by representatives of the Rural Development Fund

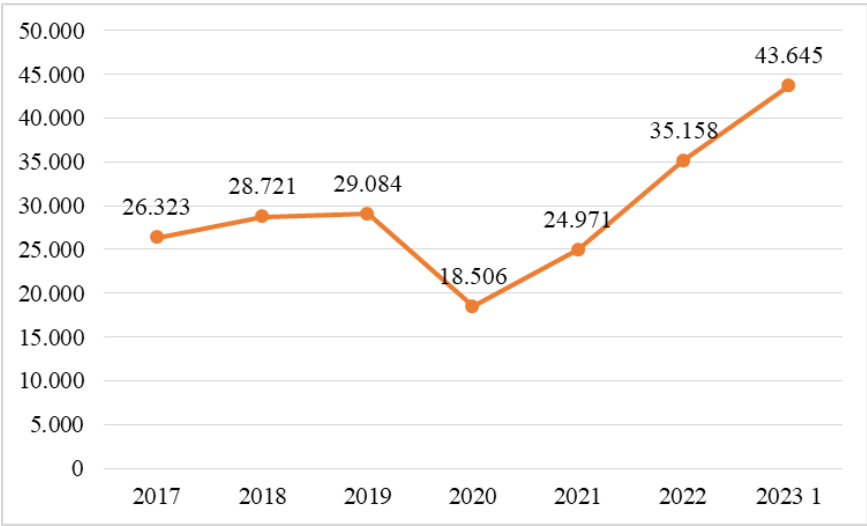
(2024b), highlighted that knowledge about the animal is an integral part of the cultural heritage of the Kyrgyz people. Recognising the importance of accumulated knowledge for the Kyrgyz people's self-identification, the project focused on creating an extensive network of custodians and practitioners, Kyrgyz El Akyl Kazyna. Members of this network collaborated with representatives of other communities, including the Kalbinsky AA Association in Talas District, Talas Region, and the Chon-Kemin AA Group in Kemin District, Chuy Region, to consolidate and exchange knowledge about the habitat and behaviour of the snow leopard. This knowledge formed the basis of strategies aimed at conserving the snow leopard population in the region.

Government policy is one of the key factors in preserving and enhancing traditional knowledge. Effective state policy involves the adoption of laws and regulations designed to safeguard and promote traditional knowledge (Pasichnyk, 2023). In Kyrgyzstan, this task is addressed through the adoption of the Law of the Kyrgyz Republic No. 116 “On the Protection of Traditional Knowledge” (2007). The law comprises 20 articles, that, among other provisions, define traditional knowledge, regulate its registration, and list international agreements signed by the nation to preserve and enhance traditional knowledge.

According to Niewiadomski and Brouder (2023), the term "sustainable tourism" refers to the rational use of resources to meet the needs of modern tourists while not neglecting the needs of future generations. Perera (2023) highlighted that sustainable tourism facilitates the preservation of the natural diversity of a region. An example of such tourism is the aforementioned Golden Bee eco-farm, the owners of which successfully transitioned to intensive nature use, positively impacting more than 300 hectares of natural wilderness.

Notably, sustainable tourism can serve as a tool for disseminating traditional knowledge, as eco-farms and other cultural heritage sites attract increasing attention from tourists (Trusova et al., 2020). Evidence for this can be found on the website of the National Statistical Committee of the Kyrgyz Republic (2024), which reports that, following a decline caused by the coronavirus pandemic, the national tourism sector experienced a revival, as illustrated in Figure 3.

Figure 3: Gross value added in tourism activities (million Kyrgyzstani Soms)



Source: compiled by the authors based on the National Statistical Committee of the Kyrgyz Republic (2024)

Based on the analysis provided, the rich history of the Kyrgyz people has shaped the diversity of their traditional knowledge. This information, as an integral element of national self-identification, has not lost its relevance to this day. Moreover, in an era of political, economic, and sociocultural turbulence, the Kyrgyz people are showing an increasing interest and trust towards traditional knowledge and its custodians. For this reason, it is essential to develop a

comprehensive set of measures and activities aimed at preserving and enhancing traditional knowledge.

Conclusion

Traditional knowledge encompasses the collective wisdom of communities, passed down through generations, and represents a vital component of a people's intangible heritage. Traditional knowledge is an integral element of collective memory, a part of national identity, and helps preserve uniqueness in a rapidly changing world. Unlike scientific knowledge, traditional knowledge is a vital part of the self-identification of communities and, as such, warrants preservation and enhancement. The Kyrgyz people accumulated extensive and diverse knowledge across various fields, including the following: national cuisine, housing and household items, pastoral knowledge, material culture and decorative arts, traditional medicine, national games, and folklore. The comparative analysis of sources showed that the traditional knowledge of communities has not lost its relevance in the modern informational paradigm. Furthermore, in the context of economic, political, and sociocultural uncertainty, the Kyrgyz people demonstrate a growing interest in knowledge passed down through generations and trust in its custodians. They rely on time-tested knowledge to address the shortcomings of the modern healthcare system, preserve natural diversity, and overcome other challenges on their path to development and prosperity.

However, the globalisation and the digitalisation of the information space may pose a threat to traditional knowledge. There is a noticeable shift away from communal knowledge in favour of information that is perceived by Kyrgyz people as more relevant. Other obstacles to the preservation and enhancement of

traditional knowledge in Kyrgyz society are legal issues regarding the protection of traditional knowledge, including copyright and patenting, insufficient public awareness, and biased attitudes towards certain communities and custodians of traditional knowledge. The preservation and enhancement of traditional knowledge is one of the most important tasks facing contemporary Kyrgyz society, which seeks to maintain its identity in an increasingly dynamic information environment.

The analysis of practices implemented in Kyrgyzstan and other countries has led to several recommendations for preserving and enhancing traditional knowledge in the modern information space. The recommended strategies include documenting material and intangible heritage objects, educating and raising public awareness on traditional knowledge and its preservation, preserving and restoring cultural heritage objects, governmental policies aimed at accumulating and enhancing traditional knowledge, and sustainable tourism as a means to spread traditional knowledge without depleting its sources.

This study has several limitations, including a relatively small sample of for analysing the nature of traditional knowledge, its place and role in the modern information paradigm, and strategies for preserving national cultural heritage. Future research may include a broader range of specific case studies to provide more in-depth comparative analyses of strategies for preserving and enhancing traditional knowledge. A comparative analysis of such strategies adapted in Eastern and Western socio-cultural and informational paradigms may also be conducted to identify effective approaches to utilising traditional knowledge.

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Conflict of interest and originality declaration

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