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Environment, Rural Livelihoods, and Labor Migration: A Case Study in Central Kyrgyzstan

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Based on a case study in central Kyrgyzstan, this paper examines the links between the environment, rural livelihoods, and labor migration. The low diversity of income-generating activities in rural areas increases vulnerability to climate change impacts, other environmental stresses, and market failures. As a result, additional livelihood strategies such as labor migration and engagement in trade or other business ventures have become essential coping strategies for rural households. Remittances sent by migrants contribute not only to individual rural households but also to rural community development. Remittances help repay loans that have been taken out by households for different purposes, particularly for running or expanding farming and animal husbandry. When remittances are spent to increase livestock herds, the resulting intensive use of nearby pastures often leads to overgrazing and land degradation.

Keywords: *Rural livelihoods; migration; remittances; environment; climate change; Kyrgyzstan.*

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Introduction

More than 60% of Kyrgyzstan's population lives in rural areas (NSCKR 2015: 5), and many rural residents experience socioeconomic, environmental, and climate-induced challenges. Under the planned economy of the former Soviet Union, many rural areas, especially in remote mountain locations, were highly subsidized by the central government. However, after the dissolution of the Soviet Union, rural areas experienced an economic downturn. Today rural people depend heavily on agriculture and animal husbandry, which are in most cases vulnerable to environmental changes and economic shocks. Limited livelihood opportunities together with vulnerability to environmental and market shocks are the main reasons that residents of rural areas supplement their livelihoods by engaging in international and internal labor migration (Chandonnet et al 2016; Sagynbekova 2016).

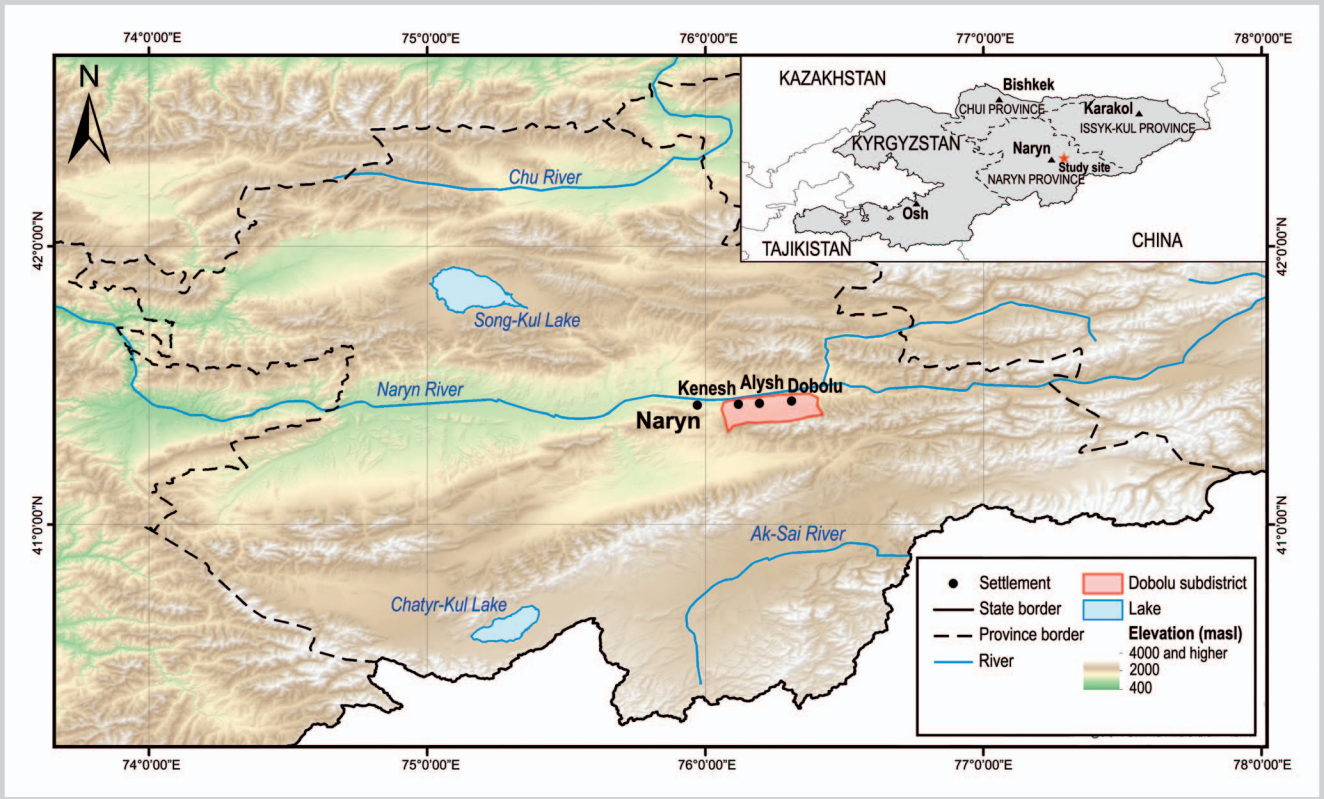
Fieldwork carried out in rural areas of Naryn *oblast* (province) in central Kyrgyzstan found that environmental problems and the impacts of climate change—for example, drought, abnormal rainfall, early cold snaps and snowfall, and the degradation of land and pastures—have had a negative effect on the income of rural people. Today migration contributes significantly to household economies, especially during times of crop failures or market shocks. Financial capital (in the form of remittances) that flows to rural areas of Kyrgyzstan from the capital city of Bishkek, as well as from Russia, Kazakhstan, and other countries, contributes to the development of rural households and villages (Sagynbekova 2016).

Although some research has been conducted on migration issues in Kyrgyzstan, the nexus between the environment, rural livelihoods, and labor migration has been insufficiently addressed. Some recent studies have focused on environmental migration (eg Nasritdinov et al 2010; Chandonnet et al 2016) and the links between animal husbandry and labor migration (Schoch et al 2010). Castles (2002: 5) argued that environmental factors are part of "complex patterns of multiple causality" where they are closely interconnected with social, economic, and political factors, and such complexity requires further exploration and analysis. Based on a case study undertaken in the remote and mountainous province of Naryn, this paper explores the impact of agriculture, animal husbandry, local environmental conditions, and climate change impacts on labor migration. It demonstrates not only how environmental and climate change factors affect people's livelihoods, and the role labor migration may play in relation to livelihoods, but also the reciprocity between environmental and migration processes.

To investigate these connections as well as the possible outcomes of such a nexus, I have pursued the following research questions:

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FIGURE 1 Location of the study area. (Map by Evgenii Shibkov)



- What kind of environmental, economic, and social challenges do people in the region face?
- What strategies do people undertake to adapt to or cope with these challenges?
- What implications do labor migration strategies have for migrants' households, communities, and the environment?

Study area

This paper is based on case study material from the Dobolu subdistrict of Naryn province in Kyrgyzstan (41°26′50.7″N; 76°14′29.7″E). This area was selected for study because its remoteness and its challenging natural and socioeconomic conditions provided an opportunity to explore the ways that environmentally induced socioeconomic problems and livelihood challenges converge in mountain regions. The survey was supported by the Ecosystem Services for Poverty Alleviation project, which aimed at "increasing understanding of the multi-dimensional social processes surrounding natural resource governance and management" (MSRI 2016) in remote and poor mountain villages of Naryn province and particularly in Dobolu subdistrict.

Dobolu subdistrict is located at an elevation of 2100 m above sea level (Figure 1). The area is characterized by a harsh semiarid climate, with temperatures reaching as low as −40°C, and winters lasting almost 6 months. These climate conditions, in conjunction with high elevation, low soil fertility, and a short vegetative period, have a significant impact on local livelihoods. Environmental factors such as drought, an insufficient water supply, and land degradation significantly affect the productivity of crops, and during the years in which crop failure occurs, many households are deprived of their source of income. The province is bordered by China to the south, and its location along the Silk Road, a trade route between China and Eurasia, could play an important role in linking demand and opportunities for trade at local and regional levels (Shigaeva et al 2016: 93).

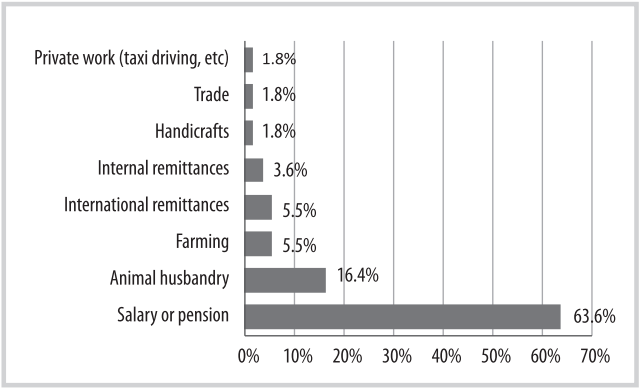
The subdistrict is monoethnic, inhabited by Kyrgyz people. According to the local administration, there are 530 households with a total population of 2495 people. Almost half of the population is of working age; 22% are children less than 16 years old (AOD 2016a).

Methodology

A semistructured questionnaire survey, focusing on the region's environmental and livelihood challenges and respondents' coping and adaptation strategies, was conducted among 55 randomly selected households in Dobolu subdistrict. In-depth interviews were conducted

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FIGURE 2 Main sources of income in interviewed households ($n = 55$).



among households dealing with environmental and livelihoods challenges and those impacted by labor migration. To better understand the role of labor migration and remittances in maintaining livelihoods, in-depth interviews were also conducted in Moscow with labor migrants from Naryn province (particularly Dobolu subdistrict), who shared the reasons for their migration and the ways that the experience had affected them and their families. Data were collected from the subdistrict government and the National Statistical Committee of the Kyrgyz Republic. A review of published literature and unpublished internal government reports was also conducted.

Results and discussion

Livelihood patterns

Naryn is the poorest province in northern Kyrgyzstan. The portion of the population living below the poverty level has been estimated at 30% in Naryn province (NSCKR 2015: 19) and at 39% in Dobolu subdistrict (AOD 2016b). A sharp decline in living standards occurred after the collapse of the socialist economy, especially during the crisis period from 1991 to 1995.

The Dobolu subdistrict was a *kolkhoz* (state farm) during the Soviet era, which provided work for the majority of local people. After the disbandment of *kolkhozes*, Dobolu residents received plots of arable land equaling 0.33 ha per capita. The households interviewed for this study cultivated mainly barley, forage grasses, and potatoes; most had gardens near their homes (0.25–0.50 ha) and cultivated vegetables such as potatoes, carrots, beets, garlic, and pumpkins for their own consumption.

One of the population's main economic activities is animal husbandry. Livestock were essential to the Kyrgyz nomadic lifestyle in pre-Soviet times, and during the Soviet era, they were "not just kept for the sake of the *kolkhoz*, but also for people's private needs. … animals not only served self-sufficiency purposes, but were also an important means of establishing and maintaining social ties among kin and neighbors, eg through gifts and the celebration of life-cycle feasts" (Steimann 2011: 83). When the *kolkhoz* was dissolved, livestock were distributed among residents. Livestock are considered an important capital asset that can be sold and transformed into cash (Schoch et al 2010; Steimann 2011; Schmidt 2012; Sagynbekova 2016). Therefore, many households invest their money, particularly remittances, in the purchase of livestock. Of the participants in this study, 67.3% said that livestock was the best means of accumulating money; Hodges et al (2014: 3) also commented that "understandably in simpler rural communities livestock have often served as currency and as a wealth bank." Rural residents sell their livestock to repay loans from banks and shops, help finance life-cycle events, build or renovate houses and livestock barns, buy real estate and cars, pay for their children's education and health care, cultivate land, buy fodder, and buy household appliances and consumer goods.

Only a few study participants were employed in permanent jobs; these were mostly in local medical and educational institutions and the local government. The average salary of respondents with jobs was 8453 Kyrgyz soms (KGS) or US$ 124 per month (US$ 1 = KGS 68; NBKR 2016). Survey respondents indicated that their main sources of income were salaries and pensions and income from animal husbandry (Figure 2).

Today animal husbandry is seen as a relatively secure livelihood, and many rural households therefore devote substantial time and revenue to it. Among survey respondents, 71% of households had taken out a bank loan. Of these, 70% of them used the loan to manage or expand their farm or livestock herd. Many households also relied on remittances sent by family members who had migrated (Steimann 2011; see also Thieme 2008a; Sagynbekova 2016). The dominant household expenses are for food and consumer goods, the education of children, and family events and social networking.

Many survey respondents' households did not accurately calculate their expenses for family events and social networking. Survey households spent approximately KGS 3000–500,000 (US$ 44–7,353) for family events and social networking in a 12-month period. These expenses have a heavy impact on household budgets. For 42% of respondents, it was difficult to raise the money needed for social networking, and they had to take out a loan or sell livestock. Even for those who did not find such measures necessary, the expense was still a challenge; 22% of respondents remarked that they had to reconsider some household costs.

Due to unemployment and low salaries, people undertook additional livelihood strategies. Some engaged in handicrafts, for instance, making traditional Kyrgyz carpets called *shyrdak* (particularly women). Others worked on a for-hire basis, building and renovating houses (particularly men), working as herders in *jailoo* (summer pastures), and doing farm work for wealthy households and for migrant households that needed extra

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help during peak labor seasons. Some commuted to work in the provincial center, Naryn city, while others migrated to cities in Kyrgyzstan or abroad.

A survey by Schoch et al (2010: 211) found that despite the crucial role of livestock raising in the economy of most rural households in Kyrgyzstan, it does not provide an adequate living, and many people diversify their income by undertaking labor migration. Indeed, the present study found that apart from low income and unemployment, villagers faced difficulties during the planting and harvest seasons because of the lack of agricultural machinery and problems with seeds and fertilizers. Additionally, there was a lack of pasture, since many of the surrounding lands belong to forest farms or the national park Salkyn Tor. Interviewees said that the number of livestock in the village was increasing, but the pastures were far away; some were even located along the distant border between Naryn and Issyk-Kul provinces. This challenge is further complicated by the lack of infrastructure, especially roads and bridges, which increases the difficulty of moving livestock to distant pastures (Shigaeva et al 2016: 96). The intensive use of the nearest pastures is leading to overgrazing and degradation of these areas.

Another challenge in rural areas is that many graduates of universities cannot find work in their area of specialization in the village. Hence, young and educated people migrate to cities in Kyrgyzstan and abroad.

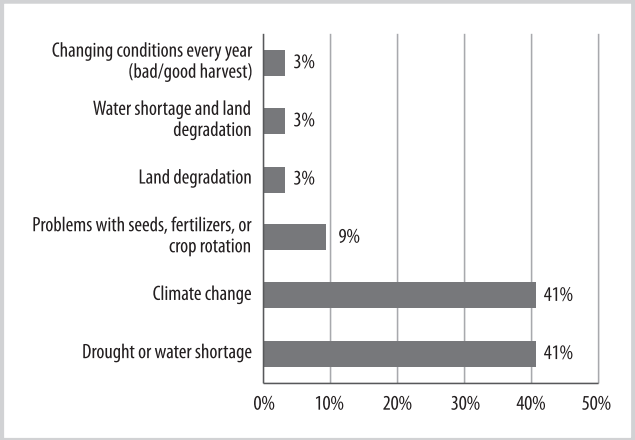
Impact of environmental factors on local livelihoods

Income from agricultural activities depends heavily on climate conditions and the availability of water for irrigation. For example, several years ago the wheat crop failed due to an early cold snap and snowfall; because of this, people in the village stopped cultivating wheat. Such environmental factors greatly impact livelihoods and create the need for additional livelihood strategies.

> *I took out a loan and cultivated wheat on 8 ha of arable land, but there was snowfall in September, which led to a crop failure. Similarly, many households cultivated wheat and faced difficulties with repayment of lines of credit. I had to take out another loan in order to repay the first one. Because of these circumstances, I migrated temporarily to Russia for work.*
>
> *(24-year-old returned migrant interviewed in Dobolu village on 9 June 2016)*

The above statement is clear evidence of the relationship between the environment, rural livelihoods, and migration. Environmental factors including climate change affect migration decisions in rural areas. As Tacoli (2009: 519) wrote, "there are clear pointers to the need to understand migration as one in a range of strategies that individuals and households can use to adapt to climate change."

FIGURE 3 Respondents' ($n = 32$) perceptions of the reasons for crop failure.



More than 60% of the survey households had experienced a crop failure in the preceding 5 years. The majority of respondents indicated that environmental factors and climate change were the reason for the crop failures (Figure 3). A recent study found that "climate change trends and projections in Central Asia have important implications for pastures, crops, and agro-pastoral livelihoods. Annual average temperatures are steadily rising in Central Asia and around the world" (Kerven et al 2011: 33, based on Christensen et al 2007 and Hansen et al 2010). The area of glaciers in the Tien-Shan mountains decreased by 25–35% in the 20th century (Zemp et al 2008). The effects of low rainfall are exacerbated by the poor water infrastructure, which results in long queues at water sources and conflicts between community members. The drought in 2014 reduced the yield of fodder crops. As a result, households spent a lot of money on fodder, many of them purchasing it from Chui province. Since livestock production is the main economic activity in Naryn province, such negative climate and environmental factors have a significant impact on people's livelihoods. Because the subsistence strategies in villages of this province are less diversified than those in some other provinces in Kyrgyzstan (Steimann 2011; Chandonnet et al 2016), the vulnerability of rural people to environmental issues is higher, "which makes them more prone to environmentally induced migration" (Chandonnet et al 2016: 73).

Land degradation is caused by both natural and anthropogenic factors and is often related to erosion (water and wind), waterlogging, salinization, and a decrease in soil fertility. More than 60% of arable lands in Kyrgyzstan are affected by erosion (Chandonnet et al 2016: 53). The degradation of agricultural lands and shortage of irrigation water have a negative effect on the crop production and thus on the income of rural residents. Many rural residents believe that the economic risks of farming are higher than those of other livelihood strategies, and they often relate these risks to

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environmental conditions. "Ecological uncertainties are related to the unpredictable and variable nature of ecosystems with which people interact. … Evidence suggests that over recent years many farm households have experienced increasing problems with farming their land" (Steimann 2011: 222). As a result, many rural residents have to undertake other livelihood strategies, including labor migration. Additionally, failure to repay loans taken out for seeds, the cultivation of land, or breeding livestock forces people to search for opportunities to earn money elsewhere.

Today pastoralism is also facing various ecological challenges. An increase in the number of livestock and unregulated grazing have led to the degradation of pastures. According to the state agency Kyrgyzgiprozem, more than 70% of near-village pastures are in unsatisfactory condition (Chandonnet et al 2016: 56). Socioeconomic and environmental factors are directly and indirectly linked, and both play an important role in the decision to migrate (see Nasritdinov et al 2010). Respondents to a recent survey in Naryn province (Chandonnet et al 2016: 68, 70–71) mentioned both environmental factors (primarily the degradation of pasture and arable lands and a shortage of water) and socioeconomic factors (including unemployment, poverty, lack of arable land, and family issues) as reasons for migration. Almost half (45.3%) of these survey participants said they believed that the environmental situation would worsen in the near future. Another recent study predicted that environmental problems will likely contribute to people's need to increase their nonfarm activities, including migration (Tacoli 2009). People from the remote high mountain areas of Naryn move to other regions of Kyrgyzstan that have more favorable environmental and socioeconomic conditions, such as Chui and Issyk-Kul provinces. Based on his research in Burkina Faso, Henry et al (2004) also found that migrants often choose regions with favorable environmental conditions as their destination.

Market shocks

Fluctuations in market prices and an absence of large trading hubs and markets have had a negative impact on the economy of Naryn province. Survey respondents reported that the reduction of prices for livestock and agricultural products has heavily impacted their livelihoods. Many farmers expected an increase in prices and better export opportunities for agricultural products and meat after Kyrgyzstan's accession to the Eurasian Economic Union in August 2015. However, due to the devaluation of the Russian ruble and Kazakh tenge, the economic crisis, and phytosanitary barriers, it has become unprofitable to export meat to Eurasian Economic Union countries (see also Tilekeyev et al 2016). Between 2014 and 2015, the KGS appreciated considerably (25–40%) against the currencies of Russia and Kazakhstan (Tilekeyev et al 2016: 44). Such market shocks deprive households of their expected income and increase their vulnerability. Additionally, poor access to markets negatively affects the citizens. These economic stresses ensure that labor migration will remain an important livelihood strategy in rural areas (see Schoch et al 2010: 219–220).

Labor migration as a livelihood and adaptation strategy

Today international and internal labor migration are considered important livelihood strategies for many rural people. Of the households interviewed for this survey, 60% have at least 1 member who has migrated, most to the capital city Bishkek or to Russia. Between 600,000 and 700,000 Kyrgyz citizens work abroad, most of them in Russia (516,893) or Kazakhstan (80,000–85,000) (MLMYKR 2015). The key determinant of migrant destinations is the existence of a functioning network (eg through kinship, friendship, or shared community origin).

Today the development of networks, the availability of information through various communication technologies, and an increase in the number of employment agencies allow rural Kyrgyz citizens to reach labor markets not only in Russia and Kazakhstan but also in Turkey, South Korea, the Gulf states, the United States, Europe, and other places. Some survey respondents expressed plans to temporarily migrate to Turkey. However, the destination of migrants depends heavily on their household's financial capabilities and social networks. Poor households that lack social networks often cannot send members abroad and can send them only to nearby cities or at best to Bishkek. In some cases they cannot afford to migrate at all. Research in Africa, particularly in the Sahel, has also has revealed that environmentally induced problems can lead to short-distance migration rather than international migration, as more resources are needed to undertake the latter (Findley 1994; Jonsson 2010).

Internal labor migration, especially to the capital, is more prevalent than international migration in the study region, while international migration is prevalent in southern Kyrgyzstan. This phenomenon can be explained especially by geographical proximity to the capital city and the presence of social networks.

There is also a difference between wealthy and poor households in terms of their responses to environmental and economic shocks. "Environmental change does not affect all people in a similar manner, and people do not respond to change in a unified, singular manner" (Jonsson 2010: 7). For instance, wealthy households do not necessarily undertake labor migration, since they can rely on their assets and other income sources or take a bank loan, whereas medium-income and poor households have limited assets and livelihood opportunities, which often forces them to migrate for work, particularly to urban

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areas, or to work as hired employees in the village. Twenty-eight of the interviewed households mentioned socioeconomic difficulties, primarily related to poverty and unemployment. Half of those households had members who were labor migrants, primarily because of livelihood difficulties.

Men in the study region are much more likely than women to undertake labor migration, as women have primary responsibility for caring for their children and elderly parents. However, this pattern is changing, with more and more women now involved in labor migration due to greater job availability, better salaries, and the existence of supportive networks. Of the households participating in this study, 15 had female members who migrated for work, and another 8 households intended to send female or male members abroad depending on job availability.

Migrants work in a variety of jobs. Women mainly work in the sewing industry in Bishkek, while men tend to take work in construction. Those who go abroad mainly work in unskilled jobs in the construction, trade, and service sectors. For rural households in Kyrgyzstan, labor migration to Bishkek or to Russia or Kazakhstan is a popular strategy for diversifying livelihoods (Schmidt and Sagynbekova 2008; Schoch et al 2010; Sagynbekova 2016). This diversification leads to multilocal livelihoods (see Thieme 2008b, 2014; Schoch et al 2010; Sagynbekova 2016).

The main impact of labor migration on households can be seen in positive economic effects such as an increase in income and a reduction in socioeconomic difficulties. For instance, Kyrgyzstan received US$ 2.2 billion in 2014, and the percentage of remittances in the country's gross domestic product for the same year was 30.3% (World Bank 2016a, 2016b). Migration positively impacts the livelihoods of migrants' households, and remittances are spent for multiple purposes:

> *My son returned from Moscow and he started a small dairy production business. He buys and brings* suzmö *(thick sour milk) from the* jailoo*, and here at home we produce* kurut *(dried yogurt balls). My son sells the* kurut *in Naryn city or in Bishkek. Remittances that he sent from Moscow were spent for our young daughter's education, for the cultivation of land, to prepare a dowry for our daughter, to buy clothes, and to organize family events. He also bought a car. This year, he and his classmates collected money for their secondary school graduation anniversary [10 years], and they donated sports equipment purchased by my son in Moscow to the school.*
> *(51-year-old woman interviewed in Dobolu village, 14 June 2016)*

The investment of remittances—not only for the household but also for the local community—contributes to the development of the village's social and economic infrastructure.

Of the interviewed households, 36% had increased the number of their livestock during the preceding 5 years. The majority of households accumulate capital in the form of livestock, and migrants' remittances have played a crucial role in their ability to do this. A considerable number of survey households with migrants spent remittances for everyday expenses, household renovation, debt repayment, and livestock purchases. Remittances have often been invested in livestock because other options in rural areas are limited and less profitable, and high interest rates make it difficult to obtain business loans. The number of livestock has also increased since remittances are used for household consumption needs, purchasing fodder, building new barns, and paying for herding of livestock in summer pastures. Such a strategy can help households increase their financial capital and secure their livelihoods (Schoch et al 2010: 212, 217). However, increasing the number of livestock and using nearby pastures more intensively often lead to the overgrazing of these pastures. Research has suggested that many of the easily accessible pastures in Kyrgyzstan are overused, whereas distant pastures have remained underused in recent years (Kerven et al 2011: 19). Only a few herders practice a 3-step livestock migration cycle (see details in Schoch et al 2010); the *jailoo* and the pastures close to the villages are intensively used (World Bank 2007: 57; Schoch et al 2010: 214, 217). Remittances have both a positive and negative impact on the environment. On the one hand, they reduce the pressure on agricultural lands because households can use them as income or invest them in a business, but on the other hand, they enable households to expand their livestock herds, which puts increasing pressure on pastures.

Migrants interviewed in Moscow described their new skills and plans to start a business upon their return to Kyrgyzstan. For example, one migrant mentioned learning to process dairy products and said that he planned to breed more dairy cattle in Dobolu and produce a variety of products such as sour cream and cottage cheese to sell in the cities. Another migrant expressed the desire to open a restaurant and fast-food chain in Naryn and Bishkek. During her time working in restaurants in Moscow, she had not only gained ample experience but also learned a lot about European, Russian, and Italian cuisines. She said she intended to purchase primary products like meat, potatoes, horse sausage, and horse milk from villages in Naryn. She also said that supplementary income could be generated from using natural resources for a tourism business (ecotourism) and from fish farming. She noted that migration and her experience working abroad had led to a change in her occupational goals. After returning, she did not wish to work in her area of specialization as a teacher because of the low salary, instead preferring to enter the restaurant business.

In addition to its economic impact, migration has various social impacts. For example, one of the respondents said, "My daughters in Moscow are going to

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invite me, and I am happy because I will see what I have not seen yet" (47-year-old woman interviewed in Dobolu, 8 June 2016). A negative impact of migration is the heavier work burden for household members who remain behind. Households whose members have migrated face difficulties during peak agricultural labor times, especially the harvest season. Migrants' children also often stay with grandparents or other relatives and are thus deprived of their parents' care and control.

Internal and international migration have become an important strategy for adapting to environmental and livelihood challenges. The positive aspects of migration include increased income, improved wellbeing, acquisition of new knowledge and skills, and relocation to a more environmentally favorable residential location (see Chandonnet et al 2016; Sagynbekova 2016). The negative impacts of migration are mainly related to the social issues of the women and children who remain behind.

Conclusion

Environmental factors, including the effects of climate change, significantly impact the agricultural activities of rural people and both directly and indirectly impact the decision to migrate. The high dependency of villagers on limited livelihood sources such as animal husbandry and farming, in conjunction with bad access to markets and market shocks, creates socioeconomic uncertainty and insecurity. To adapt and to diversify income-generating activities, many people migrate. Remittances from migration are one of the main sources of income for many migrants' households and are spent for multiple purposes. The investment of remittances in livestock and other resources creates an additional source of income for migrants' households and leads to more resilient livelihoods. Additionally, labor migration helps to solve the problem of unemployment and underemployment by providing jobs both for those who migrate and for those who stay in the village. Remittances are also often used to hire local workers. At the same time, some uses of remittances—for instance, for everyday household expenses, house renovation, and life-cycle events—do not bring long-term development to the region, and the purchase of livestock and current use patterns of pastures may even contribute to environmental degradation.

Migrants not only accumulate financial capital abroad but also gain new skills and other knowledge. Upon their return, this new knowledge can be broadly applied toward self-employment and other activities and can be shared with other community members as well, thereby bringing further development to the countryside and mountainous regions.

Labor migration has become an important livelihood strategy in response to environmental challenges and the limited availability of rural livelihoods. This strategy will most likely continue to play a crucial role in improvement of households' wellbeing and rural development.

REFERENCES

AOD [Aiyl Okmot Dobolu]. 2016a. *Otchet po itogam sotsial'no-ekonomicheskogo razvitiia aiyl'nogo aimaka*. Dobolu, Kyrgyzstan: AOD.

AOD [Aiyl Okmot Dobolu]. 2016b. *Naryn raionunun Dobolu aiyl aimagynyn aiyl okmotundo zhashagan kalktyn sotsialdyk zhaktan korgoogo muktazh katmary zhonundo maalymat banky*. Dobolu, Kyrgyzstan: AOD.

Castles S. 2002. *Environmental Change and Forced Migration: Making Sense of the Debate*. Working paper 70. Geneva, Switzerland: United Nations High Commissioner for Refugees, Evaluation and Policy Analysis Unit.

Chandonnet A, Mamadalieva Z, Orolbaeva L, Sagynbekova L, Tursunaliev U, Umetbaeva D. 2016. *Environment, Climate Change and Migration in the Kyrgyz Republic*. Bishkek, Kyrgyzstan: International Organization for Migration (IOM).

Christensen J, Hewitson B, Busuioc A, Chen A, Gao X, Held I, Jones R, Kolli R, Kwon W, Laprise R, Magana Rueda V, Mearns L, Menendez C, Räisänen J, Rinke A, et al. 2007. Climate change 2007: The physical science basis. Regional climate projections. *In:* Solomon S, Qin D, Manning M, Chen Z, Marquis M, Averyt KB, Tignor M, Miller HL, editors. *Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, United Kingdom, and New York, NY: Cambridge University Press, pp 848–940.

Findley S. E. 1994. Does drought increase migration? A study of migration from rural Mali during the 1983–1985 drought. *International Migration Review* 28:539–553.

Hansen J, Ruedy M, Lo K. 2010. Global surface temperature change. *Reviews of Geophysics* 48(4):1–29.

Henry S, Schoumaker B, Beauchemin C. 2004. The impact of rainfall on the first out-migration: A multi-level event-history analysis in Burkina Faso. *Population and Environment* 25(5):423–460.

Hodges J, Foggin M, Long R, Zhaxi G. 2014. Globalisation and the sustainability of farmers, livestock-keepers, pastoralists and fragile habitats. *Biodiversity* 15(2–3):109–118.

Jonsson G. 2010. *The Environmental Factors in Migration Dynamics: A Review of African Case Studies*. Working Paper 21. Oxford, United Kingdom: International Migration Institute, University of Oxford.

Kerven C, Steimann B, Ashley L, Dear Ch, Rahim I. 2011. *Pastoralism and Farming in Central Asia's Mountains: A Research Review*. Background paper 1. Bishkek, Kyrgzstan: University of Central Asia, Mountain Societies Research Centre.

MLMYKR (Ministry of Labour Migration and Youth of the Kyrgyz Republic). 2015. *Analiticheskii otchet o deiatel'nosti Ministerstva Truda, Migratsii i Molodezhi Kyrgyzskoi Respubliki za 9 mesiatsev 2015 goda*. Bishkek, Kyrgyzstan: MLMYKR.

MSRI (Mountain Societies Research Institute). 2016. *Annual Report 2015*. Bishkek, Kyrgyzstan: University of Central Asia.

Nasritdinov E, Ablezova M, Abarikova J, Abdoubaetova A. 2010. Environmental migration: Case of Kyrgyzstan. *In:* Afifi T, Jäger J, editors. *Environment, Forced Migration and Social Vulnerability*. Berlin and Heidelberg, Germany: Springer, pp 235–246.

NBKR [National Bank of the Kyrgyz Republic]. 2016. *Monthly Press-Release of the National Bank of the Kyrgyz Republic (May)*. Bishkek, Kyrgyzstan: NBKR. http://www.nbkr.kg/index1.jsp?item=40&lang=ENG&search=1&search_str=Exchange+rate+2016&doc=1&arc=1&rownum=10; accessed on 2 June 2016.

NSCKR [National Statistical Committee Kyrgyz Republic]. 2015. *Uroven' zhizni naseleniia Kyrgyzskoi Respubliki 2010–2014*. Bishkek, Kyrgyzstan: NSCKR.

Sagynbekova L. 2016. *The Impact of International Migration: Process and Contemporary Trends in Kyrgyzstan*. Cham, Switzerland: Springer.

Schmidt M. 2012. Changing human-environment interrelationships in Kyrgyzstan's walnut-fruit forests. *Forests, Trees and Livelihoods* 21(4):253–266.

Schmidt M, Sagynbekova L. 2008. Migration past and present: Changing patterns in Kyrgyzstan. *Central Asian Survey* 27(2):111–127.

http://dx.doi.org/10.1659/MRD-JOURNAL-D-17-00029.1
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Schoch N, Steimann B, Thieme S. 2010. Migration and animal husbandry: Competing or complementary livelihood strategies. Evidence from Kyrgyzstan. *Natural Resources Forum* 34(2010):211–221.
Shigaeva J, Hagerman Sh, Zerriffi H, Hergarten Ch, Isaeva A, Mamadalieva Z, Foggin M. 2016. Decentralizing governance of agropastoral systems in Kyrgyzstan: An assessment of recent pasture reforms. *Mountain Research and Development* 36(1):91–101.
Steimann B. 2011. *Making a Living in Uncertainty. Agro-Pastoral Livelihoods and Institutional Transformations in Post-Socialist Rural Kyrgyzstan*. Human Geography Series 26. Zurich, Switzerland: University of Zurich.
Tacoli C. 2009. Crisis or adaptation? Migration and climate change in a context of high mobility. *Environment & Urbanization* 21(2):513–525.
Thieme S. 2008a. Living in transition: How Kyrgyz women juggle their different roles in a multi-local setting. *Gender, Technology and Development* 12(3):325–345.
Thieme S. 2008b. Sustaining livelihoods in multi-local settings: Possible theoretical linkages between transnational migration and livelihood studies. *Mobilities* 3(1):51–71.
Thieme S. 2014. Multilokales Erwerbs und Familienleben in postsozialistischen Kirgistan. *Geographische Rundschau* 11:40–45.
Tilekeyev K, Mogilevskii R, Bolotbekova A, Dzhumaeva Sh. 2016. Sheep meat production value chains in the Kyrgyz Republic and export capacity to the EAEU member states. *IPPA Working Paper*. No. 36. Bishkek, Kyrgyzstan: V.R.S. Company.
World Bank. 2007. *Kyrgyz Republic: Livestock sector review: Embracing the new challenges. Report 39026*. Washington, DC: World Bank. http://documents.worldbank.org/curated/en/497831468266648728/pdf/390260KG0Lives1iew0P09028701PUBLIC1.pdf; accessed on 1 November 2016.
World Bank. 2016a. Personal remittances, received (current US$). http://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT?locations=KG; accessed on 1 July 2016.
World Bank. 2016b. Migration and remittances: Recent developments and outlook. *Migration and Development Brief* 26, April. Washington DC: World Bank.
Zemp M, Roer I, Kääb A, Hoelzle M, Paul F, Haeberli W. 2008. *Global Glacier Changes: Facts and Figures*. Zurich, Switzerland: University of Zurich.

http://dx.doi.org/10.1659/MRD-JOURNAL-D-17-00029.1

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