

Chapter 2

Role of Remittances in Building Farm Assets in the Flood Affected Households in Koshi Sub-Basin in Nepal

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Abstract The impacts of future climate change could be significantly reduced if people were better able to cope with present climate risks. The role of human mobility, particularly labor migration and remittances, has received little attention in the adaptation policies in Nepal. Instead, migration is perceived as a challenge to development and adaptation goals. This is partly due to the lack of empirical evidence on the relationship between migration, environmental stressors, and CCA. This chapter examines the role of remittances in building farm assets such as farm size, livestock, irrigation, and farm mechanization, which are an important component of a rural household's adaptive capacity. Circular migration in search of employment and higher earnings has for long been a defining feature of the livelihoods of many households in the Sagarmatha Transect of Koshi sub-basin of Nepal. Remittances are an important component of recipient household income. A major share of remittances is spent on food, healthcare, loan repayment, education, and consumer goods. There is little investment of remittances in measures pertaining to disaster preparedness (e.g. insurance). Common household responses during floods and the immediate aftermath are reactive and short-term in nature, and those between two flood events include some low-cost structural measures. A significant positive association

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between remittance recipient status of a household and farm size is observed. However, the longer duration for which a household receives remittances is more likely to reduce the size of its farm holding.

Keywords Remittance • Koshi • Nepal • Farm • Adaptation • NAPA

2.1 Introduction

Some of the most serious consequences of anthropogenic climate change are believed to be those related to changes in hydrological systems. Societies, individuals, groups, and governments are likely to adapt to future changes in climatic conditions in the same way that they have adjusted their behavior to the impacts of climate variability and extremes in the past (Adger et al. 2005; Agrawal and Perrin 2008).¹ The impacts of future climate change could be significantly reduced if people could cope better with present climate risks (Thomalla et al. 2006). Analyses of past impacts and responses to climate shocks and stressors are necessary to assess the feasibility of future responses to changing climate conditions, even if future climatic shocks and stressors are historically unprecedented (Agrawal and Perrin 2008). Building the adaptive capacity of individuals, groups, or organizations to adapt to changes and transforming this capacity into action are two dimensions of adaptation to a changing climate (Adger et al. 2005).²

Throughout history, migration has been a critical adaptation strategy to changes in natural resource condition and environmental hazards (McLeman and Smit 2006). The New Economics of Labour Migration (NELM) suggested that migration is a risk diversification strategy for rural households. In context of weakly developed credit and insurance markets, migration of a household member to seek employment provides an alternative route to reduce risk through income diversification (Stark and Bloom 1985; Taylor 1999) and improve their livelihoods (de Haas 2007). The NELM considers migration to be a household decision, wherein costs and returns of migration are shared by the migrant and non-migrating members of a household (Stark and Bloom 1985; Stark and Lucas 1988). Human mobility in response to environmental shocks or stressors could take many forms. Hugo (1996) conceptualized a mobility continuum with forced migration and voluntary migration occupying the two extremes. It is expected that the majority of climate-related human mobility will involve movements within countries with migrants using established networks and relationships to seek livelihood opportunities in response

¹The Intergovernmental Panel on Climate Change (IPCC) defines adaptation as ‘the process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities (IPCC 2014: 5).’

²The IPCC (2014: 21) defines adaptive capacity ‘as the ability to adjust, to take advantage of opportunities, or to cope with consequences’. A household could build its adaptive capacity by expanding the tangible resources used to maintain livelihoods (e.g. natural capital and productive resources) and capabilities to do so (e.g. social and human capital) (Bebbington 1999).

to climate change impacts (Bardsley and Hugo 2010). Social networks provide access to jobs, accommodation, and protection to the migrant workers (Tacoli 2011). Remittances – financial and social – contribute to climate change adaptation (CCA), disaster risk reduction (DRR), and development at the household level. Environmental disaster, usually, do not disrupt financial remittances, which supplement income of the recipient households (ADB 2012). There is evidence that inflow of financial remittance increases in the aftermath of environmental disasters (Yang and Choi 2007). Financial remittances could be one of the alternative financing sources that helps to manage risk from extreme events such as drought or flood. Social remittances in form of skills, information, network, and knowledge could contribute to awareness raising, income diversification, disaster risk reduction, and capacity building.

Even though remittances could increase the adaptive capacity of people who live in areas that are at high risk from frequent extreme events and compensate for the property damage, the households might not be able to avoid the recurring damage (ADB 2012). Any potential benefit from migration needs to be weighed against potential costs (e.g. social costs, unrealistic expectations, poor standard of living, and low wages or substandard working conditions in destination) (Foresight 2011). Different perceptions of the role of migration in socio-economic development, limited evidence on the relationship between migration and environmental stressors, and methodological challenges have thus resulted in a debate on whether and how environmental degradation would give rise to mass displacement and migration (Tacoli 2011), and the extent to which migration can contribute to CCA among migrant sending households and origin communities.

Mirroring the contemporary academic discourse, the migration and climate change policy discourse in the 1990s had focused on how environmental shocks and stressors would induce large-scale displacement and out-migration, identifying potential ‘hot-spots’, and potential destinations of these displaced populations or migrants. These early deliberations raised a specter of large-scale forced movement of people from rural to urban areas and from developing to developed countries due to climate change impacts in the future (see IPCC 1990). During the past decade, there has been a shift in the dominant paradigm in migration and development discourse that returned the focus to the positive impacts of migration on origin communities due to remittances sent back by migrant workers, skills brought back by returnees, and diaspora effects on investment and support (ADB 2012). This paradigm shift has been gradually imbibed in the parallel discourse on migration and climate change. For instance, the Cancún Adaptation Framework of 2010 recognized that migration can be an adaptation strategy (ADB 2012), or by the acknowledgement in the Sendai Framework for Disaster Risk Reduction 2015–2030 that community resilience could be enhanced by reducing disaster risk through the knowledge, skills and capacities of the migrants (UNISDR 2015: 21). However, the role of human migration, particularly labor migration and remittances as a risk management strategy or CCA have received little attention in the national adaptation policies across the Hindu Kush Himalayan (HKH) region, including in Nepal. Rather migration is perceived as a challenge to development and adaptation goals. The National Adaptation Programme of Action in Nepal (NAPA) identified rural-urban migration

as a challenge to urban planning process (MoE 2010: 5), and posited the need to address rural-urban migration by supporting rural development (MoE 2010: 14). This perception indicates that the context dependent nature of migration outcomes is not well understood by the national stakeholders. This is partly due to the lack of empirical evidence on the relationship between migration, CCA, and risk management.

A review of the slim evidence base on migration and environmental change in Nepal leads to the following inferences. First, environmental change is more likely to influence local rather than long-distance mobility (particularly, international migration) (see Massey et al. 2007; Bohra-Mishra and Massey 2011). Second, there is greater likelihood that a household member would migrate for work in communities exposed to rapid onset water hazard (e.g. riverine flood, flash flood) than those exposed to slow onset water hazard (e.g. dry spell, water shortage) (see Banerjee et al. 2011). Third, remittances are commonly spent on food, consumer goods, healthcare, education, and loan repayment rather than disaster risk reduction (see Banerjee et al. 2011). This review indicates towards the following gaps. Previous research had focused on small-scale case studies, which had been conducted using disparate methodologies and without standardized concepts and terminologies related to environmental stressors, CCA and migration. Most of these case studies explored the influence of environmental stressors on migration decision-making process. Thus, the evidence base regarding the role of migration and remittances in CCA, including an examination of circumstances under which financial and social remittances contribute to household level adaptive capacity, a systematic assessment of stakeholder narratives, and an assessment of the role of institutions in facilitating migration as a risk management strategy, is relatively limited.

This chapter will assess the role of financial remittances (hereafter remittances) in building farm assets (e.g. farm size, livestock, irrigation, and farm mechanization), which are an important component of a rural household's adaptive capacity. A better understanding of the determinants that shape the farm assets of a remittance recipient household is vital to understand the risk management mechanisms, which in turn would support appropriate policy initiatives. The next section provides a description of the study area in the Sagarmatha Transect of the Koshi sub-basin (KSB). This is followed by a discussion on research methodology and presentation of empirical evidence that characterizes the role of remittances in shaping farm assets among households in rural communities affected by the floods. The last section of this chapter discusses the implications of this research.

2.2 Case Study

This case study is part of the Rural Livelihoods and Climate Change Adaptation in the Himalayas programme ('the Himalica') of the International Centre for Integrated Mountain Development (ICIMOD). The KSB is located in Nepal's eastern Ganges

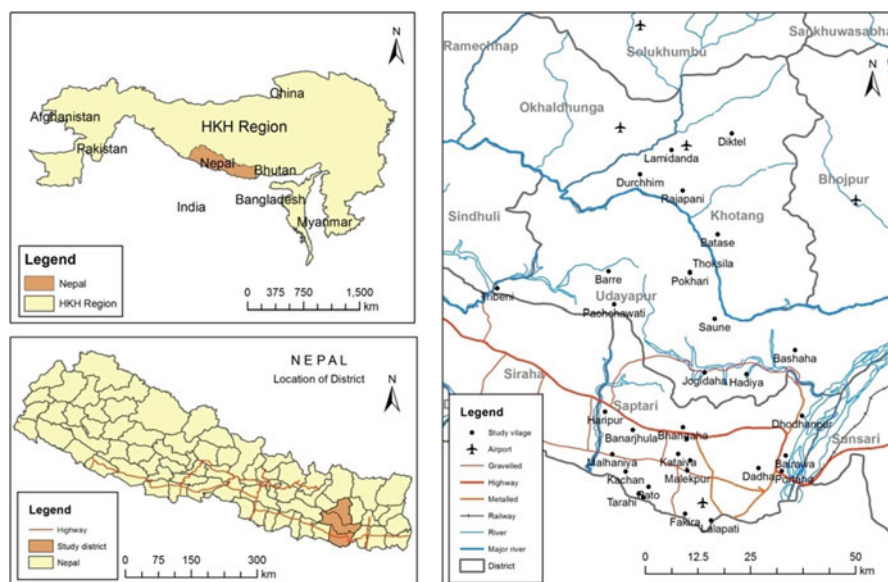


Fig. 2.1 Map of the study area in the Sagarmatha Transect, Koshi sub-basin, Nepal (Source: Migration Case Study, Himalica programme, ICIMOD)

region. The catchment area of this sub-basin is composed of the mountain region in the north, through the mid-hills, to *Terai* region (plains) in the south. The KSB is known for floods and extremely high sediment load (Dixit et al. 2009). The Himalica programme selected the Sagarmatha Transect within the KSB through stakeholder consultations that included government and non-government institutions. This transect includes the mountain district of Solukhumbu, mid-hill districts of Khotang and Udayapur, and Terai district of Saptari (see Fig. 2.1).

The KSB, which is comprised of the eastern highland, lowlands of the Ganges, and one of three snow-fed watersheds in Nepal, provides a unique research context. This region is known for the impacts of rapidly changing ecosystems, shifts in hydrological patterns, changes in land use and concomitant pressures on ecosystems and livelihoods. This region experiences recurrent extreme events such as cloudbursts, flash floods and droughts. In future, the frequency and severity of these extreme events are expected to increase due to climate change (NCVST 2009; Dixit et al. 2009). For the purposes of the study, riverine and flash floods are used as a proxy for future climatic change induced extreme events. The KSB is historically known for high mobility of able-bodied men, initially to serve in the British and Indian armies, and later on a seasonal basis to India in search of better livelihood opportunities. This trend has continued to the present day. An increasing number of people are participating in circular labor migration to the middle-east and south-east Asia. Further information on demographic, socio-economic, floods and migration characteristics in the four districts of the Sagarmatha Transect in the KSB is provided in Table 2.1.

Table 2.1 Brief description of the study area in the Sagarmatha Transect, Koshi sub-basin, Nepal

| District | Arable land | | Flood affected VDCs | | Population | | Absentee population | | | Per capita income (\$PPP) |
|------------|-------------|------------|---------------------|------------|------------|-----------|---------------------|--------|--------|---------------------------|
| | Hectares | Percentage | Number | Percentage | Number | Household | Male | Female | Total | HDI |
| Solukhumbu | 15,546.2 | 4.69 | 7 | 20.59 | 105,886 | 23,785 | 4,730 | 887 | 5,617 | 0.502 |
| Khotang | 26,077.9 | 16.39 | 51 | 44.74 | 206,312 | 42,664 | 16,504 | 1,158 | 17,662 | 0.494 |
| Udayapur | 25,794.9 | 12.5 | 17 | 22.37 | 317,532 | 66,557 | 20,036 | 2,024 | 22,060 | 0.475 |
| Saptari | 67,054.5 | 49.2 | 18 | 40.91 | 639,284 | 121,098 | 25,676 | 752 | 26,433 | 0.437 |

Source: DWIDP (2009, 2010, 2012), CBS (2013, 2012), UNDP (2014)

2.3 Research Methodology and Methods

Agriculture in the study area is mainly subsistence in nature, and is combined with other economic activities. Agricultural land and livestock are important components of a rural household's adaptive capacity (Aulong et al. 2012) and represent an accumulation of wealth (Vincent 2007). The farm size and number of livestock owned by a household are attributes of a household's farm assets. The application of tools, implements and powered machinery to enhance agricultural production and productivity and reduce drudgery is referred as 'mechanization'. (Clarke 2000). Farm mechanization could lead to an increase in crop productivity, address labour shortage, or support a change in cropping pattern. In this study, farm mechanization includes use of tractors to plough the farm during the winter cropping season or ownership of tractor, power tiller, or mechanized threshers. Access to irrigated farm land could reduce environmental risk by reducing dependence on rain-fed agriculture. The use of irrigation during the winter cropping season indicates flexibility with in a household's farming portfolio.

To study the relationship between remittances and farm assets, a separate regression was conducted for each of the aforementioned attributes of farm assets. Migration is considered to be a risk-sharing behavior of the household to diversify resources in order to minimize income risks (Stark and Levhari 1982). Remittances are sent by migrant workers in destination to their families in the origin community.³ The remittance recipient status of the household (i.e. remittance recipient or non-recipient) is the indicator of mobility and one of the independent variables. To quantify the marginal effect of remittances, a number of other independent variables were taken into account: household head's age, gender, ethnicity, and educational attainment; household's dependency ratio, flood damage (i.e., financial losses due to flood) to the household between 1994 and 2013; time taken to reach nearest paved road, local market, and bank; village level meetings on flood preparedness; and adjusted monthly per capita expenditure. A modified version of the same regression model was used to characterize the farm assets of the remittance recipient households in the study area. The household survey had recorded the duration for which a household had been receiving remittance, which is the period between the first and latest instances of remittance receipt by a household. It was recorded as a continuous variable in the household survey, and was converted into a categorical variable: short duration (i.e. below median value) and long duration (i.e. above median value). The methodology for this part of the chapter draws from Banerjee et al. (forthcoming).

³In this study, a household was considered to be a migrant-sending household if any household member had lived and worked in another village or town in the same country or another continuously for two months or more at any time during the last 30 years. Households not conforming to this definition were considered as non-migrant households.

This research study adopted a mixed method approach that included focus group discussions (FGD), household and village surveys, and key informant interviews (KII). The fieldwork was conducted in 2014.

Initially, the FGDs were conducted in all four districts of the Sagarmatha Transect: Solukhumbu, Khotang, Udayapur, and Saptari districts. Since floods are not a major environmental stressor in Solukhumbu district, the survey was conducted only in the remaining three districts, which were considered as one aggregated areal unit. A list of all flood affected rural wards was prepared and the selection of households involved a two stage process.⁴ In the first stage, the Probability Proportional to Size (PPS) was used to select rural wards. In the second stage, equal number of households were selected using systematic sampling within each selected rural ward. A household was classified as either a remittance 'recipient' household or 'non-recipient' household.⁵ At the end of the survey, a sample size of 333 was achieved; 159 remittance recipient households and 174 non-recipient households.

2.4 Results

2.4.1 *Household Responses to Floods*

The household level responses to floods in the study area have been distinguished between the responses during the flood (or inundated) period, immediate aftermath of the flood, and between two flood events. There is little difference in the flood response strategies of the remittance recipient and non-recipient households in the flood affected rural communities. The common household level responses during the flood are shifting of cattle and family to a safer location, storing valuables in a safe place within the house, buying food on credit, reducing the proportion or number of meals, borrowing money from relatives or friends, relying on less preferred food, digging a ditch or channel to divert flood water, and spending savings to procure food. In the immediate aftermath of a flood, household level responses are focused on recovery measures such as repairing the house or cattle-shed, borrowing money from friends or relatives, buying food on credit, spending savings to procure food, relying on less preferred food, preparing for farming, reducing proportion or number of meals, and bringing back cattle from safe location. Likewise, household measures between two flood events are raising the plinth of the house or cattle-shed or granary, building a barrier to reduce the speed of flood water, repairing local infrastructure (e.g. bridge, road), reducing area under paddy, and borrowing money from relatives or friends. It is evident that the household responses during the flood

⁴If a village development committee (VDC) had experienced a riverine flood or flash flood at least once since 1984 then all rural wards in the VDC was considered as flood affected.

⁵If at any time during the past 30 years a household had received financial remittances, irrespective of the relationship of the remittance sender to the household, it was referred as a remittance recipient household.

and in its immediate aftermath in study area are short-term in nature, and even strategies adopted to reduce impact over the long-run are quite rudimentary. The reasons for this are many but primarily could be attributed to inability of households to divert resources to build adaptive capacities; lack of support from government and non-government agencies; limited access to information and technology; and lack of collective will. During a focus group discussion in Udayapur, a female member recounted,

We are aware of the fact that we have to do something to about the damages caused by the flood. Every year, we incur heavy losses ... We have to build an embankment. But what can we do? If we do not work, the stoves in our houses will not light. Everyone is concerned about their own needs because we all are poor. This is also why we have not been able to do anything.

Another explained,

It is mostly because of insufficient investment. It is difficult to prevent flood damages at the household level because until and unless anything is done at the village level, that is, prevent the river from flowing into the village, preventive measures at the household level will not be sufficient ... There are embankments that are constructed but with low investments so they are not strong and easily get destroyed ... We hardly receive any support from the government and lack of co-ordination and collective spirit among the villagers is also another major issue.

The village level flood preparedness is limited. Only 20% of the households reported that their village has a community level flood contingency plan. The availability of a pre-designated flood shelter for the villagers and livestock was reported by 6% of the households. However, half of households reported to have participated in a village meeting that had discussed flood preparedness.

2.4.2 Migration and Rural Livelihoods

As mentioned earlier, circular migration in search for employment and higher earnings has for long been a defining feature of the livelihoods of many households in the study area. Migrant workers from the villages studied are predominantly men of working age group. Factors such as decline in agricultural productivity because of floods, inability of youths with modicum levels of education (i.e., those who have failed their Grade 10 exams or passed it but not pursued higher education) to be gainfully employed, lack of income-generating opportunities in the villages or surrounding localities, and prospects of economic improvement through remittances are common reasons for migration.

With regards to migrant destinations, out of the 656 migration episodes since 1984, over half are associated with a destination in a third country such as Malaysia, Qatar, Saudi Arabia, or United Arab Emirates.⁶ Another quarter of the destinations

⁶International migration for work to countries other than India.

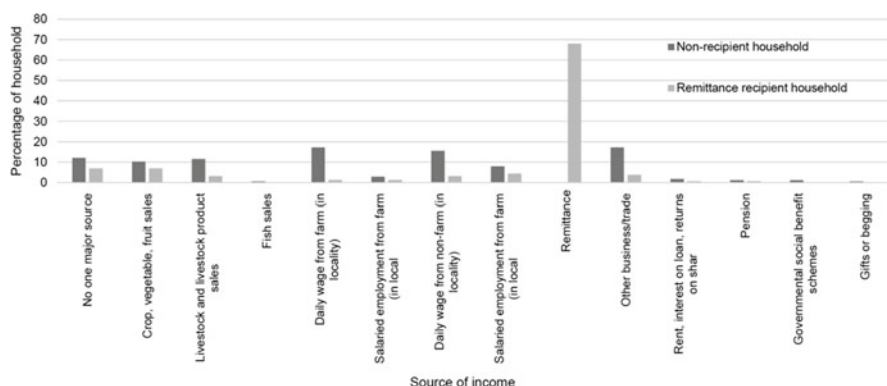


Fig. 2.2 Major source of household income during the 12 months preceding the survey, Sagarmatha Transect, Koshi sub-basin, Nepal, 2014 (Source: Migration Case Study, Himalica programme, ICIMOD)

are located within Nepal, and the remaining are destinations in India. Most of the migrant workers are wage employees (95%) in the destination communities who are employed in the secondary sector, primarily, in construction (35%) and manufacturing (18%).⁷ Most of these migrant workers do not receive social security benefits (e.g. pension, provident fund, and insurance) from their employers. For instance, only 15% of the surveyed migrant workers had access to some form of social security benefits as part of their latest job. Only 14% of the surveyed migrant workers are entitled to paid leave.

Remittances are an important component of the recipient household's income (see Fig. 2.2). Around two-third of the remittance recipient households have identified remittances as the major source of household income. The mean volume of remittances received from domestic and foreign sources during the 12 months preceding the survey is estimated to be USD 243 and USD 1,112 respectively.⁸ The mean remittance per capita for the remittance recipient household is estimated to be USD 294. On an average, recipient households have received remittances for a period of 5.5 years. Notably, compared to the non-recipient households, the remittance recipient households are less dependent on other sources of income in the origin community (e.g., wage employment, business/trade, and agricultural activities). Thus indicating that in most instances, remittances serve as the main source of a household's income, rather than supplementing that from other sources.

⁷Other minor employers included electric, gas, and water supply, defence services, and hotels and restaurants.

⁸Exchange rate in December 2015 was 1 USD = NPR 106.40

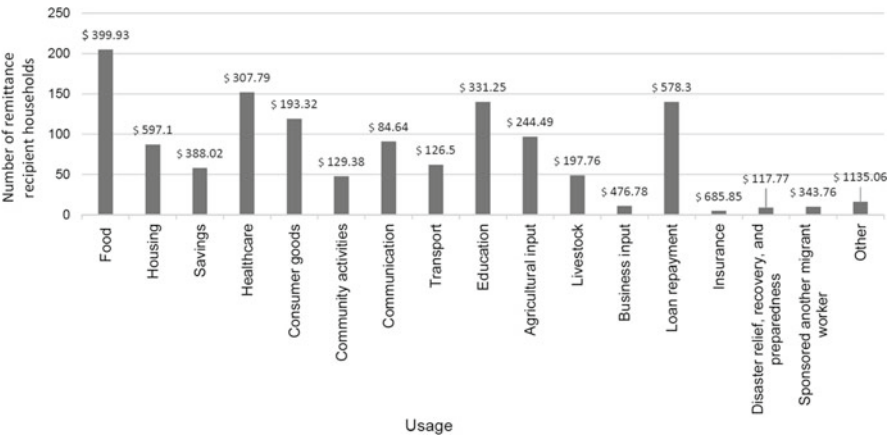


Fig. 2.3 Use of the financial remittances during the 12 months preceding the survey, Sagarmatha Transect, Koshi Sub-basin, Nepal, 2014 (Source: Migration Case Study, Himalica programme, ICIMOD)

2.4.3 *Remittances and Adaptive Capacity*

Remittances are, commonly, used to procure food and consumer goods, repay loans, and access healthcare and education. Some households have invested remittances in agricultural input and communication (see Fig. 2.3). There was little use of remittances in housing, savings, community activities, disaster risk reduction, insurance, or business input. When asked about the reasons for such low expenditure on disaster risk reduction, the common refrain was that individual households have to budget for various requirements of their household members. The disaster preparedness measures are generally considered to be of low priority, especially when confronted with daily necessities such as food, education, loan repayment, and health care. As recounted by a male migrant returnee from Khotang,

There have been slight changes after migration. I have not been able to buy land or build a house from the income I earned abroad. But what the remittances did help in is in sustaining household expenditures and repaying loans that I had taken to go abroad... There is now nothing left to invest on anything [including preparedness measures to overcome the impact of floods]

Among the various attributes of farm assets, the regression analysis found a significant association between remittances and large farm size (‘above median size’), which is an important component of rural households’ adaptive capacity (see Table 2.2). More precisely, remittance recipient households are likely to have access to larger farms than non-recipient households. This finding should be considered in context of another finding that longer the duration for which remittance is received by a household, less likely it was to have a farm above the median size (see Table 2.3).

Thus, of the various forms of farm assets such as land, livestock, irrigation, and farm mechanization, that have bearings on households’ adaptive capacity, the only

Table 2.2 Effects of remittances on household level farm assets in Sagarmatha Transect, Koshi sub-basin, Nepal

| | Recipient | Non-recipient | Beta coefficient |
|--|-----------|---------------|------------------|
| % of households with farm size above the median value ^a | 61.4 | 49.6 | 0.497* |
| % of households with livestock above the median value ^b | 61.2 | 67.3 | -0.094 |
| % of households with irrigated farm above the median value ^c | 61.4 | 49.6 | -0.141 |
| % of households that had used irrigation during the winter cropping season | 7.9 | 3.6 | 0.698 |
| Farm mechanization | 12.9 | 10.1 | 0.285 |

Source: Migration Case Study, Himalica programme, ICIMOD

Note: Non-recipient households were considered as referent. All regressions models were household head's age, gender, ethnicity, dependency, and literacy; expenditure category; flood damage to the household between 1994 and 2013; time to reach nearest paved road, local market, bank; and participation in village level meeting on flood preparedness was organized

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

^aEstimated only for households with access to farm land

^bEstimated only for households with access to livestock

^cMedian value for farm size = 0.41, +Median value for livestock = 5

Table 2.3 Effect of duration of remittance receipt on household level farm assets among the remittance recipient households in Sagarmatha Transect, Koshi sub-basin, Nepal

| | Shorter duration | Longer duration | Beta coefficient |
|---|------------------|-----------------|------------------|
| % of households with farm size above the median value ^a | 61.4 | 52.9 | -0.926** |
| % of households with livestock above the median value ^b | 50.0 | 52.7 | -0.063 |
| % of households with irrigated farm above the median value ^c | 44.3 | 48.5 | -0.028 |

Source: Migration Case Study, Himalica programme, ICIMOD

Note: Shorter duration remittance receipt households were considered as referent. All regression models were adjusted for the household head's age, gender, ethnicity, dependency, and literacy; expenditure category; flood damage to the household between 1994 and 2013; time to reach nearest paved road, local market, bank; and participation in village level meeting on flood preparedness was organized

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

^aEstimated only for households with access to farm land

^bEstimated only for households with access to livestock

^cMedian value for farm size=0.41, +Median value for livestock=5

one that is positively associated with remittances is farm size. Though, over the long term, there was a decrease in farm size of a remittance recipient household. This is an important finding since agriculture is not only one of the major livelihood strategies in the study area; agricultural productivity is not only volatile but also confronts risk from environmental stressors.

2.5 Discussion

Labor migration is an important livelihood strategy of many households in the study area, and remittances are a major source of income for remittance recipient households. In the study locations remittances are commonly spent on food, healthcare, loan repayment, education, and consumer goods. There is little targeted savings to manage flood risk, investment of remittances in insurance, or other measures pertaining to disaster risk reduction. The common household responses during the flood and in its immediate aftermath are reactive and short-term in nature and those between two flood events include some low-cost structural measures. This study observed a significant positive association between remittance recipient status of a household and access to farm above median size. Farm size is an important component of rural households' adaptive capacity. However, findings from the study also suggest that over the long term a remittance recipient household is less likely to have farm size above the median size. This indicates that the remittance recipient households in the study area are likely to downsize their farm-holding. Presumably, they become dependent on remittances as a livelihood strategy rather than using it as a once off attempt at wealth accumulation. The vagaries of weather, price, and crop diseases create risks for farming (Lucas 2014). Smaller farm size among long duration remittance recipient households may indicate towards a downsizing of farming activities and growing dependence on remittances and on the local market for food and other commodities. Based on a study in China, Tao and Xu (2007) had suggested that unlike the older and the less educated laborers in rural area, young educated migrants would not value farming as much. They would tend to disassociate themselves from farming in future. If given an opportunity to migrate permanently, they might even de-link themselves from the farm land allocated to them.

These results have important implications for the study area. On one hand, subsistence farming is still a major component of livelihoods and food security of many households. At the same time, the number of Nepali migrant workers has been progressively increasing over the past couple of decades. The findings from regression analyses suggest that in the long-term a sizeable proportion of remittance recipient households are likely to reduce their farm size, and in turn their dependence on subsistence agriculture would decline. Given the environmental sensitivity of subsistence farming in general, and particularly due to the lack of irrigation, farming technology, and farm mechanization, a reduction in farm size could reduce the environmental risks posed on the household's livelihoods portfolio. On the other hand, this would also imply a possible rise in the household's dependence on the market

to procure food items, which is likely to affect long-term food security, particularly of women, young children and the elderly. At present, Nepal imports several major food items (e.g. rice, vegetables, cooking oil, fruits) from neighboring India. A disruption of supplies from across the border could further reduce food security of the households. Farm sector provides earning opportunities in the form of self-employment as well as wage-employment to many in the study area. A reduction in farm size is likely to leave these people without any sources of income. This trend poses a challenge to meet Nepal's national priority goals since agriculture is a priority sector, and the government programs aim to increase productivity and diversify agriculture sectors to address food insecurity and nutritional status.⁹

The Local Adaptation Plan for Action (LAPA) exercise at the VDC level provides a flexible framework to address local risks as well as take advantage of opportunities (GoN 2011). The role of migration and remittances has to be mainstreamed in the LAPA exercises. A coordinated awareness-raising program is required for relevant stakeholders such as functionaries of the District Development Committee (DDC) and Village Development Committee (VDC), remittance recipient households, development partners, and financial institutions. For example, the LAPA exercise needs to recognize that remittances could increase purchasing power of the remittance recipient households that can develop the adaptive capacity of households by building farm assets, and also raise the food security (both quantity and quality) of the remittance recipient households. At the same time, this exercise should also identify a wide array of food sources to strengthen the food supply and avoid excessive dependence on any particular source.

Remittances could support off-farm livelihood diversification, especially in the form of cash crops and off-farm wage employment, which are priority sectors for national planning processes, and can in turn compensate for the income losses in the farm sector during the lean season or extreme events. Equally important would be to enhance market linkages, support capacity building of remittance recipient households, providing them with access to credit for supporting cash crop and off-farm employment. As it is the women who are left behind in the remittance receiving households gender-sensitive planning and support provisions are required.

These measures will require programmatic commitment in line with policy priority, as well as guidance, nurturing, and technical inputs from relevant government and non-government agencies. Steps should be taken to diversify the skill sets of the farm labor, particularly because of the positive association observed between remittances and farm size. It would not only contribute to a possible rise in income, but will also support diversification of household livelihoods portfolio. Furthermore efforts should be made, possibly with matching funds from the government and non-government sources, to incubate and nurture small and medium rural enterprises established by the remittance recipients.

The contribution of remittance in the development finance of Nepal has not been acknowledged. The contribution of international remittance is phenomenal – for-

⁹ 13th Periodical Plan 2013–2016, source: <http://www.npc.gov.np/images/download/13th-Plan.pdf>, accesses Nov 2015.

foreign aid represents 15 % of national budget in Nepal and the amount of remittance Nepal received is roughly equivalent to the size of the government's annual budget for the year 2014/2015.¹⁰ This is equivalent to around 29 % of the country's GDP. Nepal, thus, stands third in the world and top in South Asia in terms of the contribution of remittance in GDP. In addition to keeping a stable source of foreign exchange earnings that helps keep balance of payment afloat, migrants usually send more money when the family back home experiences hardships such as disasters. Therefore remittances act as an insurance against economic adversity which has been well exemplified during the recent April 29, 2015 earthquake. While these examples clearly reveal the significance of remittances, this reality seems to be largely ignored by the national planning processes. Nepal needs to acknowledge the role of remittances into development and adaptation processes and move towards a comprehensive migration policy that addresses challenges and opportunities provided by remittances, including at the local and household levels.

Acknowledgement The authors express their gratitude to the editors for providing this opportunity to prepare this chapter. Particular appreciation goes to Dr. Koko Warner (UNU-EHS) and Dr. Andrea Milan (UNU-EHS) for their support, encouragement and insightful feedback. The authors would like to thank Dr. Golam Rasul (ICIMOD) and Mr. Valdemar Holmgren (ICIMOD) for their support and encouragement. Special thanks to Dr. Bidhubhusan Mahapatra (ICIMOD) for his guidance with the statistical analysis. Particular appreciation also goes to the CESLAM team who had provided invaluable support during the fieldwork. The authors would like to thank Dr. Vishwas Chitale (ICIMOD) and Mr. Gauri Dangol (ICIMOD) for their inputs in the preparation of the maps and graphs. The authors will like to thank the anonymous reviewers for their helpful comments. This research was supported by the Rural Livelihoods and Climate Change Adaptation in the Himalayas (Himalica) Programme, which is implemented by the International Centre for Integrated Mountain Development (ICIMOD), and is funded by the European Union.

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¹⁰ Nepal Rastra Bank calculates the remittance in the tune of Rs 600.17 billion for the year 2014/015 through the formal banking channel alone. Labour Migration for Employment: A Status Report for Nepal 2014/2015, Ministry of Labour and Employment, Government of Nepal (forthcoming January 2016).

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Migration, Risk Management and Climate Change:

Evidence and Policy Responses

Milan, A.; Schraven, B.; Warner, K.; Cascone, N. (Eds.)

2016, XIII, 229 p. 11 illus., Hardcover

ISBN: 978-3-319-42920-5