

# Climate change and microfinance: a wake-up call for policy makers

*Alberto Lanzavecchia, University of Padova, Padova, Italy\**  
*Maria Palumbo, University of Padova, Padova, Italy*  
*Bharat Singh Thapa, Tribhuvan University, Kathmandu, Nepal*

## Abstract

People in the Hindu-Kush Himalayan region are particularly vulnerable to food insecurity related to climate change because of poor infrastructure, limited access to global markets, physical isolation, low productivity, and hazard exposure (IPCC, 2019). Farmers in this region are facing more frequent floods as well as prolonged droughts with ensuing negative impacts on agricultural yields and increases in food insecurity (Hussain et al. 2016; Manzoor et al. 2013). Drought, forest fires, floods and landslides are nowadays magnified by climate change. In Nepal, changes in monsoon patterns, increasing hydropower projects and poorly planned rural road projects will greatly exacerbate the situation of unacceptable presence of poverty and inequality of opportunities in the country.

Climate change adaptation and mitigation measures at household level and micro business are urgent for policy makers. Microfinance can play a crucial role in fostering such good practice if capital is constrained by policy rules. Through the provision of credit and other financial services, microfinance helps rural people develop alternate livelihood opportunities, build assets and spread risks. There is a significant potential for taking benefit from financial innovations such as risk insurance, microfinance, conditional cash transfer programs, and targeted subsidies by scaling up these initiatives through policy and community level initiatives. However, mitigation and adaptation measures are not enough to prevent climate change adverse impacts: loss and damage (L&D) measures is becoming increasingly urgent and unavoidable. As a consequence, a full multi-level governance is needed. The Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (2013) needs concrete implementation that requires the support of national policies and mechanisms. Following the case of Bangladesh, we call for both a top-down and bottom-up approach for addressing in a more comprehensive way L&D within the territory of Nepal.

This policy paper is targeted at policy makers to urgently take action to design and implement effective strategies to tackle climate change impact to achieve economic and social progress.

**Keywords:** climate change, adaptation, loss and damage, microfinance, Nepal.

**JEL Codes:** Q54, R51, Q58.

\* Corresponding Author: Alberto Lanzavecchia, Ph.d, M.sc, e-mail: [alberto.lanzavecchia@unipd.it](mailto:alberto.lanzavecchia@unipd.it). Assistant professor of Banking & Finance at Department of Economics and Management; Director of the International Winter School in Nepal at the Human Rights Centre, University of Padova (IT).

## 1. Climate Change in Nepal

IPCC (2007) defines the climate change as any change in climate over time, whether due to natural variability or as a result of human activity. People in the Hindu-Kush Himalayan region are particularly vulnerable to food insecurity related to climate change because of poor infrastructure, limited access to global markets, physical isolation, low productivity, and hazard

exposure (IPCC, 2019). Farmers in this region are facing more frequent floods as well as prolonged droughts with ensuing negative impacts on agricultural yields and increases in food insecurity (Hussain et al. 2016; Manzoor et al. 2013). Drought, forest fires, floods and landslides are nowadays magnified by climate change.

In Nepal, changes in monsoon patterns, increasing hydropower projects and poorly planned rural road projects will greatly exacerbate the situation of unacceptable presence of poverty and inequality of opportunities in the country.

Nepal is one of the countries that are the most vulnerable to the vagaries related to climate change. Globally, Nepal ranks 4th in terms of its relative vulnerability to climate change (Maplecroft, 2011). Rugged topography, geologically fragile hills and mountains, livelihoods predominantly dependent on natural resource-based sources like agriculture and forests, limited institutional capacity, and low level of infrastructure and technological development add to the gravity of the problem (Regmi & Adhikari, 2007).

Nepal's population has surpassed 29 million people (CBS, 2018), of which almost 80% depend on agriculture-based livelihoods. Limited domestic economy, geographically dispersed, unconnected population, as well as diverse groups belonging to various castes contribute to the compounding social vulnerability to disasters. More than 80% of the population is exposed to the risk of natural hazards (MoHA, 2017), which include earthquakes, droughts, floods, landslides, extreme temperature, and glacier lake outburst floods (GLOFs). Landslides, lightning, fire and floods together claimed the lives of 666 people in total during 2015 and 2016 (MoHA, 2016). Likewise, livestock management is at risk in the context of climate change in the Trans- Himalayan regions of Nepal (Khatri, 2009). Scarcity of water in the grazing land and decline of grasses in pasturelands have put additional pressure on new areas that can exacerbate and break the existing social systems and capital, increase conflict among users, and force them to abandon their traditional occupations. The loss of traditional occupation, for example herding, will not only affect livelihood but degrade and detriment the cultural system and capital of the region and ecological knowledge embedded with the local landscape.

Changes in the position of glacier terminus reflect the mass balance condition of past years, and a general tendency of glacier fluctuation indicates a corresponding change in the climate. It is clear that environment in Nepal, which is highly vulnerable to natural hazards and disaster, could face serious impact due to climate change. This will make the national efforts towards sustainable development even more difficult.

Several evidences of climate change and there consequences have been observed in Nepal. Temperature increase has been reported to cause an upward shift in flora and fauna. The tropical wet forest and warm temperate rain forest will disappear, and the cool temperate

vegetation will be converted into warm temperate vegetation, thus affecting the forest biodiversity (Malla, 2008). One of the highlighted climate change impacts is the melting of snow in the Himalayas. If climate change alters snow and ice cover in the Himalaya, there will be more frequent floods and droughts, catalyzes the spread of disease vectors, this will have implication to fundamental human endeavors ranging from poverty alleviation to environmental sustainability.

Schwartz (2018) claimed that climate change will likely continue to alter the occurrence of record-breaking wet and dry months in the future with severe consequences for agricultural production and food security. Low income countries are considered highly vulnerable to the impacts of climate change, with political instability, development failure, poor governance, and corruption exacerbating the climate crisis and compounding the problems resulting from fragile geography and underprivileged socioeconomic conditions (Sharma, 2011). For this reason, improving our understanding of the impacts of climate change identifying potential adaptive response is essential for low income countries like Nepal.

## **1.2 Effects of Climate Change in Nepal**

It is widely accepted that the least developed countries (LDCs) are likely to be the hardest hit by climate change, with the greatest threat being to the poor (Hallegatte et al., 2011). Mountain people in the Hindu-Kush Himalayan region encompassing parts of Pakistan, India, Nepal, and China, are particularly vulnerable to food insecurity related to climate change because of poor infrastructure, limited access to global markets, physical isolation, low productivity, and hazard exposure, including glacial lake outburst floods (Tiwari & Joshi 2012). One of the recent studies by ICIMOD (2019) concluded that women are highly affected by floods and landslides because of their women poor access to information and resources, low mobility, little decision-making power, as well as gender-based sociocultural norms and barriers, conventional gender responsibilities, and high rates of male outmigration.

The impacts of climate change are noticeable and experienced in agriculture, forests and biodiversity, water resources and energy (GoN 2011; CBS 2016). In recent years, the snow covered mountains are turning dark, and glacier lakes are gradually expanding - phenomena that are noticed by the local people very clearly. Climate change appears as a driving force in breaking the linkage between the human and ecological systems in the region (Poudel, 2016a and 2018). Major implications of climate change in Nepal are: flooding and landslides, droughts and forest fires.

### **a) Flooding and Landslides**

Floods during the monsoon are a natural phenomenon in Nepal. The intensity of the impact of any given flood depends on both natural conditions and the characteristics of the

population. The country's more than 6,000 rivers and rivulets, with a total of 45,000 km in length, support irrigated agriculture and other livelihoods, but also wreak havoc in valleys and in the Tarai when they overflow. Flooding damages crops and property and often results in epidemics. The poor are the most vulnerable to its effects. Certainly climate change has a bearing on flooding, but it is not possible to scientifically attribute floods to climate change.

Poorly constructed roads in mountainous areas of Nepal have increased erosion and landslide risk as they often cut through fragile geology, destabilizing slopes and altering local hydrological conditions, with costs to lives and livelihoods. This situation is worsening due to the intensifying rainfall during the monsoon, largely attributed to climate change (Petley et al., 2007; Bharti et al., 2016; Devkota et al., 2018; Froude and Petley, 2018), which has led to a greater occurrence of landslides, especially in the middle hills (McAdoo et al., 2018). For the past two decades, development of the road network in Nepal has topped community and government priorities, a trend likely to continue as the country transitions to a decentralized federal government (Rankin et al., 2017). Such rapid and ineffective road construction throughout the country, but particularly in the middle hill and mountain areas, is placing increasing pressure on fragile ecosystems, wasting government resources, and increasing risk to road passengers and roadside dwellers (DOR, 2013a; Singh, 2018). Mountain roads, especially when poorly constructed, present particular challenges to poor, women and children because they create the risk of landslides and floods.

The new provincial government administrations now have the opportunity to develop policies and practices, which can realign the current trend of poorly engineered, inefficient and hazardous road construction toward a more sustainable trajectory (Sudmeier-Rieux et al., 2019). In a case study of a rural-remote village of Bajhang district, where recently roads are constructed, Singh (2018) found that 10 people were killed by raging floods during three months of a rainy season. In the same village, extensive damage of crops due to flood and landslides, many farmers faced food-deficit and pushed them in starvation.

Construction of Hydropower plants also has created hazardous situation in hills and plain areas of Nepal. Nepal's topography offered more run-over-river (RoR) types of hydropower and has more risk of landslide, flooding, glacier lake outburst floods, landslide dam outburst floods, and flash floods (Bhatt, 2017). In year 2012, due to the outburst of a landslide-dammed lake, flash flooding in the Kaski district of northwestern Nepal resulted in the death of at least 31 people, left dozens more missing, and caused great loss of property including homes, businesses, crops, and livestock.

## **b) Droughts**

The countries that share the Hindu Kush Himalaya (HKH) – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – frequently experience agricultural, hydrological, meteorological, and socioeconomic droughts (Qamer & Matin, 2019). Climate dynamics, particularly the projected increase in the variability of rainfall regimes, suggest that agriculture in Nepal will face immense challenges as seasonal drought increases. Nepal's worst recorded drought was in 1994, affecting 35 districts of the western hilly and Terai regions. During the winter 2008/2009 drought, Nepal received less than 50 percent of its average precipitation. Communities which supplement their food supply from agriculture with forest products also found that the drought had severely reduced what they could harvest.

## **c) Forest fires**

Nepal has been experiencing irregular wildfire events in recent years during the dry season from November to June every year. The evidence showed that number of wildfire is increasing in Nepal, and affecting natural vegetation (Parajuli et al., 2015). Changes in temperature and decreasing pattern of precipitation are the reliable evidences of increasing forest fire incidences (Negi et al., 2012; Wang et al., 2013). These fires not only had a negative impact locally but also had potentially major implications for glacial and snow melt rates at higher elevations. In addition, in comparison with areas with extensive vegetative cover, areas affected by fire and drought generate far higher sediment loads because they are more vulnerable to landslides, erosion and debris flow after intense precipitation and because they exhibit "flashy" runoff patterns. Wildfires affect forestry and other production systems, which are themselves impacted by climate change.

Forest fires have indirect long-term impacts. Dixit (2011) stated that the difficulty in establishing seedlings after a fire will prolong the time before villagers can gather non-timber forest products (NTFPs). The loss of forest implies loss of local livelihoods. It may also affect integrity of local water sources, as increased instances of local landslides may damage them while changes in pattern of local rainfall may affect groundwater sub-processes in the mountains. On the other hand, if higher intensity rainfall become more frequent, it means that landslide events in the mountains will become more common.

To sum up, climate change will have many negative consequences which will particularly impact on low-income and otherwise disadvantaged groups if no appropriate measures are taken. It creates a double inequality through the inverse distribution of risk and responsibility.

### 1.3 Climate Change Policies Initiatives in Nepal

Climate change discussion formally entered in Nepal in 1992. After joining the international treaty on climate change called the UNFCCC, Nepal included climate change in its national agenda (GoN, 2011). In line with national and international commitments related to climate change, Nepal has taken several measures to deal with climate change at a policy level. Major policies developed over last two decades include, the National Adaptation Programme of Action (NAPA) 2010, Climate Change Policy 2011, and Local Adaptation Plan of Action (LAPA) 2011, and Climate Resilient Planning 2011, Forest Policy 2015, and the Mountain Initiative 2010.

The National Adaptation Programme of Action (NAPA) 2010 is more explicit in identifying institutions, organizations, roles and responsibilities, resource allocation, and a monitoring and evaluation plan for climate change adaptation while other policies such as Climate Change Policy 2011 and Forest Policy 2015 are not clear on these areas. Ranabhat et al. (2018) concluded that formulation of a policy, articulating targets, and mobilizing financial resources are in themselves not sufficient to effectively address climate change adaptation in Nepal.

#### 2. The rise of green microfinance between opportunities and challenges<sup>1</sup>

Taking into account all the above arguments, it emerges that climate change undermines progress towards the achievement of the Sustainable Development Goals (SDGs) set in the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015. Notably, climate change has negative effects on poverty (Goal 1), food security (Goal 2), health (Goal 3), sanitation and access to clean water (Goal 6), economic growth (Goal 8), but also on equality (Goal 10) and on peace and justice (Goal 16).

Conversely, each of the 17 goals contains at least one target that mentions the fight against environmental degradation and SDG 13 is specifically dedicated to climate action. By integrating sustainability into their activities, microfinance institutions (MFIs) could contribute to the achievement of these objectives. For instance, Target 4 of Goal 2 is dedicated to the implementation of resilient agricultural practices that, among other things, strengthen capacity for adaptation to climate change; Target 4 of Goal 8 focuses on the endeavour to decouple economic growth from environmental degradation.

---

<sup>1</sup> This section is co-Authored by Alessandra Boraso, Chiara Buzzi, Ilaria Del Rizzo, and Enrico Di Rosa.

The Special Rapporteur on extreme poverty and human rights to the Human Rights Council affirms: “*climate change will exacerbate existing poverty and inequality. It will have the most severe impact in poor countries and regions, and the places poor people live and work. Developing countries will bear an estimated 75-80 per cent of the costs of climate change*” (2019, p. 4). Low-income people, thus, will be disproportionately affected by global warming, even considering the fact that they generally live in areas that are more susceptible to extreme weather events, and they lack the instruments and resources to both prevent and recover from their catastrophic impact.

If still holds true that one of the goals of microfinance is to alleviate poverty and reduce inequalities, then it plays a key role in building climate change resilience communities (Dowla, 2009). By contrast, microfinance industry will be negatively impacted by climate change effects, such as the reduction of the productivity of agriculture (i.e. the economic sector where MFIs are deeply rooted), the mortality of people and livestock and the destruction of buildings and equipment by large-scale natural disasters, and the likely increase in default rates driven by clients’ adverse conditions.

Given such background, what can MFIs implement to foster clients’ resilience to climate change and to avoid that climate change-driven negative impacts vanish their objectives? At individual level, responses to climate change fall into two broad categories: mitigation and adaptation.

“*Measures of mitigation try to reduce the risks of climate change by limiting the emissions of greenhouse gases in the short and medium term; while measures of adaptation try to reduce the impact of climate change by adjusting life to the changed conditions in the medium and long term*” (Wiesner 2015, p. 7).

Hence, on top of MFIs priorities shall be climate-proofing their products: loans, savings, and insurance. Adaptation measures call for extra capital investments, rather than extra costs: clients will be able to secure their income and assets despite climate change impacts (Dowla 2009). Moreover, MFIs should design and adopt a disaster plan, as an integrated part within their risk management practice. Any disaster plan shall include the allocation of capital to a disaster reserve to deal with natural events and major outbreaks of diseases. Collaboration and information sharing with multilateral institutions, governments and civil society will be assets to leverage in order to strengthening actions to cope with climate change.

## **2.1 The green revolution in traditional microfinance**

Green microfinance is a new concept that emerged with the need of responding to the global threat of climate change whose effects are already being felt by low-income people in developing countries. Indeed, people communities are the least equipped to cope with the

rapidly changing weather conditions that negatively affect their income. In this scenario, green microfinance aims at designing innovative strategies to improve people's adaptation capabilities while reducing the impact of human activities on the environment itself. As microfinance institutions serve an estimated 130 million people around the world (Ramaswamy & Krishnamoorthy 2016), whose lives and earnings are highly dependent on the environment, a change of paradigm in microfinance is imperative in order to decrease their vulnerability and protect the environment from harmful use. As reported by Moser et al. (2016, p. 242), their "*plight is linked to the ability of microfinance institutions (MFIs) to adapt to the consequences arising from climate change*". Moreover, given the wide range of people currently supported by MFIs through their financial services, embracing eco-friendly strategies could have a positive impact on the pace of environmental degradation.

In order to achieve these goals, green microfinance seeks to uncover the market opportunities that financial services with a focus on the environment can offer while upholding social responsibility through the design of eco-friendly financial products and services (Forcella et al., 2017). In this way, traditional microfinance is updated by introducing a third pillar, which is environment performance - in addition to the social and economic performance.

In practical terms, "going green" means for MFIs developing procedures for granting loans that apply environmental criteria, providing clients with environmental education reducing their internal ecological footprint and offering the so-called green micro-credits (Allet & Hudon 2015). The latter are defined as "*credits provided to low-income households or micro-enterprises excluded by the traditional formal financial sector to support the use of or investment in renewable energy or energy efficiency technologies, climate change adaptation or mitigation, or any other activities which directly benefit the environment*" (Forcella et al. 2017, p. 8). Green microfinance institutions provide credits for sustainable income generating activities that include among others: waste management, recycling, agroforestry, organic production and commercialisation, solar panel installation and ecotourism (Allet & Hudon 2015). Green MFIs also engage with risk management plans. For example, they conduct an environment-based SWOT analysis to evaluate the environmental impacts of a potential project financed through microcredit (Moser et al. 2016). In addition, they can offer clients technical assistance by supporting the transition to farming techniques that respect the land. In this case, green MFIs usually rely on technical partners – e.g. Sustainable Harvest International (FinDev Gateway 2009). Last but not least, agricultural and climatic insurance, such as livestock and crop insurance, shall be designed and distributed by green MFIs. However, the effectiveness of this kind of insurance mechanism is still far to be fully evaluated (Baumgartner & Richards 2019).

Overall, these eco-friendly services have the potential to “*increase yield, decrease vulnerability and support more rewarding value chains*” in addition to safeguarding the environment (Forcella et al. 2017, p. 12). Nevertheless, in order for MFIs to produce through their green products a real and long-lasting change on people’s capabilities to generate income in a sustainable way, it is key to establish partnerships with private and public entities (Moser et al. 2016).

As also shown by the development of the Microfinance Environmental Performance Index (MEPI), green microfinance is increasingly gaining attention around the world, especially because the topic of climate change is particularly dominant in the current public debate. Since 2008 conferences and workshops on green microfinance are spreading worldwide, and the number of MFIs promoting green microfinance initiatives has grown significantly (Forcella et al. 2017). The European Microfinance Week (EMW), hosted by the European Microfinance Platform (e-MFP), is one of the top events in the financial inclusion calendar. The objective of the European Microfinance Award 2019 “Strengthening Resilience to Climate Change” was to recognise organisations active in the financial inclusion sector that provide financial and non-financial products and services aimed at strengthening the resilience of vulnerable communities to the effects of climate change. The 18 selected MFIs have shown a full range of approaches to increase vulnerable populations’ resilience to climate change. The award has been assigned to a Kenyan microinsurance provider, namely APA, that have designed an index Based Livestock Insurance and an Area Yield Index Insurance to mostly smallholder and subsistence farmers – second ranked was ASKI, an MFI in the Philippines, that builds clients’ resilience to climate change by focusing on disaster preparedness at the institutional and community level.

As reported by Forcella *et al.* (p. 14) “*The number of microfinance investment vehicles (MIVs) that integrate environmental issues into investment decisions grew from 65% in 2012 to 79% in 2015*”. The most famous green microfinance organization is Grameen Shakti, which focused its financial activities in providing microcredit for the production of solar energy for poor households in Bangladesh (Forcella & Hudon 2016, p. 454). This program has inspired other green MFIs along with other successful examples, such as “Genesis” in Guatemala which “*uses microcredit through subsidies to support environmentally friendly production techniques in agriculture, for coffee and cocoa production farmers*” (Allet & Hudon 2015, p. 2).

However, MFIs engaging in green microfinance are a small amount of the total share and within them, the percentage of activities with a focus on the environment is limited in comparison to the social and financial ones (Forcella et al. 2017). Moreover, research on green microfinance is still scarce and there is an ongoing debate concerning its benefits on the environment and the community. Indeed, as stated by Allet and Hudon (2015 p. 2) “*even though environmental*

*awareness in the microfinance sector has increased, there is little empirical evidence yet on the characteristics of MFIs performing best in the environmental bottom line*". The lack of information on how to measure the green performance of MFIs, which is also required to develop effective strategies and monitor them, led to the search for a performance indicator aimed at assessing the level of MFIs engagement with green practices. This multi-dimensional index was designed from the literature on corporate environmental performance and microfinance social performance (Allet 2012). The index encompasses the main strategies used by MFIs to "go green": adopting environmental policies, reducing their internal ecological footprint, managing the environmental risks of their clients' activities, providing green microcredit to promote environmentally-friendly activities or clean technologies, and implementing non-financial services such as environmental awareness-raising campaigns.

Through the provision of credit and other financial services, microfinance helps rural people develop alternate livelihood opportunities, build assets and spread risks. However, despite the efforts made to improve research on the topic of green microfinance and the number of MFIs that in the recent years have decided to embrace the green revolution, concerns remain over the benefits and the disadvantages that such change of paradigm can bring.

## **2.2. Drivers of MFIs' ecological responsiveness: Legitimation, Competitiveness, Social Responsibility**

The literature offers a variety of motivations for MFIs to embrace environmental management programs.

According to Allet (2012, p. 3), the most proactive MFIs in enhancing environmental strategies "*are primarily motivated by social responsibility, additionally by competitiveness, and to a lesser extent by legitimation*". MFIs are "proactive" when they reach green solutions through accurate researches, while MFIs are defined as "reactive" when they satisfy stakeholders' requirements and they reduce risks for themselves through minimal efforts. The latter are primarily driven by legitimation (stakeholders' pressure), while the former by social responsibility. Bansal and Roth generally defined corporate ecological responsiveness as "*a set of corporate initiatives aimed at mitigating a firm's impact on the natural environment*" (Thambusamy & Salam 2010, p. 2), which can be also adapted within the MFIs framework.

Legitimation is, therefore, one of the drivers for MFIs to enhance green policies. Indeed, many stakeholders are increasingly interested in MFIs' environmental responsibility. In particular, "*international donors and socially responsible investors*" ask MFIs for a green commitment, while "*commercially-oriented investors or local banks*" do not consider environmental performance as a priority (Allet 2012, p. 4). External actors can play an

important role in influencing MFIs to develop environmental programs, strategic reasons remain the main motivations for a green transformation, while the pressure of influential stakeholders ranked second (Forcella & Hudon 2014).

Secondly, embracing environmental commitments is strategic in a competitive environment, since it can be a sign of innovation and attention to the evolution of people's interests. Indeed, competition has pushed some MFIs to promote a green innovation, including green microcredits. According to Russo and Fouts, green strategies get higher profits due to higher consumer satisfaction. Therefore, among other reasons, MFIs would embrace environmentally friendly policies for strategic and financial benefits in order to gain access to socially responsible stakeholders' funding and in order to stand out from competitors. Moreover, MFIs could "*attract clients by proposing appealing 'credit + services' packages; for instance, by assisting clients to increase their productivity through access to energy-efficient technologies or training in sustainable production techniques*" (Allet 2012 p. 6). Furthermore, since climate change is becoming a dangerous risk for business, MFIs through green policies could reduce their credit risk managing the environmental risk of their clients. This comparative advantage may be linked to another important motivation: enhancing MFIs reputation. Indeed, developing greener performances helps MFIs to improve their reputation with a better public image, leading to better external relations. According to Weber *et al.*, the trend of adopting environmental risk management started to spread at the beginning of the 1990s, and nowadays public perception over the threats of climate change is pushing for greater commitment on the green cause. Reputation valuation is needed to create economic value through the enhancement of confidence and trust among stakeholders (Black et al 2000).

Another driver for the enhancement of green policies is linked to social responsibility, which is an already defining characteristic of MFIs. Social responsibility can be considered to be intertwined with ecological responsibility. Indeed, if the social purpose of MFIs is to provide financial services to unemployed or low-income individuals often living in vulnerable situations to improve their lives, green policies would further alleviate poverty and also environmental risk. For instance, environmentally friendly practices will reduce energy loss and will promote a careful use of natural resources, allowing higher savings. In order to reach this goal, new competences and appropriate know-how need to be acquired. Marguerite Berger claims that there are two main approaches to microcredit: "*minimalistic credit*" when a mere loan is given, and "*credit plus*" that is "*credit accompanied by technical assistance as a necessary component of microenterprise projects*" (Berger 1989, p. 1025). Proper training would guarantee a more efficient and environmentally friendly use of credit. Community-based arrangements for managing risk through finance are essential in the efforts of reducing poverty and climate-change related disasters (Bhattamishra & Barrett 2008).

### **2.3. Limitations on MFIs' ecological responsiveness**

Regarding legitimation, many stakeholders do not put enough pressure on MFIs in implementing green policies. Indeed, the discourse on climate change is still undermined by the incapacity to foresee the benefits that an investment aimed at enhancing the adaptation, mitigation and resilience capacities of the poor can have on coping with risks in the present and on reducing them in the future. Even though the interest on environmental concerns exists among some donors and microfinance investors, practical responses to climate change are not considered to be a high priority issue, especially among commercially-oriented investors or local banks. More importantly, the implementation of green microfinance can be perceived as particularly expensive. Indeed, MFI should develop new competences and expertise in order to determine environmental risks that clients may face and to qualify them to find proper mitigation solutions. For these reasons, MFIs pursuing a legitimation motive usually implement a minimal environmental response. In this way MFIs contain costs and they do not need to acquire additional technical skills.

However, on the long term, the implementation of green policies could help MFIs to reduce costs. MFI management can explore ways to reduce inefficiencies and waste of resources, resulting in a decrease of costs for MFIs and a lower impact on the environment (Hall & Lal 2006).

In order to promote effective results, MFIs should foster a strategic dialogue with local actors and communities, taking into consideration local dynamics and needs, so as to distance from pre-existing destructive practices and frameworks, and from imposed rules (Forcella & Huybrechs 2016).

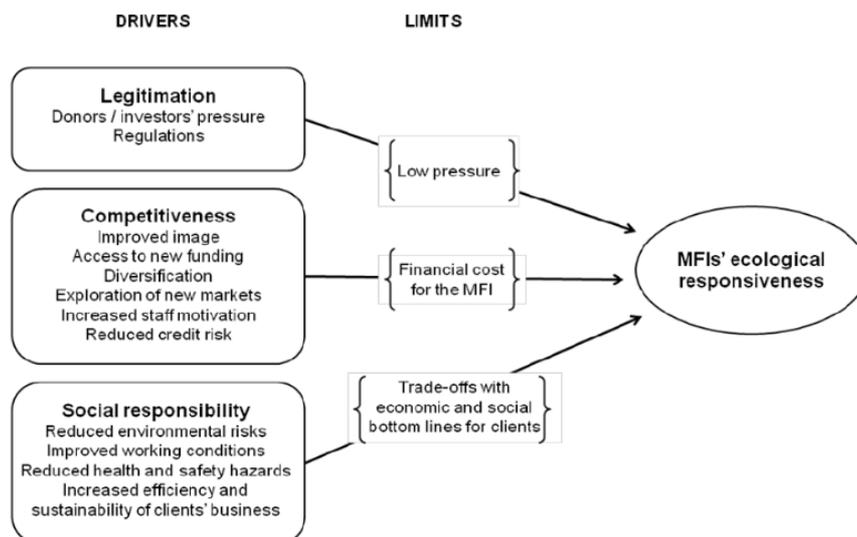
Regarding competitiveness, the burden that green microfinance can raise in traditional microfinance institutes could represent a constraint, resulting in a slowdown of the diffusion of green microfinance. This argument is argued by some professionals: "*environmental management is burdensome and would make MFIs drift away from their objectives.*" (Allet, 2012, p. 2). Indeed, updating competences and knowledge in order to implement green policies could be negatively perceived by employees, as their workload would increase to maintain the previous level of productivity. Finally, reputation risk can be considered evaluated a weak driver for MFIs operating in an area where an environmental disaster caused by them is unlikely to happen.

Regarding social responsibility, the functionalist views supports the idea that business in general should be focused only on providing goods and services to clients and profits to

investors, as summarised by Sohn (1982). Following the same reasoning, MFIs should not drift apart from their objectives while trying to implement environmentally friendly solutions.

However, a more comprehensive view might consider environmental commitment to be tightly linked with social responsibility, as green microfinance would improve the lives of beneficiaries through a more conscious livelihood. *“Overall, while MFIs with a minimalist approach define engagement in environmental management as a mission drift, MFIs that are the most engaged in environmental management consider that not addressing social and environmental issues would actually constitute the mission drift”* (Allet 2012, p. 18). In conclusion, social responsibility can be considered the main driver for MFIs that are more proactive in the development of an effective ecological framework.

**Figure 1. A model of ecological responsiveness in microfinance**  
(based on Bansal & Roth, 2000)



*A model of ecological responsiveness in microfinance.*

### 3. Broadening perspectives: Loss and Damage at international level

Mitigation and Adaptation approaches are fundamental measures for continuing to tackle climate change. However, as the time passed and the climate change impacts increased, government around the world have noticed that those instruments were no longer effective so they started to shape a third pillar for adverse climate change effects: Loss & Damage.

In literature, there are two different approaches to distinguish adaptation and L&D: the *beyond adaptation* approach and the *risk tolerance* approach. The former, refers to actions put in place after the mitigation and adaptation have been adopted with the residual remained; the

latter considers L&D as something involving a response to risks that are over intolerable risks (Wallimann-Helmer 2015).

According to the approach used, there will be different priorities of climate L&D in terms of measures and responsibilities. Concerning the *beyond adaptation* approach, the priorities refer to the implementation of efficient L&D measures. Within the *risk tolerance* approach, priorities are related to the capacity building of the local communities, by strengthening risks assessment abilities of those facing climate impacts - the implementation of L&D measures starts after assessed whether local communities consider them useful.

Addressing these climatic losses and damages is today a controversial aspect of the international climate change negotiations. IPCC (2014) stressed how supporting developing countries with finance, technology and capacity building is fundamental for strengthening mitigation and adaptation abilities even if there will still be losses and damages.

At the 19th Conference of the Parties (COP) meeting of the United Nations Framework Convention on Climate Change (UNFCCC) in Warsaw, a step forward has been made. In fact, in 2013 the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts (WIM) was established. The WIM has, among the others, the task of “*Enhancing action and support, including finance, technology and capacity-building, to address loss and damage associated with the adverse effects of climate change, so as to support countries to undertake actions [...]*”.

The WIM recognized that L&D involves more than what can be reduced by adaptation paving the way for the agreement on a common principle that include aid from those who contributed the most to climate change (the developed countries) towards those who suffered the most - the poorest countries.

Over years, the WIM reached important results and implemented various activities part of its mandate. It raised the awareness on L&D by encouraging the dialogue among different stakeholders, it increased the knowledge on related topics. However, the mere formulation of the WIM cannot be considered the final step for addressing L&D. There are still important issues that need to be discussed and need to achieve a sustainable solution.

L&D approach might be the driver for two policy actions: an international legal approach and a Human Rights Based one.

The latter, makes clear how the human rights framework can help in finding mutually agreed solutions among states by overcoming the liability and compensation discourse that usually represents a huge obstacle in the international dialogue.

### 3.1 Increasing the international commitment on L&D through litigation

Despite several negotiations over the years under the UNFCCC framework, there is no sufficient financial support addressing L&D and this has started pushing the most vulnerable states in searching other solutions for tackling L&D.

At the international level, there are three different principles that guide the financial (and not only) support towards affected countries to address L&D. Firstly, the *Polluter-Pays Principle (PPP)*, which indicates that those who contributed the most to the occurrence of the harm are also responsible for providing compensations to the affected ones. The second one is the *No-harm rule* which states that countries have the duty of preventing and controlling the occurrence of the harm to other states and compensate them, if there is the presence of some injuries. Finally the *Common but differentiated responsibilities and respective capabilities* stating that “*The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof*”. These three international agreed principles show how states are legally obliged to avoid inflicting harms to the affected populations, to protect them and - whether the harm is inevitable - to provide them with remedies.

In order to be compliant with these obligations, states agreed under the UN climate regime to firstly act with mitigation and adaptation measures, and then to create the WIM. However, despite these international steps, the progresses in supporting the most vulnerable countries in addressing L&D are still limited, or even inconsistent. So far, the third action of the WIM mandate, related to the technical and financial support, has not been followed by any kind of financial fund making it impossible to be implemented. In fact, as we have seen, after almost six years, the WIM is still only discussing the modalities and activities needed to guarantee the technical and financial support to the affected countries.

Many affected people, not supported by any kind of action coming from the WIM, have decided to try to hold states accountable for their harms through the legal avenue. If it is true that the Paris Agreement does not “*provide a basis for any liability or compensation*”, this does not apply to the general rules that shape the liability and compensation among countries which include the international duties, international law and national legal systems. Over the years, states, municipalities, NGOs, activists, and single individuals have started bringing climate change related cases before the courts. The increasing trend gives us the idea that the affected countries no longer intend to wait for having the L&D addressed, as it should be.

Finally, human rights are playing an important role in climate change litigations. In particular, they increase the interest of the judges on the related cases. Despite the difficulties in connecting scientifically the emitters with the alleged climate harm provoked, human rights have been useful for holding governments accountable for climate change harms. In different cases, human rights were at the base of the claims brought before the courts. In this sense, they will maintain a fundamental role even in future cases, giving the proper voice to all the rights that climate change impacts violate.

### 3.2 The Human Rights Based Approach for addressing L&D

The Human Rights Based Approach (HRBA) is a conceptual framework that aims at integrating human rights principles and obligations into policies and governance. It refers also to the task of empowering people to recognize and claim for their own human rights and to guarantee that those responsible for the respect, protection and fulfilment of human rights meet these obligations and can be held accountable for them. In particular, there are six important principles that need to be followed for a correct implementation of the HRBA: universality and inalienability; indivisibility; inter-dependence and inter-relatedness of human rights; equality and non-discrimination; participation and inclusion; and accountability and the rule of law.

For adopting the HRBA policy-makers need to recognize the interdependence between L&D and human rights obligations by integrating them within the international and regional human rights instruments (Toussaint & Martinez Blanco 2019). The causal effect between climate change and its consequences is now easier to prove, linking also the human rights impacted by the disaster. As an example, an extreme weather event impacts on people, such as the displacement of populations, and to the related human right implicated - the right to adequate standard of living or the right to adequate and secure housing (Fig. 1).



**Figure 1. Mapping the Human rights implications of Loss and Damage, adapted from submission of the Maldives to the Office of the UN High Commissioner for Human Rights, 25 Sept. 2008.**

The HRBA indicates to states that there are already set international and regional human rights obligations and includes climate policies under these obligations, specifically under human rights law. In this way, even without a compensation and liability framework agreed among States parties under the L&D regime, international human rights law gives the opportunity to damaged populations to benefit from a judicial recourse. In this sense, the HRBA provides for a preventive solution that, rather than addressing the violations of human rights emerged by L&D, tries to tailor the L&D regime to the human rights obligations.

Moreover, through its action, the HRBA allows the affected populations and the civil society to re-build and re-shape the political debate and the public opinion on L&D in the climate regime. In fact, the international political debate on L&D can be traced back to focus on the fundamental rights of the singular individuals. In particular, *“adopting an HRBA could remedy a central deficiency of the ongoing policy debate, which frames loss and damage in abstract, state centric terms as a developing country issue”*. By focusing on the rights of the singular individuals, states should increase the protection of vulnerable groups guaranteeing, among the others, the right to participation and inclusion. In this sense, under the HRBA, states would ensure the participation of the most vulnerable communities in the formulation and application of the L&D policies. This is why we can say that the HRBA demonstrates to be a fundamental instrument for strengthening the international response to L&D in relation to human rights, being able to create an institutionalized cooperation and dialogue framework between states and those people who are more affected by L&D.

In particular, according to Martínez Blanco and Toussaint (2019), the process on adopting HRBA in the L&D regime should include: i) an assessment of the climate change impacts on human rights in order to facilitate the formulation of L&D policies and actions; ii) the development of guidelines for applying human rights to L&D policies and governance and monitoring this application; iii) a periodic control undertaken by the human rights defenders entities or by the WIM itself.

### 3.3 A National Mechanism on L&D for developing an International Mechanism on L&D

The second aforementioned strategy emerged more recently, after having perceived the inefficiency of the international community to achieve concrete outcomes in addressing L&D.

Being one of the most climate change affected countries, Bangladesh decided to be the first mover in exploiting this option – it 2008 was the first country in preparing a national adaptation plan which well anticipated the proposal coming by the UNFCCC. Moving forward from the 2008 “Bangladesh Climate Change Strategy and Action Plan” (BCCSAP), the Government created a new fund - the “Bangladesh Climate Change Trust Fund” which will be used for financing a two years pilot project on the national mechanism for L&D.

In December 2018, the Government of Bangladesh has decided to start a pilot project for the development of a National Mechanism on Loss and Damage. In particular, it will deal with both slow and onset events, the possibility of concretely use insurance as mechanism for tackling L&D, the several complexities around the non-economic L&D, the climate-induced migration.

We are not sure that the Bangladesh National Mechanism on L&D will provide for a flawless mechanism for addressing L&D, but undoubtedly it will be the first example of a national mechanism and it will provide for understanding and knowledge on how an effective mechanism for L&D should work. In this way Bangladesh already achieved a privileged position over both developed and developing countries in addressing the climate change impacts under an adaptation framework and now potentially it will do the same for the L&D framework. National experiences will not substitute the work made at international level, but it will be a valid support coming directly from the ground. The lessons emerged from the national level could help making progresses in the international negotiations. Evidences at national level might provide lessons to transfer to other countries. The process can be enriched by both the top-down and bottom-up process; on one hand the international perspective and knowledge can support the national process, on the other the national information and expertise can increase the understanding of L&D. This link will need to be country-specific and based on the national policies and legislations. At the same time, however, it could become an important forum for sharing best practices and experiences among countries.

Only the time will provide us the full understanding on that. However, it seems more certain that the national experience will give the opportunity to the international community to be an observer and to increase the understanding on how L&D will be addressed at both the international and national levels.

#### 4 Final remarks

For many years the IPCC has published several reports highlighting the dramatic consequences of the climate change adverse impacts perceived by the most vulnerable populations of the world. In the last few years the whole world has experienced an increase in the frequency and intensity of weather-related hazards along with the long-term adverse impacts of climate change associated to anthropogenic actions. This subject has become one of the most controversial and global issues of this century because it crosses the human and environmental conditions of the entire planet.

Nepal is one of the countries that are the most vulnerable to the vagaries related to climate change. Globally, Nepal ranks 4th in terms of its relative vulnerability to climate change (Maplecroft, 2011).

While the changing climate impacts all countries and economic sectors, people are not all affected in the same ways. Climate change is particularly threatening to poor and marginalized communities, given the lack of skills, capital and alternatives. Hence, microfinance, that do target those people, can play a key role in increasing the resilience of vulnerable communities. Through the provision of credit and other financial services, microfinance helps rural people develop alternate livelihood opportunities, build assets and spread risks. In order to drive MFIs business practice, policy makers shall set up incentives and capital constrains by policy rules. There is a significant potential for taking benefit from financial innovations such as risk insurance, microfinance, conditional cash transfer programs, and targeted subsidies by scaling up these initiatives through policy and community level initiatives (Prabhakar 2013).

However, in many areas of the world, existing mitigation and adaptation commitments are no longer enough to prevent dangerous climate change related impacts. In other words, the climate change effects that we are not able to adapt and mitigate will be part of the future response to climate change that we can include in the field of loss and damage (L&D). While scientists urge governments to change political and economic decisions, many populations are already facing global changes that put their health and survival at risk and that that go beyond what can be adapted or mitigated. Consequently, a full multi-level governance is needed.

After six years from the WIM formulation, it remains an important information initiative but without the effective capacities for translating into a tangible support. The legal avenue - the Human Rights Based Approach and the National Mechanism for L&D - have the potential to push

the international community to react actively towards a more equitable sharing of the responsibilities and burdens of L&D. In this regard, a recommendation for future researches could be to monitor how these emerging strategies affect the political debate on L&D, analyzing its possible positive outcomes in addressing it.

## References

- Allet, M. (2012). Why Do Microfinance Institutions Go Green? An Exploratory Study. *Journal of Business Ethics*, p. 3.
- Bhattamishra, R. , Barrett, C. B. (2008). Community-based Risk Management Arrangements: An Overview and Implications for Social Fund Programs. *World Bank*.
- Berger, M. (1989). Giving Women Credit: The Strengths and Limitations of Credit as a Tool for Alleviating Poverty. *World Development*.
- Bharti, V., Singh, C., Ettema, J., & Turkington, T. A. R. (2016). Spatiotemporal characteristics of extreme rainfall events over the Northwest Himalaya using satellite data. *International journal of climatology*, 36(12), 3949-3962.
- Bhatt, R. P. (2017). Hydropower development in nepal-climate change, impacts and implications. *Renewable Hydropower Technologies*, 75.
- Black, E. L., Carnes, T. A. V., Richardson, J. (2000). The Market Valuation of Corporate Reputation. *Corporate Reputation Review*.
- CBS (2016). *National Climate Change Impact Survey: A Statistical Report*. Central Bureau of Statistics, National Planning Commission, Government of Nepal, Kathmandu, Nepal.
- CBS (2018). *Nepal in Numbers*. Kathmandu: Central Bureau of Statistics, Government of Nepal.
- Devkota, S., Shakya, N., Sudmeier-Rieux, K., Jaboyedoff, M., Van Westen, C., Mcadoo, B., & Adhikari, A. (2018). Development of Monsoonal Rainfall Intensity-Duration-Frequency (IDF) Relationship and Empirical Model for Data-Scarce Situations: The Case of the Central-Western Hills (Panchase Region) of Nepal. *Hydrology*, 5(2), 27.

- Dixit, A. (2011). Climate change in Nepal: Impacts and adaptive strategies. *World resources Report. Institution for Social and environmental transformation-Nepal.*
- DOR (2013a). *Department of Roads: Nepal Road Standard 2070, Government of Nepal, Ministry of Physical Infrastructure and Transport, Department of Roads, Planning and Design Branch, Road and Traffic Unit, Kathmandu: Department of Road.*
- Forcella, D., Huybrechs, F. (2016). Green Microfinance and Ecosystem Services. A quantitative study on outcomes and effectiveness. Université Libre de Bruxelles - Solvay Brussels School of Economics and Management Centre Emile Bernheim. *CEB Working Paper*, n. 16/018.
- Froude, M. J., & Petley, D. (2018). Global fatal landslide occurrence from 2004 to 2016. *Natural Hazards and Earth System Sciences*, 18, 2161-2181.
- GoN (2011). *Climate Change Policy, 2011*. Kathmandu: Ministry of Environment, Government of Nepal.
- Hall, J., Lal, A. (2006). How MFIs and their Clients Can Have a Positive Impact on the Environment. *Green Microfinance.*
- Hanson, S., Nicholls, R., Ranger, N., Hallegatte, S., Corfee-Morlot, J., Herweijer, C., & Chateau, J. (2011). A global ranking of port cities with high exposure to climate extremes. *Climatic change*, 104(1), 89-111.
- ICIMOD (2019). *Impact of climate change on Himalayan Glaciers and Glacial Lakes: Case studies on GLOF and associated hazards in Nepal and Bhutan*, Lalitpur: International Centre for Integrated Mountain Development (ICIMOD)
- IPCC, 2014, *Climate Change 2014: Synthesis Report, Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, UK.
- IPCC, 2019. AR5—Summary for Policymakers.
- Khatri, M. B. (2009). Anthropological observation of climate change and livestock management in Upper Mustang, Trans-Himalaya of Nepal. *Myagdi Guru: A Journal of Interdisciplinary Studies*, 6.

- Malla, G. (2008). Climate change and its impact on Nepalese agriculture. *Journal of agriculture and environment*, 9, 62-71.
- Maplecroft, V. (2011). Climate change vulnerability index, 2015. *Climate Change and Environmental Risk Atlas*.
- McAdoo, B. G., Quak, M., Gnyawali, K. R., Adhikari, B. R., Devkota, S., Rajbhandari, P. L., & Sudmeier-Rieux, K. (2018). Roads and landslides in Nepal: how development affects environmental risk. *Natural Hazards and Earth System Sciences*, 18(12), 3203-3210.
- MoHA, 2017. *Nepal Disaster Report 2017: Road to Sendai*. Kathmandu: Ministry of Home Affairs, Government of Nepal.
- MoHA. (2016). *Gorkha Earthquake 2072: Experiences and Learning*. Kathmandu: Ministry of Home Affairs, Government of Nepal.
- Negi, G. C. S., Samal, P. K., Kuniyal, J. C., Kothyari, B. P., Sharma, R. K., & Dhyani, P. P. (2012). Impact of climate change on the western Himalayan mountain ecosystems: an overview. *Tropical ecology*, 53(3), 345-356.
- Parajuli, P., Pandey, R. P., Trang, N. T. H., Chaudhary, A. K., & Sohng, J. K. (2015). Synthetic sugar cassettes for the efficient production of flavonol glycosides in *Escherichia coli*. *Microbial cell factories*, 14(1), 76.
- Petley, D. N., Hearn, G. J., Hart, A., Rosser, N. J., Dunning, S. A., Oven, K., & Mitchell, W. A. (2007). Trends in landslide occurrence in Nepal. *Natural hazards*, 43(1), 23-44.
- Poudel, J. M. (2016a). *Climate Change, Farming and Livestock: A Study on Perceptions, Knowledge and Responses among the People of Nhāson, Manang*. PhD Dissertation, Tribhuvan University, Kathmandu, Nepal.
- Poudel, J. M. (2018). Pond becomes a lake: Challenges posed by climate change in the Trans-Himalayan Regions of Nepal. *Journal of Forest and Livelihood*, 16(1), 87-102.
- Qamer, F. M., & Matin, M. (2014). *Operationalizing Crop Monitoring System for Informed Decision Making Related to Food Security in Nepal*. Retrieved from: <https://reliefweb.int/report/nepal/operationalizing-agricultural-drought-monitoring-and-early-warning-system-hindu-kush>

- Ranabhat, S., Ghate, R., Bhatta, L. D., Agrawal, N. K., & Tankha, S. (2018). Policy coherence and interplay between climate change adaptation policies and the forestry sector in Nepal. *Environmental Management*, 61(6), 968-980.
- Rankin, K., Sigdel, T., Rai, L., Kunwar, S., & Hamal, P. (2017). Political economies and political rationalities of road building in Nepal. *Studies in Nepali History and Society*, 22(1), 43-84.
- Regmi, B., & Adhikari, A. (2007). *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World*. Human Development Report Office, occasional paper, country case study-Nepal. United Nations Development Programme, Kathmandu, Nepal.
- Schwartz, J. (2018). More floods and more droughts: Climate change delivers both. *New York Times*, December 12, 2018.
- Sharma, S. (2011). The political economy of climate change governance in the Himalayan region of Asia: a case study of Nepal. *Procedia Social and Behavioral Sciences*, 14, 129-140.
- Singh, B. P. (2018). From nowhere to nowhere. Haphazard road construction is ravaging the Nepali countryside. *Nepali Times*, 6 July 2018, available at: <https://www.nepalitimes.com/banner/from-nowhere-to-nowhere/>
- Sohn, H. F. (1982). Prevailing rationales in the corporate social responsibility debate. Available at: <https://link.springer.com/article/10.1023/A:1005871021412>
- Solomon, S. (2007, December). IPCC (2007): Climate change the physical science basis. In *AGU Fall Meeting Abstracts*.
- Sudmeier-Rieux, K., McAdoo, B. G., Devkota, S., Rajbhandari, P. C. L., Howell, J., & Sharma, S. (2019). Invited perspectives: Mountain roads in Nepal at a new crossroads. *Natural Hazards and Earth System Sciences*, 19(3), 655-660.
- Toussaint, P., Martinez Blanco, A. (2019). A human rights-based approach to loss and damage under the climate change regime, *Climate policy*, available at: DOI: <http://doi.org/10.1080/14693062.2019.1630354>.

- Tiwari, P. C., & Joshi, B. (2012). Environmental changes and sustainable development of water resources in the Himalayan headwaters of India. *Water resources management*, 26(4), 883-907.
- Wallimann-Helmer I., 2015, Justice for climate loss and damage, *Climate Change* 133(3):469–480, available at: DOI: 10.1007/s10584-015-1483-2.
- Wang, S. Y., Yoon, J. H., Gillies, R. R., & Cho, C. (2013). What caused the winter drought in western Nepal during recent years?, *Journal of Climate*, 26(21), 8241-8256.
- Wester, P., Mishra, A., Mukherji, A., & Shrestha, A. B. (2019). *The Hindu Kush Himalaya Assessment: Mountains, Climate Change, Sustainability and People*. Cham: Springer Nature Switzerland AG.