



Mountain regions are identified as being one of the three most 'vulnerable' areas with regard to global environmental change, indicating that the drivers of migration in mountain regions are numerous and closely interlinked. Migration is already a typical diversification strategy in mountain areas to reduce vulnerability to both environmental and non-environmental risks.

A first workshop on this topic was organised in 2012¹ and brought together both senior and junior researchers with an interest in migration and/or climate change in mountain areas. The underlying theme of the workshop was to consider mountain areas, along with other vulnerable regions (drylands margins or low elevation coastal zones), as a relevant starting point from which to assess the nexus between migration and climate change.

The workshop focused on two of the world's major mountain ranges: the Himalayas (Nepal) and the Andes (Bolivia, Peru and Guatemala). It confirmed that the physical and economic marginality resulting from the frequent exposure to extreme temperatures, plus the distance from centres of economic wealth and political power, have contributed to substantial outmigration from most mountain areas over the last four decades. It also showed that mountain areas are particularly vulnerable to climate change, which can lead to temperature rise, higher exposure to extreme events, increased sensitivity of glaciers and serious consequences for biodiversity.

The 2013 Workshop

The workshop brought together established researchers and PhD students, who all share a strong empirical approach to their work. The session was introduced by Prof Etienne Pigué, who outlined some of the above-mentioned common features of the different mountain areas and raised the key questions of the workshop:

- Will migration increase in the future, in the context of climate change? What is the role of environmental factors in past, current and future migrations in mountain areas?
- Does existing migration in mountain areas hold out a prospect for greater resilience (for those left behind)? Is a climate-resilient mountain community more mobile, or is it one with more migration options?

¹The workshop was held at the University of Sussex, Brighton (UK) on May 3rd and 4th, 2012. It was co-organised by the University of Sussex (UK) [Richard Black] and the University of Neuchâtel (Switzerland) [Etienne Pigué] and supported by the Cost Action IS1101.

- Mountain areas are often very dependent on urban centres, which are frequently the main destination areas for migrants and sometimes also very exposed places as far as environmental change is concerned. What role do urban areas play in the context of migration in mountain areas that is driven by climate change?

These questions have been discussed in the light of various fieldwork experiences conducted in the main mountain regions of the world as follows:

- Andes: Peru, Bolivia, Ecuador and Colombia
- Himalayas: Nepal and India
- Africa: Tanzania
- Europe: Italy and Portugal

Learning points

Will migration increase in the future, in the context of climate change? What is the role of environmental factors in past, current and future migrations in mountain areas?

This question refers to what is driving migration and the workshop led to extensive discussions based on the empirical evidence relating to this specific topic. There was wide agreement among participants about the multicausality of migration. Slow-onset change affects particular sectors and may lead to changes in long-term sustainability of an activity. Some examples show a high dependence of the studied villages or communities on agriculture. The first case study of the Rainfall project (UNU-EHS) conducted in Tanzania (Dr Tamer Afifi) in the Kilimanjaro region clearly indicates that the rainfall variability has a very negative impact on local food production. Results show a strong correlation between unpredictable and changing weather patterns and the decision to migrate.

Fast-onset events were discussed using examples of the Colombian Andes (Vicente Anzellini) and the Italian Apennines (Eleonora Guadagno) with regard to villages partially, if not completely, damaged by landslides. These types of events can affect a whole community with long-lasting consequences. Relocations are in these cases inevitable; however they lead to a high level of dissatisfaction and impoverishment for some of the affected households.

Does existing migration in mountain areas hold out a prospect for greater resilience (for those left behind)? Is a climate-resilient mountain community more mobile, or is it one with more migration options?

The workshop introduced some facts about the migration-resilience nexus. The study conducted in Nepal (to be continued in Bolivia) aims to find out how land management in the Panchase area of Western Nepal (Stéphanie Jaquet), is being affected by migration, climate changes (temperature and rainfall patterns) and hazard events, and what measures are needed to increase resilience of livelihoods and land management practices there. Evidence shows that available money is used for food first with not much left for spending on agriculture. In the Upper Gangotri Valley in India (Shrabana Datta), agriculture does not provide enough through the year and migration is a way to counterbalance the income in low production seasons. The non-migrant part of this population is more vulnerable to climate change due to its remaining in the mountain area.

The only case study completely based on quantitative methodology (data from a survey) conducted in the Ecuadorian Andes (Raül Vanegas) in the Paute catchment, seeks to improve the understanding of the complex dynamics of agricultural practices, land use and perception of land degradation. Results show that current migration has a weak influence on the different dynamics studied.

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The second case study of the Rainfall project (UNU-EHS) conducted in Peru (Andrea Milan), in the area close to the city of Huancayo, points out the importance of the distance to cities when considering migration patterns. In a context of drought and insufficient rain, people living very close to Huancayo (main city in the area) rely heavily on a daily commute to urban areas, whereas populations living with more complex ecology, and in more remote locations, often migrate for a few years.

The connection to neighbouring cities, La Paz and El Alto, is also important with regard to mobility patterns in the Bolivian Andes (Raoul Kaenzig). This case study looks at the impact of glacial retreat on migration in both rural and urban areas. The latter are extremely vulnerable places, where water and energy are, to a large extent, supplied by the surrounding glaciers. The symbolic significance of the glaciers is also a significant feature in the perception of the changing environment of the Q'ero communities in the Peruvian Andes (Geremia Cometti). The Q'ero are the best known of the Andean Shamans and they benefit from their reputation in building strong connections with the city of Cusco. The mobility of this population has to be framed in the context of the complex intermingling of material and symbolic factors.

To conclude the workshop, Prof Richard Black shared some thoughts on the papers that had been presented. Using the example of a case study from Portugal where he studied the connection between environmental degradation and the migration processes, he outlined the importance of considering the environment not only as a given state, but also as an economically/politically/socially and even demographically produced one. From this perspective, not only is it crucial to gather a sound knowledge of the local dynamics of the studied area, but also to remember that the local context may be influenced by global dynamics, such as the global economy.

Titles of presentations and addresses:

Dr Tamer Afifi (UNU-EHS, Bonn, Germany): *Where the rain falls: Food and livelihood security, and migration. Case study: Tanzania.* (afifi@ehs.unu.edu)

Vicente Anzellini (University of Neuchâtel, Switzerland): *Population relocation after landslides in Gramalote, Colombia.* (anzellini@un.org)

Eleonora Guadagno, PhD (University of Poitiers, France): *Environmental forced displacement in the Italian Apennines: Cerzeto.* (guadagno.eleonora@gmail.com)

Stéphanie Jaquet, PhD (CDE, University of Bern): *Sustainable land management in mountain regions of Bolivia and Nepal in the context of outmigration, climate change and disaster risk reduction.* (stephanie.jaquet@cde.unibe.ch)

Shrabana Datta, PhD (Ludwig-Maximilians-Universität, Munich, Germany): *Climate change and (im)mobility. Community in Upper Gangotri Valley, India.* (shrabana_datta@yahoo.com)

Raúl Vanegas, PhD (University of Cuenca, Ecuador): *Identifying socio-economic and demographic driving factors at household population level conditioning the local agricultural practices, land use*

and perception of land degradation in the Paute catchment (Ecuador).
(raul.vanegascabrera@fundp.ac.be)

Andrea Milan, PhD (UNU-EHS, Bonn, Germany): *Where the rain falls: Food and livelihood security, and migration. Case study: Peru.* (milan@ehs.unu.edu)

Raoul Kaenzig, PhD (University of Neuchâtel, Switzerland): *Bolivian Andes: From glacier retreat to migration?* (raoul.kaenzig@unine.ch)

GeremiaCometti, PhD (Graduate Institute of Geneva, Switzerland): *Climate change and migration in the Peruvian Andes: The case of Q'ero.* (geremia.cometti@graduateinstitute.ch)

Organisers

Prof Etienne Piguet, University of Neuchâtel, Switzerland. (Etienne.Piguet@unine.ch)

Prof Richard Black, University of Sussex, UK. (r.black@sussex.ac.uk)

Raoul Kaenzig, University of Neuchâtel, Switzerland. (Raoul.kaenzig@unine.ch)

Jérémie Guélat, University of Neuchâtel, Switzerland. (Jeremie.guelat@unine.ch)

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