Benefits of the international migrations for the environment in the home country
A case study in two Ecuadorian provinces

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Introduction

The impacts of the international migrations on the development of the sending countries are often reduced to its economic and social aspects (Giuliano et al. 2009). 200 million people currently live outside their country of birth (United Nations 2009) and their remittances contribute largely to the economy of their home country. Considering only the developing countries, remittances reached 235 billion dollars (Ratha et al. 2009). It is hundred times more than the budget freed by the EU for the Cooperation in the Development in 2009 (European Commission 2009). Migrants and migration networks are seen as a powerful lever for the development of his/her village (Mazzucato et al. 2009; Beauchemin et al. 2009). Migration is one of the numerous livelihood strategies developed in several developing rural regions (Henry et al. 2004) and can make important poverty-reducing contributions to household incomes, with multiplier effects in community (Durand et al. 1996). For the so-called "left-behind", remittances could reduce household vulnerability to economic shocks (Calero et al. 2009). Nevertheless, a few micro economic analyses point some negative effects of remittances, such as squandering in conspicuous consumption (Binford 2003; Reichert 1981). In terms of social aspects, positive and negative impacts can be found too (Mondain 2009). Out-migration undermines traditional rural livelihoods as social institutions (Binford 2003). The male migration gives higher levels of responsibilities and a greater autonomy for their wife left behind and this imbalance in the male/female ratio may have impacts on local politics (Desai et al. 2008; Deshingkar et al. 2004). Furthermore, by allowing the household to pay for school enrolment, remittances decrease incidence of child work, especially for girls in rural areas (Calero et al. 2009).

At the same time, the migration-environment nexus is an important issue but a large part of the scientific community focuses only on the impacts of the environment on migration. The attention of researchers, stakeholders and media is focused on the definition, the measures and the geopolitics aspects of the 'environmental refugees' issue. This growing interest in the environmental migration is viewed mainly by a negative point of view (load for the host countries, environmental damage, vulnerability of migrants, etc). In the migration-environment nexus, the impact of migration on the environment is less studied or only in the case of internal migration or refugees camps. Studies are looking for how an important arrival of people may disrupt the population-natural resources balance, such as the increasing demand for wood, changes in land use practice, water pollution, and a degradation of natural resources (Black et al. 1997; Lohrmann 1996; McNally et al. 2002; Hugo 1996).
The environmental impact of this international migration for the home countries and its contribution to a sustainable development is an open question. Some authors argue that migration has potential for transformative impacts on agriculture (Gray 2009) and constitutes an opportunity for the sustainable development of the home countries (Heilmann 2006). Others suggest that rural out-

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migration can lead to land abandonment and reforestation as part of a ‘‘forest transition’’ (Rudel et al. 2005). In El Salvador, Hecht et al. (2006) found that remittances allow a decrease of the environmental pressures by the abandonment of uncultivated plots of land, a decrease of the agricultural intensification, and the investment in the other systems of production. An unhoped reforestation is likely to be in progress in this country thanks to changes of household behaviour allowed by the remittances. Finally, in Mexico, important changes of landscape have also been attributed to remittances (Hostettler 2007) but the author does not clearly support the idea of a possible environmental degradation and insists on a future better evaluation of these changes. In definitive, large-scale examples of this process from the developing countries are scarce (Perz 2007) and empirical studies on the environmental damages/benefits led by the international migrations are called for here.

Objectives of the study

This study is the first part of a doctoral project that aims to contribute to a better general understanding of the role of the migrant as agent of development for its own home country by focusing on the environmental aspects. The specific objective of this paper is ***to identify the benefits of the international migrations for the environment in the Ecuadorian Sierra*** by highlighting the environmental changes occurred after the departure of migrants in their home villages, with the Azuay and Cañar provinces as a case study. We assume that the whole interactions between the natural environment and the rural households are modified by the departure of one of its member to abroad. Hypotheses can be broadly divided into three categories: those related to the decrease of the workforce generated by the departure of the migrant, those engendered by the remittances and finally, those related to the transfers of knowledge, skills or ideas by the migrants (Figure 1).

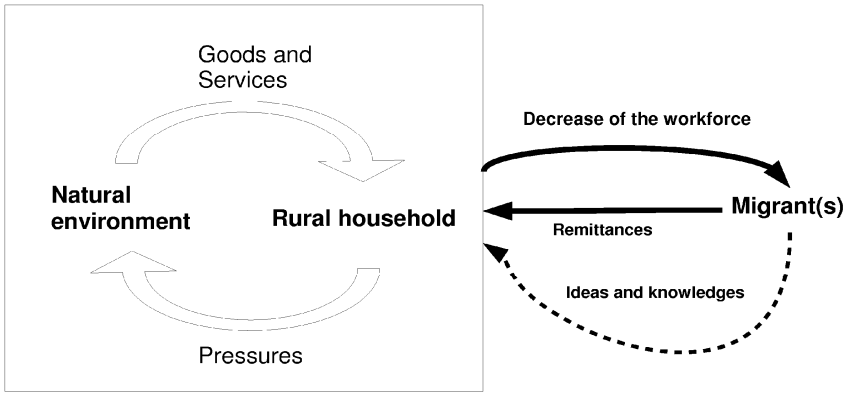

Fig. 1 - Migration–environment nexus in home country

Hypothesis 1: The departure of one migrant, mostly a young male, decreases the workforce available in a rural household. We expect that this reduction brings about a decrease in the consumption of ecosystems services (wood, water, etc.) and a lesser pressure on land (e.g. abandonment of less-fertile plots of land).

Hypothesis 2: The increase in the household income thanks to the remittances makes a higher pressure on the environment by a modification of the household life-style and by a modification of the agrarian practices (e.g. intensification, mechanisation).

Hypothesis 3: In the home country, the environment benefits from knowledge, skills and ideas transmitted by the migrant abroad. We expect, among the left-behind, a higher environmental awareness and the use of environmentally-safe practices (e.g. soil protection management techniques). But, we expect that this awareness is more obvious and efficient when initiated by a migrant association.

Context

The two neighbouring Azuay and Cañar provinces in the Ecuadorian Sierra are a favorable context to test the three hypotheses.

The Andean mountains contain unique ecosystems consisting of a wide diversity of natural environments, which range from lowland rainforest to lower mountain rainforest, Andean cloud forest, grassland and shrub vegetation and páramo vegetation at the highest elevations. During the last few decades, the natural ecosystems of the Andean region have increasingly been disturbed by rapid demographic growth and socio-economic development (Hofstede et al. 2002). Despite the fact that these environments are sources of water, energy and biological diversity that are essential to the survival of a large part of the Andean population, they are endangered by human pressure and natural ecological imbalances caused mainly by land use and climate change (Becker et al. 2001).

Due to rapid demographic growth and severe land degradation, both the quality and quantity of land available is rapidly decreasing. Access to land is highly unequal. Over half of the landowners have less than 1 ha of land, often located on steep slopes so that cultivation occurs on slope gradients up to 70% (INEC 1991) These small farms or "minifundios" are further divided into even smaller landholdings. Overgrazing and intensive cultivation of these poor soils have led to severe land degradation, and widespread poverty amongst the rural population.

The provinces of Azuay and Cañar in the southern Ecuadorian Andes experience high levels of transnational migration. Since the 90s, 600 000 Ecuadorians have left their country to the United States (O'Neil 2003; Jokisch 2002; Jokisch et al. 2002). By 2000, the second wave of out-migration had reached more than 550,000 Ecuadorians. Europe became to be attractive, mainly Spain. (Jokisch et al. 2002). In 2007, the World Bank estimated the amount of remittances sent to Ecuador at 3,175 billion US dollars. Three households out of four benefited from this additional income (O'Neil 2003).

Data and method

To better understand how the home environment is influenced by the international migration, a qualitative survey will first be conducted in spring, 2010 by the Geography Department of the University of Namur (Belgium) and the Faculty of Agriculture of the University of Cuenca (Ecuador). By using land cover changes map from Landsat TM images (1990-2007) and the 2001 population census (INEC 2001) sampled parishes will be chosen according to the proximity of Cuenca, and environmental and social criteria. In these parishes, in-depth interviews will be conducted with the head of a household with at least a member abroad. We estimate at about 30 the number of households needed in order to achieve data saturation or informational redundancy. The questionnaires will include (i) environmental topics related to agricultural practices, land use change, land degradation; (ii) socio-demographic topics related to migration (i.e. duration, motivation, and destination), household composition and gender roles, and the impact and the use of remittances (just after the departure and after 1-5 years of migration); and (iii) the perception of the left-behind on the environment-migration nexus.

In addition, we will use focus group with the Cañar-Murcia association in order to highlight the positive actions initiated by a migrant association. Cañar-Murcia is a co-development project developed through the Spanish Agency for International Cooperation in Ecuador. It seeks to improve the social conditions for migrants both in their country of origin (specifically Cañar, Ecuador) and the social conditions in their destination country (specifically Murcia, Spain). This pilot project has generated a series of positive practices in terms of co-development that could likely be replicated in other regions and countries.

Expected results

In terms of expected results, significant changes in interactions between the natural environment and the rural household due to migration are expected.

After the departure of one migrant, we expect an abandonment of the most degraded household's plot of land, chiefly if the new head of household is a woman. We assume that the left-behind will choose less labour-demanding activities. Nevertheless, we expect also a minimum keeping of agricultural activities because it remains an important cultural and risk-averse activity in Ecuador, especially for women (Jokisch 2002). If the migrant is a female, we expect two main differences from male migrants. Firstly, the remittances are likely to be bigger and more frequent. Secondly, their utilisation by the left-behind (expected to be a male) are likely not to lead to an abandonment of any plot of land but, on the contrary, we expect their intensification.

Remittances are likely to be used principally for convenience goods and conspicuous consumption (houses, cars, etc.). Moreover, the consumption in water and in energy is expected to increase dramatically. At the same time, sources of energy can also change: fuel and gas can replace local firewood. However, we also expect to find some households which have improved their agricultural practices thanks to their remittances by using new crop and cattle varieties, mechanisation, chemical inputs, etc. Each of these changes will be assessed according to its impacts on environmental goods and services. But, we expect that the most environmentally-safe improvements should come from association of migrants' projects thanks to a real environmental awareness and a more controlled budget management.
Moreover, we expect that individual remittances are less lasting than "remittances send to the local association". Indeed, we assume that individual remittances are rather high during the five first years that follow the departure of the migrant. After this period, we expect a decrease. .

Conclusion

In the current debate on the international migration, the study of environmental impacts in the home country seems strongly important (GFMD 2007). Yet, there is a real lack of empirical researches. Our study aims to contribute to a better understanding of this issue. This research is the first step of a larger project on the impacts of international migration on the environment in the Ecuadorian Sierra. . The next step is to conduct a large quantitative survey planned for 2012 in Ecuador.

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