

Assessing Adaptation to Climate Change: Environmental and socioeconomic changes in the Andes of Bolivia

Marolyn Vidaurre de la Riva^{1,2} & André Lindner²



International Climate Protection Fellowship

²Institute of International Forestry and Forest Products, Faculty of Environmental Sciences – Dresden
University of Technology, Germany

Based on a case study of Charazani – Bolivia, this research outlines the understanding of adaptive strategies to cope with climate change and its impact on environmental and socioeconomic conditions that are affecting rural livelihoods.

Mainly qualitative methods were used to collect and analyze data following the framework for vulnerability assessments of socio-ecological systems.

Climate data reveals an increase in precipitation and temperature, as well as a higher frequency of extreme weather events. Local testimonies highlight these events as the principle reasons for agricultural losses.



Fig. 1: Terraces and subsistence farming in Charazani, Bolivia

Charazani is populated mainly by indigenous communities, depending on natural resources and subsistence farming. The territory comprises three different ecological zones and is host to a high cultural and biological diversity (Fig. 1).

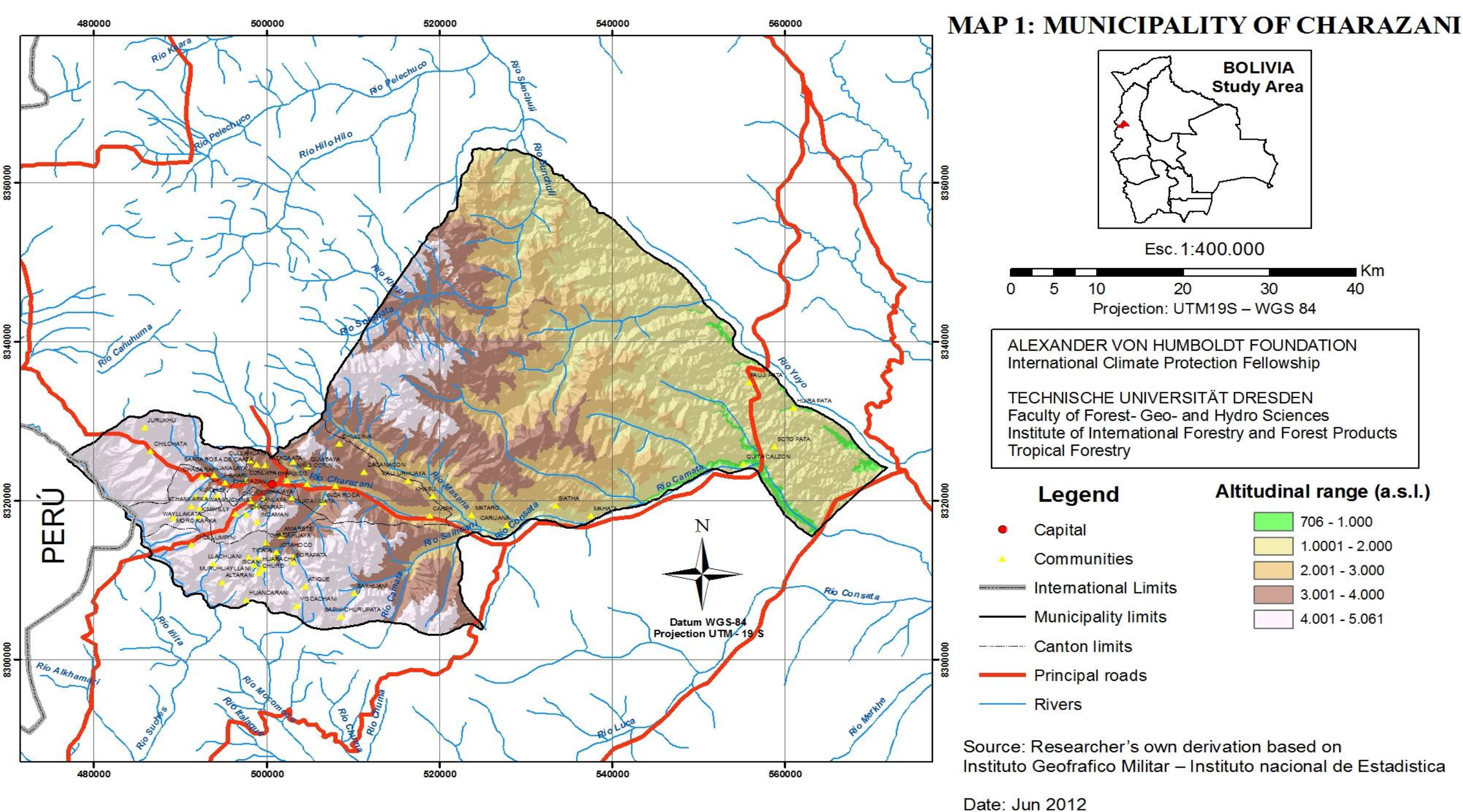


Fig. 2: Municipality of Charazani – ANMI Apolobamba– Bolivia (INE 2004, modified)

Adaptive measures in agricultural practice were identified at different levels: household, community and external-national (Tab 1). Most of these measures have their roots in traditional ecological knowledge

Tab 1: Adaptive measures in agricultural practice in Charazani, Bolivia

Problems	Adaptive measures		
	Household	Community	External - National
Water stress, Drought, Hailstorm, Frost, Landslides, Fire, Changes in biodiversity	Risk management (diversification of crops), Use of local indicators	Rituality, Reinforcement of traditional systems, Development of irrigation system and waterworks, Traditional management of water, soil and biodiversity	Meteorological data from SENAMHI, National budget for irrigation systems and risk management, External technical support on irrigation systems, NGO's working on conservation and natural resource management
Economic system, Access to markets	Trueque (interchange of products), Development and adoption of techniques and technologies in agriculture	Temporary migration, Diversification of economic system beyond agriculture, Mink'a - Aymi	NGO's working on agriculture and livestock
Erosion of traditional knowledge	Ritual practices	Social organization based on traditional structures	National policies: revalorization of traditional knowledge (Ministry of Land), New scholar curriculum incorporates traditional knowledge, NGO's – working on cultural and education programs

Despite there is large array of possible adaptation measures that families are implementing, the lack of local capacities and economical resources are challenging the livelihood strategies and increasing the vulnerability to climate change. Particularly in this area traditional knowledge plays an important role in the process of adaptation and actually is complemented with contemporary technologies that together might be able to contribute on resilience of the communities. Furthermore, the understanding of the social-environmental system could provide opportunities to face the impacts of climate change.

contact: Marolyn Vidaurre, marolynvida@gmail.com



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