

# 1 Introduction and Rationale

Mountain areas cover 24% of the world's land surface (UNEP-WCMC 2002) and are home to 12% of the global human population (Huddleston and Ataman 2003), with a further 14% living in their immediate vicinity (Meybeck et al. 2001). All of the world's major rivers originate in mountains and more than half of the world's mountain areas play a vital role in supplying water to downstream regions (Viviroli et al. 2007). Mountain areas are repositories of biological and cultural diversity and provide vital services with a tangible economic value – such as water, power, tourism, minerals, medicinal plants, and fibres – to mountain communities and, even more important, to often heavily populated downstream areas. Mountains also influence the climates of their surrounding regions and serve as important carbon sinks.

However, mountain environments are highly fragile, and people living in mountain areas are exposed to a system of environmental and non-environmental stressors which are interlinked and have serious repercussions on mountain people's livelihoods. These stressors include processes of socioeconomic development and growing populations, which linked to increasing demand and globalisation increase the pressure on water, land, and other natural resources and services. In this context, climate change acts as an additional stressor which can multiply existing development deficits and reverse progress in mountain areas (UNDP 2010) and may limit mountain people's inherent capacity to cope and adapt. Mountain people, who have contributed the least to global greenhouse gas (GHG) emissions, are expected to be among those who will be the worst affected by adverse impacts of climate change. In order to achieve equitable development, the international community needs to support policies that compensate mountain communities for the value of the ecosystem services provided by mountain systems, and that help them benefit from emerging opportunities. A special effort is needed to raise awareness of the fragility of mountain social-ecological systems in view of global climate change, and to lobby more effectively, particularly in the context of the United Nations Framework Convention on Climate Change (UNFCCC) and associated processes, for the main causers of climate change to support the people of mountain areas. In this context, greater access to funding mechanisms for climate change adaptation is required, geared particularly towards the needs of fragile mountain social-ecological systems. Mountainous countries in the developed world can serve as important resource centres providing knowledge, technology, and expertise to mountain areas in developing countries.



This paper describes the high vulnerability of mountain social-ecological systems, elaborates the importance of mountain ecosystem goods and services for mountain people and downstream communities, and explores the opportunities that are also created by climate change, especially for mountain economic development. The paper concludes with recommendations on the urgent need for global collaboration and lobbying in order to achieve resilient mountain social-ecological systems.