CIRCLE-2 Policy Brief

- MOUNTain Areas -

Climate Change Impacts, Vulnerability and Adaptation

Summary

This policy brief is directed towards funders and managers of research programmes on climate change impacts and adaptation as well as policy makers concerned with these issues. It notes various challenges in addressing climate change in research and policy for mountain areas and provides recommendations on research needs.

Mountains cover 36% of Europe's area and are home to 17% of the continent's population. When projecting future climates and evaluating Climate Change Impacts, Vulnerability and Adaptation (CCIVA), both mountain populations and the far greater numbers of people affected by changes deriving from climate change in the mountains need to be considered.

According to the Intergovernmental Panel on Climate Change (IPCC 2007), mountain areas, already vulnerable to climate variability, will mainly experience negative impacts from future climate change. Climate change in countries with mountain areas implies continued glacier retreat, reduced snow cover and winter tourism, and extensive species losses (in some areas up to 60% under high emissions scenarios by 2080).

The IPCC documented – for the first time - the wide range of climate change impacts on mountain areas such as "retreating glaciers, longer growing seasons, shifts of species ranges, and health impacts due to heat waves. The observed changes described above are consistent with those projected for future climate change". The IPCC also stressed the need to promptly conduct impact studies and implement "proactive climate change risk management adaptation plans."

Planning for climate change adaptation (e.g. developing political strategies or deciding on the implementation of adaptation measures) is a relatively new challenge for national and local decision-makers. Planners and managers in all sectors have to take decisions now about future strategies, measures and investments aimed at protecting their systems against potential climate vulnerabilities. However, while much knowledge and data about likely future climate change is available for Europe's mountains, projections, socio-economic scenarios, and assessments of impacts and vulnerabilities are highly variable across different mountain ranges and sectors.

New focused research is required to advance the knowledge and understanding of the changing climate of mountain areas, and the resulting impacts and vulnerabilities, to inform policy- and decision-makers most effectively and support the development of sound adaptation actions.

Reference: M. Leitner, D. Hohenwallner, M.F. Price, T. Scheurer, G. Greenwood, 2011. Climate Change Impacts, Vulnerability and Adaptation in mountain areas. Proceedings of CIRCLE-2 MOUNTain Kick-Off Meeting, Chambery, 2-3 February 2011.

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1. The four current projects within **CIRCLE-2 MOUNTain** show that **research on CCIVA** is an **emerging challenge in mountain areas** and CIRCLE-2 national research funding institutions are providing the necessary funding.

2. Within the current research in mountain areas focusing on climate change, . the **Alps are being addressed well** by projects and test sites, but many **other mountain ranges are not that well researched.** A key need is to expand efforts to a larger Europe for Mountains (beside the Alps)?, in terms of knowledge generation and research funding.

3. Particular foci for additional efforts are **long-term monitoring** (e.g. in mountain biosphere reserves), **ecosystem services, coupled Human-Earth Systems and communication with public and policy makers**.

4. Funding for the **digitization of past and "hidden" data** in archives, yearbooks, etc., is needed, especially to better understand past and current climate conditions as a basis for future climate projections (climate modeling and scenario development).

5. Adaptation to a changing climate in mountain areas requires application of the **precautionary principle**, **taking robust decisions under uncertainty and knowledge gaps**. Knowledge exchange and joint learning are major benefits resulting from transnational collaboration.

6. The **duplication of efforts** at different scales **should be avoided;** better linkages between the different scales and levels are essential.

7. A key issue in mountain research is **the transfer of knowledge and of the relevance of research results to stakeholder groups**. The communication of the state-of-the-art and proposed research is a vital step, but is currently approached only at the project level (e.g., the two year EU FP7 Mountain.TRIP project). **Scientists also need to better involve stakeholders in planning and implementing research and ensuring that research results are relevant** – implying:
   - Strong stakeholder involvement
   - Interactions between science and policy - taking into account different (time)scales
   - Ensuring that scientific concepts and results are presented in 'user-friendly' ways
   - Education of "knowledge brokers" (after projects end) or the development of a "knowledge exchange" profession (during projects)
   - Institutional sustainability (longer term support for Mountain.TRIP-like work or a body supporting cooperation in mountain areas and research – e.g. an EEA for Mountains)

8. Bringing researchers and research funders/managers from different scales and levels together, aiming at exchanging views on current and future research activities and funding opportunities in the field of mountain research (focus CCIVA).