LIFE PASTORALP: a project for alpine pasture vulnerability assessment

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Introduction

Alpine natural pastures are important ecosystems threatened by anthropic factors, such as abandonment or reduction of management, and by environmental drivers, nowadays mainly represented by climate change (Subedi et al., 2016). Socio-economic changes interest many mountain and marginal areas covered by permanent pastures, and this is causing remarkable effects on biomass production, forage quality, botanical composition and biodiversity issues (Orlandi et al., 2016). Climate change is affecting mountain ecosystems in different ways (IPCC, 2014): in the last century, the Alps have experienced a remarkably high temperature increase (about +2 °C). Moreover, a modification in precipitation patterns along growing season is expected, with high consequences on productive regimes that can affect animal utilization of these resources (Nettier et al., 2017).
Despite these factors, in many regions of the Alps an adoption of measures on pastures to face climate change is still lacking, even if some *ad hoc* policies for marginal areas to preserve mountain farming were adopted. To contribute to fill these lacks, the present LIFE funded project aims to produce information on how to reduce the vulnerability and increase the resilience of farming systems based on alpine pastures by assessing and testing adaptation measures, increasing capacity building and developing improved management strategies for climate change adaptation.

Materials and Methods

PASTORALP (Pastures vulnerability and adaptation strategies to climate change impacts in the Alps; October 2017-March 2022) is an EU-funded project in the Climate Change Adaptation LIFE program (LIFE16-CCA-IT_000060), coordinated by the University of Florence (Italy) and involving eight institutions operating in Alpine areas equally distributed across Italy and France. The actions will take place in two protected areas of Parco Nazionale del Gran Paradiso (Italy) and Parc National des Écrins (France), extending over more than 160,000 ha.

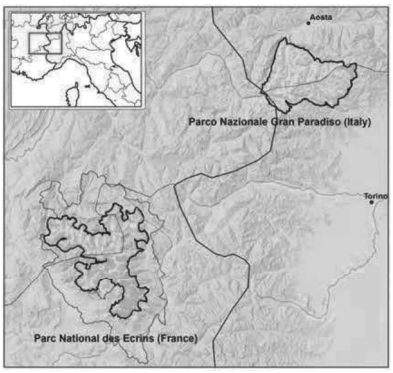

Figure 1. Protected areas (PNE and PNGP) interested by the PASTORALP project and pastures surface (in green).

PASTORALP actions reflect the usual design of the LIFE program. Preparatory actions are meant to create a stakeholder framework for the implementation of all project actions, the establishment of a communication plan, to disseminate activities and to analyze the legislation background. The outcomes of these actions will be used to identify feasible adaptation strategies. Data collection and climate scenarios will be assimilated into grassland simulation models for vulnerability analysis. Pastoral maps will be used in combination with climate scenarios for modelling or for vulnerability assessment. A large set of environmental and socio-economic indicators will be adopted to define feasible adaptation strategies. The outcomes from these actions will all be available via an online platform tools. Stakeholders/end users will then cooperate with potential beneficiaries in modulating and optimizing the tools platform, which is considered the most effective output of the project. A detailed set of communication activities will facilitate a participatory process of local stakeholders/end users alongside the project, through information, consultation and validation workshops and training. The final products of this co-construction process will be translated into an adaptation strategy and replication plan, that will be proposed to decision-makers at regional, national and EU levels for its replicability also in other alpine mountain environments.

Results

Expected results of the project will concern farming systems assessment, as estimation of the pastures vulnerability in the two National Parks and the integrated impacts of climate and socio-economic changes on pasture production systems. Characterization of forage resources will be performed by means of harmonized vegetation types maps. Modelling and climatic scenarios and the obtained outputs will in turn be used to propose climate change adaptation strategies for pastures management in the studied areas and to produce guidelines and recommendations for an enhanced decision-making in pasture management at different policy levels.

The involvement of local stakeholders (contacted during launching events, workshops, by direct connections, etc.) will be one of the key strategies of the project: to this aim, evaluation and demonstration of the technical and socio-economic viability of proposed management options will be performed in selected demonstration pilot areas and the adaptation strategies will be continuously refined with feedbacks from local stakeholders, involved during all the lifespan of the project. In this way, the project should promote an increased capacity building to local communities/actors for coping with climate change impacts and adaptation of farming practices.

Finally, one of the major impacts of PASTORALP will be the reduction of land abandonment through the promotion of improved EU, national and regional proofing policies, practices and incentives (RDPs, CAP, etc.) mainstreaming climate change adaptation for mountain pastoral resources.

Conclusions

LIFE PASTORALP will assess vulnerability of alpine pastures to face future climate changes, propose adaptive management strategies and ensure feasibility and sustainability of proposed practices. The Parks involved in the project should be considered as “open laboratory areas” in order to extend the knowledge on adaptive pastures management inside their territory and to replicate them across the entire alpine range, with further adaptive proposals that will continue after the end of the project.

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