



HAFL Master's Thesis Abstract

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English Title:

Nomadic and Sedentary Pastoralist Systems in the Eastern High Atlas Mountains of Morocco:

An Exploratory Study on Participatory Approaches for Rangeland Rehabilitation and Management.

English Summary:

The Eastern High Atlas Mountains of central Morocco are inhabited by pastoral and agro-pastoral rural communities. The dry summers and cold winters create difficult conditions for vegetation growth and water retention in this semi-arid climate. Overgrazing, deforestation and the resulting erosion effects on the rangelands compound these problems, making it difficult for households to rely on pastoralism for their livelihoods. To combat erosion and rehabilitate the watersheds in this susceptible region, the Food and Agricultural Organization (FAO) of the United Nations (UN), with funding from the Swiss Agency for Development and Cooperation (SDC), are working with Moroccan institutions to develop a participatory watershed planning and management project in the Midelt Province of Morocco. However, nomadic pastoralists, who are an important natural resource user in the targeted watersheds, have not been sufficiently integrated into the community-based natural resource planning. The aim of this thesis is therefore, to explore the challenges and barriers keeping nomadic pastoralists from being involved, and to study ways of overcoming these hurdles and placing all pastoralists in a position to participate in natural resource planning. This study provides a literature review on the state of the art in agricultural and forestry production systems in the study region, their institutions, land tenure rights and best practices on participatory approaches. Household questionnaires were gathered to fill in specific knowledge on the study areas and any knowledge gaps not found in the literature. Questionnaires were analyzed using statistical software, R version 3.3.1. A stakeholder analysis was conducted to examine the different actors involved in the watersheds and their interactions between them. Data on the current rangeland condition, including vegetation cover, basal & canopy gaps, height classes and species densities were collected using the "stick-method" from "Monitoring Rangeland Health" (Herrick and Riginos 2010) and recorded using the mobile application LandPKS, version 3.0.0. Mapping of the watersheds, their resources and exploitation were created using QGIS version 2.18.0 with data gathered from household questionnaires and participatory mapping exercises.

Organized loosely by weakened informal institutions and suffering from recent historical instability of the rights to use natural resources, both nomadic and sedentary pastoralists find it difficult to get organized and find



solutions to their degraded rangelands. The complex legal framework that allows for loopholes and conflicting customary and formal laws, create further complications and disorganization for pastoralists. Nomadic pastoralists find it considerably difficult to organize rangeland use, as the size of their once expansive rangelands are shrinking due to changes in land tenure from the state and acquisitions from entrepreneurial activities. The loss of forest rights in 1917 was a hard blow to rural communities that relied on forest products for cooking, heating and fodder reserves during the winter. Among other suggestions, the study finds the participatory rangeland management (PRM) approach to be suitable for rangeland rehabilitation in this context. The approach aims at strengthening community control over rangeland resources by encouraging local actors to take control over the decision-making processes. Coupled with land tenure security and the co-management of forest resources, the incentives of these approaches provide the opportunity for sustainable management of natural resources. Common pool resources are difficult to manage when stakeholders are disorganized and have a variety of different interests in mind. One goal is clear, the rangelands are getting worse and all stakeholders would like to see improvements in the state of the watersheds. In all three douars, local organization of irrigation channels and cultivated lands are done well and seem to be sustainable and resilient for the time being. These systems are well organized and done so on a local level with indigenous knowledge passed down from generation to generation. In the past, forests and rangelands were similarly managed, but have become heavily degraded since the rights to use these natural resources have changed. If the rangelands could be organized with the same attention and organization as the irrigation channels and agricultural lands, the watershed could be in much better condition. To succeed, rangelands and forests would benefit by being managed together by a community-based organization, with initial and extensive help from state forestry officials and technicians. Only with stakeholder collaboration and organization, will a project like this succeed in the long run.

Keywords: pastoralism, participatory approaches, rural communities, highlands, morocco, semiarid zones, watershed management

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