



Drought vulnerability assessment and mapping in Morocco

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In Morocco, nearly 50% of the population lives in rural areas. They are mostly small subsistent farmers whose production depends almost entirely on rainfall. They are therefore very sensitive to drought episodes that may dramatically affect their incomes. Although, as a consequence of the increasing frequency, length and severity of drought episodes in the late 90's, the Moroccan government decided, to move on from a crisis to a risk management approach, drought management remains in practice mainly reactive and often ineffective. The lack of effectiveness of public policy is in part a consequence of the poor understanding of drought vulnerability at the rural community level, which prevents the development of efficient mitigation actions and adaptation strategies, tailored to the needs and specificities of each rural community. Thus, the aim of this study is to assess and map drought vulnerability at the rural commune level in the Oum Er-Rbia basin which is a very heterogeneous basin, showing a big variability of climates, landscapes, cropping systems and social habits. Agricultural data collected from the provincial and local administrations of Agriculture and socio-economic data from the National Department of Statistics were used to compute a composite vulnerability index (DVI) integrating four different components: (i) the renewable natural capacity, (ii) the economic capacity, (iii) human and civic resources, and (iv) infrastructure and technology. The drought vulnerability maps that were derived from the computation of the DVI shows that except very specific areas, most of the Oum er Rbia basin is highly vulnerable to drought. The mountainous areas present the most favorable annual rainfall. That contributes to explain their low DVI. In the provinces that present the highest vulnerability to drought, spots presenting a lower vulnerability correspond to large irrigated perimeters. Overall, the main output of this study were to show how the DVI can allow detecting the differences in vulnerability in the different rural communes providing, therefore, a tool for more effective drought management practices. The analysis of the 4 dimensions of the DVI showed that at the river basin level, the mean annual rainfall, the percentage of irrigated lands, The Cereal / Fruit trees and market crops ratio, the land status, the farm's sizes, the adult literacy rate and the access to improved drinking water represent the major drivers of vulnerability. They may therefore be targeted in priority by mitigation and adaptation actions.