

Climate change threats to semi-arid transhumance grazing systems: proposals for adaptation in Cabo Verde



Castro, J F¹; Tavares, L²; Castro, M.^{1,3}

¹ Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

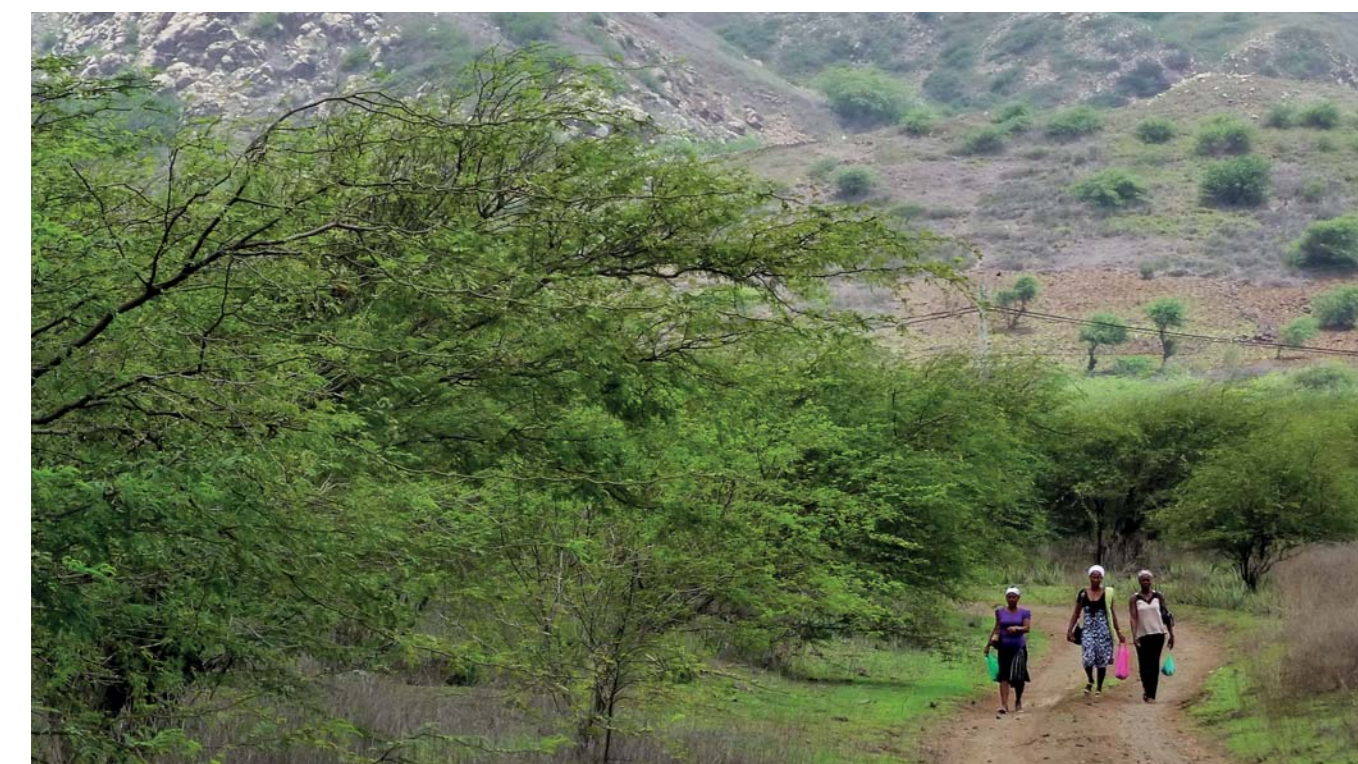
² FAO- Organização das Nações Unidas para a Alimentação e Agricultura, Avenida OUA, 66, Praia, Cabo Verde

³ Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

mzecast@ipb.pt



Cabo Verde pastoral systems are mostly found under harsh environmental conditions, usually in dryland areas. They show a remarkable ability to take advantage of fluctuations in resource availability. This study investigates the transhumance system of Tarrafal (Santiago island) to perceive how the herders' expectations to adapt their rangelands and practices to climate change relate to pastoral communities' socio-economic conditions.



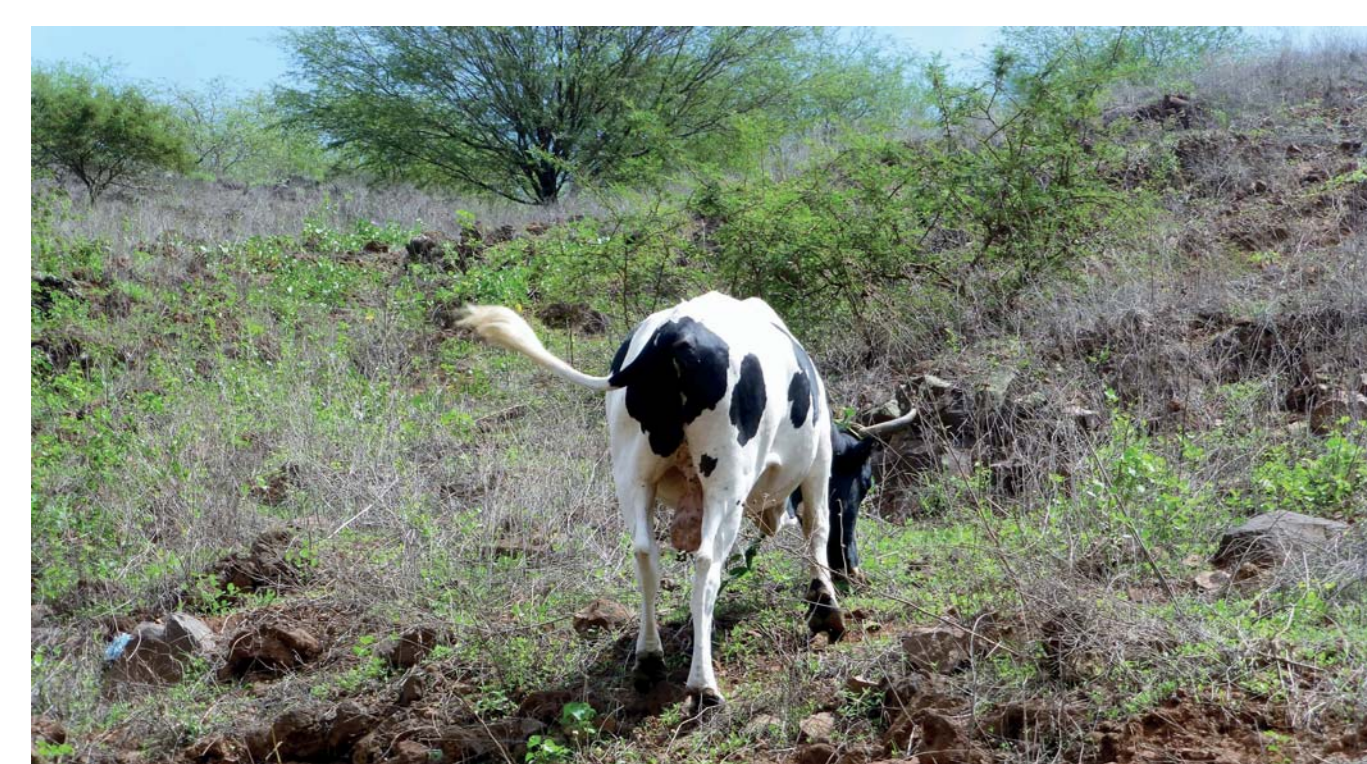
The study focuses on communities that benefit from 2494 hectares of a fenced semi-arid pastoral plateau (20-300m a.s.l., 24.5 °C, 300 mm). It is a savanna-like landscape of *Prosopis juliflora* together with *Euphorbia tuckeyana*, *Sarcostemma daltoni*, *Paronychia illecebroides* in uplands, *Compylanthus glaber* and *Nauplius daltonii* in southern slopes, *Cynodon dactylon*, *Melinis repens*, *Aristida* sp, *Ipomoea purpurea*, and *Commicarpus helena* in low lands, and *Ricinus communis*, *Jatropha curcas*, and *Cassia bycapsularis* around water streams.



Education levels were generally very low, 74% have no formal instruction, but 8% have a superior education level (see table); despite being small-scale livestock keepers, most of them have another main profession, 38% have a professional activity not related to agriculture; all households have extra income from various sources and no significant differences were found in the structure and socio-economic assets between locations.



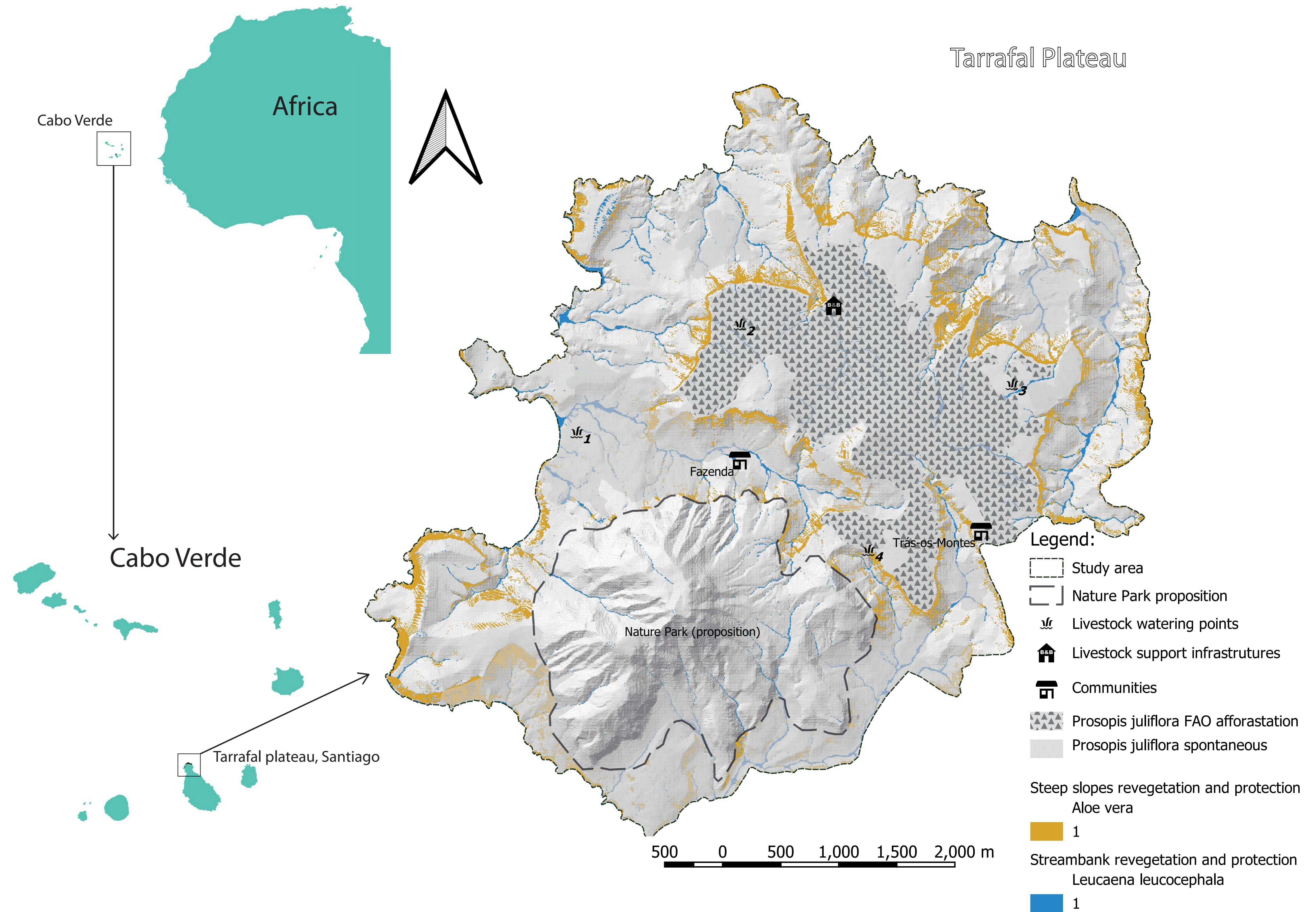
The households own various livestock although the number of heads per household is very low (see table). No significant differences were found in the ownership of different livestock type and mean herd size between locations. The herd size of cattle is higher for male-headed households, and the number of goats is higher for female-headed households.



Majority of the households practice transhumance. In the early rainy season, around July, animals move in a short migration after the long dry season, mainly cattle and sheep and goats, towards the Tarrafal plateau. By the end of the rainy season (October-November), pastoral resources start to be scarce, animals back to the farms around February, some are sold, and others are kept. Smallholders living outside of the territory plateau fed their animals at home with crop residues, mainly maize straw and grass caught in remote areas. The animals of the plateau villages continue to be fed on pastures around the houses.



The geographical analysis assessed existing water supply structures' suitability and designated new ones to improve transhumance effectiveness. New watering points along principal depressions allow to establish forage species – *Parkinsonia aculeata*, *Opuntia ficus-indica*, *Pennisetum pedicellatum*, and *Desmanthus virgatus* – and reduce stormwater runoff. These proposals could sustain and adapt the Tarrafal transhumant grazing system to climate change, reduce the farmers' income loss, and improve food security.



Education level	No education 64%	Alphabetization 10%	Primary /secondary 12% / 6%	Superior 8%
Employment	Domestic 40%	Farmers 22%	Teachers 18%	Others 20%
Extra income	Remittance's emigrants 45%	Social grants 31%	Retirement 21%	Study grants 3%

Livestock type	Number of households	Median herd size/household
Goats	49	4 (1-70)
Sheep	36	2 (2-4)
Cattles	45	2 (1-4)
Donkeys	20	