

BURKINA FASO: HOUET DEPARTMENT POLICY BRIEF ON LAND DEGRADATION

Fred Kizito, Lulseged Tamene, Nicholas Koech, Brian Pondi and Kennedy Nganga (2018) in collaboration with TMG Think Tank for Sustainability: Land Degradation Assessments Using Multiscale Hierarchical Approaches for Agroecosystem Restoration and Improved Food Security: The Case for Kenya and Burkina Faso. *CIAT publication, pp56*

This policy brief aims to give an overview of land degradation hotspots in Houet Department and the policy options for land restoration. In this assessment, **land degradation** is referred to as the persistent loss of ecosystem function and productivity caused by disturbances from which the land cannot recover without human intervention (unaided). **Hotspots** are defined as places that experience high land degradation and if left unattended, will negatively affect both human wellbeing and the environment. The spatial location of hotspots was identified through a methodology combining modeling, participatory stakeholder consultations and field validation. Understanding the spatial locations helps identify hotspot areas and target them as priority intervention sites with relevant management options. This county policy brief is complemented by detailed National comprehensive assessment report which can be accessed at this link: <https://cgispace.cgiar.org/handle/10568/97165>

The methods conducted in this land degradation assessment were hierarchical (covering three different scales: national, department and watershed) and involved stakeholder consultations for field validation evidences (See Figure 1).

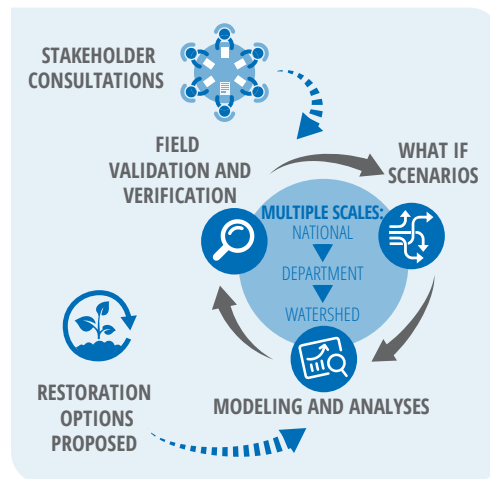


Figure 1: Land degradation assessment approaches

KEY MESSAGE 1: Erosion and land degradation risks are eminent in the south eastern portion of Houet department. Understanding the major drivers will help develop relevant management options to address land degradation.

The Erosion Hazard Index (EHI) was assessed based on a weighted sum overlay of data from land cover, soil texture, topography, streams sediment runoff, roads sediment runoff and precipitation. This was then followed by land degradation assessment through a step by step metric that combines the EHI with chemical soil properties (soil pH, CEC and soil organic carbon).

EROSION HAZARD INDEX FOR HOUET

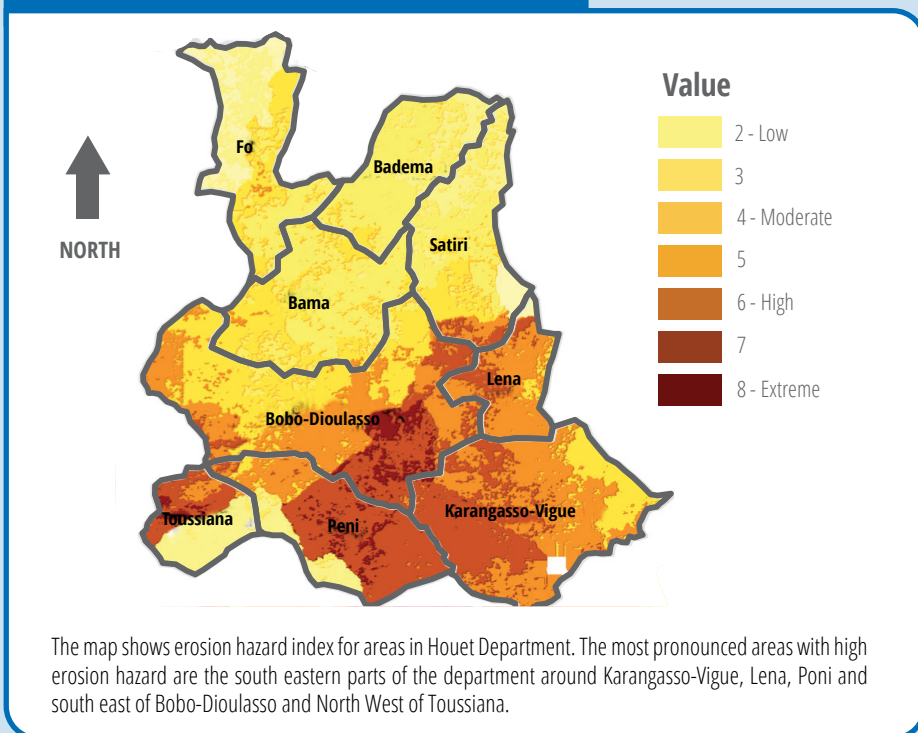


Figure 2: Erosion hazard index



INSIGHTS



Given that the risk of land degradation is high in certain areas especially in the south eastern parts of the department, there is need for generation and dissemination of information and proven restoration technologies to smallholder farmers by capacity building of landscape stewards.



Capacity building needs to be coupled with the mobilization of financial, material and human resources.



Stakeholder dialogues within the the south eastern parts of the department around Karangasso-Vigue, Lena, Poni and south east of Bobo-Dioulasso identified as most vulnerable should take place in exchange with the areas that are least affected by the sedimentation problem in order to synthesize key lessons learned for successful implementation.

KEY MESSAGE 2: Soil losses in Houet especially in the south eastern parts of the department around Karangasso-Vigue, Lena, Poni and south east of Bobo-Dioulasso are serious and require intervention to halt potential loss in food production and other vital ecosystem services

44% of the areas in Houet are severely affected by land degradation

We used the SWAT model to assess water yields, sediment and surface runoff in Houet. The key data used as input in SWAT were elevation, soil characteristics, land use, weather, and streamflow. In order to have a better context about the severity of soil loss in the study watershed, we categorized the zones according to soil loss rates. In severely affected zones, soil erosion has led or will lead to considerable soil degradation, reduction in land productivity for food crops and/or deterioration of soil quality on-site and/or off-site. Off-site impacts might include serious soil and water problems such as siltation of reservoirs and watering points, and pollution among others.

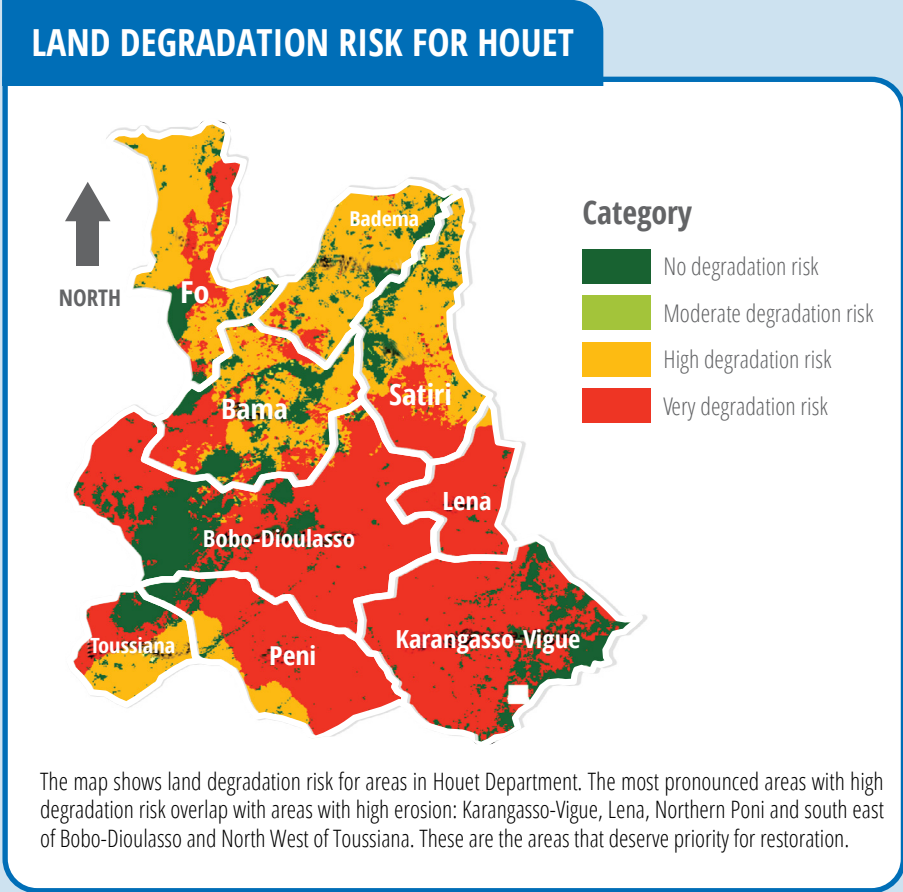


Figure 3: Land degradation risk for Houet

AVERAGE SEDIMENT YIELD PER LAND USE/COVER CLASS

Land use /cover type	CULTIVATED	GRAZING/ GRASSLAND	BUSH/ SHRUB	FOREST
Average sediment yield (t ha ⁻¹ yr ⁻¹)	6.42	6.27	8.92	5.53
Area (ha)	29,893	96,518	1,453	7,830
Area (%)	22%	71%	1%	6%

Based on the average sediment yield per land use category, it is appropriate to target or prioritize the grazing and grassland areas. Although the average sediment losses are not the highest, the percentage land area and the % contribution are quite high 96,518 ha and 71% respectively.

Figure 4: Average sediment yield per land use/cover class in Houet

INSIGHTS



As evidenced by the study, the areas in the south eastern parts of the department around Karangasso-Vigue, Lena, Poni and south east of Bobo-Dioulasso and North West of Toussiana, there is land degradation and a loss of valuable top soil that would otherwise contribute to food production, this then gets washed into reservoirs and in turn reduces their water storage capacity, affects fisheries and other aquatic life.



Linked to the loss of top soil is the erosion of indigenous knowledge on how interventions mitigate and reverse the negative impacts of erosion. This calls for the promotion of locally bred solutions with indigenous knowledge and investments in environmentally friendly technologies for both communities and cities with strong environmental and social regulations enforcements.

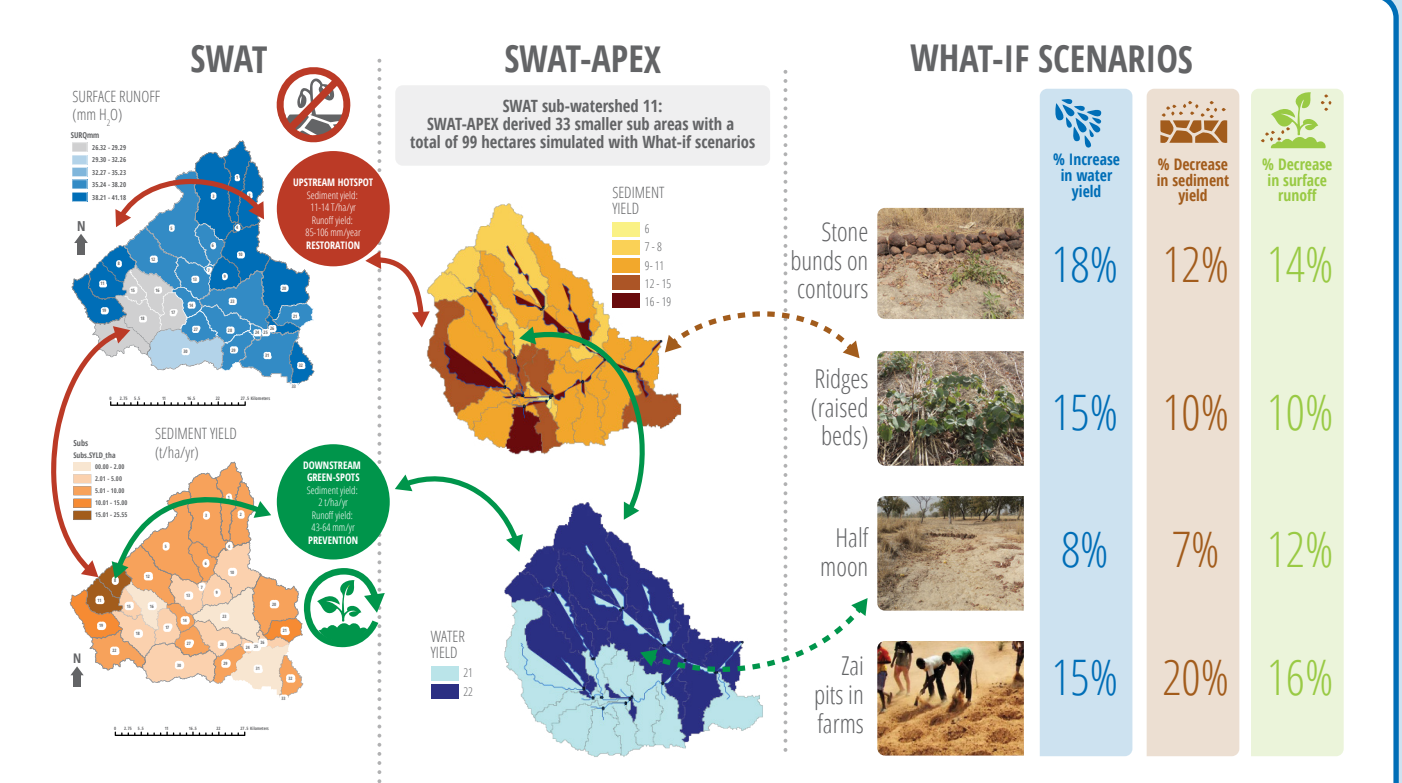


This can be complemented with enforcing balanced approaches which meet human needs and reduce inequalities, especially among vulnerable groups, the youth and women in the areas most affected by land degradation.

KEY MESSAGE 3: Integration of proven practices and scaling up of best management practices tailored for Houet department coupled with innovative farming options promises to transform and restore the vulnerable and degraded areas

Mitigating the risk of land degradation will require a basket of options/solutions deployed to address specific issues in relation to erosion reduction, reduce surface runoff losses within different areas especially the hotspot areas that were affected by land degradation. In this work, we conducted modeling scenarios with the APEX-SWAT model to develop specific "What if scenarios" for restoration to the hotspot areas. For example, the scenarios demonstrated that the use of stone bunds, ridges half-moon and Zai pits has promising options to reduce sediment yield, reduce surface runoff and increase water yield.

SWAT-APEX FOR HOUET



The area around Poni was simulated with "What if Scenarios" The highest water yield was from the stone bunds, then raised beds and Zai pits while the half moon had the lowest water yield and smallest decrease in sediment yield. The success of different interventions will depend on the context of the specific area in question (location, land use type, slope and topography).

Figure 5: Restoration options for Houet

INSIGHTS

- PILOT DEMONSTRATIONS:** Given that land restoration efforts have been successful in some areas, use of promising pilot areas to scale and leverage what is already working needs to be promoted and replicated elsewhere to restore ecosystem services.
- CAPACITY BUILDING:** In order for interventions to have impact, farmer centered capacity building needs to be emphasized.
- ECONOMIC BENEFITS:** Innovative landscape mechanisms that create demand driven economic additions along with restoration efforts will promote uptake, sustainability, and scalability.
- INTER-SECTORAL COLLABORATION:** Agricultural transformation in Burkina Faso needs substantial reform in the context of coordination across ministries and inter-sectoral collaboration.