

BURKINA FASO: TUY 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 Tuy 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://cgspace.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).

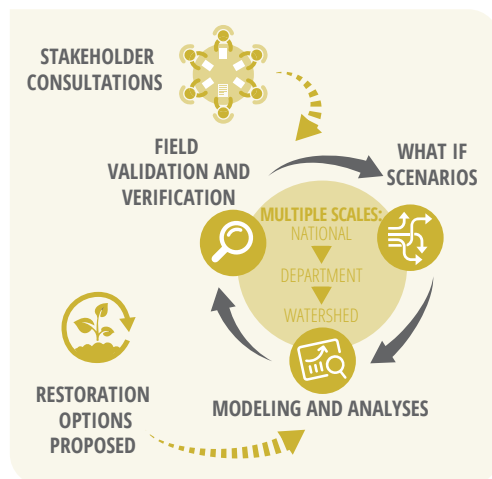


Figure 1: Land degradation assessment approaches

KEY MESSAGE 1: Erosion and land degradation risks are eminent in Tuy and understanding the major drivers will help develop relevant management options

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). Based on the EHI analysis, the northern parts of Tuy (parts of Bereba, Bekuy and Hounde) are more at risk of soil erosion and equally the northern parts and mid-central (portions of Hounde, Kombia, Boni and Founzan) areas are more at high land degradation risk. The southern portions are not at as high a risk as the northern areas. (Figure 2)

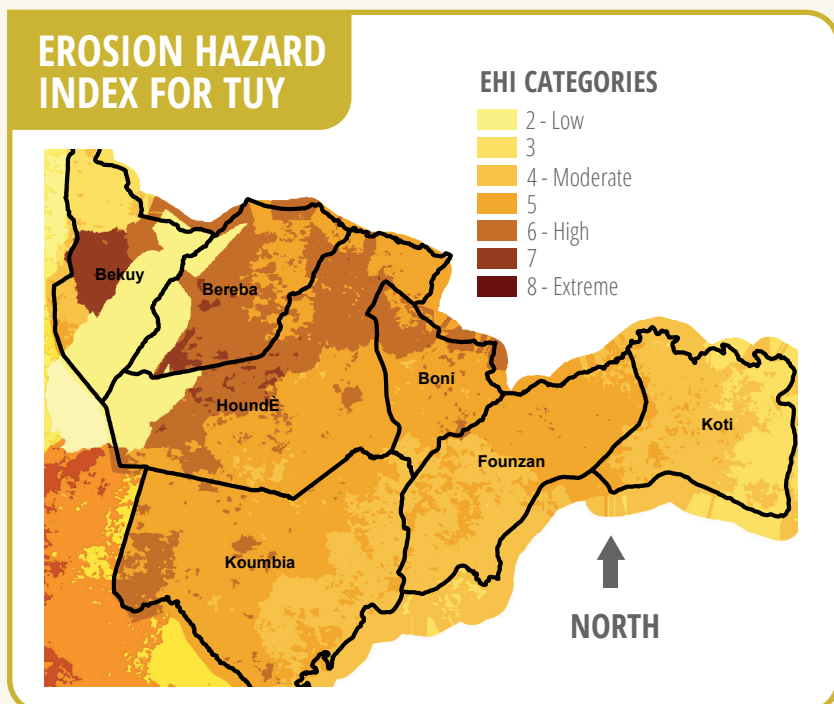


Figure 2: Erosion Hazard Index for Tuy



INSIGHTS



Mobilization of financial, material and human resources, for the areas identified as hotspots with high risk for land degradation.



There is need for generation and dissemination of information and proven restoration technologies to smallholder farmers in the form of capacity building of landscape stewards in the vulnerable areas in the northern parts of Tuy (Bereba, Bekuy and Hounde) and mid-central areas (Hounde, Kombia, Boni and Founzan) areas are more at high land degradation risk.



Stakeholder dialogues within the areas identified as most vulnerable should take place in exchange with the areas that are least affected by both erosion and land degradation risk in order to synthesize key lessons learned for successful implementation.



KEY MESSAGE 2: Soil losses in Tuy require sustainable yet affordable interventions to halt potential loss in food production and other vital ecosystem services

55% of the areas in Tuy are severely affected by land degradation and are mostly under intensive agriculture

We used the SWAT model to assess water yields, sediment and surface runoff in Tuy. 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 average rate as per the tolerable soil loss in the region with a value of less than 2 t ha⁻¹ year⁻¹ and areas with soil loss rates higher than 5 t ha⁻¹ year⁻¹ were identified as severely affected zones (Schmengler, 2010). In these 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.

LAND DEGRADATION RISK FOR TUY

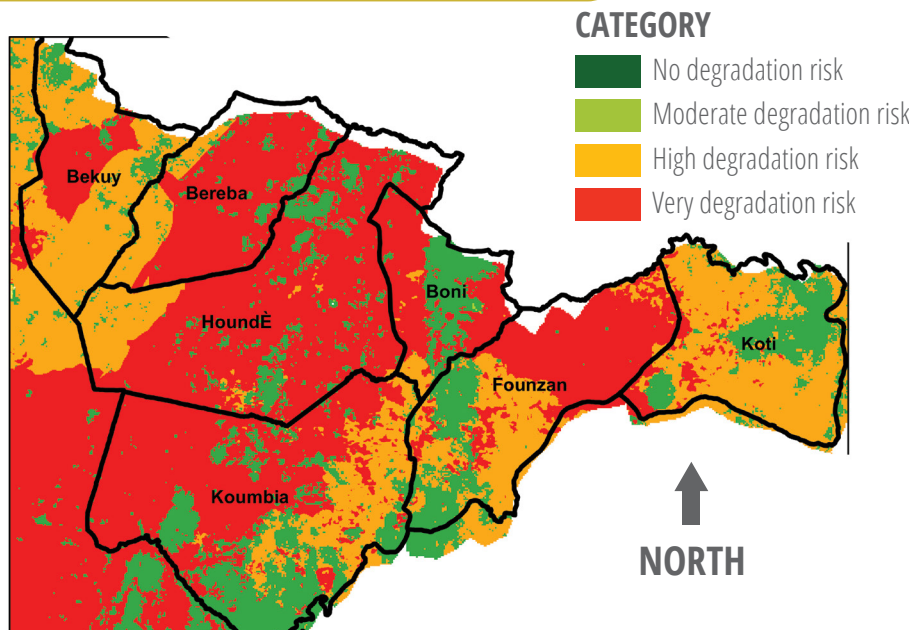


Figure 3 portrays that the land degradation risk was highest for the communes of Bereba, Hounde and parts of Koumbia, Boni and Founzan

Figure 3: Land degradation risk for Tuy

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)	7.24	6.45	5.48	4.55
Area (ha)	37,651	88,665	9,402	7,823
Area (%)	26%	62%	7%	5%

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 88,665 ha and 62% respectively.

Figure 4: Average sediment yield per land use/cover class for Tuy

INSIGHTS



As evidenced by the study, there is clearly a loss of valuable top soil around the zones of Bereba, Hounde and parts of Koumbia, Boni and Founzan 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 the areas around Bereba, Hounde and parts of Koumbia, Boni and Founzan with strong environmental and social regulations enforcements.



This can be complemented with enforcing balanced approaches which meet human needs and reduce inequalities.

KEY MESSAGE 3: Integration of proven practices and scaling up of best management practices tailored for Tuy province coupled with innovative farming options promises to transform and restore the vulnerable and degraded areas in parts of Houde, Kombia, Poni and Founzan with high land degradation risk. The use of zai pits, half moon, stone bunds and other interventions will require specific contexts which can be provided by the district agricultural extension agents.

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.

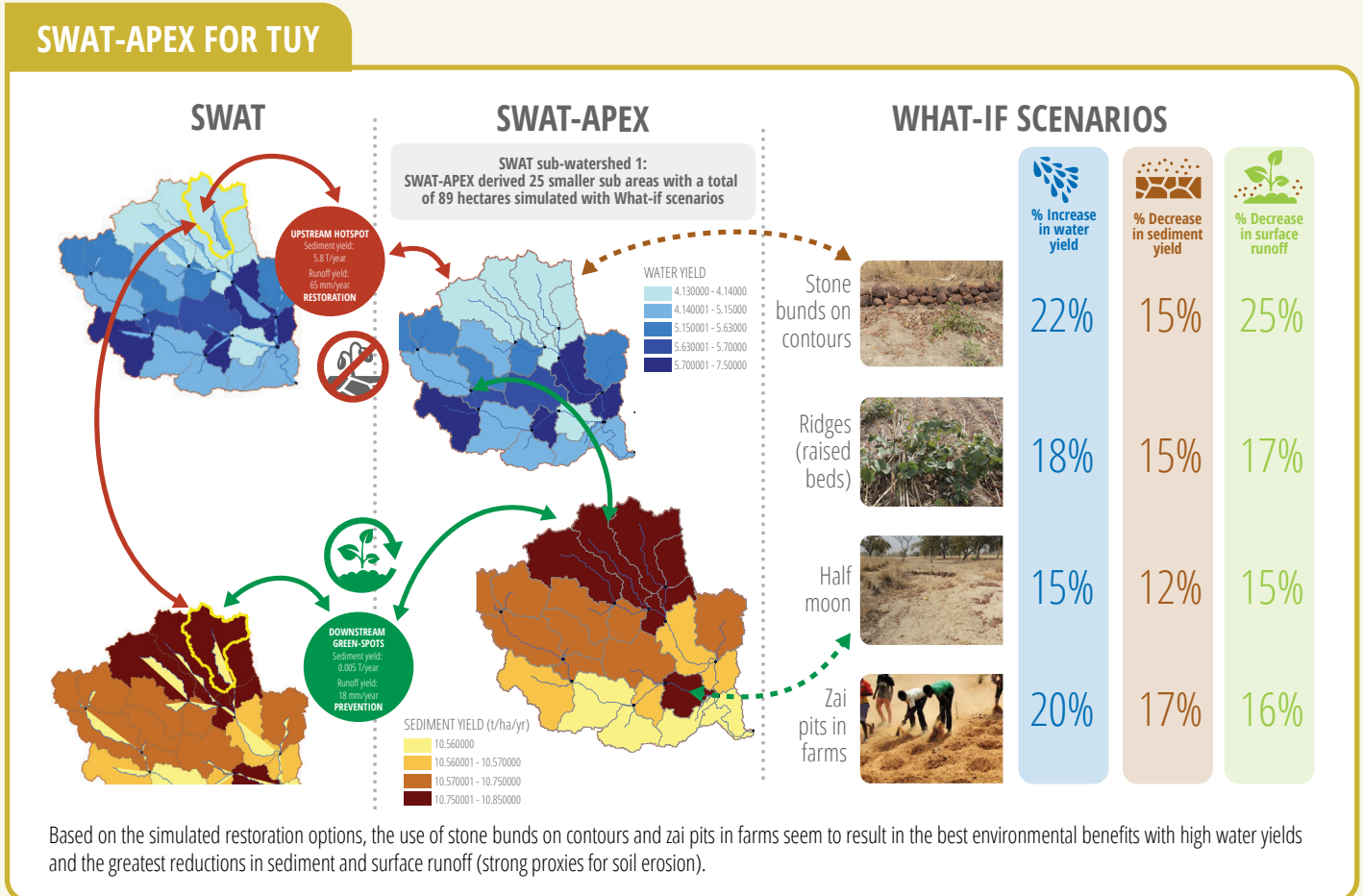


Figure 5: Restoration options for Houde in Tuy department

INSIGHTS

- PILOT DEMONSTRATIONS:** Based on the restoration options provided in Figure 5, use of promising pilot areas to scale and leverage what is already working needs to be promoted and replicated elsewhere to restore ecosystem services especially in the areas around Bereba, Houde and parts of Koumbia, Boni and Founzan.
- CAPACITY BUILDING:** In order for interventions to have impact, farmer centered capacity building needs to be emphasized in the vulnerable areas around Bereba, Houde and parts of Koumbia, Boni and Founzan.
- 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 tuy, Burkina Faso needs substantial reform in the context of coordination across ministries and inter-sectoral collaboration especially in the areas around Bereba, Houde and parts of Koumbia, Boni and Founzan.