ECOSYSTEM RESTORATION | Case studies towards implementation

Context

The Strengthening Community Resilience in Somali Region, Ethiopia (SCRSE)- programme aims at implementing strategic interventions targeting food security, water security and disaster risk reduction to improve long term community stability and resilience in Somali Region. The programme is anchored to the Ecosystem based Adaptation (EbA) Approach. Hence, the proposed interventions focus on recovering ecosystem services (see Figure 1).

A water resources and ecosystems' assessment was done (see the **Atlas of the Upper Fafan Catchment**). One of the outputs of this assessment was an ecosystem restoration suitability map (Figure 2), which provides the most effective ecosystem restoration type of interventions per suitability zone. To facilitate the implementation of interventions, case studies were detailed in the **Guidelines for implementation of ecosystem restoration interventions in the Upper Fafan Catchment**. This poster summarizes the main elements of these case studies towards providing a spatial overview and promoting EbA systems' thinking over point wise development activities.

The presented case studies are representative for larger areas in the Upper Fafan Catchment. Each case box indicates the main challenges, examples of recommended interventions, some of the expected results, and the most important activities towards implementation. For more details please refer to the Atlas and Guidelines.

The cases mention direct results of interventions, but the impact will go beyond the mentioned effects when implementation happens in an integrated manner at landscape scale. When ecosystems are restored, services and functions such as water resources regulation, soil fertility, biodiversity, and climate are recovered. This strengthens the overall resilience of the landscape and its inhabitants to hazards, and benefits society and economy (see Figure 1).

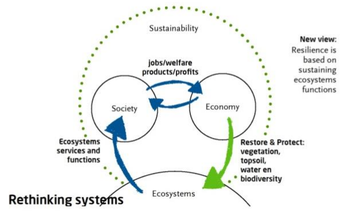

Figure 1. Building resilience through ecosystem restoration (Source: IUCN CEM, RSM)

Table 1. Legend to the ecosystem restoration suitability map listing the recommended types of ecosystem restoration interventions

Zone	CHARACTERIZATION		RECOMMENDED TYPES OF INTERVENTIONS			
	Current land use	Slope and stream specifications	Protection and restoration	Soil and water conservation (SWC)	Off-stream water storage	In-stream water storage
A1	Arable land	Flat to gentle sloping areas (<5%)	-	Basic SWC, flood-adapted agriculture	Hafirs, ponds	
A2		Gentle slopes (5-10%)	-	SWC measures for slopes	Hafirs, ponds, hillside dams	
A3		Steep slopes (10-25%),	-	SWC for slopes or permanent agriculture	Hillside dams, rock catchments	
A4		Very steep slopes (>25%)	Discourage agriculture, forest management	Permanent agriculture	Rock catchments	
A5		Flat to gentle sloping areas (<3%), Weak Soils	-	Basic SWC, SWC for weak soils, SWC to control wind erosion	Hafirs, ponds, micro dams, birkads	
A6		Slope > 3%, Weak Soils	Discourage agriculture, forest management	SWC for weak soils and slopes, permanent agriculture	Micro-dams, birkads	
R1	Rangelands	Slopes < 10%	Rangeland management	Biological interventions	Hafirs, ponds, birkads	
R2		Steep slopes (10-25%)	Rangeland management	Biological interventions	Hill-side dams, birkads	
R3		Very steep slopes (>25%)	Area closures	Biological interventions	Rock catchments	
F1	Forests/ bushlands	Slopes < 10%	Forest management	-	Hafirs, ponds	
F2		Steep slopes (10-25%)	Forest management, area closures	-	Hill-side dams, rock catchments	
F3		Very steep slopes (>25%)	Forest management, area closures	-	Valley dams, rock catchments	
W1a	Wetlands/ River valleys (agriculture, rangelands, forest)	River valleys, Basement	Riverbank protection	Basic SWC, flood-adapted agriculture	Managed aquifer recharge, hafirs	
W2a		Regularly flooding, Basement	Riverbank protection	Flood-adapted agriculture	Managed aquifer recharge, hafirs	
W1b		River valleys, Limestones, Weak soils	Riverbank protection, conservation areas	Flood-adapted agriculture	Hafirs	
W2b		Regularly flooding, Limestones, Weak soils	Riverbank protection, area closures,	-	-	
W3		Artificial reservoirs	Riverbank protection	Life fencing	-	
B1	Built-up areas	Towns	Urban water and waste management	Biological interventions	Roof rainwater harvesting	
B2		Settlements	Forest management, SWC to control wind erosion	Life fencing	Roof rainwater harvesting, birkads	
E1	Eroded areas	Severe gully erosion	Area closures	Biological interventions, erosion control structures	-	
	Sandy sediment, on basement rock (Fafan)	Small sandy gullies, stream order 1	Riverbank protection	Biological interventions, erosion control structures		Check-dams, (small) valley dams
		Sandy gullies and streams, stream order 2	Riverbank protection	-		Check-dams, (leaky) sand dams, valley dams
		Sandy seasonal streams, stream order 3	Riverbank protection	-		Subsurface dams, sand dams, valley dams
		Sandy seasonal rivers, stream order 4	Riverbank protection	-		Subsurface dams
	Silty to clayey sediment, on limestone (Jerer)	Small clayey gullies, stream order 1	Riverbank protection	Biological interventions, erosion control structures		Check dams
		Clayey gullies, stream order 2	Riverbank protection	-		Valley dams
		Clayey seasonal streams, stream order 3	Riverbank protection	-		Valley dams
		Clayey seasonal rivers, stream order 4	Riverbank protection	-		Valley dams

Case 3 Good agricultural practices on slopes

Dengego, Foothills of the Amora Mountains, Zones A2, A3 and A4

Main challenges
Loss of fertile lands and infrastructure due to rill and gully erosion

Recommended types of interventions
SWC-measures for slopes, permanent agriculture

Expected results
Higher yields, production of high(er) value crops

Activities towards implementation
Establish farmer field schools, set-up tree nurseries, organize exchange visits

Figure 3-1. Severe gully erosion on weak soils

Figure 3-2. Example of intervention: Stone bunds

Figure 3-3. Example of intervention: Terraces with permanent agriculture

Case 6 Water reservoirs for integrated development

Elbeyih Dam, Open water, Zone W3

Main challenges
Pollution, siltation, high evaporation rates

Recommended types of interventions
Life fencing, infiltration galleries, troughs for livestock, deepening

Expected results
Improved water quality and availability

Activities towards implementation
Invest in improved design and management, sensitization campaign

Figure 6-1. Elbeyih Dam East of Jijiga

Figure 6-2. Example of intervention: Life fencing with euphorbia

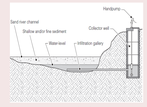

Figure 6-3. Example of intervention: Infiltration gallery

Case 5 Recovering wetlands' ecosystem services

Sheik-Ali-Gure Area, Floodplains Jijiga, Zones W1b and W2b

Main challenges
Severe gully erosion, solid waste, overgrazing, encroaching agriculture

Recommended types of interventions
Riverbank protection, area closures, flood adapted agriculture

Expected results
Gully restoration, increased grass and crop production, flood mitigation

Activities towards implementation
Policy development, facilitate establishments protected areas

Figure 5-1. Pollution and degration of wetland areas south of Jijiga Town

Figure 5-2. Example of intervention: Establishment of closure areas

Figure 5-3. Example of intervention: Riverbank (and wetland) protection

Case 1 Conservation practices on weak soils

Gumburkha-Khale, Plateau Plains Jijiga, Zone A5

Main challenges
Loss of fertile soil and low soil moisture content due to poor vegetation cover

Recommended types of interventions
Basic SWC-measures, SWC-measures for weak soils and to control wind erosion

Expected results
Higher and more reliable yields, and increased availability of wood

Activities towards implementation
Establish farmer field schools and organize exchange visits

Figure 1-1. Agricultural fields close to Gumburkha-Khale

Figure 1-2. Example of intervention: Grass strips

Figure 1-3. Example of intervention: Straw mulch

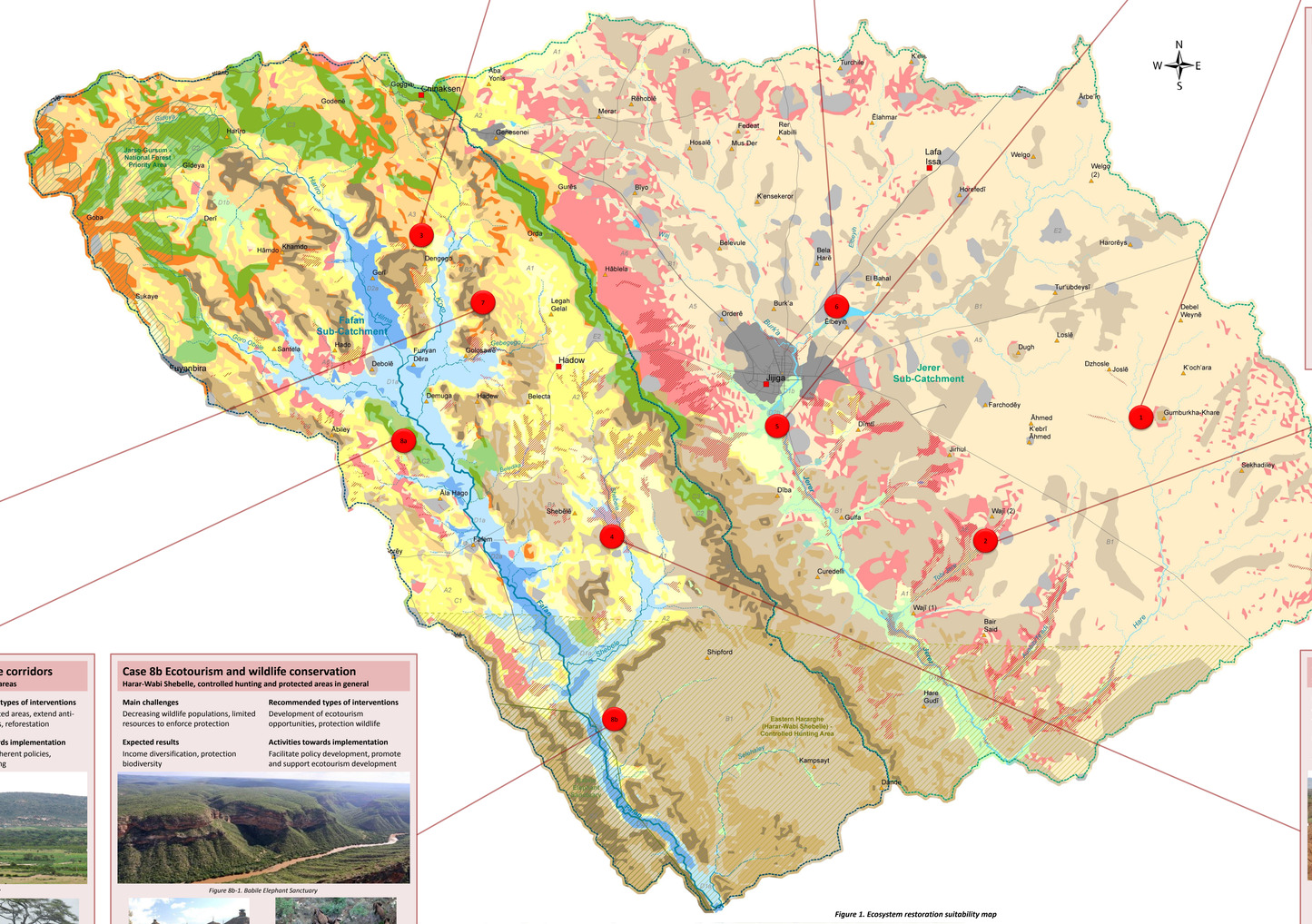

Figure 1. Ecosystem restoration suitability map

Case 2 Restoring severely eroded lands

Valley of Tobi Jere Stream, Tributaries to Jerer River, Zone A6

Main challenges
Loss of soil and infrastructure due to severe gully erosion

Recommended types of interventions
Area closures, biological and physical erosion control interventions

Expected results
Lower incidence of floods, increased availability of fodder and wood

Activities towards implementation
Delineate and close degraded areas, Promote SWC-measures

Figure 2-1. Severe gully erosion on weak soils

Figure 2-2. Example of intervention: Protection of trees

Figure 2-3. Example of intervention: Check dams in a gully

Case 7 Control and management of invasive species

Mainly in rangeland areas in Fafan Sub-Catchment

Main challenges
Loss of native species, soil degradation, animal poisoning

Recommended types of interventions
Use of invasive species as fuel, mulch, fodder and for income diversification

Expected results
Higher income, improved food security, control of invasive species

Activities towards implementation
Research, training, awareness raising, education, policy development

Figure 7-1. Two invasive species in the project area: Lantana camara (L) and Prosopis juliflora (R)

Figure 7-2. Sofa made of Lantana camara wood

Figure 7-3. Fuelwood from Prosopis juliflora biomass

Case 8a Forest conservation and nature corridors

Tikdam, forested area, Karamar Ridge and other forested areas

Main challenges
Deforestation, loss of biodiversity, loss of natural resources

Recommended types of interventions
Connect protected areas, extend anti-poaching efforts, reforestation

Expected results
More wildlife, higher biodiversity, healthier ecosystem

Activities towards implementation
Advocate for coherent policies, awareness raising

Figure 8a-1. Forested areas in Fafan Valley

Figure 8a-2. Tortoise in forest area in Fafan Sub-Catchment

Figure 8a-3. Warthogs crossing the road in a forest area close to Tikdam

Case 8b Ecotourism and wildlife conservation

Harar-Wabi Shebelle, controlled hunting and protected areas in general

Main challenges
Decreasing wildlife populations, limited resources to enforce protection

Recommended types of interventions
Development of ecotourism opportunities, protection wildlife

Expected results
Income diversification, protection biodiversity

Activities towards implementation
Facilitate policy development, promote and support ecotourism development

Figure 8b-1. Babile Elephant Sanctuary

Figure 8b-2. Lodges modelled on traditional huts (Simien Hotel)

Figure 8b-3. A buffer zone around Babile Elephant Sanctuary could help to protect wildlife

Case 4 Sustainable rangeland and forest management

Shebele River, Fafan Valley, Zones R1 and R2

Main challenges
Overgrazing, deforestation, erosion and widespread presence of invasive species

Recommended types of interventions
Rangeland management and biological interventions

Expected results
More and better pastures, increased fodder availability during emergencies

Activities towards implementation
Establish agreements on grazing practices, introduce area closures

Figure 4-1. Denuded soils in rangeland areas

Figure 4-2. Example of intervention: Meeting on grazing practices

Figure 4-3. Example of intervention: Growing seedlings for reforestation

Strengthening Community Resilience in Somali Region, Ethiopia (SCRSE), a Protracted Crisis, Horn of Africa Program

Poster and map developed by Acacia Water and Wetlands International. Significant contributions to the underlying assessment were made by, the Ethiopian Red Cross Society, The Netherlands Red Cross, the women and men of Jijiga, Gursum and Tuliguled, and Taye Alemayehu. Sources photographs: Acacia Water, oldworldgardenfarms.com, IPMS Ethiopia, ILRI, Yonas Beyene, Cordaid, adisababaonline.com, Alberta Seith, David Snyder/Counterpart International, Steven Hussey, adivasi.net, dreamysdelights, greatelephantcensus.com and energyzedworld.com

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