Inter-Governmental Authority on Development (IGAD)

The Biodiversity Management Programme in the Horn of Africa (BMP)

A Case Study on Interventions to enhance biodiversity conservation

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Introduction

In its third year of implementation, the IGAD BMP project implemented by ICRAF in Kenya-Somalia cross border area has recorded significant progress towards promoting alternative livelihoods for biodiversity conservation.

In the Kenya side of the cross border area, the project has supported establishment of a number of demonstration sites on agroforestry and rainwater harvesting.

The interventions

Three intervention sites in Soroko demonstration site were initiated;-

a) Soroko TCN farm

A shallow well was prospected, excavated, constructed and equipped with a solar pump in Soroko Tree and Crop Nursery farm. With the availability of water, Kenya Forest Service established a Central nursery and one community nursery. The tree seedling were used for enrichment planting in Kipini provisional forest and Witu forest. During the previous drought period experienced in Lamu, the well provided the community with water for domestic use.

The shallow well supply water for the nursery establishment and management, photo credit Wilfred Muriithi/ICRAF.

b) Mrs. Muchira's farm

In situ, ex situ technologies demonstration was done at Mrs. Muchira's farm where Zai hole, micro-basin, raised/sunken beds on drip irrigation were used for training. The technologies are aimed at enhancing self-sufficiency on farm to ease pressure on the environment.

Interested farmers visited Mrs.Joyce Muthoni's farm to observe various in situ and ex situ technologies for production of horticultural production, photo credit Wilfred Muriithi/ICRAF.

Sweet pepper establishment on micro-basins, photo credit Wilfred Muriithi/ICRAF

Drip Irrigation at Soroko/Silas Orembe's farm.Water from well is lifted using a solar pump into an elevated tank seen in the background from where it is fed into the drip system.

c) Large roof/Communal approach system demonstration

Communal approach system demonstration was established at Witu secondary school where 190m^3 plastic lined pond was developed. Training on Water collection, conveyance, storage, and abstraction using appropriate (rope and washer pump) technology and application techniques

was done. Additionally, 10x10m land was prepared for nursery establishment on agroforestry trees and horticultural crops to be managed by the agriculture students in the school.

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1. Signage at Witu Secondary School
2. 190m3 Plastic lined runoff pond at Witu Secondary School.
3. The pond seen covered with 80% shade net to keep off mosquitos, insect pest/rodents, evaporation and is also equipped with a rope/washer pump to ease water abstraction

d) Small catchment-Household approach

A 25m^3 plastic lined pond was constructed by 16 artisans (on an on-the-job training) drawn from groups working with ICRAF in Witu Ward. This was done at Lamu Conservation Trust's office premises at Witu Centre .As a result, 4 other tanks (3x 25m^3 and one x10m^3) were constructed by the trained artisans for their respective groups.

A demonstration on 120m^3 runoff pond based on surface water collection was done at Tangeni area. Surface water collection, storage, abstraction and use for crop production and nursery establishment was practiced. Back to Eden Youth and Women group excavated a second pond and had it plastic lined as they looked up for the onset of rains**.**

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1. Signage at Lamu Conservation Trust

2. 16 artisans drawn from the 5 demonstration sites on an on-the-job training of 25m^3 plastic lined tank at LCT offices, Witu

3. Inside of the roofed plastic lined tank

4. Constructed tank seen from the outside**.**

Learning from the demonstration sites

The impact of the BMP project has been felt on the ground and has actually captured the attention of many non-participating stakeholders. For instance, some farmers (non-project members) had approached Equity bank in Mpeketoni requesting for loans to set up rainwater harvesting technologies in their farms. Borrowing from the project's technologies, Lamu county government is planning to introduce the rainwater harvesting technologies to Lamu East. Further interactions with the county government revealed that plans are underway to set up a honey processing house to support bee keeping. The project had already distributed honey processing materials to some beneficiaries in March 2016. Also, technology spill over is noted where some farmers in Hindi were implementing rain water technologies observed and learnt from farmers in Soroko– BMP project site. Interestingly farmers in Hindi have not received any external financial assistance in establishing the technologies on their individual farms.

The project has further caught the attention of academic institutions. A case where teachers in Witu secondary school were asking for requirements be 'recruited' into the project was reported

and one teacher is using the technologies learnt from the project on his farm. The below section provides some case studies from the BMP project.

Soroko RWH for Agroforestry and Food Security, a case study on interventions to enhance sufficiency at farm level and ease pressure on the environment

1. **Farmer Exchange Tour**

42 farmer (8Witu Nyongoro,11 Back to Eden,6 Lamu Conservation,8 Maisha Masha and 9 from Soroko)were treated to a farmers 'exchange tour on 29/9/2016 to Mpeketoni where farmer: farmer interaction was the order of the day

A farmer, Mr. Muriuki in Mpeketoni seen explaining to visiting farmers and staff how he manages enterprises. Irrigation done with water from a shallow well.

As a result of this learning farmers from Soroko grouped to form a Common Interest group now identified as *Soroko Upendo Horticultural production group(Annex 1)* by the under listed members (with shallow wells);

After forming a group, Individual management strategy was adopted. Staff from ICRAF, Agriculture and Kenya Forestry Service followed up with the individual farmers on a demand-driven extension service. Using some support from ICRAF, starter seed and insecticide package was given to the group members while encouraging them on starting small and growing with

capacity. Replication of introduced technologies started at a small scale. Early adaptors have since started going commercial.5 out of the group of 9 are doing exemplary well.

Technical options adopted

Zai holes

planting pits

Micro basins

Tumbukiza roots

Ridge and furrow

Raised/sunken beds

Solar pumping

drag-hose irrigation

Drip Irrigation

On -farm tree nursery

Shallow well

Farmer field day-Soroko 14/3/2017

Theme-***Building Resilience to Climate Extremes***

Jointly ICRAF, Kenya Forest Service, Ministry of Agriculture, Techno serve and Equity Bank manned specific stations during the field day presided over by the County Director of Agriculture. 232 farmers and 32 Soroko Primary School pupils' attended.9 stations used to pass messages.

Stn.mgr Witu /tees

Wilfred/ICRAF/RWH

Janniffer kabora/Agric

Mr. Munene/Agric

mr. Machria Irrig.Engin.

mr. Mbaga/Agric-pest/diseases



Technoserve staff Equity Bank staff mr. Vindonyi/DA/chief guest.




Rainwater Harvesting for enhanced biodiversity management-Tangeni

Runoff pond system for ground surface runoff collection

Back to Eden Youth and Women group was adapted .Members were totally involved on a participatory reconnaissance/feasibility survey on bioclimatology and livelihood. The active poor members of the CBO relied purely on rain-fed cropping for their horticultural production endeavors in an area characterized with erratic, unreliable and sometimes unpredictable climate

changed rainfall patterns which have of late been severely affected by a prolonged 4 –season drought. Together with members of the group members, transect of the area in question was taken and possible sites for runoff collection and storage identified and one site prioritized. Ministry of Agriculture's Irrigation team came in for topo survey and rainfall data analysis besides participating in RWH project design.

A 120m3 runoff pond was developed, 500m2 plot put under tomatoes on drip irrigation and a 10000 tree seedling nursery.



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Runoff pond system site (Tangeni ,Back to Eden Youth and Women SHG).

Training process on pond excavation(photo 1),water collection/storage (photo 2),contour bedDING (photo 3), direct seeding(photo 4),nursery establishment and management of tree seedlings and tomatoes(photo 5) has been going on.

System development was started in August 2015 and the process is still on going. Different RWHM &agroforestry technologies will be demonstrated. Six training sessions have been held with an average attendance of 58/training (farmers+ agric. staff and partners).At least 300 community members expected to learn from here. 500m^2 plot worth of tomatoes and 10,000 assorted tree seedlings were produced.

1. **Honey Value Chain (HVC)**

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1. Signage at Kakate, Witu Nyongoro bee keepers demo site.
2. Apiary
3. 33 m^3 plastic lined tank to capture and store roof runoff for bees /domestic vegetable gardening and sustaining tree seedling at planting

Lesson learnt

- 1. Group approach, Individual Management strategy is key to sustainability
- 2.Climate Change is real and have affected livelihoods:

  a)Build Resilience to climate extremes;

- Combine ex-situ, in-situ and groundwater technologies
- Teamwork in a Complimentary way (adding synergy) necessary for development

b) Market focus production(Technology/BPSups, Certified inputs, Timelines of operations) emphasis is necessary.

Challenges experienced

Challenge	Explanation	Proposed solution
1. Prolonged drought	A 4-season drought have been experienced seriously affecting rain-fed cropping systems	Farmers advised to consider using groundwater for supplemental irrigation and domestic uses besides adopting RWH technologies
2. Low income level	Almost all farmers rely on farming for income earnings	Starting at individual levels, grow high value crops on supplemental irrigation
3. Human-wildlife conflict	Deadly conflict was caused by wild animals (especially buffalos) in search of water and fodder.	KWS,KFS ,Conservancies/ Ranches to develop groundwater/water points to contain wild animals. Farmers to adopt agroforestry practices and fence of their farms.
4. Encroachment to farms by herders	Herders from within and far off distance brought their animals to farming community territory causing serious conflicts.	Herders and farmers to collaborate and work together. Administration to administer law
5. Low water table	At 40/50 ft depth, Motorized pumps used not efficient/economical	Use submersible pumps either electrical or solar powered. Community to liaise with government to get connected to national grade.
6. Saline ground water	Salt water intrusion from Indian ocean common	Prospect to identify stream/seepage springs from mainland instead of digging haphazardly. Well diggers to be trained on prospecting using indigenous tools.