Conservation and Restoration of Riparian Areas in Sagana-Gura Subwatershed, Nyeri County

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Gura river has its source from the Aberdare Forest and is 45 km long. It crosses Nyeri South, Tetu, and Mukurweini sub-counties before joining the Sagana river to Masinga dam which is the main storage for the hydropower generation. It is referred to as the fastest flowing river in East Africa and its main tributary is the Gikira river. There is a population of about 8,500 persons whose farm borders Gura river and its tributaries and they depend on agriculture for their livelihood.

In Kenya, water resources were solely managed by the State Department of water. The effective management of water resources proofed unsustainable hence the inclusion of community-based Water Resource Users Associations in the Water Act for cooperative management. The main challenges in the region are soil erosion from the farms to the streams, riverine encroachment for arrowroot farming, water pollution through washing clothes, illegal water abstraction for horticulture farming, planting of fast-growing water unfriendly trees and lack of awareness on the importance of riparian management.

In 2011, Gura WRUA mobilized resources and did the mapping of the critical areas that require rehabilitation and pegged 10m riparian land on either side for 20 km. This was done after extensive public awareness on the importance and management of riparian areas. The rehabilitation through the planting of water-friendly trees and ground cover crops was however not implemented owing to the inadequate resources by the WRUA.

Further studies conducted by the Upper Tana Nairobi Water Fund in 2014 highlighted the same challenges of farmers cultivating on steep slopes and having inadequate conservation measures on their lands. The UTNWF working with the Green Belt Movement engaged 20 trained youth volunteers to map the degraded areas and peg the numerous Gura tributaries within the Mukurweini-West ward while advising farmers on the appropriate crops and materials to be planted. The farmers were supported with the planting materials.

The materials planted along the riparian land were improved bamboo species, high-value multipurpose trees, and Napier grass of an improved variety ‘Kakamega 1’. The Napier grass was to act as the vegetation cover while the farmers will be feeding it to their livestock through a cut and carry method for improved milk production. A total of 28 km in Gikira and Gura river of the riparian land was rehabilitated through the initiative and the farmers are reaping the benefits. The community was also trained on how to cultivate upland arrowroots away from the riparian land using roof water harvesting technology for higher production and food security. A total of 910 farmers have adopted the farming technology and have stopped cultivating in the riparian areas.

Grace Muringi, for instance, planted bamboo seedlings and Napier grass on her 450 m riparian land. The Kakamega 1 Napier was of high quality and has led to increased milk yields from 10 to 14 liters per cow per day. This is besides stabilizing her land from erosion The neighboring15 farmers were inspired by the outcomes on the Napier on increased milk yields. The farmers have conserved an additional 800 m of the riparian area by planting Napier grass as a cover crop and livestock fodder.

Photo: Stakeholders engagement prior to tree planting along Gikira River © Solomon Karanja

Josephine Wanjiku is among the farmers who are scaling upland arrowroot farming. She started with one trench of 10 m with 100 arrowroots for food security. Josephine use surface runoff water that is harvested in the trenches. She now has 13 upland arrowroot trenches for her domestic consumption and sells the surplus for additional income of KES 30000 and planting suckers worth KES 10000. Consequently, a stream that had dried up on her land has been restored.

Photo: Upland arrow root grown in a trench

Water quality in the Gikira river for example has significantly been improved. The sediment load reduced by 36.90 % while the turbidity of water reduced by 10.01% in 2019 compared to the baseline data in 2016. The annual rainfall over the same period increased by 37.7%. This indicates the positive impacts of riparian conservation to filter out sediments emanating from upslopes.

These benefits have resulted in a strengthened partnership with stakeholders in the sub watershed. The Nyeri county government and the Kenya Forest Service in collaboration with the local WRUAs are supporting the rehabilitation of the river sources in the Zuti forest and intensifying riparian conservation and management. The stakeholders have a monthly meeting dubbed Focal Area Team (FAT) forum from which targets, roles, and timelines are defined for sustainable conservation of water resources