

Landscape scale Disaster Risk Reduction

And the role of wetland ecosystems

90% of all hazards are water-related. To effectively address disaster risk, it is fundamental to understand how water behaves in the landscape, how factors such as infrastructure, vegetation, land use and climate change influence water flows, and to connect all water users and stakeholders. We work on initiatives to transform landscapes into safer and more prosperous environments.

Keeping the water in the landscape, Uganda

In the not so distant past, the people of Rwambu, Uganda faced shortages of water, crop failures and waterborne diseases. This was largely created by agricultural expansion and bad management of the wetlands.

Wetland management, water, sanitation, deforestation and soil degradation had previously been treated as separate problems in Rwambu. Wetlands International and partners introduced an integrated landscape approach in 2012.

Our interventions that followed succeeded in keeping water in the landscape so that the water is available in both the rainy and dry seasons. The project has become a national policy success story and a hotspot for training.

Case Focus:

- Region: Rwambu Catchment, Uganda
- Risks: lack of water, contaminated water, soil erosion, siltation
- People affected: 2,700
- Ecosystems: marshes
- Ecosystem services: maintaining the water table, purification, flood control, soil fertility, wildlife habitat



Interventions:

- Mapped rainfall and water flows, identified the linkages between upstream activities and downstream impacts
- Nature-based solutions best suited to different zones, from uphill to downhill



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Value of wetlands in Uganda

Wetlands cover 13% of Uganda. In rural areas, their value for water purification is estimated to be \$25 million a year.

Root causes of water problems

- Land pressure led to cultivation on steeper slopes
- The loss of vegetation on steep hillsides led to increased erosion and loss of fertile soils downhill
- Rapid runoff prevented water infiltration and recharge
- Wetlands in the valley were encroached and drained
- Poor sanitation practices led to poor water quality

Our approaches

Landscape scale risk mapping: within the catchment, we mapped rainfall and water flows, and identified the linkages between upstream activities and downstream impacts.

Participatory approach: we involved all stakeholders in design and implementation, including vulnerable communities.

Low cost and local: we used stone, soil bunds, check dams and tree lines, and equipment was locally mobilised.

Capacity and local leadership by local authorities and NGOs: training in sustainable agricultural practices and the establishment of wetland management committees.

Our solutions

We focused on nature-based solutions to reverse the worsening water and sanitation situation, retain water in a hilly landscape and sustain wetland services:

- Trees planted to stabilise the hill slopes, reduce erosion, promote recharge of the water table, and as barriers to avoid wetland encroachment
- Bunds, check dams, earth trenches to intercept runoff, control erosion, and promote water infiltration
- Wetlands demarcated and fragile, buffer and cultivation zones introduced
- Farming within the wetland area banned and families compensated with sustainable alternative livelihoods
- Leaky latrines replaced by environmentally friendly ones downstream and strategically relocated

Results after three years

We succeeded in keeping water in the landscape and the water table is still rising. Runoff is slowing down and groundwater is naturally recharging so that water is available for consumption, production and ecological services, in both the rainy and dry seasons.

Ecological functions and biodiversity are restored. Crop yields and productivity increased due to improved soil moisture and fertility. Finally, there is less fluctuation in stream flows between rainy and dry seasons.

This initiative demonstrates best practice in catchment based water resources management and attracts government agencies, private companies, academic institutions, media, and other communities.

More information at www.wetlands.org.



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