

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.

Water trade-offs to reduce drought in Tana Delta

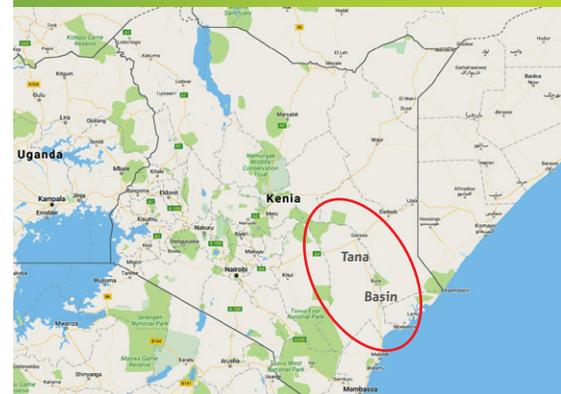
The Tana Delta is at the far downstream end of the Tana River Basin which provides eighty percent of Nairobi's drinking water. Fifty-sixty percent of Kenya's current energy demand is generated through hydropower dams. Seven million people live in the river basin with mostly agricultural livelihoods.

Expansion of hydropower infrastructure, an oil refinery, and additional irrigation schemes are being planned in or adjacent to the basin. These developments put the river's health and services under threat. Over-abstraction of water in the Basin could lead to limited water flows downstream.

Wetlands international undertook an extensive cost benefit study of the entire Tana River Basin to support the recommendation to invest in water saving measures and in less water-dependent economic development.

Case Focus:

- Region: Tana Delta, Kenya
- Risks: droughts, floods, coastal erosion
- People affected: 100,000 people
- Ecosystems: highland forests; agro-ecosystems; grasslands; coastal forests; mangroves; lakes and rivers



Interventions:

- Extensive cost benefit study to value the ecosystem services in the Tana River basin and analyse the potential impact of upstream development.



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Ecosystem services in the landscape

The Tana Delta's wetlands support over 100,000 people who practice pastoralism, agriculture and fishing. Further, it supports birds and highly threatened animals and plants.

Economic valuation

- The value of mangroves in the Delta is about 2.5 million USD per year for fisheries, firewood and construction materials. Already 38 percent of the trees have been lost. Drawing more water from the basin will further harm the mangroves which depend on the regular flooding of the delta.
- Past developments like hydropower generation have brought monetary welfare. However, the costs and benefits are not equally distributed among upstream and downstream communities.
- The size of the Tana Delta's wetlands dropped with a 91 percent loss in 10 years.
- The planned projects upstream will reduce the overall water resources to almost a constant level of natural minimum flow, with hardly a flood peak left, leading to a drop in the mean discharge by about a third.

- New economic activities in the basin seem to bring benefits when looked upon narrowly, but will create higher costs elsewhere or in the future. The Basin's water resources are getting scarcer and become a limiting factor in enlarging welfare. In such cases trade-offs for development start to develop.

Conclusions from the costs benefit study

The existing water resources are not enough for the increased demand resulting from the growing population and economic development. The planned infrastructure projects will therefore affect the lives and livelihoods of communities mainly in the downstream counties.

To maximally reap benefits from interventions in the Tana Basin, water allocation needs to take place, ensuring that:

- A balance should be sought between development, conservation and human well-being.
- Nature values should be explicitly factored in water allocation decisions.
- Water allocation should be based on an inclusive water needs assessment and done in a participatory way.
- Water allocation should use evidence from basin-wide assessments to avoid welfare losses from unintended consequences and equity issues.



Julie Mulonga, Wetlands International Kenya, speaking at the launch of the Tana Delta extended cost benefit study