



## Water resource management in Kenya's Ngusishi sub-catchment

The Ngusishi sub-catchment of the Ewaso Ngiro North Basin – like elsewhere in Kenya – is facing water scarcity. The basin supplies the water-dependent industries of flowers, tea, vegetables, coffee, milk, and tourism, as well as communities living on the slopes of Mount Kenya. In the late 1990s, water-related conflicts were commonplace. With 122 unregulated water intake pipes attached to the spring-fed Ngusishi stream alone, there was no water left for users downstream, and conflicts were increasing.

This is a story about the emergence of the Ngusishi Water Resources Users Association (WRUA) and how dialogues with government and private sector actors institutionalised more equitable water resource arrangements.

### Beginnings of the Ngusishi WRUA

Set up as a self-help group in the late 1990s to reduce water conflicts, the Ngusishi WRUA was registered as a community-based organisation (CBO) in 2003. Immediately after, they partnered with the Water Resources Authority to undertake a census of the population, and livestock.

Alarmingly, the joint study determined that conservatively – during the driest period – the area's three springs can only produce a maximum

of 63 litres/second. This was only enough to meet the domestic needs of users.

What then followed was seven long years of negotiation, concluding with an agreed spring water allocation plan, in line with national directives.

- Seventy per cent was to be distributed for domestic water use.
- The remaining thirty per cent was to be released into the environment.
- Water needs that couldn't be met by the springs were to be supplied by WRA-licensed and regulated private boreholes set up 100 meters apart, at different depths from aquifers.



A self-regulating water intake constructed and managed by the Ngusishi WRUA.

*Although it took seven years of negotiation, 95% of all [water-related] conflicts are now resolved amicably [by the CBO]. – Murithi, Treasurer of the Ngusishi WRUA*

## Day-to-day water management

The Ngusishi WRUA plays an important role in bringing all stakeholders together. They 'believe in dialogue' to resolve conflicts and ensure that water reaches downstream users equitably, including across the border to Somalia. Transparency, annual audits, and good governance are considered essential in building trust among its members and resolving conflicts.

The objectives of the Ngusishi WRUA are water resource management, conflict resolution, and conservation of water resources. By bringing people together, its members seek to balance multiple water uses for domestic purposes, irrigation, commercial (e.g., export flower farms), and fisheries.

The Ngusishi WRUA receives training from various government departments, including quarterly water testing services by the Water Resources Authority. They manage the system of water allocation and encourage water conservation, catchment protection, tree planting, and riparian restoration among farmers. They have designated scouts who monitor rivers for illegal water connections and abstraction, and pollution. And



Up close and personal, testing the structural integrity of the water intake

during times of water shortage, the Ngusishi WRUA activates a rotational system, which has been agreed upon with all water users.

Today, all water intakes are now metered. The Ngusishi WRUA is involved in 20 water projects serving 10,000+ people and an area of 24 km<sup>2</sup>. Of these projects, eight are focused on communities with household connections. The remainder is concentrated on flower or small-scale farms and ranches. Communities receive a minimum of 3-5 litres per second flow, depending on population size. Commercial farmers receive 5 litres per second flow – all for domestic use.

Water is drawn from three self-regulating metered water intakes, which were constructed with donor support. Regulation is done by the Water Resource Authority or the National Environment Monitoring Authority - in the case of pollution - often in response to Ngusishi WRUA monitoring results from their scouts.

## Water user fees

Members pay a set tariff of half a shilling per cubic meter to the government, and an additional equivalent amount is agreed upon for the Ngusishi WRUA. Commercial farms pay a higher rate of 2 KES per cubic meter.

Annual subscriptions to the Ngusishi WRUA total approximately 3.3 million KES (US\$ 25,000). Revenues cover the costs of 12 staff – including



SNV learning event participants visit a Timafloor greenhouse.



Timafloor pink roses for export.

two Project Managers, security for the water intakes, and eight scouts whose job is to monitor meters for abstraction and pollution. Subscriptions partially cover recurrent and some maintenance costs. However, without capital investment from the government, the rural communities – through the Ngusishi WRUA – are not able to expand services nor undertake any major renovation.

### An innovative partnership

Commercial flower farms are key water users in the area. Nearby Timafloor farm, for example, has an agreement and strong corporate social responsibility relationship with the Ngusishi WRUA. This partnership has resulted in the construction of Ngusishi WRUA office buildings and bores for local schools, and the donation of a vehicle to facilitate the CBO's movement and area visits.

With a sprawling 140 hectares of greenhouses for rose exports, Timafloor's water needs are supplied by the following:

- a mix of 18 metered boreholes,
- an estimated 1 million m<sup>3</sup> in rainwater harvest storage, and
- flood water during the rainy season; an arrangement agreed upon with the Ngusishi WRUA.

To meet Kenyan and European Union standards for accreditation, all runoff is treated on-site using

wetlands and drip irrigation. However, whilst the use of greenhouses reduces water consumption, reliance is comparatively high at 30 m<sup>3</sup> per hectare per day.

### Remarkable progress but challenges persist

Whilst the Ngusishi WRUA has achieved remarkable progress since its founding, and more rapidly when it was formalised, challenges persist.

#### Water scarcity remains a challenge.

Although the spring has reportedly maintained its flow through the recent drought period, it is unable to meet all needs. Further, because groundwater levels within aquifers are not monitored – much remains unknown.

#### Water quality is under increasing pressure from upstream users.

The Ngusishi market, which is upstream of the springs, has a growing population using poor-quality pit toilets causing e. coli counts to rise. Whilst providing only for domestic water uses, the water is not treated and at least one of the springs is unprotected due to a land dispute. Households reportedly also use some of the water for small-scale irrigation and prefer it unchlorinated. Further, households are expected to either boil or chlorinate water themselves.

## The sustainable financing of the Ngusishi water resource management system remains to be addressed.

Nationally the water tariff has been increased by the Ministry of Water, Sanitation, and Irrigation from half a shilling per cubic meter to 5 KES. Ngusishi WRUA is advocating for this to be further reviewed.

Whilst it was acknowledged that the tariff had not been raised for many years, was too low, and an increase would improve water conservation practices – they saw the need for further consultation. Tariff setting and metering at the household level could also be an opportunity to address any equity concerns, for example, through the introduction of tiered tariffs and meters at household level and household level remote sensors could monitor actual usage.

Furthermore, there is a need for greater capital investment to redress over-reliance on external donations and ensure that services reach everyone. It appears the linkages to the county budget and planning processes will need to be strengthened.

## SNV

SNV is a mission-driven global development partner working across Africa and Asia. Our mission is to strengthen capacities and catalyse partnerships that transform the agri-food, energy, and water systems, which enable sustainable and more equitable lives for all.

## Acknowledgements

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It highlights key points arising from a group work during SNV's learning event on Equitable Water Resource Management held in June 2023 in Kenya.

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