



# Katanino

Supporting successful Joint Forest Management in Zambia

Annual Progress Report 2022



## Summary

The Katanino project is one of our big successes together.

Between 2013 and 2017 there was a rapid depletion of forest resources, brought about by easy access to markets via the highway and a growing population. In five years, 42% of the forest had been lost, a trend that was likely to increase with no intervention.

Now, in the four years since our project started in 2019, a beautiful and precious area of miombo woodland has been placed under restoration and protection so that it cannot be deforested or degraded by charcoal production or agricultural expansion any more.

The families that relied on the forest for their livelihoods have been supported in successfully embarking on no fewer than seven new income generation activities that don't put pressure on their natural forest. And perhaps most importantly of all, the communities here will continue to protect and maintain the reserve so that the many benefits of a mature forest are felt by generations to come.

The Katanino project isn't just talked about in WeForest's corridors – it has achieved a level of fame within the whole of Zambia, held up as an example of excellent restoration practices that could be replicated and scaled up in other parts of the country.

This report shares an update of our progress during 2022. Thank you for all your support!

## 2022 in numbers

**5644 ha** is being protected and restored in the forest reserve and buffer zone; an estimated **6.1 million trees** are growing

In 2022:

**25 912** seedlings were raised in the nursery for planting and agroforestry

**80 ha** mapped on farms as restoration plots through assisted natural regeneration (ANR)

**233 ha** of agroforestry systems established

**3 ha** is under pine production

**625** households are engaged in forest-friendly income generation

**800** bee hives were hung on ANR plots; **500** were hung in the forest reserve

**57.48 kg** of honey was harvested from 1010 beehives from 313 ANR plots



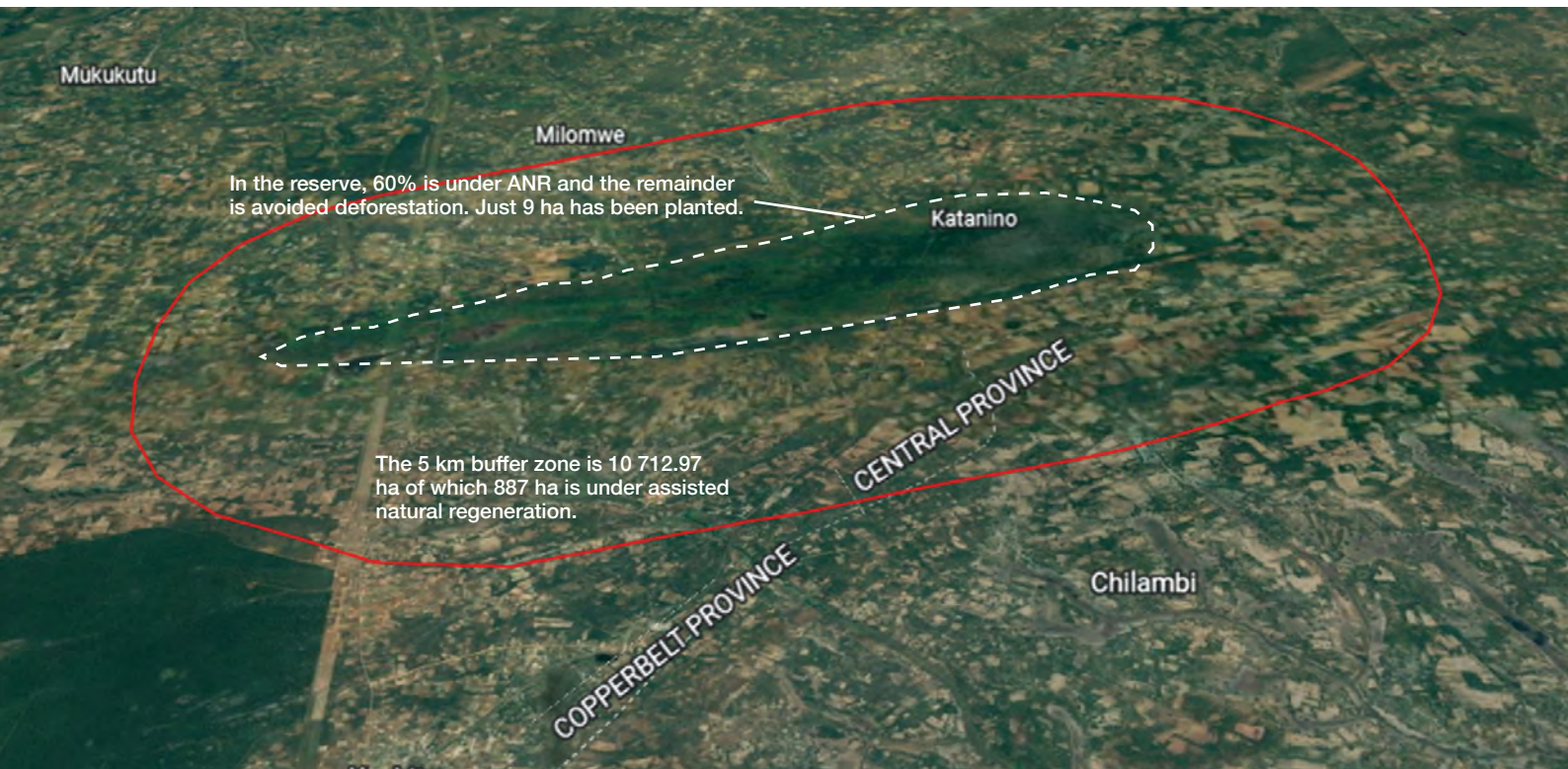
## Restoration

# Increasing tree cover in Katanino Forest Reserve and its Buffer Zone

Katanino Forest Reserve has been heavily degraded for charcoal production, agriculture and timber extraction. We can all congratulate ourselves, because by the end of 2022 – four years after the project’s inception – a total of 5644 ha had been placed under restoration, which represents an estimated total of 6.1 million trees protected and growing within the project’s boundaries.

The 4380 ha forest reserve itself is under restoration by assisted natural regeneration (ANR) or conservation, with just some small patches of enrichment planting. 887 ha of farm plots are also under restoration by ANR in the reserve’s 5 km buffer zone (see Livelihoods section), and 377 ha of agroforestry systems have been established.

There’s very little planting needed in the forest reserve, and none took place in 2022, for a very positive reason – the forest is naturally regenerating! When we carried out the baseline survey in 2020 we found no natural regeneration occurring. However, since the





first planting in January 2021 and the subsequent survival monitoring, we found that coppices (trees cut back to simulate growth) in the enrichment planting sites were doing well. They were growing faster than the planted seedlings, even.

This means that our project approach is now almost totally assisted natural regeneration in the reserve, with much less enrichment planting needed than originally thought. The nurseries here produce seedlings for agroforestry and any future planting needed. Enrichment planting, if it happens, usually takes place in December or January.

Restoration activities that support natural regeneration include weeding to support wild seedlings to thrive, pruning to encourage regeneration, and fire management. Fire management involves activities such as establishing firebreaks to reduce wildfire risk and carrying out controlled early burning to reduce the chance of wildfires later in the dry season.

Wildfires are a real problem here, and in 2022 there were three – and we did unfortunately lose some of the seedlings planted in 2021 to one of these fires. Even afterwards the coppices showed good recovery and were sprouting well, so this area will also be supported to naturally regenerate.

Early burning within the reserve started in June 2022. This suppresses the weeds so that during the season when fire is a real danger – August to October – the amount of vegetation that the fire can use as fuel is reduced and so any fires remain smaller.

Although most of the assisted natural regeneration farm plots in the buffer zone have mature miombo with sparse grass cover, the areas around the plots have a lot of grass owing to reduced tree cover, so the farmers with assisted natural regeneration plots are also encouraged to make and maintain fire breaks.



## Coming together for the first time since the pandemic

An 11-day exchange visit took place in May 2022, where staff from WeForest's Headquarters in Brussels, Ethiopia and Malawi visited projects in Zambia.

This knowledge-sharing visit offered a platform for everyone to share their experiences and learn best practices from colleagues. The Katanino staff found the Ethiopia team's insights into bee colony splitting particularly interesting.



To assess the estimated tons of CO<sub>2</sub> captured by aboveground woody biomass, permanent sample plots have been established. The baseline data was collected in 2020 and new data collected in 2022 is being analysed so we can see the progress and impact. Comparisons will be done with the baseline survey data to determine if there is an increase in tons of CO<sub>2</sub> captured.

The richness of tree species in the forest reserve is also assessed from the permanent sample plots. At the time of the baseline survey in 2020, 72 woody species belonging to 56 genera and 31 families were recorded. Two years on from the first assessment, new data was collected in March 2022, measuring sapling height, diameter to assess the transition from sapling to tree and the health of the saplings. This too is under analysis for comparison with the baseline data.

*A ring-weeded seedling in one of the enrichment planting sites*



## New research on ground-level ozone

In 2022 the UK Centre for Ecology & Hydrology (UKCEH) launched a campaign to collect some of the first ever data on ground-level ozone (O<sub>3</sub>) concentrations in restoration forests in Africa, and WeForest staff are taking part. O<sub>3</sub> is created by the chemical reactions between pollutants such as nitrogen oxides and volatile organic compounds in the presence of sunlight. Higher concentrations of ozone in the atmosphere can reduce photosynthesis, growth and resilience to drought, restricting the growth of forests – which in turn reduces their potential to sequester carbon from the atmosphere. To collect the data, we placed 6 ozone diffusion tubes (pictured) in our Katanino project site, into which ozone from the atmosphere is collected in absorbent material. Each tube is left for 3-4 weeks in the field and then sent back to the UK for analysis.





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## Co-management

### Enhancing stewardship and governance

We are laying the groundwork so that local communities, with public institutions, can take over management of the reserve and the 5km buffer zone around it to protect the forest in the long term.

The Katanino Forest Trust – made up of the Joint Forest Management Committee, which is responsible for management of the forest reserve and the 5km buffer around it, and the Village Resource Management Committee, which is responsible for the day-to-day running of forest management activities in the project area – is supporting the joint management of the reserve for ten years starting in 2019, after which it will assume all responsibility.

The Forest Management Plan, developed in collaboration with the local communities and the foundation of the long term work here, was expected to be finalised in 2022. Due to delays this work will now be completed in 2023.

The bylaws have already been produced and will be presented to the chiefs in 2023, after which they will be submitted for approval by the Forestry Department.

All fifteen Community Forest Resource Guards who patrol the reserve on a daily basis to enforce the law and protect the forest were trained in June and gazetted by the Zambian Minister of Green Economy and Environment, Collins Nzovu, as Honorary Forestry Officers in

### Moving out from the city

One challenge faced by the project is that migration from cities to this rural area is common, with 35% of households having moved in during the last 10 years. Studies have shown that before 2012, the use of Katanino forest resources was relatively low and only contributed to around 3% of household income. Between 2013–2017, however, there was a rapid depletion of resources in the forest brought about by easy access to markets provided by the highway and a growing population. Often, these former city dwellers are new to farming practices or natural resource management. If this is to be improved, their (lack of) background needs to be taken into account.



December 2022. This gives them the authority to enforce forest law outside the reserve in the buffer zone, with the same authority as state Forestry Officers.

## Deforestation has reduced!

The patrols carried out in 2022 resulted in some really great news – deforestation here has reduced! Only three charcoal kilns were found, as opposed to eight in 2021. The number of offences recorded was four, compared to 57 in 2021 – and these were only minor infractions such as grazing or the harvesting of wild fruits. These infractions are expected to stop fully when the bylaws come into full force.

During 2022 the committees and the WeForest team had a number of stakeholder engagements with local organisations to help in project implementation. These include Birdwatch Zambia, which will undertake a bird survey in the forest reserve and train local bird guides.

Birdwatch Zambia will also take part in the planned school outreach programme. During 2022, the team and committees held meetings with school administrators to discuss how this programme will be rolled out, starting with five schools. At one of them, Yande Community School, Weforest and the Forestry Department, together with community members from Oposhi Zone, launched National Tree Planting – a series of events held from

*Chief Nkambo of the Lamba people of Masaiti district planting a Pinus kesiya seedling during the launch of National Tree Planting*



Charcoal sacks

December to March across the entire country – on December 15th by planting 333 pine seedlings.

## Species in the spotlight

This edible wild mushroom is *Termitomyces titanicus*, known locally as *ichikolowa* in the Bemba language. They are a rich, low calorie source of fiber, protein and antioxidants, and they're also good for the forest: they break down complex dead plant and animal debris, increasing nutrient availability in the soil. Mushrooms also propel nitrogen fixation and phosphorus mobilization, which are essential for plant development.





## Livelihoods

# Improved incomes and food security for communities neighbouring Katanino Forest Reserve

The project's aim is that more than 900 farmers in the 5 km buffer zone – which comprises 38 villages in 5 zones with 941 households in total – around Katanino Forest Reserve will set aside at least half a hectare each in their farms as restoration plots. In return, the farmers receive support to take up forest-friendly income-generating activities, such as beekeeping, so they don't have to rely on the forest for fuel wood or charcoal. They also receive training in techniques like pruning to help their trees regenerate faster.

In 2022, around 80 more hectares of farm plots with 200 new farmers were placed under Assisted Natural Regeneration (ANR), making a total of 887.12 ha since the beginning of the project. There's good compliance among the farmers to the rules of engagement. Participants are seeing the benefits, and are now willing to commit more than the requisite half hectare. The new farmers received 1000 beehives, making an all-time total of 2685 hives on ANR plots. Beehives on farms support families' incomes, while those in the reserve ensure the Village Resource Management Committees are self-sufficient and have income to cover their working costs.

313 farmers already in the scheme benefited from the sale of honey in 2022, with an average yield from all the hives

of 11.5kg per hive. This gained an income equivalent to \$47.25 per farmer, which is around a third of the baseline median annual cash income for farming families here.

Aside from beekeeping, Katanino has six other livelihoods to choose from! In 2022, 233 ha of the buffer zone was under restoration under the project's two agroforestry schemes (conservation agriculture and silvopasture with goats) and the pine production scheme.

## Conservation agriculture

Recruitment for the conservation agriculture scheme – where maize is intercropped with legumes and nitrogen fixing species – went very well in 2022. 305 farmers signed up, 163 women and 142 men. The total number





of farmers taking part in CA is now 438, with 152.5 ha under restoration. 113 farmers recruited in 2021 raised an average of \$835 each from the sale of their soy beans in 2022.

## Silvopasture with goats

70 ha of land with 70 farmers was placed under agroforestry in 2022 under the silvopasture for goats scheme, in which farmers set aside a hectare each to raise goats and receive legume and agroforestry seedlings to grow as fodder. The farmers have already received 175 does and 10 bucks, and 15 kids have already been born! The total number of goat farmers is now 152 with 149 ha.

The survival rates for agroforestry tree seedlings will be measured in 2023.

## Pine production

Creating woodlots on farms grows dedicated trees for families to harvest for fuel or timber that will reduce or stop the deforestation of native forest. 12 new participants were recruited for this in 2022. Unfortunately four of the five farmers who took part in the pilot phase in 2021 lost most of their seedlings to termites due to the dry spell that makes these insects more aggressive, so they also planted

## Why are livelihoods programmes so crucial?

Our baseline survey at the beginning of the project found that 54% of households here faced food shortages and consumed forest products (fruits, wild vegetables and mushrooms, tubers and honey), and 38% of households used forest products to raise cash incomes from charcoal, wild fruits, mushrooms or firewood. The forest provided on average 53% of mean cash income, while income from livestock was derived by only 16% of households. As restoration and protection of the forest reserve limits community access to resources such as charcoal, it's essential that we provide or support alternative, sustainable income sources. A follow-up survey will help us measure the impact our livelihoods schemes have had on these percentages.

again in 2022. To avoid this happening in the future, the pine seedlings will be grown for one year longer in the nurseries before planting, and the farmers will be trained in how to take better care of their seedlings.

Of the 12 new recruits, one was a school that established 0.25 ha of pine, bringing the total area now under pine production to 3 ha. Data on income raised and quantities produced in the pine plots will be available later in 2023.

## Chickens, mushrooms and vegetable gardening

In the chicken rearing scheme, 125 farmers enrolled in 2022, representing 100% of our target for the year. In the mushroom scheme, 116.9 kg of mushrooms were produced raising a total of \$230.86 or an average income of \$8.50 income for each of the 27 women still taking part. 30 families are taking part in the system where participants are loaned treadle pumps to irrigate vegetable production.





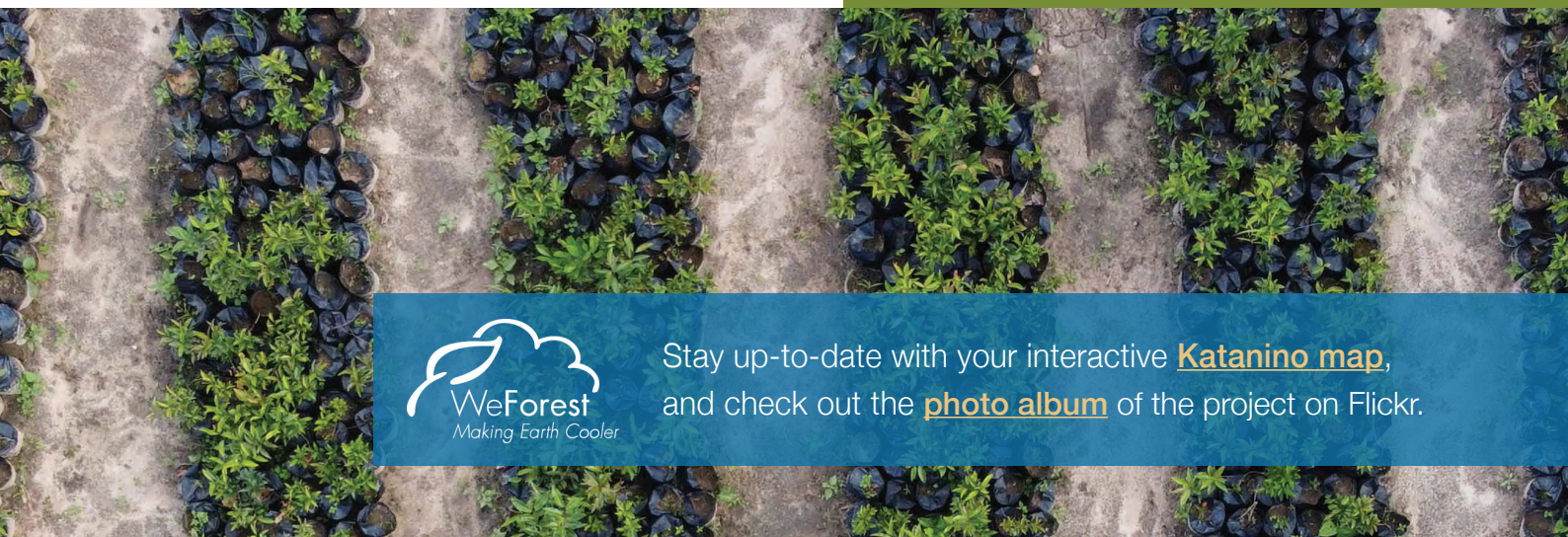
## What's Next?

- The Forest Management Plan will be revised and completed.
- The bylaws will be presented to the chiefs, after which they will be submitted for approval by the Forestry Department.
- Reports on the estimated tons of CO<sub>2</sub> captured by aboveground woody biomass and the richness of tree species in the forest reserve will be produced and compared with the baseline.
- The rest of the 240 goats will be delivered to the silvopasture farmers.
- 1000 beehives will be hung on farm plots and 100 ha placed under assisted natural regeneration.
- 3 mushroom houses will be built with 45 women farmers trained in mushroom production.
- An experimental bee colony splitting site will be set up.
- 176 000 seedlings will be raised for agroforestry.

How do we know our restored forests are growing and making an impact?

Every hectare under restoration is mapped with GPS points to generate polygons (areas on a map) that are assigned to sponsors. Permanent monitoring plots are established in our sites and our forestry and science teams conduct surveys to monitor progress of biomass growth, tree density, survival rate and species diversity, among other indicators. Where social impacts are also critical, we measure socio-economic indicators such as the number of families benefiting, people trained, and income generated from forest-friendly livelihood activities.

Please visit our [What We Do](#) webpage.



Stay up-to-date with your interactive [Katanino map](#), and check out the [photo album](#) of the project on Flickr.

*Thank you for supporting the Katanino project!*