



# Desa'a, Ethiopia

Reversing land degradation and poverty through forest landscape restoration

Annual Progress Report 2022



## Summary

WeForest's largest forest and landscape restoration project in Tigray, Northern Ethiopia, is aiming to bring water back to the region, reverse soil erosion and lift communities out of poverty.

Despite continuation of the war in the region through 2022, the team and the community once again met the planting and restoration goals. 4031 ha was brought under restoration management – the equivalent of over 4800 football pitches, we are now over one-third of the way to restoring the 38 000 ha landscape. The livelihoods programme was however significantly impacted by the restrictions on markets, fuel, and bank closures. At the end of the year we were delighted to see a peace-deal agreed, and our team and the communities are cautiously optimistic for 2023 and the hope of stability and peace in the wider region.

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

## Progress in 2022

**4031 ha** was brought under restoration management – representing a long term total of approximately **3.9 million** trees protected, regenerating and planted

Over **737 000** seedlings were planted on forest lands and homesteads

**55** permanent monitoring plots were established in the restoration zones to track progress over time

**772 473** micro basin planting pits were created

Over **11 000** people from local communities engaged in the restoration activities

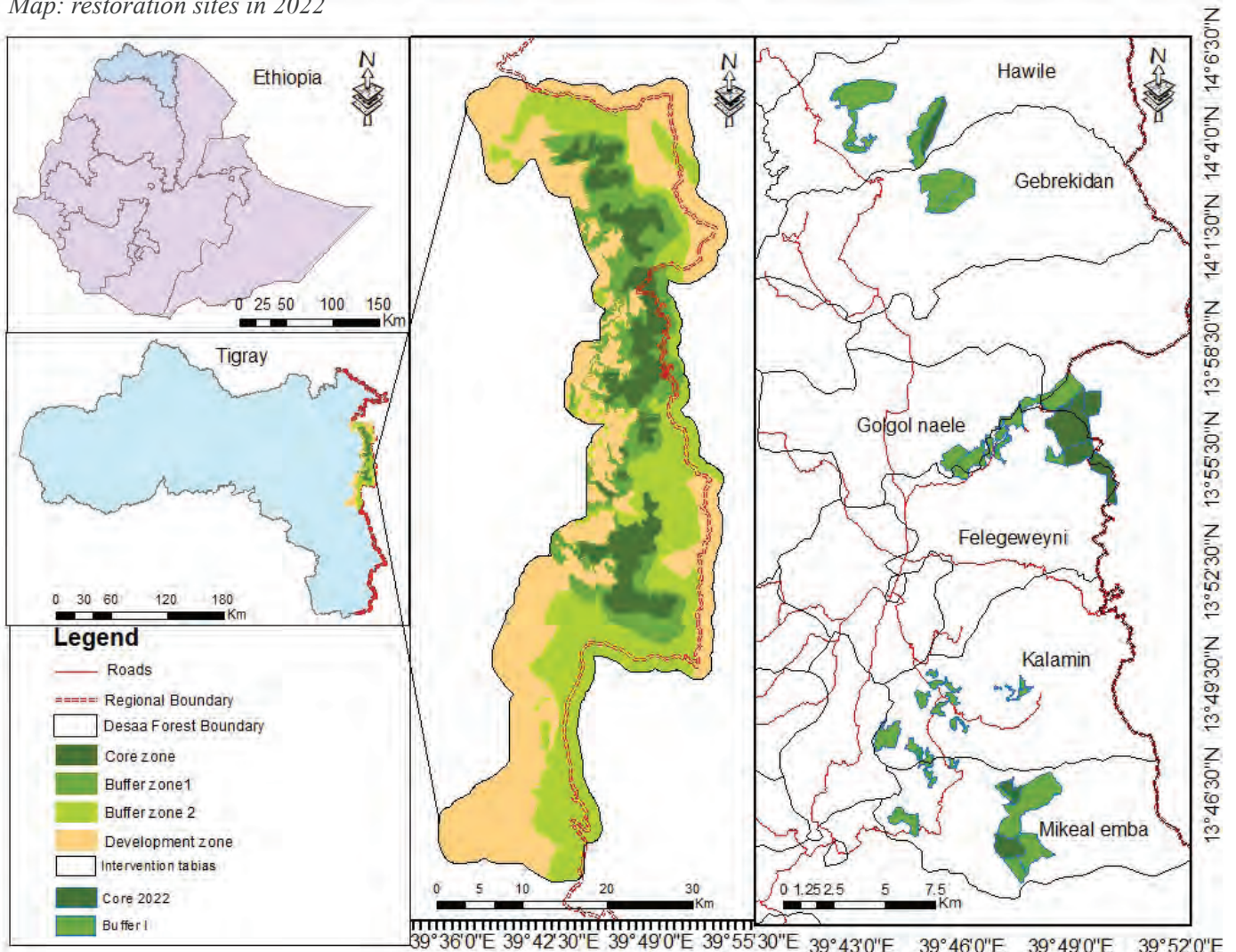


## Overview

Desa'a Forest is divided into two zones: the core zone and the buffer zone (see map) where the primary activities include enrichment planting, Assisted Natural Regeneration, the implementation of different silvicultural and post-planting management activities, and conserving soil and water resources.

In 2022, landscape restoration activities were carried out across the landscape in six municipalities (known as Tabia, Kebele or Ward, this is the smallest administrative division in Ethiopia); Kalamín, Felegeweyni, Hawile, Mikael Emba and Golgol-Naele.

Map: restoration sites in 2022





## Governance

### Key milestone: new by-laws enacted to protect the forest

Unsustainable use of the land in Desa'a forest has led to its degradation. Policies exist at the national level, but have not been translated into actions on the ground. Revising and updating the local by-laws is an important step in forest management and land-use planning. This year we reached our key milestone: the new bylaws in all 7 municipalities were amended and ratified in consultation with the local community.

The existing bylaws were developed a long time ago at a village level, and now have more detailed information and clarifications on physical boundaries, rules for the types of land, which as well as forest include grassland, farmland and gullies, and on the activities that are allowed or not allowed.



### The project's all-time achievements so far

Between 2018-2022, the project has:

- Restored **13 912 ha**, over 37% of the 2030 target of 38 000 ha – representing a long term total of approximately 13.5 million trees protected, regenerating and planted
- Planted or is regenerating **74** native vegetation species
- Exceeded seedling survival rates targets of 80%: ranging from **87%-92%** since 2018
- Reached over **11 000** families in 6 villages in the restoration programme (that's 66 000 people based on the average family size of 6).
- Engaged over **3200** households in income generating activities (honey production, poultry, small ruminants and agroforestry).



## Restoration

# Tree planting and Assisted Natural Regeneration increases forest cover throughout the Desa'a landscape

Another year of strong community mobilization and extraordinary commitment by staff and stakeholders meant that in 2022 we brought 4031 ha of land being under restoration.

Seven nurseries raised 1 156 400 quality seedlings of 11 species and our goal is to increase this to 1.3 million tree seedlings from 14 tree species. The 7 nurseries employ 123 nursery workers (42 men and 81 women).

- A total of 669 199 seedlings of 5 tree species were ready and planted in the restoration sites.
- 68 273 seedlings from seven tree species were planted at 1400 homesteads for multiple purposes including non-native species, such as *Cytisus proliferus*, serve as feed to their bees and livestock and can be pruned for firewood.

This year we also used a direct seed sowing technique on over 132 ha that belong to nine different tree species.

A detailed soil and vegetation survey was collected from 37 plots of the 55 permanent monitoring plots (PMPs)

### How does pruning help restoration?

If you're not a gardener yourself, it may seem counterintuitive to cut away at trees or shrubs rather than just letting them grow. But pruning – the selective cutting of branches – has multiple benefits in our projects. Pruning prevents a tree from developing too many stems, so it will develop a thick trunk as it matures. It makes the tree grow vertically faster, which also makes it stronger more quickly, with less need to compete with weeds or shrubs for sunlight or water. It also provides a sustainable source of firewood for local communities.



established in 2022 restoration sites and will support monitoring and evaluation over time.

Post planting management like mulching, weeding and watering is crucial for restoration and in some cases, like pruning, can deliver significant family benefits. Pruning is essential to help trees grow well, and it also provides the extra bonus of sustainable fuelwood for families. Over 320 community members pruned 70 000 trees throughout 2022. Approximately 150 households received enough fuelwood to last for 2-3.5 months. Fuelwood collection is often done by women and girls and can be a hard and time-consuming activity. Providing firewood from pruned trees provides them a significant benefit.

### Outstanding survival rates

The survival rate at the 2018 planting sites surpasses the minimal standard set, which is 80% after three years. Survival data of the seedlings planted in 2018, 2019, 2020, and 2021 was collected from the established



permanent monitoring plots. The survival rate was 92.43%, 90.72%, 87.22 and 87.62% respectively.

Table: tree species planted in 2022 restoration sites and at homesteads for agroforestry

#	Scientific name	Local name	Restoration planting	Livelihood planting	Natural regeneration
1	<i>Juniperus procera</i> Hochst. ex Endl.	Sareda	x		x
2	<i>Olea europaea</i> L. subsp. <i>cuspidata</i> (Wall. ex G. Don) Cif.	Awli	x		
3	<i>Cytisus proliferus</i>	Meno/tree lucern	x	x	
4	<i>Acacia decurrens</i>	Acacha	x	x	
5	<i>Acacia saligna</i> (Labill.) H.L.Wendl.	Lemlem acacha	x	x	
6	<i>Schinus molle</i>	Tikur berbere		x	
7	<i>Cordia africana</i>	Awhi		x	
8	<i>Grevillea robusta</i>	Gravela		x	
9	<i>Rhamnus prinoides</i>	Gesho		x	
10	<i>Vernonia amygdalina</i>	Grawa		x	
11	<i>Euphorbia abyssinica</i>	Kolkual		x	
12	<i>Becium grandiflorum</i>	Tebeb		x	
13	<i>Leucas abyssinica</i>	Siwakerni		x	
14	<i>Azadirachta indica</i>	Nim		x	
15	<i>Callistemon citrinus</i>	Bottle brush		x	
16	<i>Dovyalis abyssinica</i> (A.rich) warb.	Mongeoilhats		x	
17	<i>Melilotus albus</i>	Medik		x	



## Livelihoods

### Alternative livelihood activities provide reliable income, decreasing the pressure on the forest

During 2022, we had planned to provide materials for income-generating schemes to over 1800 households. Owing to the war and the resulting mobility restrictions and market closures, we were able to support 654 families; around one-third were women-headed households. Skills development and entrepreneurship training was similarly affected and will be resumed in 2023.

#### Forest-friendly beekeeping

In Tigray, honey has high value. It requires little input, can be easily stored and sold at the local markets and, as such, it is an ideal annual income-generating activity for landless households. In an area where 86% of households directly depend on forest resources for subsistence, developing alternative, forest-friendly sources of income like honey is an essential step toward reducing local human pressure on forest resources.

We provided 55% of our planned households with bee colonies (3 per household). The availability of bee colonies is a challenge and WeForest established a queen rearing hub to solve the shortage of bee colonies in Desa'a. In 2022, 27 new bee colonies we created (just over half of our planned target) through grafting and splitting.

New ways to scale beekeeping are needed to be able to meet demand, and we are seeking new sites to meet the target.

Successful beekeeping and good honey harvests are a relatively intensive activity. The programme continues to identify and address challenges faced by local beekeepers and provide technical support; ensuring sufficient forage for bees to feed, by planting the right species at right time, supporting training on feed supplements where necessary, and bee shade construction with local grasses. During the last 4 years, the project has supported 565 households with 1488 colonies. An assessment in 2022, with 60% of the households, showed we are close to our target. 84% of these are still actively engaged in the beekeeping sector, compared to our target of 85%.



## Poultry can reduce pressure on forests

Poultry is a low-input system which has the advantage of providing regular income while improving nutrition. The chickens are procured within the district to increase chances of survival and adaptation (they are already used to cold climatic conditions), avoid disease transfer and provide local market demand for breeders.

During 2022 the entire business sector was closed due to the war. Our programme intended to support 800 families in 2022 was on hold and will resume in 2023.

## Small ruminants for nutrition and income

Sheep and goats are among the major economically important livestock in Tigray for poor households since they are often the main sources of protein and household income. Provided they are reared in a controlled manner, sheep provide a suitable alternative livelihood option for female-headed households. Unlike chickens, sheep provide more substantial income, but less frequently than chickens.

Sheep distribution remained challenging during 2022, and we expect to see a significant improvement in the ability of activities to resume in 2023 with the ongoing peace process. Training is an important part of successful sheep farming and despite the challenges, we met 25% of our training target.

## Agroforestry for food security

Agroforestry is a system in which specific trees or woody shrubs are mixed with crops on agricultural land. It is one of the most sustainable and profitable ways for smallholder farmers to grow cash crops for food security, nutrition and consistent income while natural resources such as soil and water

### A new life for Lemlem

Lemlem R., 50, used to be dependent on her 0.25 ha of land and food aid, which placed her under the poverty line. In 2020 she began to take part in the project's sheep and chicken livelihoods schemes, receiving three ewes, one lamb and ten pullets. Her family is now able to have an egg a day and sell 21 eggs per week, earning up to \$US70. The ewes gave birth to five new lambs, which motivated Lemlem to expand even more by buying additional sheep from her egg sales. Now, she has 11 sheep, and is thrilled at the benefits, both nutritional and financial. "These days I am freed from a life of struggle! I am actively engaged in livestock husbandry, confident about having sources of critical cash in times of need, and feel I have a better social status," she said.





are improved by the presence of the trees, which also sequester carbon as they grow. In agroforestry plots some trees such as timber are harvested and ideally replaced. Others, such as fruit and nitrogen-fixing trees, which are often used for soil fertilization and animal fodder, are pruned year after year providing food, soil fertility and numerous other benefits.

In 2022, 1400 households engaged in multipurpose tree planting and 460 households engaged in apple production. Survival rates of apple trees planted 1 year ago are over 92% and far greater than those of other multipurpose trees (almost 45%). In 2023, the team will conduct more household research to identify the reasons and support activities to increase survival rates in future.

### Alternative energy sources

Forest-dependent communities gather wood, trees, leaves and undergrowth from the forest for fuel and combined with the use of traditional, inefficient stoves means the annual pressure for fuelwood is estimated to represent more than 23K tons. Direct fuel saving solutions are important for reducing the unsustainable use of fuelwood.

For 80% of the 19 000+ households our goal is to decrease fuelwood consumption by 30% with energy efficient cookstoves (Tikkikil stoves) and to increase access to local, sustainable fuelwood supply from the buffer zone (150kg per household per year). During 2022 the team



made an initial assessment of whether cooking stoves are functioning, data from a small sample of households surveyed showed 91% of have functioning cooking stoves and use the cooking stoves for more than four days in a week and at least twice in a given day. Further detailed assessment will be conducted in 2023 to conclude the adoption rate and efficiency of the technology with a larger sample size.

Our programme to distribute cookstoves and solar lamps for local communities has been largely on hold since the war began and we expect to see activities resume in 2023 with the opening of roads, markets and businesses once again.





## Community engagement

### Over 11 000 jobs in restoration during 2022

Soil and water conservation structures are a crucial step in forest restoration to avoid further soil erosion and facilitate rainwater infiltration to restore critical watersheds. We establish structures before the rains – including trenches, half-moon basins, percolation ponds and terraces – to replenish groundwater, help infiltration and stop heavy topsoil from washing away. With these structures, which can be entirely built by the communities, we expect to harvest around 0.5 million m<sup>3</sup> of water during each rainy season.

Over 11 000 people benefited directly from paid work that this restoration created.



*Image: This water harvesting structure was constructed two years ago in Hawile and collects water during the rainy season. When we visited the structure was almost full and we met Mebrhit H. (25) and Desta B. (55) who explained how important this is for their vegetable gardening and livestock.*

#### In 2022...

- 652 deep trenches were constructed covering 2.6km and have the capacity to stop 1,956 m<sup>3</sup> of soil erosion (about 80% of an Olympic-size swimming pool).
- 3km stone bunds will reduce the rainfall runoff intensity and stop soil erosion
- 597 smaller trenches will trap siltation/sediments and stop soil erosion
- Work began on 5 large water harvesting structures (including the expansion of one structure from 2020) each with a volume of 750m<sup>3</sup>.
- 108 loose stone check dams were constructed in gullies (pictured left) to stop their continued expansion that is creating flooding hazards for families lower down the hillsides. These structures will have the capacity to trap 1,091.5 m<sup>3</sup> of sediments
- Over 100 000 grasses including sisal and *Phalaris aquantica* were planted on the steep slopes of eroding gullies to stabilise the soil and reduce erosion.



## What's Next?

### Restoration

- January and February: Identification of areas for next season's soil and water conservation structures.
- March-May: construction of soil and water structures.
- May-June: planting pit preparation.
- July-September: Planting.

### Livelihoods

- January-March: selecting households and suppliers.
- March-April: skill development and entrepreneurship training.
- April-June: Livelihoods activities resume: poultry, sheep and the distribution of improved cookstoves.

### Monitoring and Evaluation

- The first household survey to evaluate impacts of forest-friendly incomes programme is planned in 2023.
- First 5-year vegetation monitoring will take place in 2024 (for 2019 sites) including the impact on water availability, infiltration and quality.

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 beneficiaries, people trained, and income generated from forest-friendly livelihood activities.

Please visit our [What We Do](#) web page for more information.



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

*Thank you for supporting the Desa'a project!*