

# Desa'a, Ethiopia

Reversing land degradation and poverty through forest landscape restoration

Yearly Update 2021





## Summary

WeForest's most ambitious project is more than a quarter of the way towards its goal to restore 38 000 ha in Northern Ethiopia, bring water back to the region, reverse soil erosion and lift communities out of poverty.

However, 2021 was a very challenging year. War that broke out in Tigray at the end of 2020 has restricted mobility and closed markets and banks. Despite these challenges, the team and the community exceeded our restoration targets – a truly incredible achievement. 3853.93 ha was brought under restoration management, exceeding our original target by 35%.

This report shares an update of our progress during 2021. Thank you for all your support!

## 2021 in numbers

**3854 ha** was brought under restoration management, representing a long-term total of approx. **3.75** million trees protected, regenerating and planted

**610 434** seedlings planted on forest lands and homesteads

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

**74 000** person-days of community engagement

Since 2018, the project has:

- restored **9877 ha**, over 25% of the 2030 target of 38 000 ha – representing a long term total of approximately **9.6 million** trees protected, regenerating and planted
- engaged **2560** households in income generating activities (honey production, poultry, small ruminants and agroforestry)
- established **257** permanent monitoring plots since 2018 to track progress of tree growth

Survival rates are incredible: for the seedlings planted in 2018 they average **94.05%**, **96.53%** for those planted in 2019 and **90.74%** for seedlings planted in 2020.





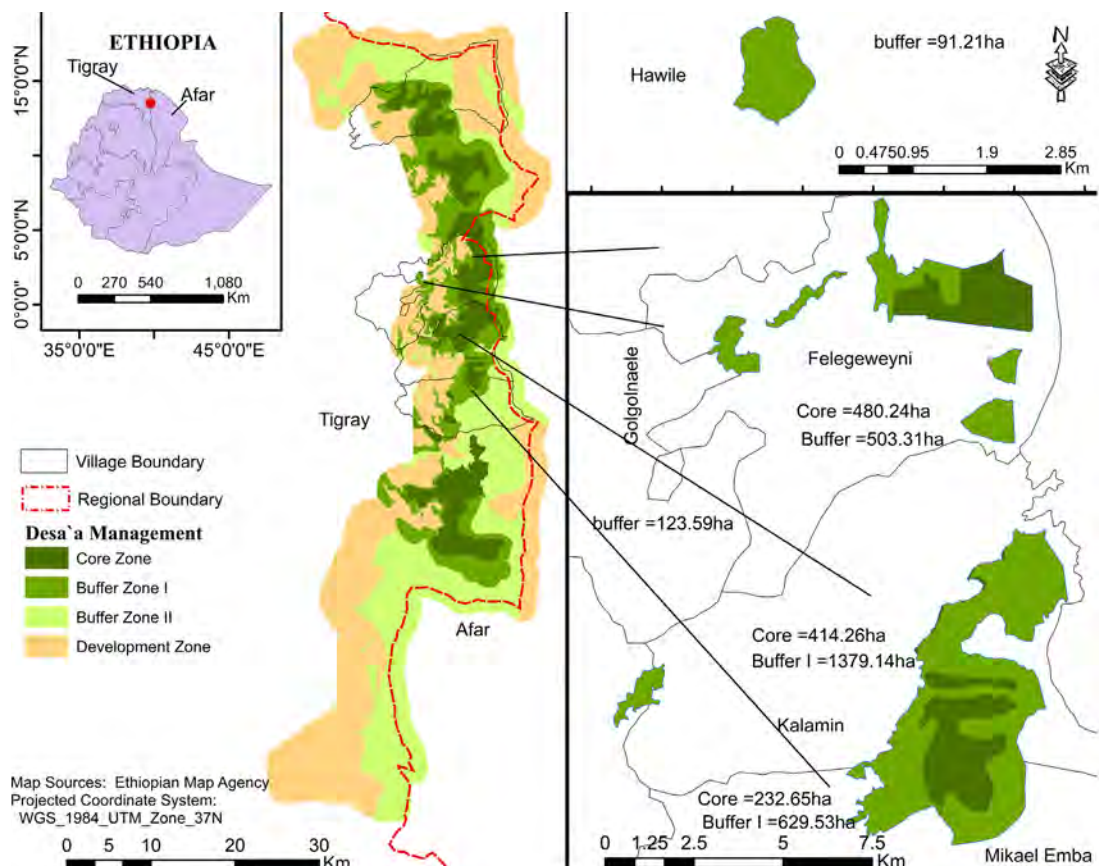
## Overview

The Desa'a Forest is divided into three management zones – core, buffer and transition. 3854 ha of the forest was brought under conservation and restoration management in 2021, 9877 ha in total to date.

In 2021 the restoration work was carried in five tabias (also known as a kebele or a ward, the smallest administrative division in Ethiopia, which can comprise several smaller villages); these are Kalamín,

Felegeweyni, Golgol-naele and Hawile, and new for 2021, Mikael Emba. The population of these five tabias is 9050 with an average family size of five. They are involved in all our activities: either in the alternative livelihood schemes, or by participating in planting or other field activities, or by receiving training.

Map:  
restoration  
sites added in  
2021







## Restoration

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

Strong community mobilization and extraordinary commitment by staff and stakeholders meant that in 2021 we almost doubled our restoration target in the core zone and restored almost a quarter more than planned in the buffer zone, leading to a total 3853.93 ha of land being brought under restoration management.

11 nurseries raised 711 200 quality seedlings, four nurseries are fully supported by WeForest, including the nursery workers' wages, and seven nurseries receive material and technical support from the project. Approximately 610 430 seedlings were planted.

534 640 native tree seedlings (75% *Olea europaea* and 25% *Juniperus procera*) were planted in the core and buffer zones of the forest – beyond our target of 485 800 seedlings.

Approximately 47 790 seedlings of different multipurpose trees, were planted in 2580 homesteads. The non-native species, such as *Cytisus proliferus*, serve as feed to their bees and livestock and can be pruned for firewood. 28 000

### Outstanding survival rates

The survival rate at the 2018 planting sites surpasses the minimal standard set, which is 80% after three years.

According to the data, the average survival rate for the seedlings planted in 2018 – like this juniper, below – is 94.05%, while it is 96.53% and 90.74% for the seedlings planted in 2019 and 2020 respectively.

Compared to the previous years' performances, 2020's survival rate is lower because of imitations to post-planting activities owing to the war – but this is still an incredible survival rate for Tigray. For seedlings planted in 2021, data will be collected after 6 months, in February 2022.







*On the way to the planting site*

seedlings of *Cytisus proliferus* were also planted in gullies and open grassland patches in the buffer zone.

Before field activity begins, a detailed soil and vegetation survey is conducted. Soil and vegetation data was collected from 34 permanent plots that were established for monitoring, 24 situated in the buffer zone and 10 in the conservation zone.

The survival rate of seedlings planted between 2018 and 2020 were collected from these permanent plots. Data needs to be collected at 6 months after planting and annually afterwards. For the seedlings planted in 2020, we could not collect the six month's data from the permanent plots as mobility was difficult due to the security situation in the wider region. However, annual data was collected and shows superb results (see box, previous page).

160 173 trees were pruned in Kalamín, Golgol-naele, Felegewoyni and Mikael Emba over 2726 ha, and the branches are distributed to 3350 households for firewood – 37% of the total households across the year's five target villages. Watering, weeding, mulching, and cultivation was carried out on 397 520 planted seedlings (75%) across the 2726 ha of buffer zone restored in 2021.



## Securing the harvest for the farmers in Desa'a

With COVID-19 closing markets and limiting mobility, a locust outbreak, a dry spell, and internal conflict and unrest, 4.5 million people in 94 districts in Tigray in Northern Ethiopia are facing a severe crisis. We knew we had to find a solution for the 23 000 farmers we work with across 13 villages in Northern Ethiopia, including 11 villages in Desa'a, even though humanitarian aid is not our normal focus.

During 2021 we were able to raise \$1.2 million to secure the wheat and barley harvest of all these farmers, who have been and are still suffering as a result of the conflict in Tigray.

Watch our video about this initiative [here](#).







## Governance

### Sustainable land-use and forest management plans have been implemented

Unsustainable use of the land in Desa'a forest has led to its degradation. Policies exist at the national level, but have barely been translated into actions on the ground. This critical first step in restoration works with the community to identify where and how they want to protect the forest.

A village land-use map was prepared during 2021 for the new restoration sites and has been validated in the presence of local stakeholders and community representatives. Consultation with the local stakeholders about the land-use map for 2022's restoration sites is taking place at the time of writing.

Revising and updating the local by-laws is an important step in forest management and land-use planning. The existing bylaws were developed a long time ago at a village level, and were focused on farmer-level rules and penalties. The new by-laws contain much 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. They also include details on the management of wildlife and fire management. The revised by-laws, which are prepared in the local language, still need some amendments and validation from the local community, but this is delayed due to the ongoing war.







## Livelihoods

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

During 2021, we had planned to provide materials or stock for income-generating schemes to 1443 households. Owing to the war and the resulting mobility restrictions and market closures, we were able to support only 46% of the households. Skills development and entrepreneurship training was similarly impacted.

#### 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 met 55% of our planned target of 150 households with bee colonies (3 per household) and supplied 246 bee colonies.

The queen-rearing hub that started production during 2021 to solve the bee colony supply shortage and for training

purposes has made an impact on supply; producing 49 new bee colonies through colony-splitting (25% of our target). We also plan to test grafting – a technique where you collect eggs in a laboratory to produce more

#### Incomes are increasing

Baseline data is collected from a minimum of 10% of the participants to monitor the impact of the livelihood improvement packages. In 2021 this data was collected from a sample of participants who had been involved in the schemes since 2018. According to the data, households who have achieved sales are receiving an average income up to 9315.49 ETB (about \$207US) from poultry and sheep per year and 6550 ETB (\$146US) from beekeeping. This very promising start is already a great boost in a region where the daily income is below US\$1.9 per day for more than half of the families in Desa'a.

Furthermore, the individuals who received input in 2018 are getting more income in 2021 than those who get the inputs in 2019 and 2020, indicating that the income they got is increasing over time. This could be mainly from the increase in technical efficiency and marketable stock size.





colonies. This requires lab equipment and will be done in collaboration with a Tigray research institute when the security situation allows.

### Poultry reduces 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 2021 we procured 4000 chickens and distributed them to 400 female-headed households (10 chickens each), less than half of our planned target 856 households. Each recipient also got 50kg of start-up feed.

### 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 was most challenging during 2021. We distributed 276 ewes and 153 lambs to 92 female-headed beneficiary households from Felegeweyni, just 11.5% of

### Incentive payments for high survival rates

In 2021 we changed our approach to providing high-value tree seedlings such as apple. It was found that if farmers bought these seedlings themselves, they were getting a subsidized price – cheaper than if the project purchased and provided them. Our new approach is incentive-based, and depends on the survival rates of seedlings given to households. Households now buy the seedlings themselves from nearby government nurseries at the subsidized price; then, based on the performance of the seedlings, households get incentive payments from WeForest at different stages, starting from the sixth month after planting. This approach should result in more motivation for the farmers to take care of their high-value trees, as well as an increased sense of ownership.





our target. This low achievement was due to markets being closed almost all the first quarter of the year and banking services closing from the end of June 2021.

## Agroforestry for food security, and to boost abundance and diversity of natural resources

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 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 2021 we distributed apple seedlings to 92 households, with an average of 8 apple seedlings per household with a minimum of 5 seedlings and maximum of 18. The target was higher (437 households), but the war and lack



of supply meant that the nurseries could not supply and deliver enough seedlings.

## Alternative energy sources

Forest-dependent communities gather wood, trees, leaves and undergrowth from the forest for fuel. They also use traditional, inefficient stoves, which in turn aggravate the degradation rate of the forest and affect family health. Direct fuel saving solutions are important for reducing the unsustainable use of fuelwood.

The war presented challenges in the manufacture of the fuel-efficient cooking stoves we planned to provide to more than 6500 households, meaning we were only able to provide 2792 in Kalamini and Felegeweyni. We collected baseline data on energy consumption from 218 families that received cookstoves, so we will be able to compare energy consumption before and after receiving the stoves. The analysis of this data is still taking place at the time of writing.

Solar lamps were purchased in Addis Ababa because of the lack of supply in the Tigray region, but the war posed challenges in distributing them. We plan to transport them once the situation is resolved. As solar lamps have not been distributed since 2020, we have not collected baseline from families and plan to collect in 2022.





## Community engagement

# Community soil and water conservation activities: crucial for restoration success

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.

During 2021, different soil and water conservation structures were installed in the new restoration sites. To monitor the amount of soil reclaimed in the area, the GPS location of each structure is registered, and the real impact is expected to be observed in five years.

The community contributed 73 908 person-days of labour to make these different soil and water conservation activities, including planting pit preparation.

## The number of structures in 2021

Five percolation ponds (all in Mikael Emba) and seven water storage ponds with a total volume of 7645m<sup>3</sup> were constructed in Mikael Emba (2 ponds), Golgol-naele (2), Felegeweyni (1), and Hawile (2).

Work began on seven gabion check dams with an average volume of 100m<sup>3</sup> and 25 sand bag check dams with a volume of 50m<sup>3</sup> each – they will be completed in 2022.

123 loose stone check dams with a total capacity of 6150m<sup>3</sup> were constructed in the five villages.

Approximately 569 306 micro basins were prepared this year ready to plant seedlings.

3886 deep trenches for water harvesting and sediment trapping with a total volume of 15 799m<sup>3</sup> were constructed – more than twice the planned number of 1500 with a volume of 3m<sup>3</sup> each.

127.073 km of terraces, which prevent rainfall runoff on sloping land from accumulating and causing serious erosion, were constructed in the five tabias.

In addition, 67 springs were identified in Kalamín, Felegeweyni, Golgol-naele and Mikael Emba. Two are present for 6 months of the year, while the remaining 65 are present the whole year. The data from these springs will serve as a baseline to control the overall impact of the project on water availability.





## What's Next?

### Restoration

- Jan and Feb: Identification of areas for next season's soil and water conservation and harvesting structures
- Jan to June: 4031 ha brought under restoration management in both buffer and core zones
- March -May: construction of soil and water conservation and harvesting structures
- May-June: planting pit preparation
- July-Sept: Planting

### Livelihoods

Depending on the ongoing conflict:

- Distribution of sheep to at least 50% of the total target of 400 female-headed households
- Distribution of bee colonies to 300 households if available from local suppliers. If not, distribution to 120 households from our bee rearing centre only
- Distribution of 2000 cooking stoves

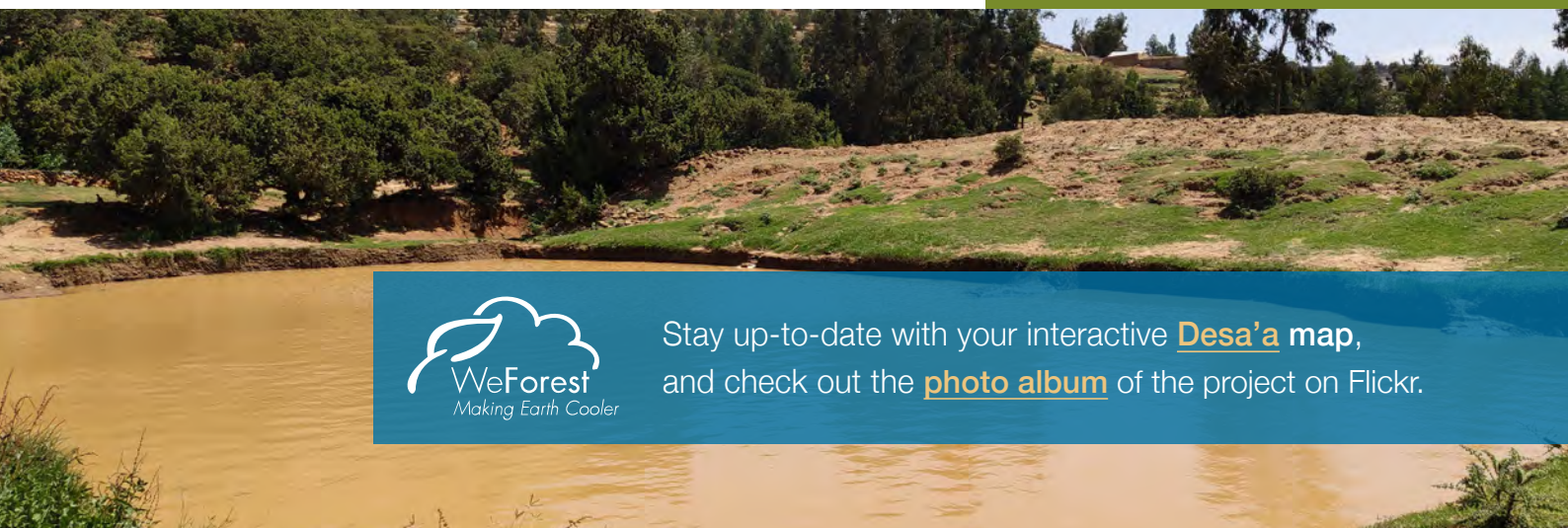
### Monitoring and Evaluation

- The first household survey to evaluate impacts of forest-friendly income programmes 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 [Why and How](#) webpage 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!*