

# Spekboom

Reforestation, South Africa

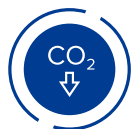




## Spekboom: Restoring a biodiverse thicket ecosystem

Subtropical thicket is renowned for its outstanding biodiversity, counting 1,588 plant species. Out of these, 20 percent are endemic to South Africa's Eastern Cape alone. One of the native keystone species is spekboom, a small succulent tree. It is remarkably tolerant of drought and rocky soils, being able to thrive on down to 250 mm of water per year. It can grow up to 5 meters high and live up to 200 years. It is also known as Elephant bush.

The Eastern Cape landscape has suffered from extreme degradation due to intensive agriculture and extended drought periods. This has severely reduced the range of the native thicket ecosystem. Spekboom is highly effective to catalyze thicket restoration through regenerating soils and stimulating biodiversity. It also has a high potential for rapid and permanent carbon removal. Climate-Partner has already started the thicket reforestation process and is planting 2.5 million new spekboom plantlets on 1,000 hectares over a three year period. Continuous monitoring and protection will make sure the landscape is restored into a biodiverse thicket ecosystem. Spekboom brings multiple benefits for soil, water, and biodiversity. It is considered an 'ecological engineer' species and has successfully underpinned multiple restoration projects in the region. Its unique attributes support a full spectrum of ecosystem services over time e.g. carbon cycle, water cycle, nutrient cycle, biodiversity.



**14,000 t CO<sub>2</sub>**  
estimated sequestration  
per year per 1,000  
hectares planted



**Reforestation**  
Spekboom  
(Portulacaria afra)



**Eastern Cape,**  
South Africa



**Verified Carbon  
Standard (VCS)**  
under validation



The project size is scalable. The minimum area available is 500 hectares with significant expansion possible.  
[www.climatepartner.com/1432](http://www.climatepartner.com/1432)



## How does reforestation contribute to climate action?

Forests are essential in our lives and are among the planet's most important carbon sinks. Besides providing habitats for wildlife, they filter the air, stabilise and protect soils, store water, and contribute to the balance of our climate. However, global forest areas have declined sharply in recent decades due to increasing settlements, agriculture, illegal logging, and raw material extraction. Afforestation, reforestation, and revegetation activities significantly increase a forest's carbon storage capacity in both the biomass of the forest and in the soil. The storage capacity varies according to the tree species, age, and location.

Experts distinguish these activities in the following way:

- Afforestation converts non-forested areas into forest ones.
- Reforestation restores forest areas that have been damaged or deforested in the past.
- Revegetation increases the vegetation through planting trees, shrubs, or other plants.

**This project is a reforestation project.**



Restore indigenous 'Thicket' ecosystems by planting spekboom (elephant bush) on degraded farming land within the plant's native range in South Africa's Eastern Cape.



## Eastern Cape, South Africa



The spekboom reforestation project is located within one of 36 recognised 'biodiversity hotspots' worldwide which represent the earth's most biologically rich regions under critical levels of threat.

Located in a water stressed region, a problem exacerbated by the depletion of the natural thicket.

Until about 200 years ago, the Eastern Cape of South Africa was dominated by a sub-tropical thicket ecosystem spanning over 5 million hectares, it is now reduced to just a fraction of that. Vast areas of the Eastern Cape have suffered severe degradation due to agricultural practices and overgrazing.

This vital thicket ecosystem is a complex forest which creates its own microclimate and harbours a particularly wide array of flora and fauna, of which, spekboom is the dominant species. A longer term aim with the reforestation of this thicket ecosystem is to create and connect ecological corridors which will provide suitable habitat and sanctuary for many of the most iconic herbivores we associate with the region, including but not limited to, elephant, black rhino, and numerous antelope species.





# The ecological engineer

Spekboom is known as an ecological engineer – meaning that the plant has the potential to bring substantial positive changes to its environment.

## The advantages of spekboom:

- **Enhanced biodiversity:**  
spekboom provides nutrient-dense leaves and nectariferous flowers that increase habitat, food source and biodiversity for large fauna, birds, and flora species. The thicket it creates is closely associated with large and iconic herbivores such as the endangered black rhino and of course elephant. Spekboom also encourages a micro-climate that enables other thicket species to reemerge.
- **Avoids soil erosion:**  
Its roots are soil binding which prevents soil erosion. Furthermore, spekboom roots and low hanging branches, which make contact with the soil, act as 'resource traps', capturing leaf litter, eroding soils and seeds. The trapped leaf litter decomposes to become soil organic carbon.
- **Lifetime:**  
Its longevity is well documented, being incredibly hardy, able to survive with very little water and capable of living between 200 and 300 years.
- **Water security:**  
Restoring thicket is a key strategy towards water security in the Eastern Cape which is a water stressed region; intact thicket captures, stores and slowly releases water into the relevant catchments.



Comparison between degraded land (small image) and thicket biome.



# Impacts of this spekboom reforestation project

Spekboom reforestation creates multiple social, environmental and economic co-benefits beyond CO<sub>2</sub> removal.



2.5 million spekboom seedlings planted per 1,000 hectares. Spekboom has a particularly high carbon removal capacity (removal for this project is 379 t/ha cumulative over 30 years).



Spekboom greatly aids the restoration of the water cycle; through restoring soils, water infiltration and water retention are key benefits of the rapid conversion of leaf litter into soil organic carbon.



85+ rural employment opportunities per 1,000 hectares. The project creates vital employment opportunities for local communities and townships and 25% minimum female employment rate.



Restoring the ecosystem in one of 36 designated 'biodiversity hotspots' worldwide.



Tackling household poverty rates of currently 60-80%. Unemployment rates in the Eastern Cape are the highest in South Africa.



Creation of ecological corridors, habitat and food sources for elephant, the endangered black rhino, kudu, bushbuck and many other native species.



Soil is regenerated by increasing Soil Organic Content (SOC). Spekboom creates a microclimate and ecological infrastructure for other thicket species to return.





## Verified Carbon Standard: under validation



Standards and independent auditors ensure effective carbon offset projects at ClimatePartner. The effectiveness of carbon offset projects is an integral part of our holistic work – from reducing to offsetting emissions. As a reliable partner for the economy, we have a major responsibility to ensure that carbon offset projects develop their full impact.

Well over half of all voluntary emission reductions worldwide are validated and verified according to the Verified Carbon Standard (VCS). The standard contains clear specifications for determining the CO<sub>2</sub> emission reductions for the various project types, such as reforestation, wind power or cooking stoves. This standard was initiated by the standard setter Verra.

Further information at:  
[verra.org/project/vcs-program](https://verra.org/project/vcs-program)

Projects must also be audited by independent third party auditors, be transparent and conservatively calculated. Examples of these independent third party auditors are TÜV, PwC or SCS Global. The certificates generated from these projects are called Verified Carbon Units (VCU).





## Spekboom reforestation project contributing to the United Nation's Sustainable Development Goals (SDGs).

### SUSTAINABLE DEVELOPMENT GOALS



60-80% of households in the project region live in poverty. The reforestation project provides a way to generate new income streams.



Employment creation is specifically targeting female empowerment in one of South Africa's areas with the highest unemployment rates, and inherent sexist biases.



By improving soil health and reducing erosion, the project also supports water cycle restoration.



The project creates new job opportunities in the area with South Africa's highest unemployment rates.



Spekboom has a high potential for carbon removal. Besides, it creates a micro climate that is conducive to biodiversity restoration.

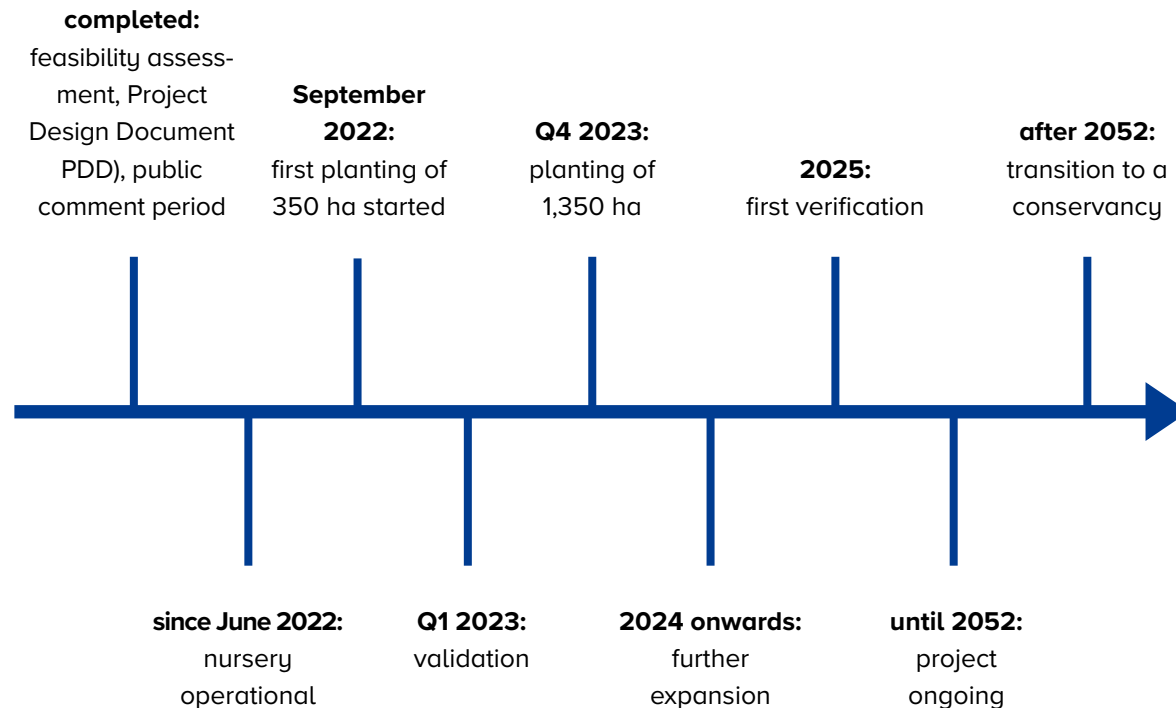


The project location in one of the 36 recognized global biodiversity hotspots. Spekboom's nectar-rich flowers provide food for many insects and attract insectivorous birds and the project aims to connect protected areas to bring back large animals.



## The project over time

A carbon offset project has a set life cycle consisting of various phases, from the feasibility assessment to the retirement of carbon credits.



- Restore indigenous 'Thicket' ecosystems by planting spekboom (Elephant bush) on degraded farming land within the plant's native range in South Africa's Eastern Cape.
- Spekboom is considered an 'ecological engineer' species and has successfully underpinned multiple restoration projects in the region. Its unique attributes support a full spectrum of ecosystem services over time e.g. carbon cycle, water cycle, nutrient cycle, biodiversity.
- The project size is scalable. The minimum area available is 500 hectares with significant expansion possible.
- Issuance of credits is 3 years after planting.
- The project will be certified under the VCS (Verified Carbon Standard).

Spekboom has a particularly high carbon removal capability; a conservative estimate of carbon removal for this project is 379 t/ha cumulative over 30 years.

Annual removal capacity is on average 14,000 t per 1,000 ha planted.







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