

INNOVATIVE COCOON TECHNOLOGY FROM THE NETHERLANDS FOR SUSTAINABLE TREE PLANTING AND REFORESTATION

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In 2013, [the Land Life Company, based in the Netherlands, began prototyping the innovative Cocoon technology](#), seeking a way to significantly improve new trees' survival and growth rates, making the tree planting reforestation efforts more impactful and sustainable.

The Cocoon is a circular structure made from recycled cartons with a hole in its centre for a seedling. Three lightweight paper pulp-based buckets encircle a seedling to supply it with water. Although inspired by ancient methods, agroforestry scientists and engineers at Land Life Company quickly worked to improve this initial design. In 2014, the company developed a simple lid to reduce water evaporation. Changes to the design were not limited to its shape. Much attention was given to the materials, introducing hot-pressing to create a smoother pulp fibre product, ensuring better water retention, a better lid fit and improved transportability.

A staggering 95% survival rate is what sets the Cocoon apart in the tree planting. Traditional methods often fall short in harsh environments, but the Cocoon acts as a protective barrier, safeguarding young saplings from extreme temperatures, arid soils, and harmful pests. This resilience is vital for successful reforestation projects, especially in degraded lands where survival rates can be critically low.

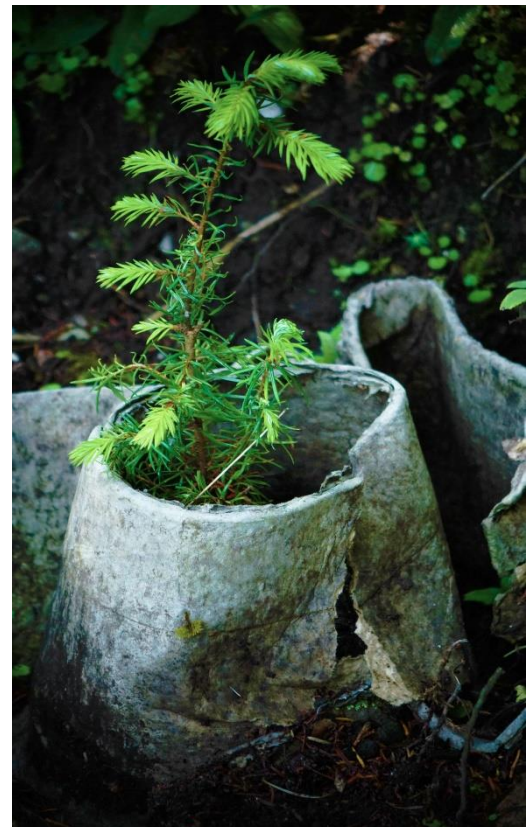
Sustainability is at the core of reforestation efforts, and the Cocoon aligns with this principle perfectly. Crafted from completely biodegradable materials, it leaves no environmental footprint. As it naturally decomposes, the Cocoon enriches the soil without leaving behind any waste, a critical feature for maintaining the integrity of natural ecosystems.

The most ground-breaking feature of the Cocoon is its ability to reduce water usage by a factor of thousand. The unique donut-shaped water reservoir captures rainwater and releases it slowly to the tree's roots. This mechanism significantly reduces the need for regular irrigation, a key advantage in areas with water scarcity.

Cocoons, which are biodegradable rings made from recycled cardboard that provide essential nutrients to trees in their first year of life. Cocoons eliminate water waste due to irrigation, saving up to 20,000 litres of water per plant.

The innovative solution of Cocoon presents the following characteristics:

- *95% survival rate.* The Cocoon acts as a barrier, shielding young trees from extreme temperatures, dry soils, pests, and



other environmental challenges.

- *100% biodegradable.* Made from biodegradable materials, the Cocoon naturally decomposes over time, leaving no trace and minimizing waste.
- *Less water needed.* The Cocoon's donut-shaped water reservoir captures rainwater and slowly releases it to the tree's roots, reducing the need for irrigation during critical early growth stages.

The Cocoon has a simple yet highly efficient design. It consists of a circular reservoir buried around the base of the young plant. This reservoir is filled with water, which is gradually released to the roots over several months. The system allows roots to develop deeply, encouraging plants to seek water in deeper soil layers, giving them greater resistance to drought in the future. The Cocoon also creates a microclimate that protects the plant from wind and extreme heat. Being buried, the system also improves the water-holding capacity of the surrounding soil and reduces evaporation.

From July 2016 to March 2020 the [Life Green Link Project](#) funded by the European Union, demonstrated the innovative method, Cocoon technology, to help plants survive and establish deep root systems in desertified areas across the Mediterranean region. Coordinated by the Spanish CREAM Centro de Investigación Ecológica y Aplicaciones Forestales, the project involved replacing traditional irrigation techniques with the Cocoon, the water-efficient, low-cost and 100% biodegradable tool. The project team planted 22,301 seedlings of 31 different species or varieties, over a total area of 73 ha in Spain. Replication of the project was also carried out in 50 additional locations in Spain, Italy, Greece and Portugal, with more than 7,511 Cocoons distributed with this aim. In these areas, the failure rate of restoration by planting ranged from 50% to 85% and the new technology achieved plant survival rates by up to 90% during the critical period.

[An article published in 2020 by the Creaf Institute](#) informs that the economic study of this technology also shows that reforestation with the Cocoon can be up to four times more profitable than doing it the traditional way, if we consider the cost in relation to the results obtained.

This low-cost methodology, with no harmful effects on the environment, has been implemented in numerous countries worldwide with remarkable success. The Land Life Company explains in its website that the cocoon innovative solution has already been used in countries ranging from the [United States](#) and [Mexico](#) to [Spain](#) and [Cameroon](#). It is currently being used to [recreate Sudan's tree cover](#) in a project jointly run by the country's forestry commission and the United Nations Refugee Agency (UNHCR). In 2019 alone, the project planted 1 million trees and several million more were planned for 2020. Additionally, a tree nursery has been established, where Land Life's cocoon will help grow 200,000 saplings a year.

Since 2013, [the Land Life Company has planted over ten million trees that are alive and thriving and restored over 11,250 hectares of degraded land](#) on behalf of their customers - from Africa to Europe, the Americas to the Asia Pacific. They achieved the net zero goals and science-based climate targets with large-scale, high-integrity carbon removal reforestation projects in [Australia](#), [North America and Canada](#), and [Spain and Portugal](#). They also invested in Land Life's Corporate Social Responsibility tree planting opportunities such as the Monarch Butterfly Reserve in [Mexico](#) and Orangutan Reserve in [Indonesia](#).



To know more

[Land Life Company website](#)

[Article in renewablenmatter.eu](#)

[The greenlink.eu project website](#)

[Article in creaf.cat](#)

[Article in creaf.cat](#)

[Article in innovariego.cl](#)

[Article by Comision Nacional Forestal de Gobierno de Mexico](#)

[Interview with Jurriaan Ruys, CEO of Land Life Company in cleantech.com](#)

[Article in materialdistrict.com](#)

[Cocoon in Instagram.com](#)

[Cocoon in malleconservation.com.au](#)

[Cocoon in Volterra.bio](#)

