

Innovative drone technology to tackle deforestation

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Credit: Pankaj Biswas from Pexels

A UK start-up is developing a high tech concept that it believes will one day enable it to plant one billion trees every year, contributing to efforts to tackle global deforestation and contributing towards greater overall sustainability.

Deforestation continues to significantly outstrip our best conservation

efforts. Illegal logging, land clearance and habitat destruction all contribute towards a net global loss of around 6.6 billion trees each year. But while deforestation is a complex issue with many causes and challenges, there is one concept that can easily be grasped - because tree [planting](#) is a labour-intensive and expensive activity, replanting has simply not been able to keep pace with the speed of habitat loss.

Taking this proposition as a starting point, UK-based start-up BioCarbon Engineering has sought to harness cutting-edge technology to revolutionise the planting process, and thus help to replenish precious habitats and ensure a sustainable supply of forest-based materials. This fits with the EU's objective of moving Europe away from the traditional linear 'take, make and dispose of' model of production and consumption, towards a sustainable circular economy.

The company received an EU grant designed to boost the potential of small businesses for eco-innovation and a sustainable supply of raw materials. This helped to fund a phase 1 project that focused on establishing a complete supply chain, a sound business model and a commercialisation strategy. The project also involved planning a large scale pilot for the automated planting solution, to be demonstrated in different ecosystems throughout Europe. The four-month project was completed at the end of March 2016.

The new planting system consists of a mapping unmanned aerial vehicle (UAV), a planting UAV and machine learning software. The technique is fully automated and promises to be a significantly cheaper and faster means of reforestation. The company estimates that ten seeds can be planted per UAV per minute. Once scaled up, the company aims to plant one billion seeds a year.

In addition to cost and speed, the new technique offers a number of other advantages. Mapping technology is used to increase uptake rates

and the likelihood of healthy forest development. Given that the planting is carried out by an aerial vehicle, terrain normally inaccessible by land-based approaches can now be reached.

Pods are then fired into the ground by the drone, enabling the planting of a large number of trees in a short period of time. Each pod can be loaded with pre-germinated seeds and a nutritious hydro-gel, giving it all the minerals and moisture it needs to get started.

The technology represents a significant departure from current [tree-planting](#) techniques, which include planting by hand and delivering dry seeds by air. Hand-planting is slow and expensive, while spreading dry seeds results in low uptake rates. It also presents an opportunity to help countries meet their environmental obligations. At the UN Climate Summit in Paris, a commitment was made to restore 350million hectares of degraded and deforested land by 2030, and it is clear that traditional planting techniques will not be enough.

Next steps include scaling up the innovation, continuing to fine-tune the seed-pod dispersal technology, and attract further interest from potential investors and collaborators in order to bring the concept to market.

More information: For further information, visit www.biocarbonengineering.com/

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