Satellite-derived Information and Airborne Lidar to Combat Cocoa-fuelled Deforestation

African governments and the world's cocoa companies are to be handed a crucial new tool in their battle to end deforestation caused by their supply chains. Using satellite-derived information from the UK Space Agency's Forests 2020 project led by Ecometrica, the Ghana Forestry Commission has been supported in the development of a landscape-level map that separates cocoa from forestry. This is critical to measure how the cocoa industry is driving deforestation.

With over two million small-scale farmers growing cocoa in the Ivory Coast and Ghana – the world's two biggest cocoa-producing countries – it has proven difficult to track where each bean is coming from and therefore to exert pressure on suppliers to end unsustainable practices.

Land cover map

'Big cocoa' has pledged to stamp out unsustainable farming methods that involve the destruction of protected rainforests in West Africa via the Cocoa & Forests Initiative (CFI), but it has proved a difficult task for an industry served by millions of small farmers in the region. In a further development, Ecometrica, the downstream space information company, which leads the Forests 2020 project to monitor tropical forests using satellite technology, is bringing together its innovative platform with new, more detailed land cover map to enable cocoa companies to securely plot their supply chain and assess their impact on protected areas.

Dr Richard Tipper, chairman of Ecometrica, said: "Cocoa and chocolate companies recognise the importance of sustainability and have clearly pledged to end deforestation caused by their industry. However, this it has proven a difficult task because companies lacked the information to assess the effectiveness of their policies. The Ecometrica Platform will allow organisations to plot their own commercially confidential data onto the forest maps we are already creating with Forests 2020. This will offer a unified insight into what is actually happening in the vicinity of known suppliers, especially where legitimate farms border protected forests, and will therefore play an important role in helping companies and governments to sensitively tackle the complexity of ensuring supplies come from sustainable sources."

Forest canopy

Commitments to eliminate deforestation from the cocoa supply chain have proven hard to implement due to the lack of available, robust data. As a shade loving crop, cocoa is grown underneath the forest canopy and can be difficult to identify from traditional satellite monitoring. Traceability of individual batches of cocoa beans continues to represent a significant challenge, alongside the need to balance the livelihoods of millions of smallholders and preserve their natural environment.

The cooperation of governments, NGOs and cocoa buyers has long been regarded as a crucial factor in driving sustainability. However, without access to accurate information, this has proved a steep challenge.

Taking the benefits of Lidar

Ecometrica is planning to add a further layer of information to the system in the coming months, using aircraft equipped with Lidar, a method that can see through foliage to give a detailed 3D impression of a forest's health and possible crops growing under the canopy. This will allow the project to further support the Government of Ghana in its commitment to the Cocoa and Forests Initiative, a joint pledge by the government and cocoa companies to reduce the impact of growing cocoa on natural forest in Ghana and Cote d'Ivoire.

The Ecometrica Platform will offer companies a constantly-updated picture of West African forests, gathered from space, Lidar aircraft and on the ground by the Forests 2020 project, and allow this to be analysed in the context of their own known supply chains. Evidence of deforestation that is observed near supplying farms can then be further investigated.

The Ivory Coast and Ghana are the world’s two largest cocoa growing countries but elsewhere in Africa, Asia and Central America, livelihoods depend on this valuable crop. Ecometrica’s global reach, monitoring the health of the earth from space, is also giving other regions the scope to better understand the impact of cocoa production and combat the destruction of protected rainforests.

Fermented cocoa beans drying in Ghanaian sunshine. Forests 2020, a UK Space Agency-backed project, led by Ecometrica, to monitor tropical forests using satellite technology, has launched a pioneering new tool to help African governments and the worldâ€™s cocoa companies in their battle to end deforestation caused by their supply chains. The Ecometrica Platform will provide a constantly-updated picture of West African forests, gathered from space, Lidar aircraft and on the ground by the Forests 2020 project. (photo: Lewis Rattray)

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