SPACE TECHNOLOGY ENABLES TRUST IN CARBON CREDIT MARKETS

JARKKO ANTILA SAYS EARTH OBSERVATION IMAGERY IS KEY IN CREATING VIABLE VOLUNTARY CARBON MARKETS

The use of commercial space-tech will prove a pivotal moment in scaling voluntary carbon markets as part of our global fight against climate change. All industries and businesses must take urgent steps towards a Net Zero future, which is only possible with the correct policies and adaptations. However, it's not easy to decide on the 'right action' due to a lack of reliable information.

For example, we have seen significant growth in forest restoration initiatives to remove carbon from the atmosphere and limit the rise in global temperatures. Companies invest in tree-planting schemes as part of their environmental, social and governance policy and buy carbon credits on voluntary carbon markets (VCMs) to offset CO_2 emissions they can't eliminate in their regular business operations. The problem is that pricing data on these markets is not always reliable, verifiable or environmentally robust.

The inability to track tree-planting successes and failures has led to phantom forests because of broken promises or because trees died or were harvested. We first need to be sure how many trees are planted and how many survive before we can even begin to measure the amount of carbon they sequestrate.

High-quality hyperspectral imaging from space captures the molecular composition of materials at scale and, in the case of trees, can determine their variety, health, and carbon levels. The technology enables the independent supervision needed by both parties for VCMs to run effectively and transparently. As nanosatellite constellations expand, the data frequency increases. Carbon credit traders can use daily data sets for tracking trends and changes in the biosphere, among other targets. When the data sets are linked directly to financial systems, they can provide the transparency and frequency needed to determine accurate, daily carbon offset prices.

Daily hyperspectral data also helps the market develop beyond forestry to include other areas, such as agriculture. It is currently impossible to determine agriculture's role in carbon capture due to fragmented farming methods and crop varieties. Hyperspectral imaging is a highly effective method for measuring crop-soil carbon interaction at scale and can unlock the sector's vast carbon sequestration potential. In addition, the frequency of measurements can guide real-time investments and commodity trading decisions, as hyperspectral imagery can determine the occurrence and scale of events – for example, forest fires or gas leaks – that might affect the prices of crops such as wheat or rice.

Space technology is the gateway to a multi-billion dollar market. Carbon management will deliver economic benefits worth $26tn by 2030, with the carbon credit market alone worth more than $50bn. Buyers of carbon credits can be confident they pay a fair price. Suppliers will be assured of an acceptable return, which will encourage further investment in carbon-reduction projects.

Hyperspectral imaging from space enables the independent supervision of carbon sequestration across forests, oceans and agricultural sectors. More importantly, it will bring much-needed accountability, trust and pricing transparency to the entire market, fuelling its growth.

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