Revolutionizing carbon credit monitoring with CO2Sink

NTT DATA's CO2Sink technology is being used by Calabria Verde to accurately estimate the exchange of CO2 between vegetation and the atmosphere. It leverages a range of advanced technologies including IoT, Artificial Intelligence and Machine Learning, among others.

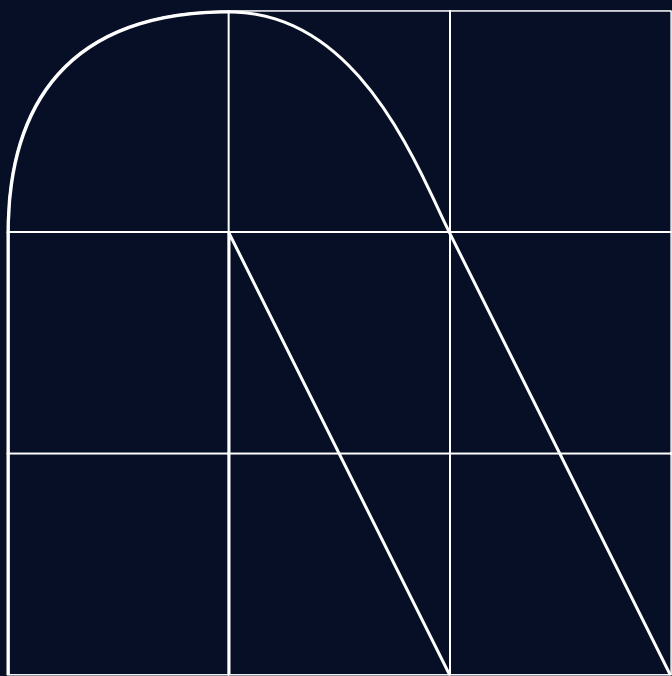
Carbon credits will likely continue to play a key role in international efforts to combat climate change, as they incentivize businesses to reduce carbon emissions, encourage conservation projects and promote international cooperation. Calabria Verde wants to be an active participant in this market and it entrusted NTT DATA to develop a scalable and robust system to provide a scientific basis for the carbon credits it plans to sell.

The client

Calabria Verde is an Italian public body engaged in forestry activities and the management of the forest biomass in the Calabria region. It is also responsible for fire prevention and control, mountain policies, hydraulic monitoring and surveillance of the region's hydrographic network, and support to the regional Civil Protection.

The organization is divided into 11 territorial districts in addition to the head office located in Catanzaro, the regional capital, with a staff of about 4,000 employees.

In the forestry sector, carbon credits have a key role to play in incentivize sustainable forestry management practices, such as reforestation and improved forest conservation methods. The credits such activities generate can provide a new and diversified source of revenue, which can be used to fund further sustainable initiatives, and open up new commercial opportunities with environmentally responsible businesses and investors.



The challenge

Carbon credits have been marred by controversy relating to issues of accountability and transparency, as well as the long-term effectiveness of some projects generating these credits. Inadequate monitoring and verification protocols can lead to inaccuracies in reported emissions reductions, undermining the credibility of carbon credit projects.

One particular controversy surrounds the concept of additionality, where it's challenging to prove that a project is genuinely reducing emissions beyond what would have occurred naturally. These challenges have spurred the development of monitoring systems to ensure that projects claiming carbon credits are truly reducing emissions.

> "The accurate measurement of carbon captured, combined with good planning and sustainable management of forests, will bring positive environmental social and economic impact."

Giuseppe Oliva,
Special Commisioner
Calabria Verde

The solution

By implementing advanced monitoring technologies, such as satellite imaging, IoT sensors, and AI-based data analysis, CO2Sink provides real-time, publicly accessible data about emissions and sequestration activities. This data accuracy and transparency creates trust among stakeholders and investors, ensuring the quality and credibility of the real socio-environmental impact of the forestry projects in which Calabria Verde participates.

CO2Sink includes several modules, adaptable according to the need of the investor and the area of interest. In particular, this module of CO2Sink designed for Calabria Verde features the following:

- Seamlessly integrates satellite data with information garnered from strategically deployed sensors in Calabria's forests.
- Utilizes the Eddy Covariance method, a scientific approach enabling precise measurement of greenhouse gas exchanges between ecosystems and the atmosphere.
- AI algorithms that are leveraged to process vast datasets, offering nuanced insights into the intricate relationship between vegetation and CO2 levels.
- Blockchain technology that provides a transparent and immutable ledger, preventing double counting and ensuring the uniqueness of carbon credits.

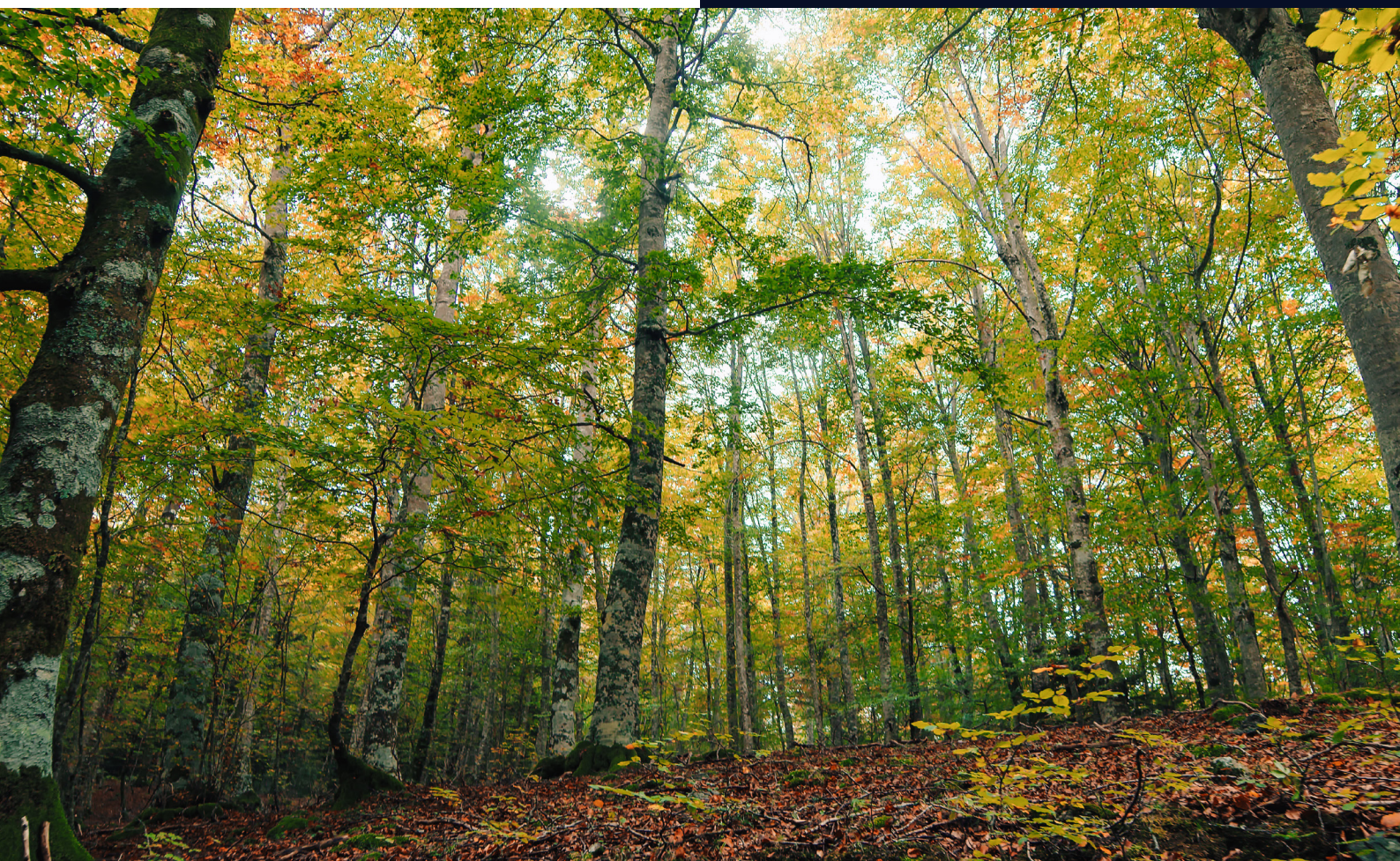
The results

The first installation of CO2Sink took place in the summer of 2022 in the forest known as ‘Parco Lardone’ and allows the actual absorption of CO2 to be measured in real time over a forest area of about 5,600 hectares.

The project successfully demonstrated not only the effectiveness of the various technologies employed, but also proved how the CO2Sink platform can easily be scaled up to cover larger areas by combining field measurements from IoT devices with satellite data.

> “In NTT DATA, we are especially proud of this project, because we pride ourselves on putting innovation and technology at the service of environmental protection.”

Giorgio Scarpelli,
CTO
NTT DATA Italia



Next steps

Based on the success of the first phase of this project, negotiations are underway to expand its scope and geographic extension to systematically monitor carbon capture over a much larger area of forestry, 25,000 sq km.

The project is destined to be become a pivotal tool in Calabria Verde's sustainability initiatives by ensuring that its efforts are not just impactful but also measurable, so its long-term commitment to environmental stewardship and sustainability in the forests it manages.

For its part, NTT DATA is leveraged the experience gained through the CO2Sink project to develop two new carbon offset monitoring projects, in Guatemala and India, which will benefit local communities.

Why NTT DATA

The collaboration between Calabria Verde and NTT DATA exemplifies the power of innovation applied to environmental conservation.

Calabria Verde chose NTT DATA because of its strong brand, its reputation for innovation and its expertise in delivering complex systems.

The CO2Sink leverages NTT DATA's core strengths as a systems integrator skilled in applying and integrating a range of different technologies, including IoT, AI, ML, blockchain and satellite imaging.

For further information

www.nttdata.com