

World AgroCommodities

Project objectives

The primary objective of this project is to support EU Member States in overseeing the **EU Deforestation Regulation (EUDR)** by providing a reliable approach to verify geolocations of land parcels, deforestation status and crop types, key elements in the due diligence reports to be submitted by companies. A key focus of the project is thus assisting **Competent National Authorities (CNAs)**, who are responsible for monitoring and validating the data provided by companies on the seven regulated commodities, namely cattle, cocoa, coffee, oil palm, rubber, soya and wood (see a few examples in [Figure 1](#)). The system will leverage **ESA's Copernicus Sentinel data**, supplemented by necessary ancillary and in situ data, to ensure accurate assessments across different geographic regions.



Figure 1: Commodities production such as rubber, cacao, coffee and cattle covered in the EUDR scope. Images courtesy of C. Sannier, GAF AG

Engagement with Competent National Authorities

The project's initial phase commenced with a focus on consolidating user requirements. We identified the specific needs of CNAs (*Germany, Czech Republic, Italy, France, Belgium and the Netherlands*) concerning the EUDR implementation. Through dedicated consultations, we pinpointed their key priority topics and challenges in meeting these requirements. This vital input helped to define the necessary technical and data requirements for our proposed EO-based solution to support EUDR compliance effectively.

Implementation Challenges

Multiple challenges were noted by the CNA teams for the upcoming implementation period; for example:

- Differentiating between primary and secondary forests, and agroforestry systems.
- Identifying subtle changes in forest cover, especially in the case of selective logging.
- Using global datasets for verification and/or risk assessment poses problems due to their accuracy levels (i.e., possibly high uncertainties in some regions).
- Binding data sources for compliance with known accuracy levels are required.

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From the consultative process, it was deemed necessary to have a **two-step system for proof and guidance/verification**. The first step would quickly identify high-risk plots, and the second step would then utilise EO-based tools for a more detailed inspection of sites.

Risk Analysis and Site Selection

In the initial phase, we worked closely with CNAs to define test and demonstration sites and outline the technical requirements for the EO-based solution. Key activities included:

- *Selecting Proof of Concept sites*, supported by ancillary data for deforestation detection. For instance, the deforestation risk was one criterion to select these sites (see **Figure 2** illustrating how the deforestation score was calculated).
- *Specifying technical requirements*, including output products, accuracy levels, spatial and temporal resolution, coverage, and timelines.
- *Demonstration Sites* to showcase the solution's benefits and policy integration potential.

This activity set the foundation for benchmarking and further development.

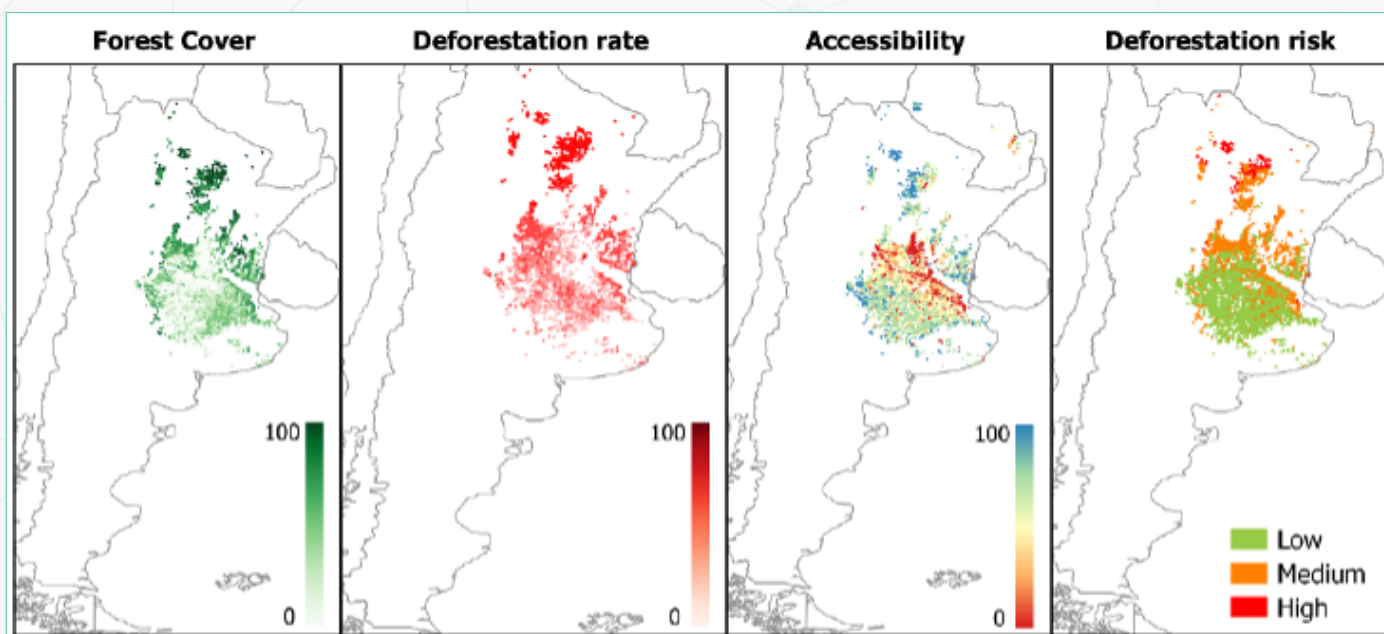


Figure 2: Illustration of the integration of forest cover, deforestation rate and accessibility to generate the "Deforestation risk score" in each site, which provided the basis for selecting proof-of-concept sites

Review and Benchmarking

We cross-compared state-of-the-art EO data and modelling approaches for monitoring EUDR-regulated commodities. Through literature reviews, we evaluated AI-based algorithms for detection, mapping, and monitoring, identifying strengths and limitations. This guided our selection of candidate models for pan-tropical benchmarking across Latin America, Africa, and Southeast Asia. Using Sentinel-1, Sentinel-2, and VHR data, we assessed methodologies based on accuracy, efficiency, stakeholder needs, and feasibility to determine robustness, validity ranges, and uncertainty.

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First key findings

1. No Universal Model

- Performance varied by commodity and region, highlighting the need for **flexible, tailored solutions** for EUDR compliance.
- *Attention UNet* shows promise as a general-purpose AI model but requires further validation.

2. Training Data is Critical

- Global AI models depend on **diverse, high-quality datasets**—yet gaps persist.
- We're expanding data collection and leveraging **active learning** to enhance coverage and accuracy.

3 AI is Scalable but Needs Refinement

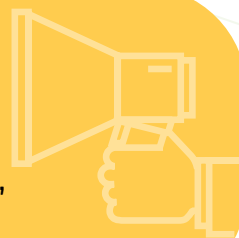
- AI provides a viable foundation for EUDR monitoring, but **model optimization, input data quality, and rigorous validation** are essential for reliability.

4 Stakeholder Engagement is Key

- Feedback from **diverse stakeholders** is crucial, including additional **CNAs** from member states, to evaluate the EO-integrated solution.

UPCOMING MILESTONES

- ✓ Sketching out a preliminary architecture for the **EO-based integrated solution & operationalization**.
- ✓ The **2nd Proof of Concept Living Lab** for the CNAs will be held on 30 September 2025, aiming at a consultative review of progress and methodology selection.



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