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Innovative technical solutions and pilot project to support compliance with the EUDR



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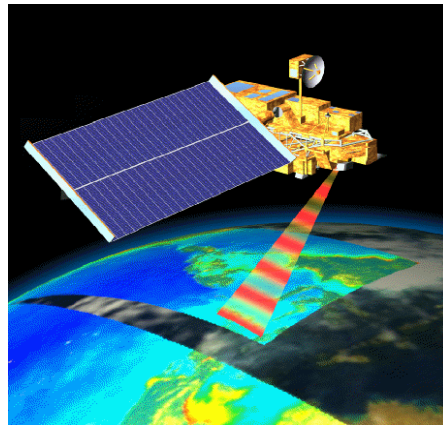


01 Introduction of GRAS

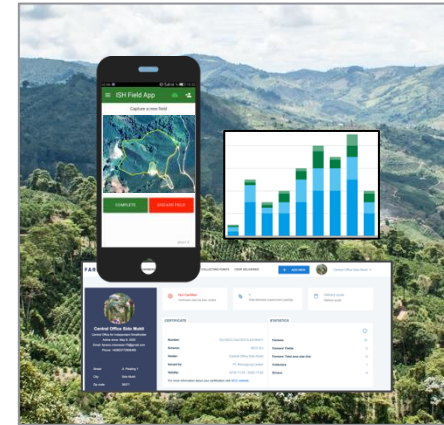
GRAS has many years of expertise in the areas of land use analysis, risk assessment and the development of interactive tools



First-hand coffee expertise, implementation of projects in coffee-producing countries. 4C is sister company



More than 10 years of experience in the field of risk assessment and analysis of land use changes using remote sensing and geodata. In addition, coverage of social and labour issues



Development of monitoring tools, e.g., for large-scale data collection and analysis of production areas of smallholders



Implementation of the DKV risk analysis based on the criteria of the LkSG, as well as the grievance mechanism Ear4U



GRAS supports companies to comply with obligations from Due Diligence regulations

Examples



German Act on Corporate Due Diligence Obligations for the Prevention of Human Rights Violations in Supply Chains (LkSG) & EU Directive on Corporate Sustainability Due Diligence (CSDDD)

- Abstract risk assessment of relevant human rights risks
- Establishing and managing grievance mechanisms



Regulation on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation (EUDR)

- Collection of geo coordinates, polygons and legality information
- Analysis of deforestation after 31 Dec 2020
- Risk analysis for individual deliveries
- Reporting for DD Statements and internal documentation

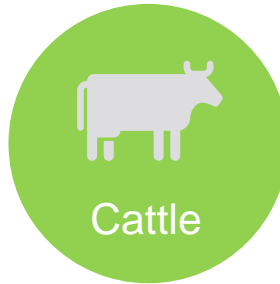


02 Innovative solutions to support compliance with EUDR

Obligations described in the EU regulation on deforestation-free supply chains

Proof that products are **deforestation-free** and **legal**

- Cut-off date for deforestation: December 31, 2020
- In accordance with all relevant legislation in force in the producing country



Collection of **farmer information and field coordinates/ outlines**

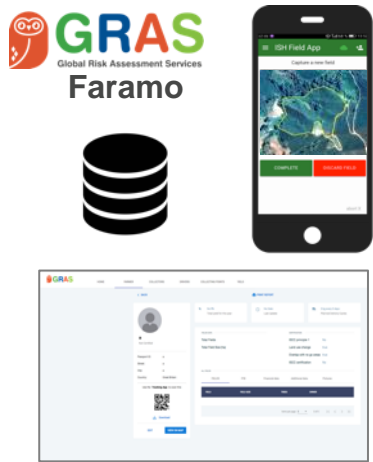
Provide information that production is **deforestation-free and legal**

Conduct **risk assessment** and mitigation measures

Passing on the information **through the supply chain**

GRAS and 4C provide tools to collect and analyse relevant data for specific plantation areas, e.g. collecting geo-coordinates, analysis of deforestation

Collecting information



The image shows the GRAS Faramo logo, a database icon, a smartphone displaying the 'GRAS Field App' interface, and a computer monitor displaying the web management system.

- Mobile app for efficient data collection on the ground
- Collect basic farmer data
- Geo-coordinates & plantation outlines
- Photos of legal documents
- Questionnaire on legal requirements
- Farmer management system
- Train the trainer approach

FARAMO - Management, analysis and visualization of plantation outlines and production data

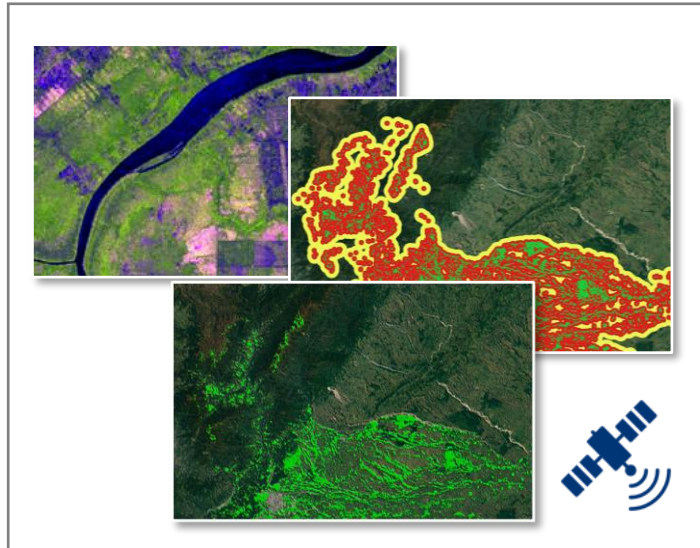


The image shows a photograph of a coffee plantation on the left, the 4C logo (a green globe with '4C' in orange) and a location pin icon on the right, and an aerial map of the plantation with green and purple markers on the bottom right.

4C certification includes the collection of geo-coordinates of farmers

GRAS applies an efficient multi-step approach to create a forest base map to analyse geo-coordinates of production areas against deforestation

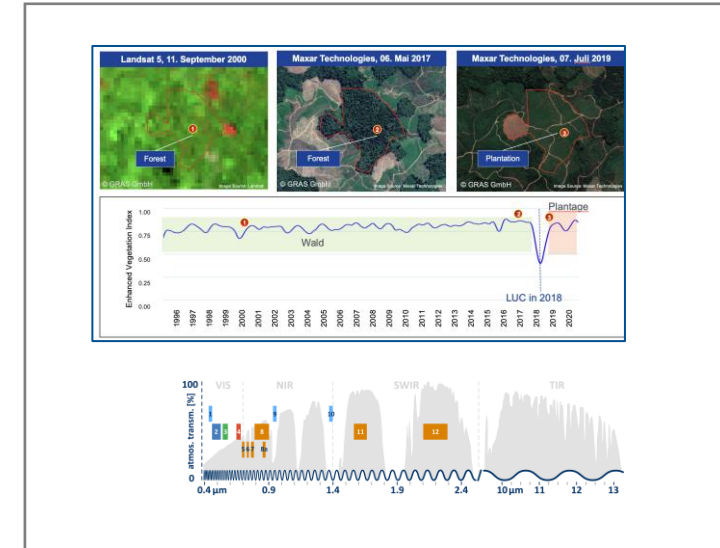
Deforestation analysis



Level 1: Integrated and combined map based on global datasets, JRC, JAXA, National datasets, etc.



Level 2: Improved map based on high resolution satellite images, e.g. Sentinel 2



Level 3: Detailed analysis of critical cases, raw observation, high resolution, time series analysis, etc.

GRAS uses remote sensing technology to detect land use change and deforestation

Deforestation analysis

Examples

Sentinel 2 (ESA, Copernicus):

- 10x10m spatial resolution
- Launch Sentinel-2A: 2015
- Images available every 5 days

Landsat (NASA):

- 30x30m spatial resolution
- Launch Landsat 4/5: 1982/84
- Landsat 8/9 available every 8 days



Sentinel-2



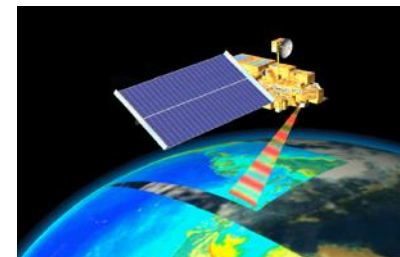
SPOT



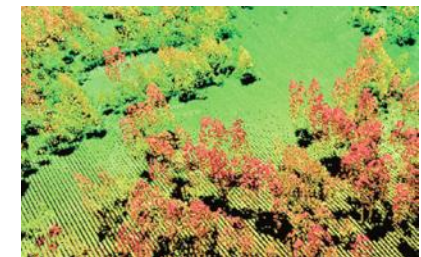
PALSAR



Landsat



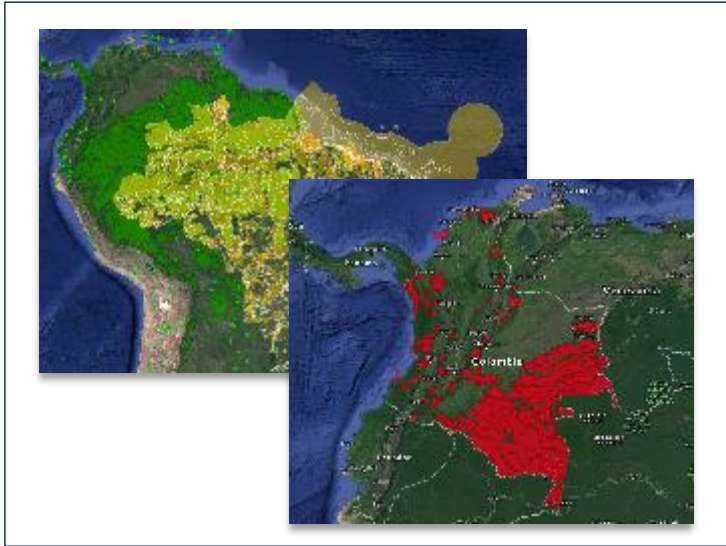
MODIS



LiDAR

The risk assessment approaches from GRAS are customized to the specific criteria relevant for DD regulations, based on geo-data & statistics and indices

Risk assessment

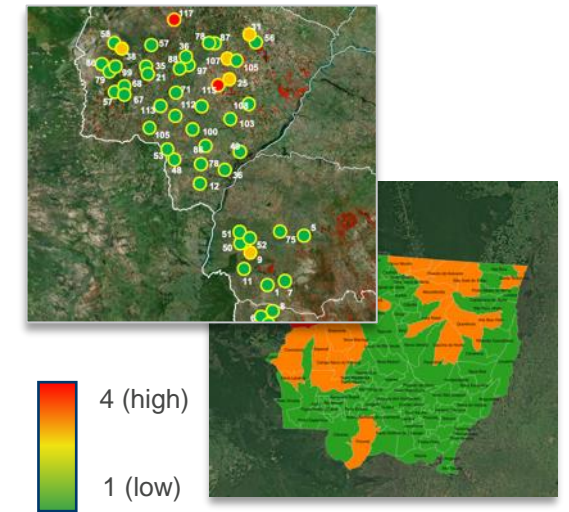


Forest, deforestation, protected area datasets and others are used for sub-regional risk assessment

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Evaluation of political and social criteria, information from certification systems and third parties



Transparent, data-based risk evaluation



03 Pilot coffee farms in Vietnam

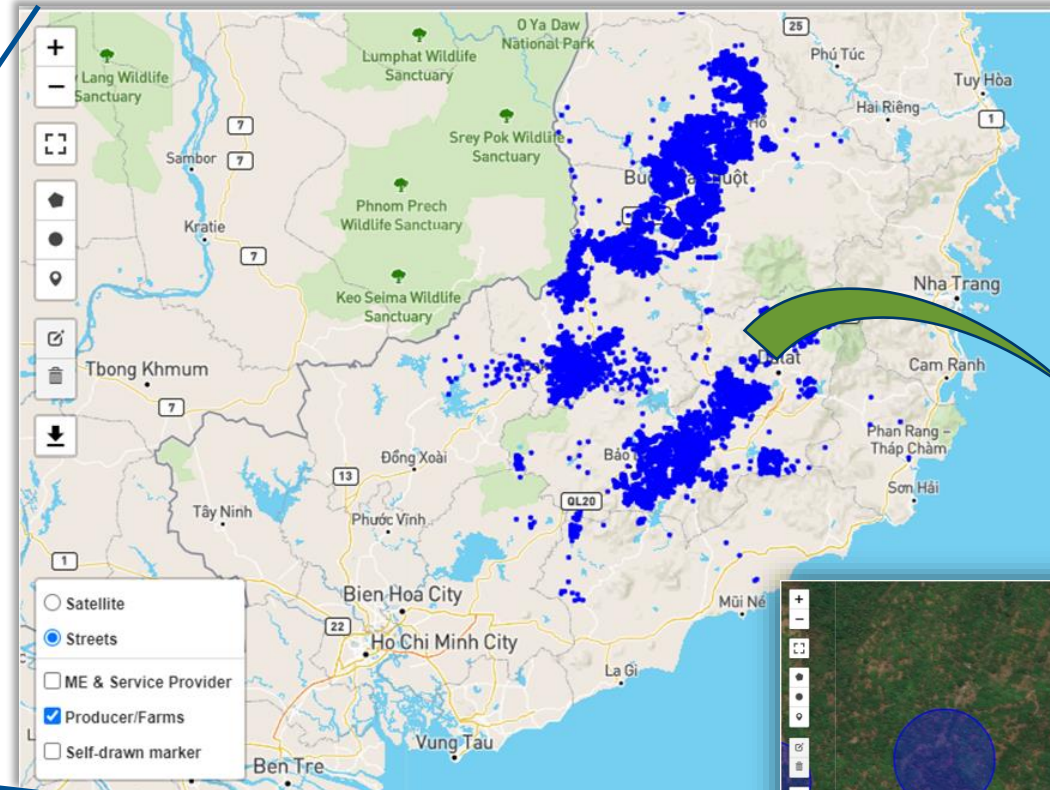
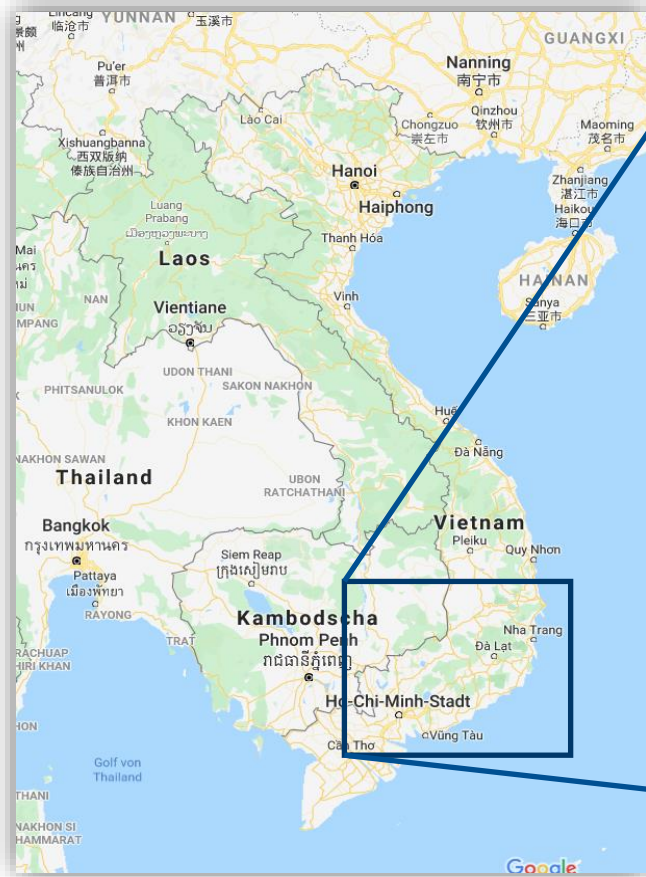


Running Pilot Project:

**Deforestation status for coffee farms provided
by Vietnamese companies to claim
deforestation-free coffee
(4C and GRAS)**

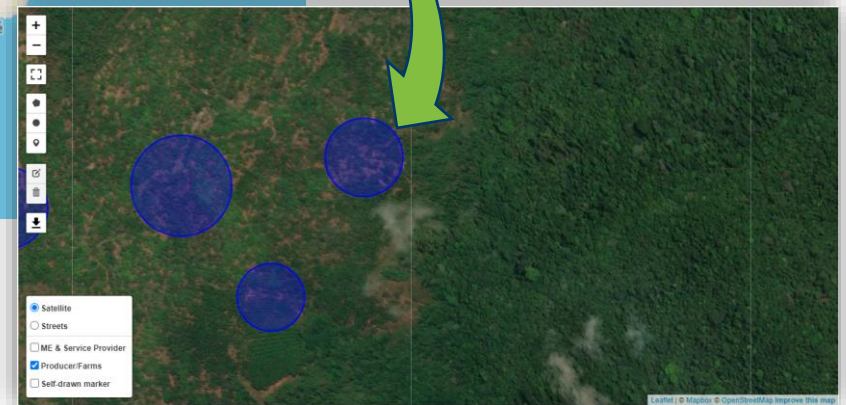
- Vietnamese companies provided point coordinates and Polygon
- GRAS develops the Forest Map of Vietnam considering the cut-off date 31 December 2020
- 4C integrated the Forest map into 4C Portal
- Deforestation Alerts are shown in 4C Portal showing the deforestation status of the farms

Geo-point coordinates are an integral part of the 4C Certification System



Geo-coordinates of more than 320,000 farmers in the 4C Portal

- 100% geo-coordinates certified plantations, mill facilities and warehouses available in 4C portal
- **However, 9% Farms \geq 4 ha still need polygons**



GRAS produces forest base maps for the year 2020 for the deforestation check

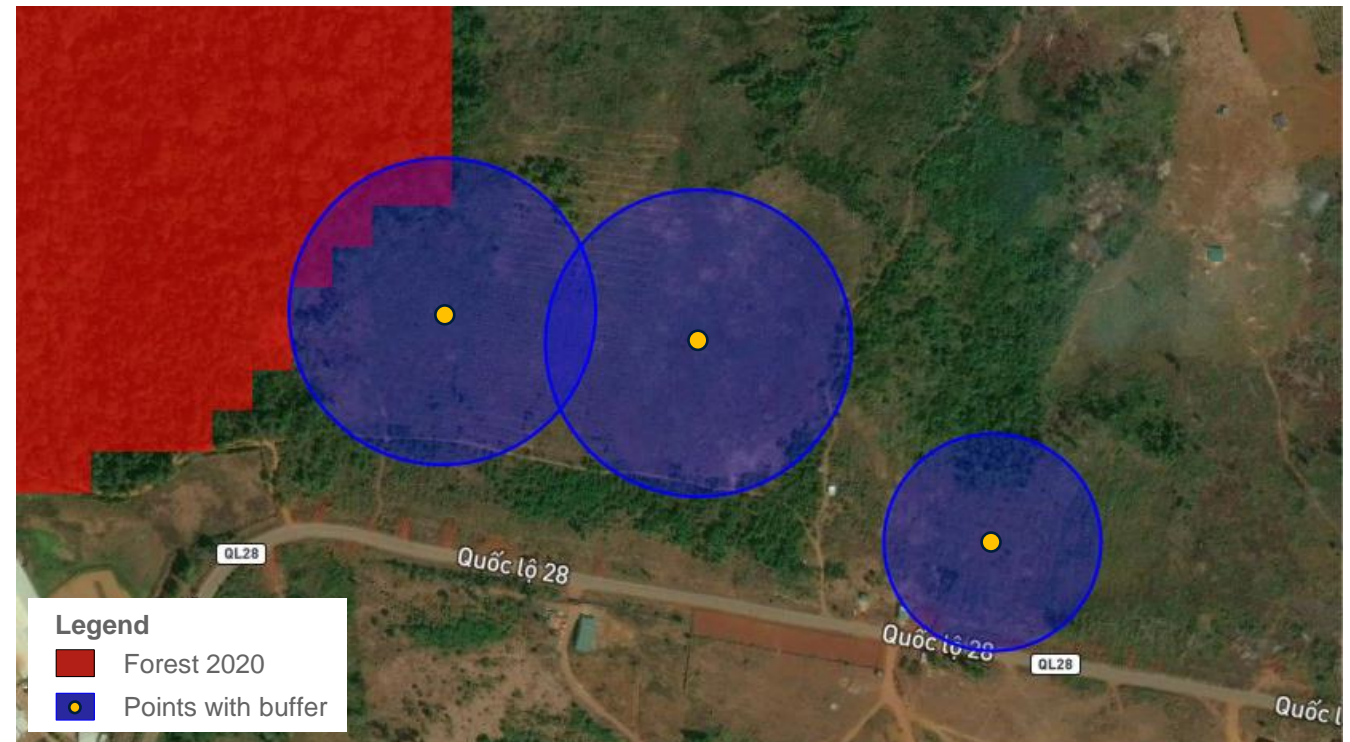
Forest base maps show the extension of forest before the cut-off date 31st December 2020

The algorithm is trained to distinguish between tree plantations and natural forest in 2020



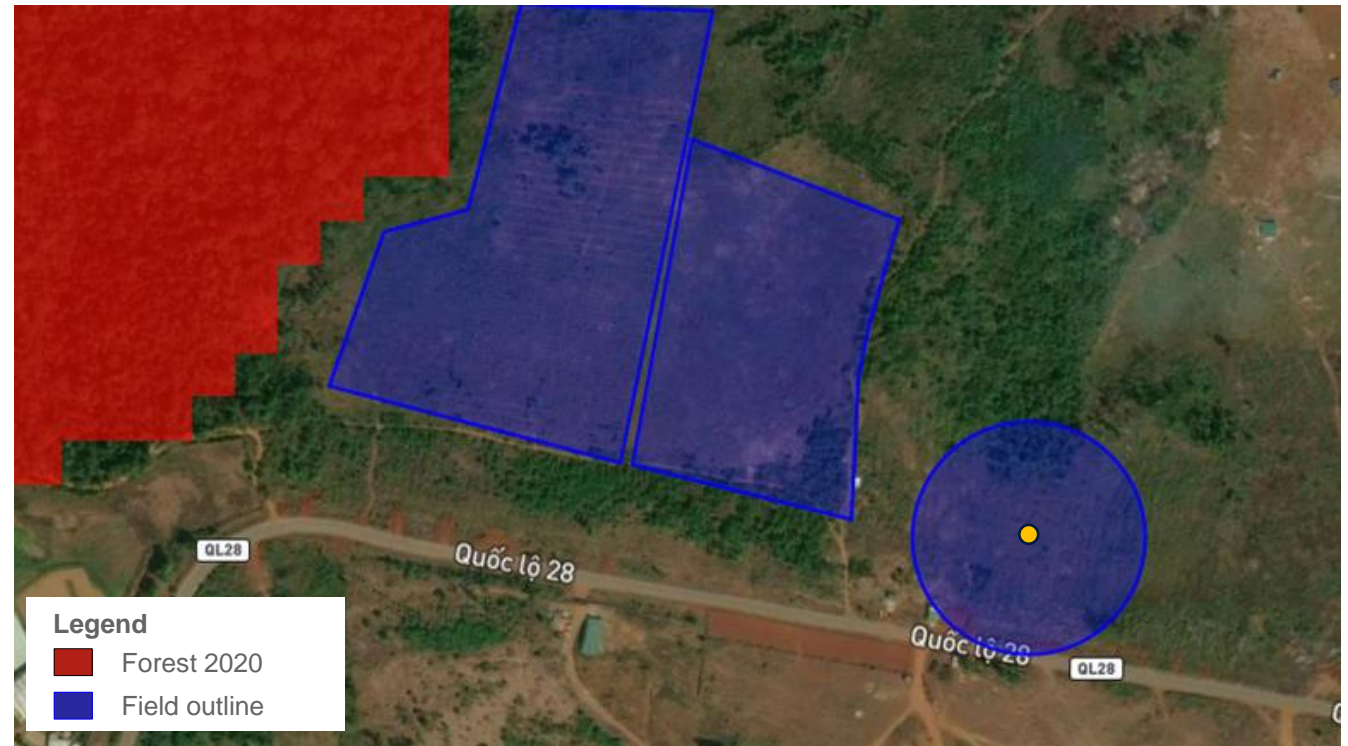
Farm points with buffer areas are checked for overlaps with forest layer from 2020

- All farm locations are checked for overlaps with forest layer from 2020
- Leftmost farm raises an alert
 - This group of farm locations cannot be considered EUDR compliant
- The alert needs to be resolved by
 - Moving the geo. coordinate to the correct location
 - Provide evidence that coffee production in the area is allowed
 - Define the polygon of the exact farm area
 - Exclude the farmer from the group

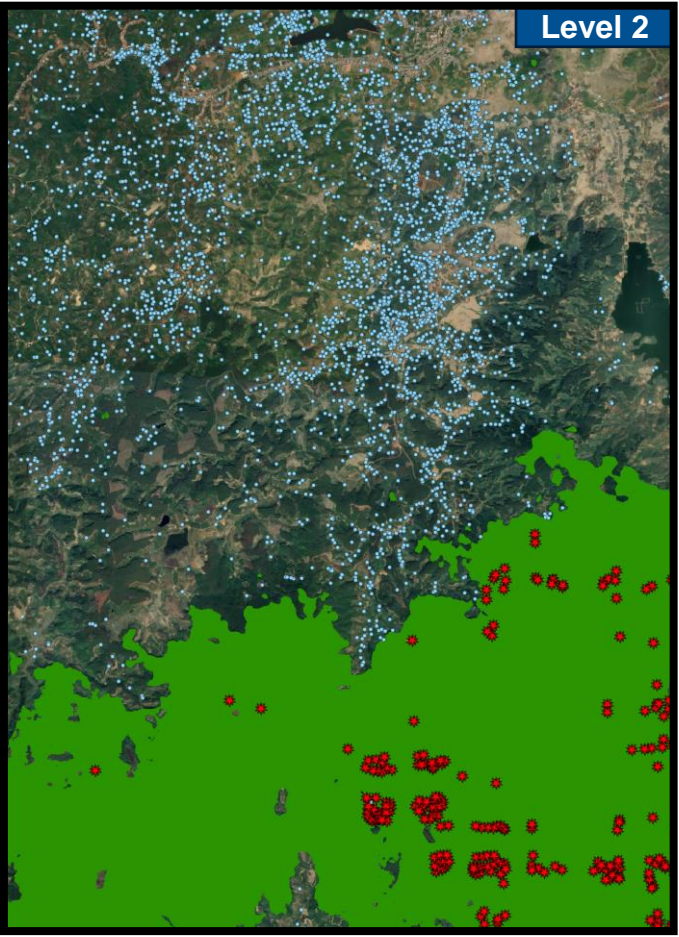
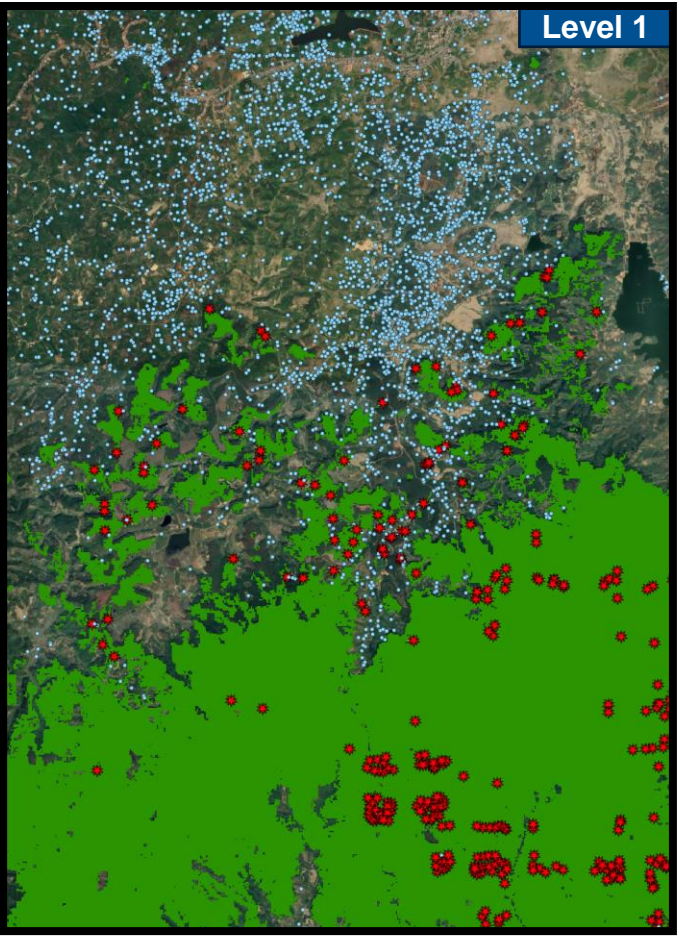
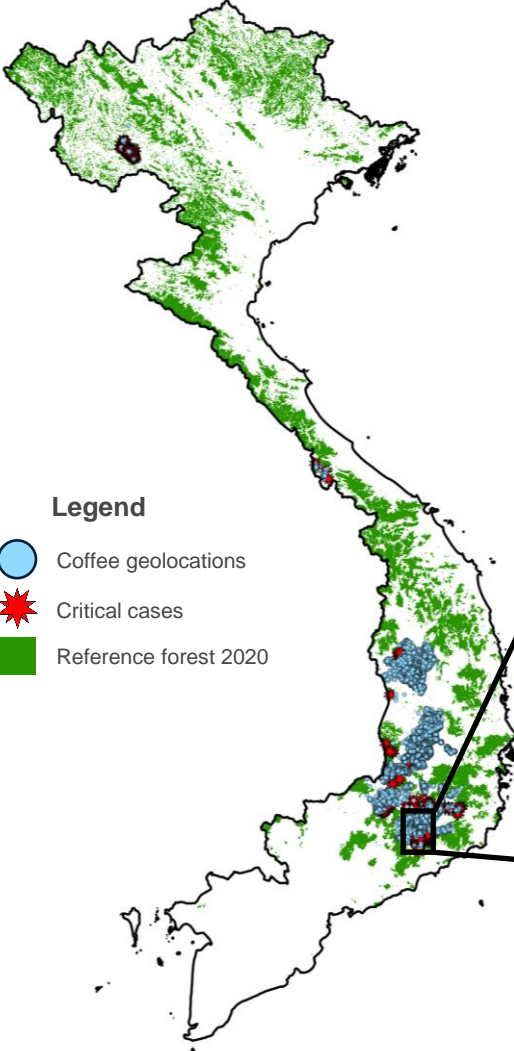


Farm polygons are more accurate and show a realistic analysis against forest layer

- Using a polygon to describe the farm area solves the alert
- The exact outline of the field allows no inaccuracies
- It is recommended to collect polygons in the field to immediately obtain an accurate image and avoid duplicate checks
- → Produce EUDR compliant coffee

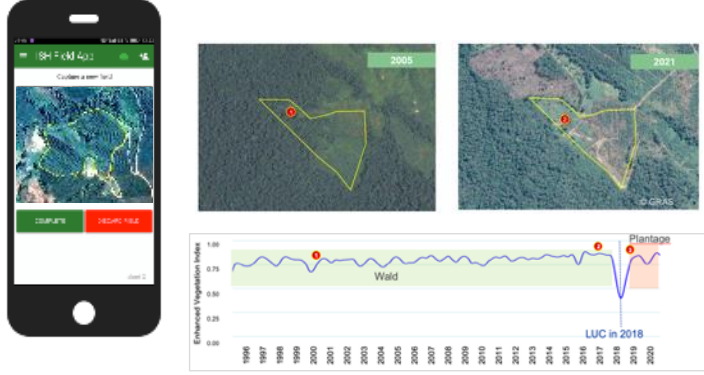


Example of a GRAS system test in Vietnam EUDR deforestation checks coffee sourcing area




Total coffee geolocations: 111,035	Level 1	Level 2
Critical cases	1,137	648
Critical cases %	1.02 %	0.58 %


GRAS supports companies in adhering to EUDR obligations through a comprehensive process that identifies and addresses deforestation risks in any of the commodities and countries of origin




- Mapping of plantation areas
- Analysis using satellite data and innovative evaluation methods




Collection of farmer data and geo-coordinates & analysis of deforestation




- Consideration of all relevant environmental and human rights criteria of the EU regulation



Risk assessment

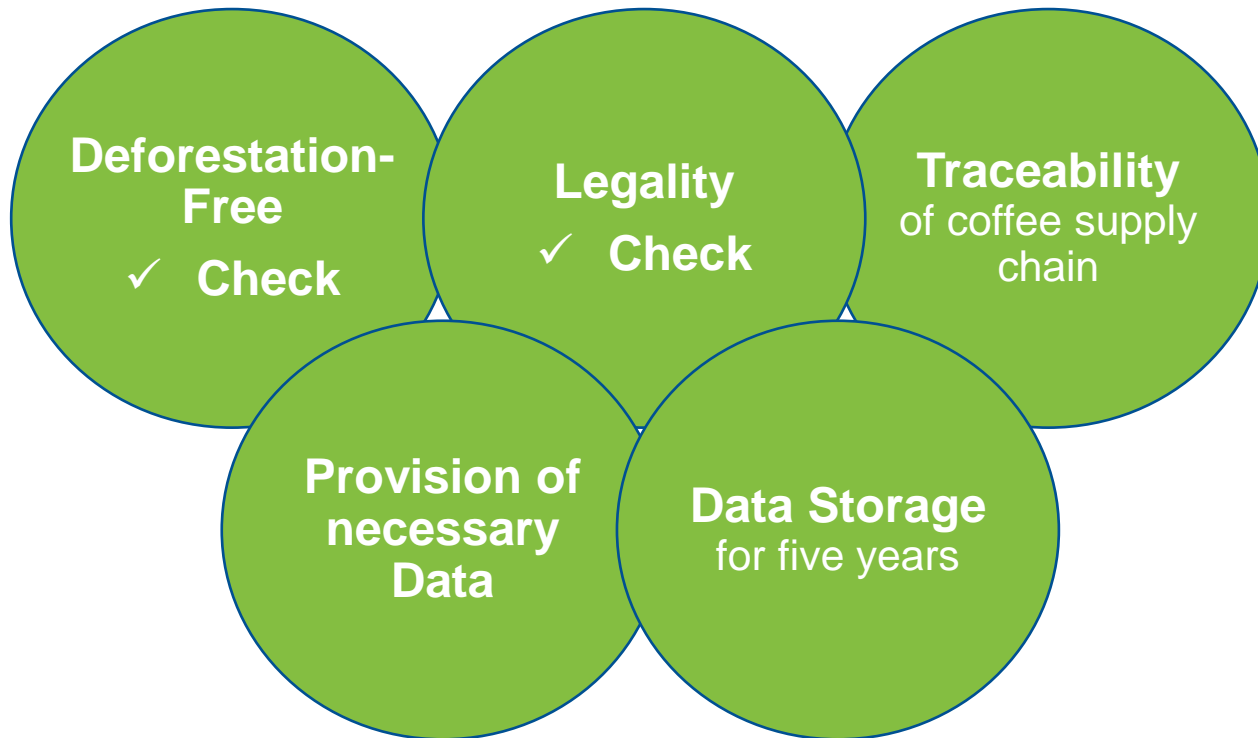


- Independent traceability platform
- Passing on of farmer information through the supply chain by „digital handshake“



Traceability

A complete set of solutions to cover EUDR as a one-stop shop is offered by 4C and GRAS



- ✓ EUDR requirements (Art. 2 (40)) covered in the 4C Code of Conduct
- ✓ Traceability is provided through the Commercial Reporting via the 4C Portal by System Users
- ✓ Risk analysis tools by GRAS for external auditors verify potential conversion of primary forest and protected areas through remote sensing
- ✓ Geo-coordinates of more than 320,000 farmers in the 4C Portal
- ✓ 4C offers support options for the Legality Check



Thank you very much!



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