How 4C enables prevention and reduction of coffee-driven deforestation?

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27 May 2021

4C is a pathway to sustainable coffee supply chains

4C coffee produced in **20 countries**

More than **300,000** farmers are producing 4C coffee

23 cooperating certification bodies

1.6 million tons of green coffee certified

Independent **3rd party audits**

Use remote sensing to **verify land use change**

Innovative and cost-efficient solutions

Major brand owners and traders are sourcing 4C coffee

Nearly **1 million hectares** covered

Effective **Improvement Plans** for impact on the ground

* data as of 31st December, 2020

Protection of forest and areas of high biodiversity are top priorities of 4C

4C Code of Conduct - Principle 3.1: Protection of Biodiversity and High Carbon Stock Areas

Protection of primary forest

! No cutting, destruction or conversion into coffee plantations since 2006

Conservation and/or restoration of areas of high biodiversity

Implementation of climate change mitigation and adaptation measures

Deforestation and biodiversity loss are major threats for mankind. Governments and consumers increasingly request companies to take over responsibility

420 million ha of forest lost worldwide through deforestation since 1990

FAO, 2020

1,000,000 animal and plant species are now threatened with extinction

IPBES, 2019

Current annual rate of deforestation: **10 million ha**

FAO, 2020

Global deforestation and forest degradation account for **11% of CO2 emissions**

REDD+, 2020

Since 2010, more than 473 companies have made **"zero-deforestation" pledges**

Tropical Forest Alliance, 2018

Increasing legislative pressure on national level (France, Netherlands, upcoming Supply Chain Law in Germany) and **intensified discussion on EU Due Dilligence requirements**
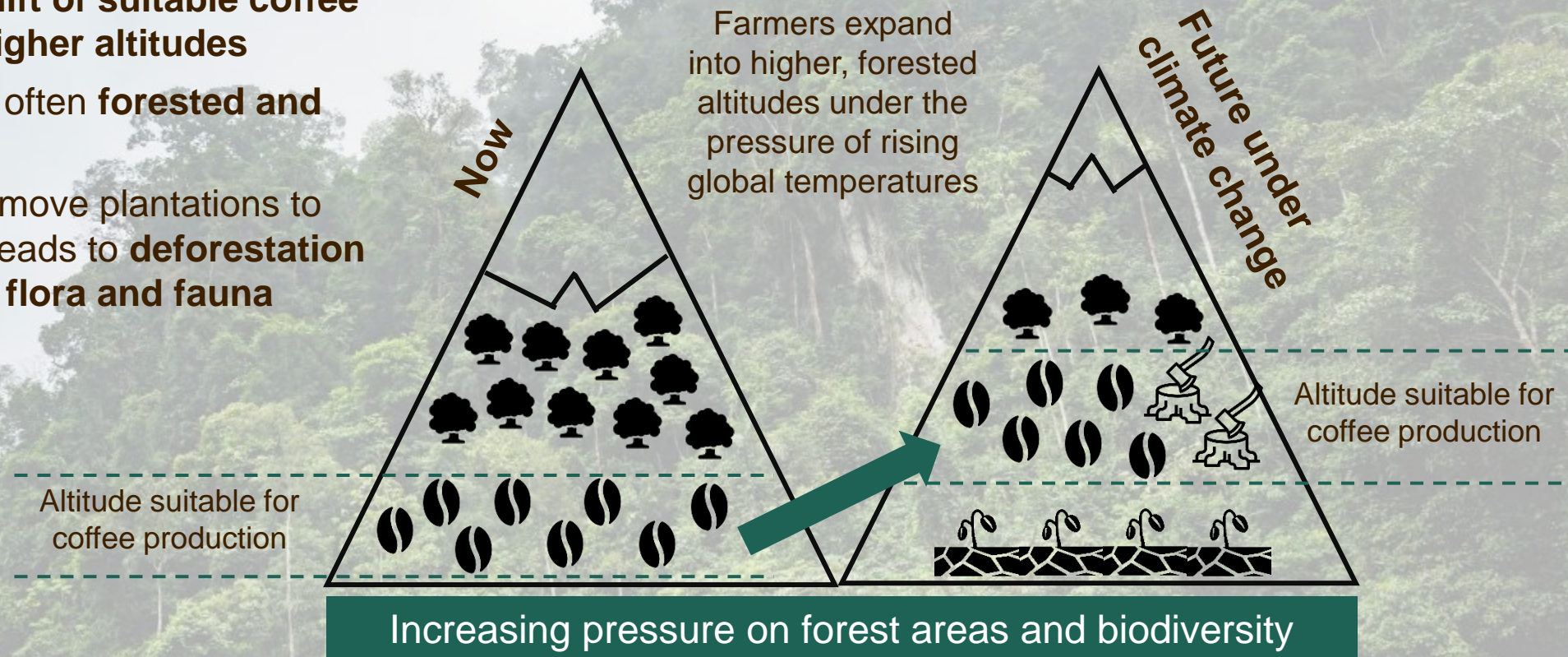
Companies need to take **an agile approach to address the problem**

Climate change increases pressure on natural resources in coffee producing regions

- Changes of global climate and rising temperatures lead to a **shift of suitable coffee production areas into higher altitudes**

- These higher regions are often **forested and highly biodiverse**

- A pressure on farmers to move plantations to higher forested altitudes leads to **deforestation and is a threat to native flora and fauna**

! **60% of the area suitable to grow coffee in 2050 is covered by forest**

Conservation International, 2018

Now

Future under climate change

Farmers expand into higher, forested altitudes under the pressure of rising global temperatures

Altitude suitable for coffee production

Altitude suitable for coffee production

Increasing pressure on forest areas and biodiversity

Why is it important to have a closer look into smallholder production?

Main producer group in the coffee sector

Direct economic pressure and low adaptation capacity

Limited market and financial access
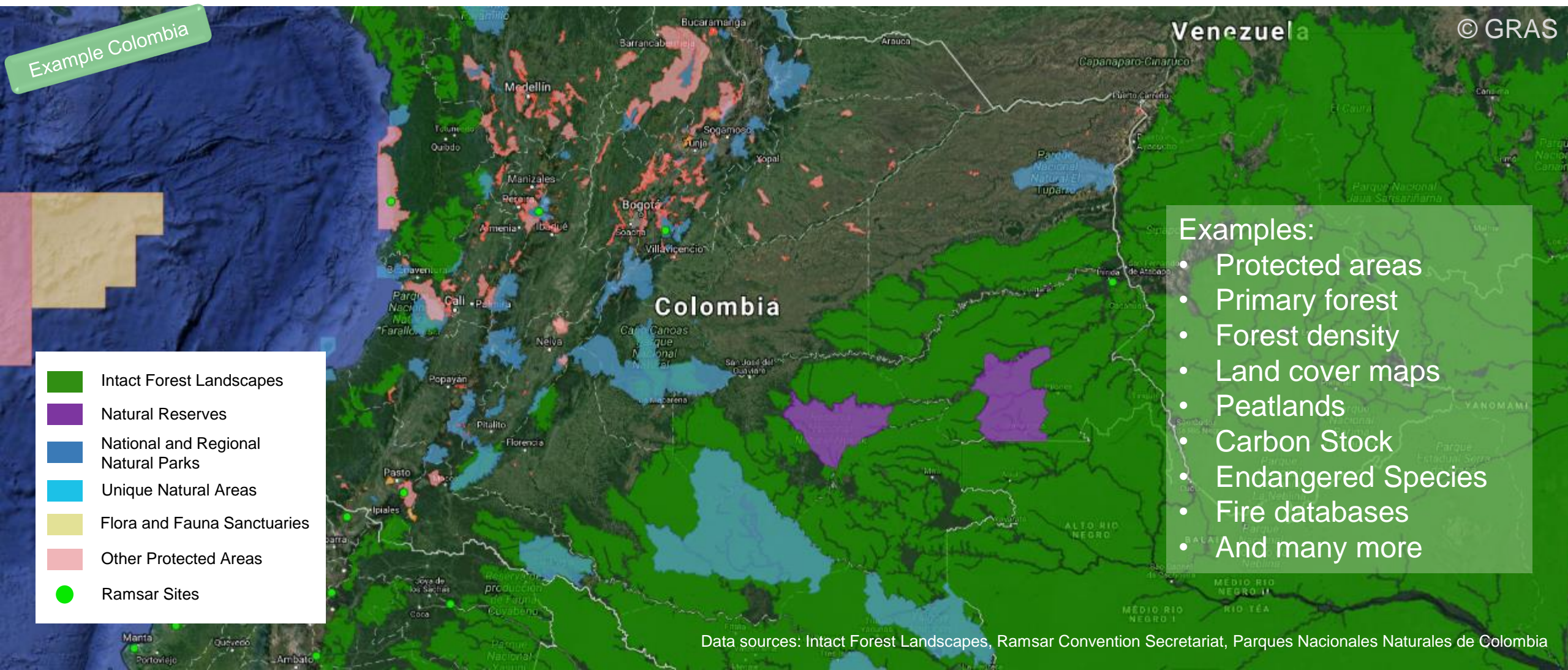
Inadequate agricultural practices and low yields

Pressure on natural resources and deforestation

Expansion of smallholder agriculture is often one of the main driving forces behind deforestation and forest degradation. Smallholder coffee farming must be taken into account when adressing these issues
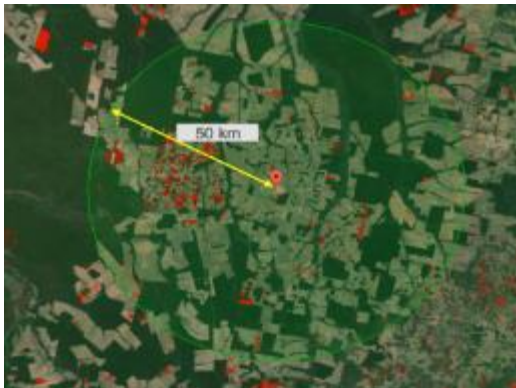
Available local and national datasets on biodiversity and protected areas are used to check the overlap with plantation areas of coffee farmers

Example Colombia

© GRAS

Examples:
- Protected areas
- Primary forest
- Forest density
- Land cover maps
- Peatlands
- Carbon Stock
- Endangered Species
- Fire databases
- And many more

Legend:
- Intact Forest Landscapes
- Natural Reserves
- National and Regional Natural Parks
- Unique Natural Areas
- Flora and Fauna Sanctuaries
- Other Protected Areas
- Ramsar Sites

Data sources: Intact Forest Landscapes, Ramsar Convention Secretariat, Parques Nacionales Naturales de Colombia

GRAS supports the implementation and monitoring of deforestation free and climate-friendly supply chains

Using efficient remote sensing methods and tools

1 Semi automated risk assessment of sourcing areas	**2** Calculation of risk factors of assessed sourcing areas	**3** Calculation of risk factors of individual farmers	**4** Detailed analysis

✓ **Cost-effective and quick analysis** of all sourcing areas

✓ **Identification of sourcing areas** with high risk
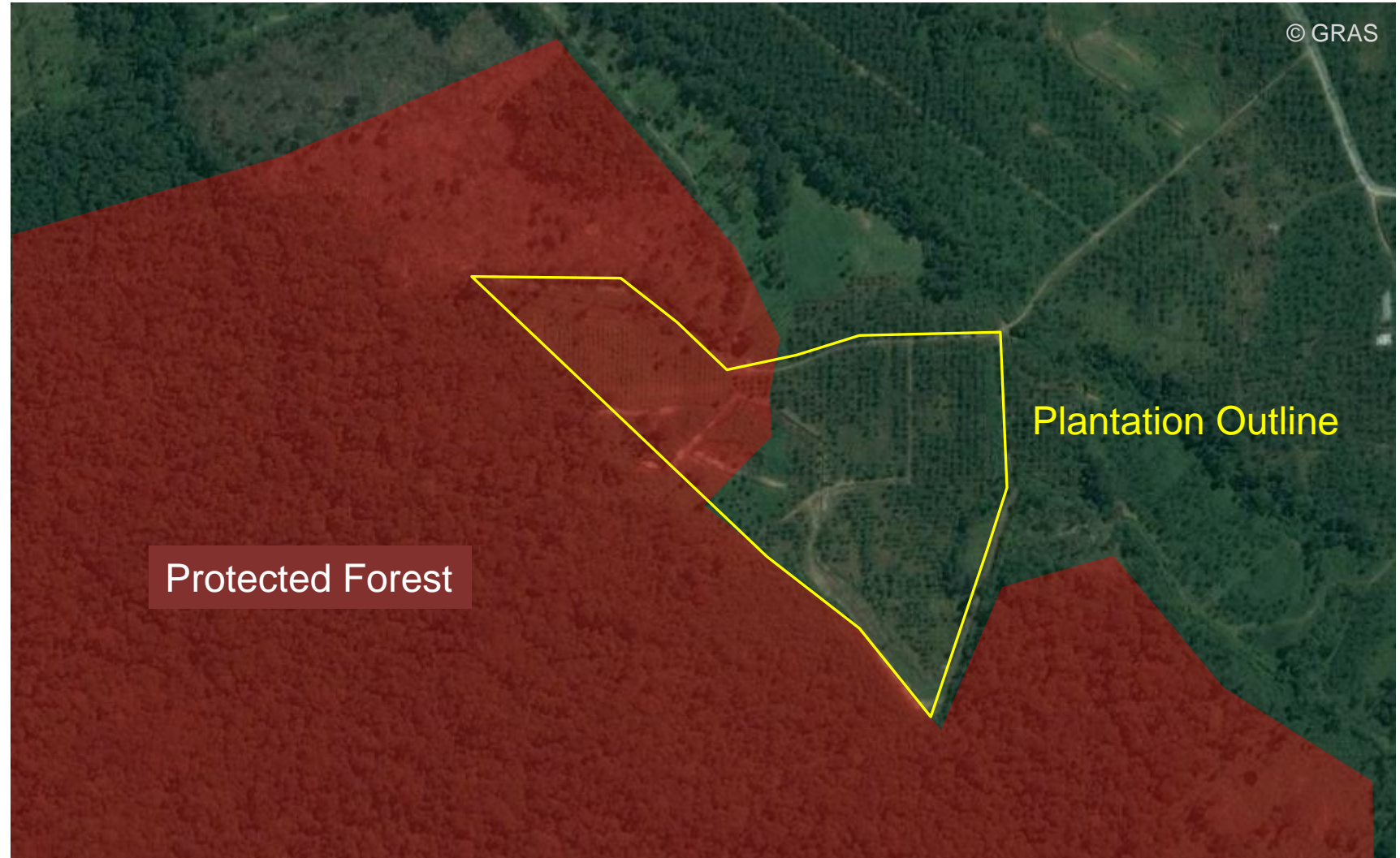
✓ **Efficient identification** of farms with high risk

✓ **Exclusion of farms** not meeting sustainability criteria

Plantation outlines can be compared with the available datasets for biodiversity and reveal violations against the protection status of respective areas
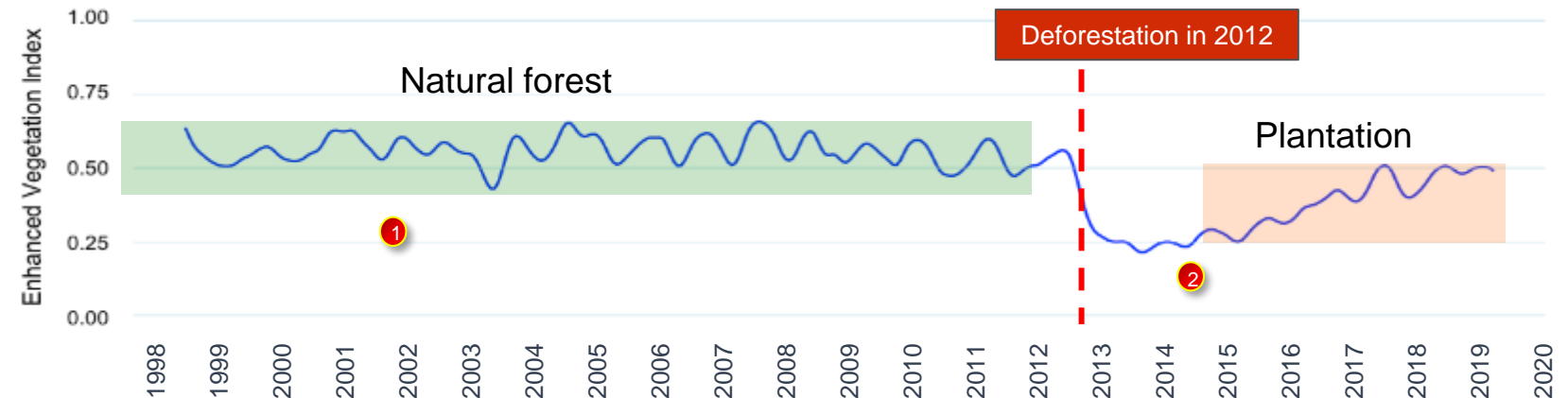

- Datasets from national sources, e.g. governemental bodies, and global databases are used to check the violation of their protection status and compliance of individual coffee plantations

- Areas with remaining areas of primary forests and endagered species can be monitored with highest priority

© GRAS

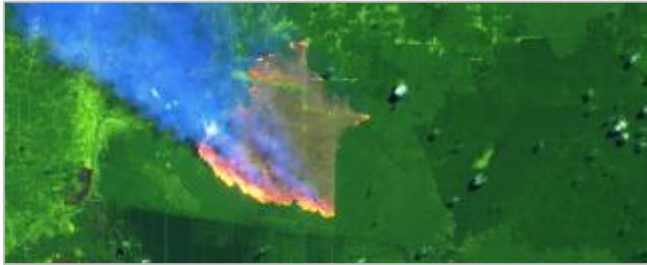Plantation Outline

Protected Forest

Satellite images and vegetation index time series are used to verify the exact time and type of land use change activities within plantation outlines
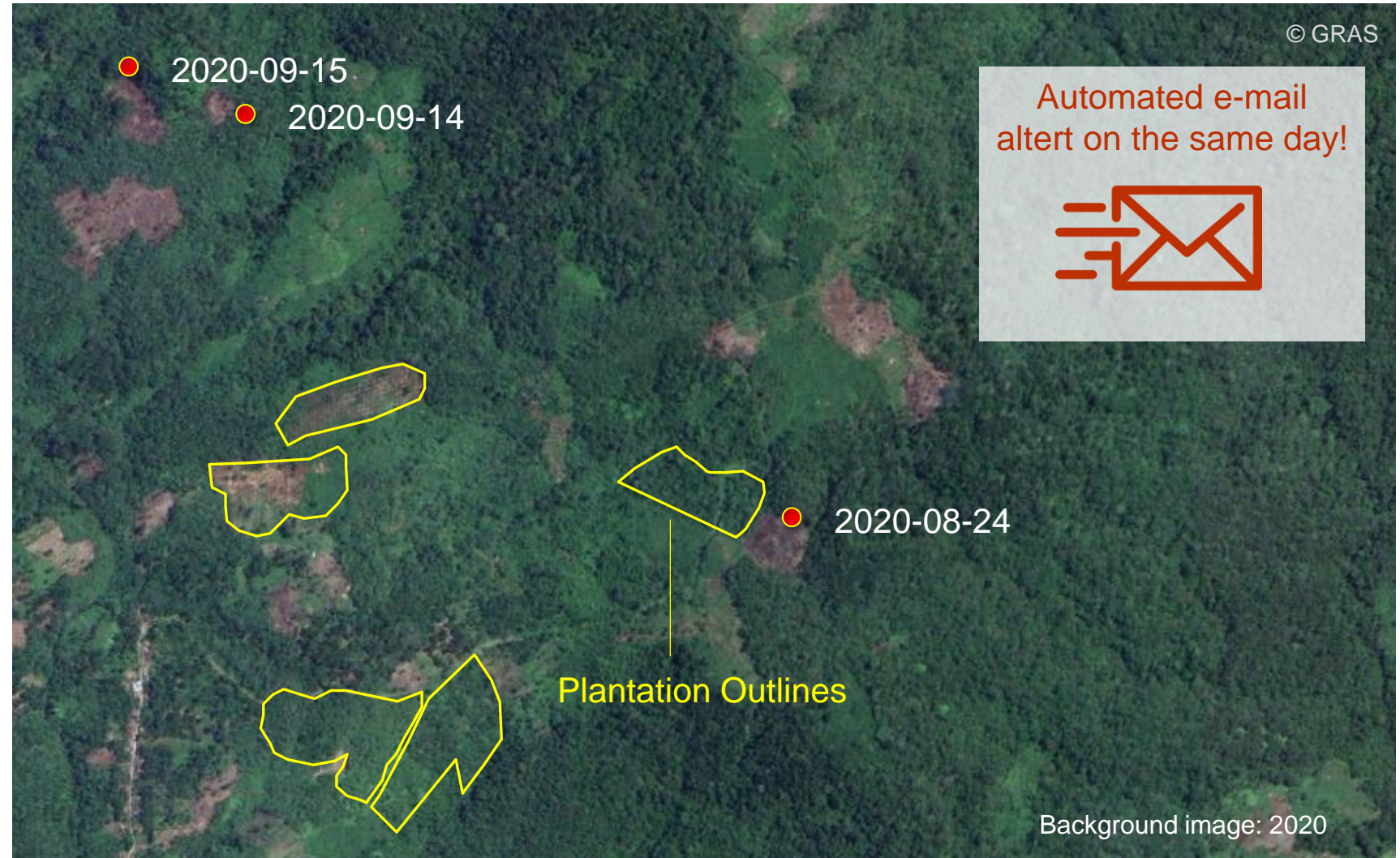

- High resolution satellite images are available gloablly and far back into the past

- This allows to verify the compliance of strict deforestation criteria of 4C

- Patterns of vegetation index time series indicate the type of historic land use and its changes

2005

2014

© GRAS

Natural forest
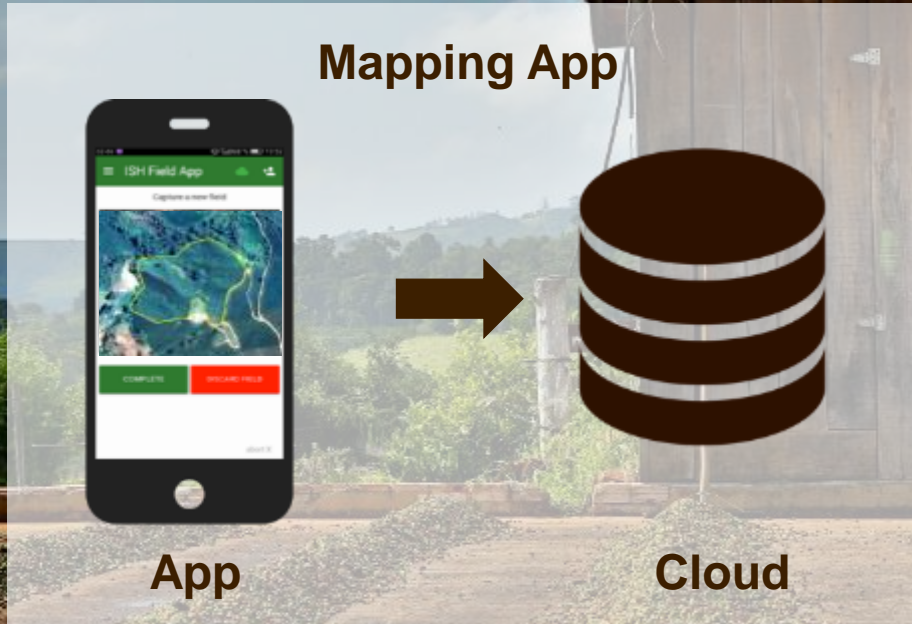
Deforestation in 2012

Plantation

Fire databases are updated on a daily basis, allowing an early indication for potential deforestation activities in the production regions or within farm outlines

- The available fire database is updated ona daily basis
- Alert per e-mail on the same day of the detection
- Identified fires can be a sign for expansion and deforestation activities
- The daily alert allows for early action in the observation region

2020-09-15

2020-09-14

© GRAS

Automated e-mail altert on the same day!

2020-08-24

Plantation Outlines

Background image: 2020

A mapping mobile app allows to collect data and field outlines

Mapping App

App → **Cloud**

- Basic data
- Field outlines
  - Automated check against environmental risks
- Field size
- Number of trees
- Yields per month/year
- Applied inputs
- GHG data
- Photo of smallholder
- Field records

Environmental Geodata

Performance **GRAS** Pictures

Data

GHG data Basics

👍 **Mapping can be conducted by non-experts (e.g. heads of the farmer groups)**

Digital farmer management solutions facilitate the integration of farmer groups into sustainable supply chains with positive impacts on their communities

Collecting farmer data

Mapping of plantations

Verify compliance

Tracking deliveries

GAP training

Implementing GAP measures

Monitor impact

Facilitate access to finance

↓

Improvement of management practices

↓

Increased yield and product quality

↓

Increased farmer income and resilience against hazards

Deforestation-free and highly biodiverse: 4C impact-driven projects on the ground

- Project examples:
  - **Analysis of remote sensing** data to ensure deforestation-free coffee supply chain
  - **Smallholder App** for data collection and traceability
  - **Calculating GHG emissions** to support mitigation and adaptation implementation measures
  - Promoting **climate-smart agriculture** through capacity building
  - **Improving biodiversity in coffee farms** via biodiversity assessment at coffee plantations and biodiversity implementation plans

4C cordially invites any interested party to join forces and participate in its projects, contributing to deforestation-free coffee supply chains and biodiversity improvement

Summary

Deforestation and biodiversity loss are significant challenges faced by the coffee sector

- **4C is a credible and robust system** that contributes to the protection of landscapes with high biodiversity and carbon values. Converting primary forests and protected areas into coffee plantations is unacceptable for 4C

- **The use of innovative remote-sensing technologies** enables 4C to conduct **comprehensive risks assessments** and strengthen deforestation-free and biodiversity-friendly coffee production

- With support of digital tools and independent auditors 4C is **continuously monitoring compliance with its sustainability requirements**

- With its comprehensive approach, advanced risk assessment procedures and innovative tools, **4C supports companies in meeting the increasing due diligence requirements** to their supply chains

Thank you for your attention! Any questions?

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