Certification Support with Global Risk Assessment Services (GRAS)

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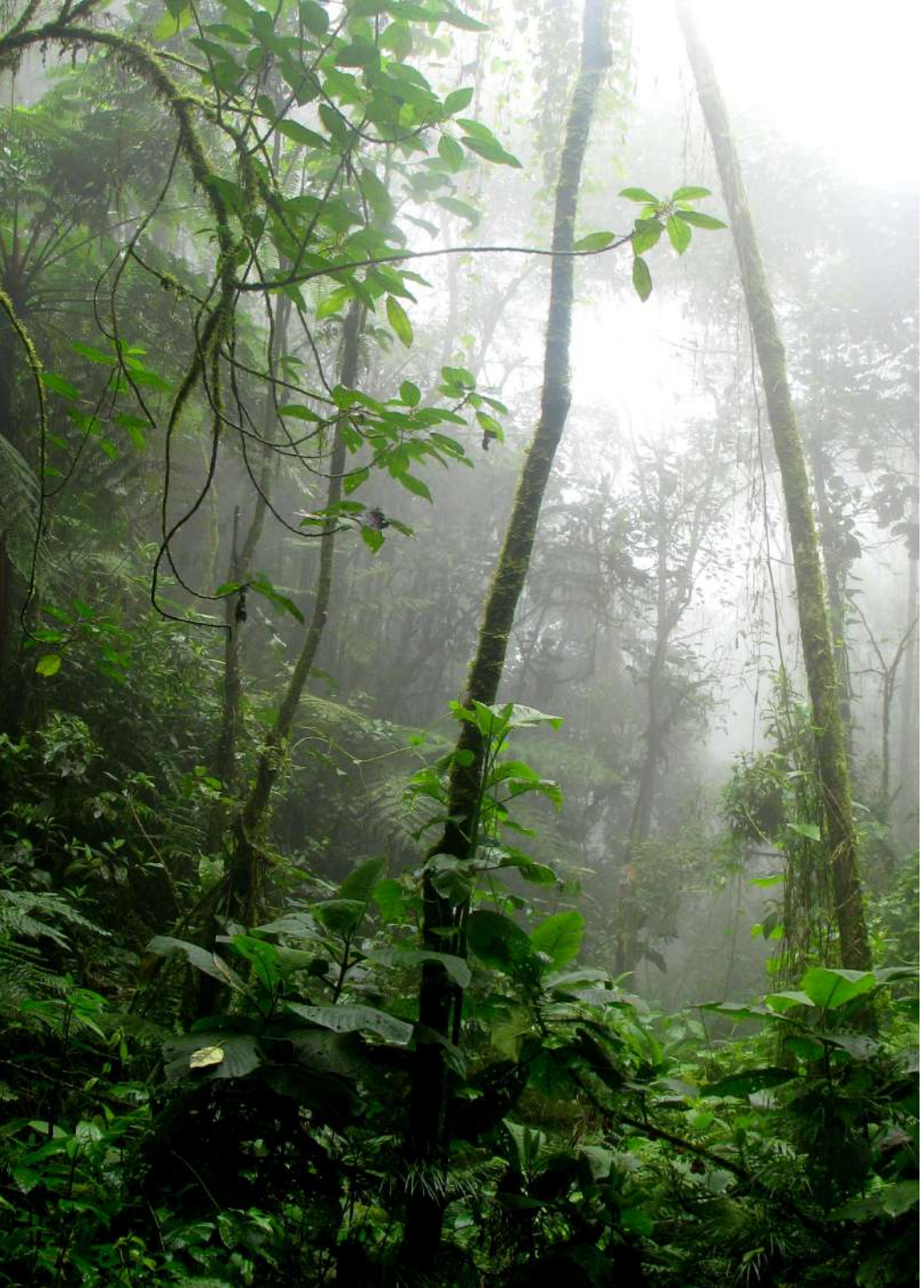
ISCC
International Sustainability & Carbon Certification



01

How does GRAS work?

02

Case Study: Oil Palm Plantations

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Case Study: Coffee Farmers in Colombia

04

Case Study: Soy Farmers in Brazil

01 How does GRAS work?

A reliable and efficient monitoring of sustainability requirements is crucial for all stakeholders along the supply chain and beyond

Farmers / Farmer Groups

Agricultural Traders

Brand Owners / Retailers

Private / Public Investors

Auditors

Governments and NGOs

GRAS is a comprehensive solution to implement and monitor deforestation-free supply chains by…

… identifying deforestation and degradation of high biodiverse areas

… mapping and managing sustainability risks in agricultural production

… implementing secure and efficient monitoring of global supply chains

… supporting credible and cost-efficient certification processes

GRAS is an integrated one-stop-shop solution to verify and monitor compliance with the most relevant sustainability criteria

Biodiversity Areas

Deforestation

High Carbon Stock

Social Indices

GRAS
Global Risk Assessment Services

ISCC
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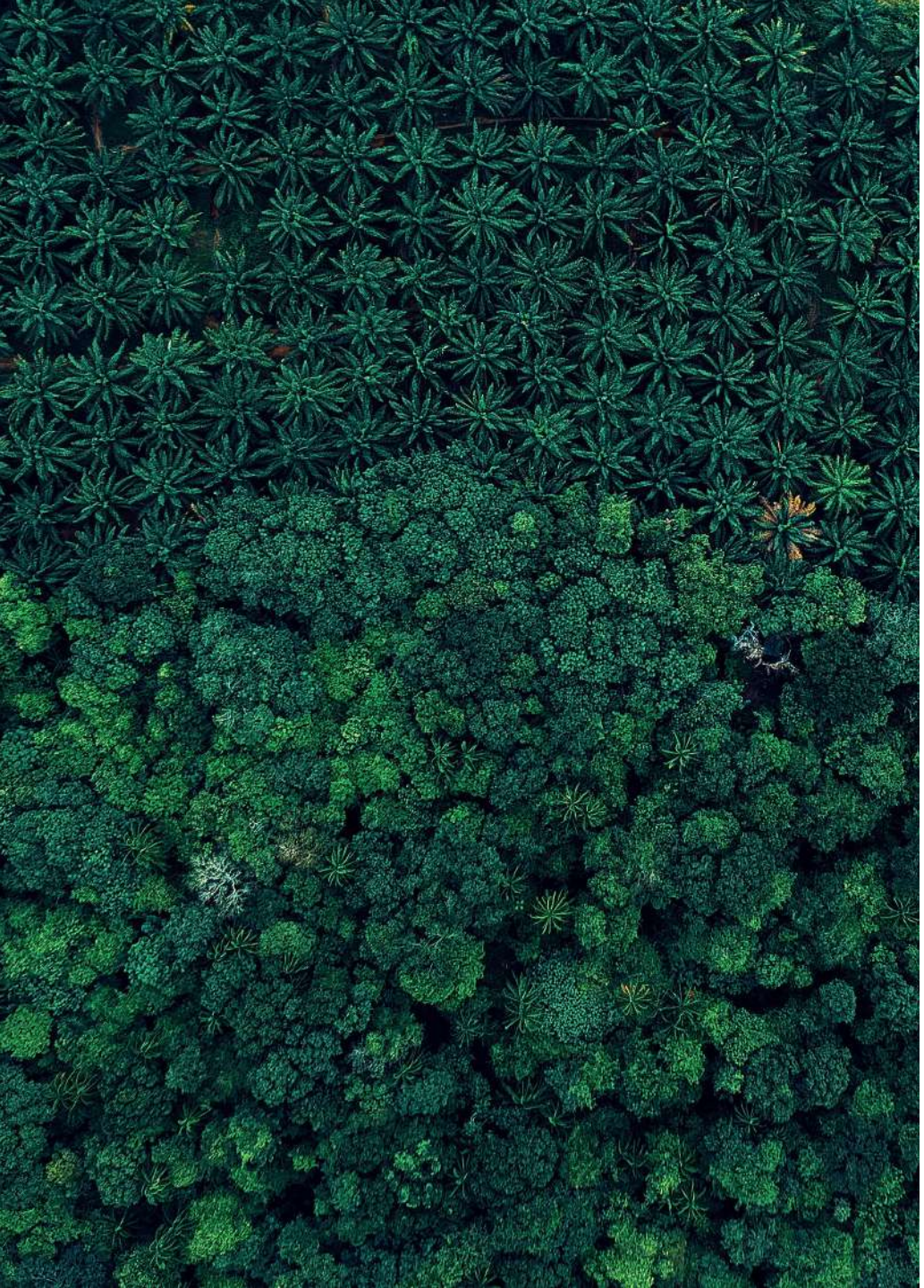


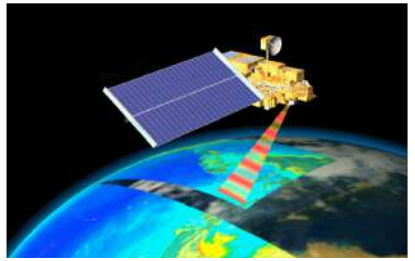
GRAS uses latest remote sensing technology to identify land use change, deforestation and degradation of land cover

Sentinel-2

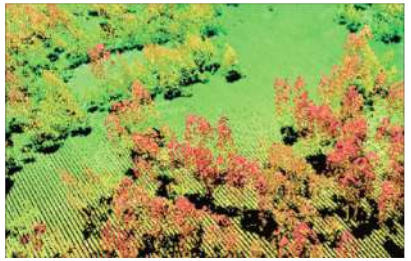
SPOT

PALSAR

Landsat



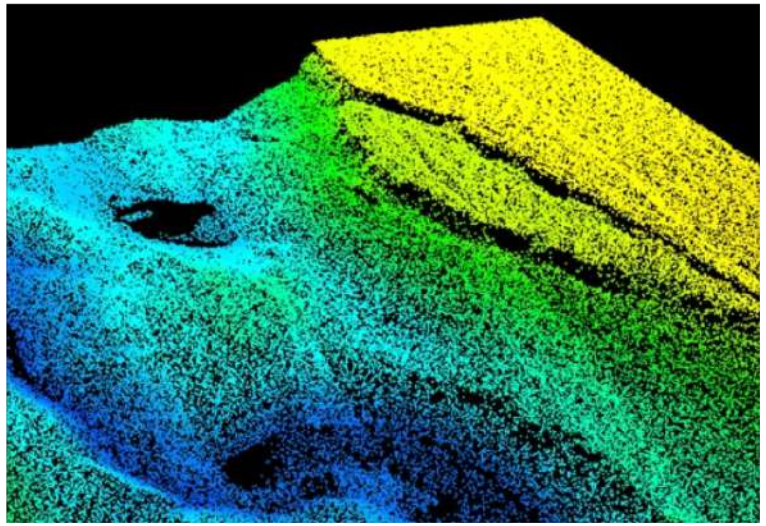
MODIS



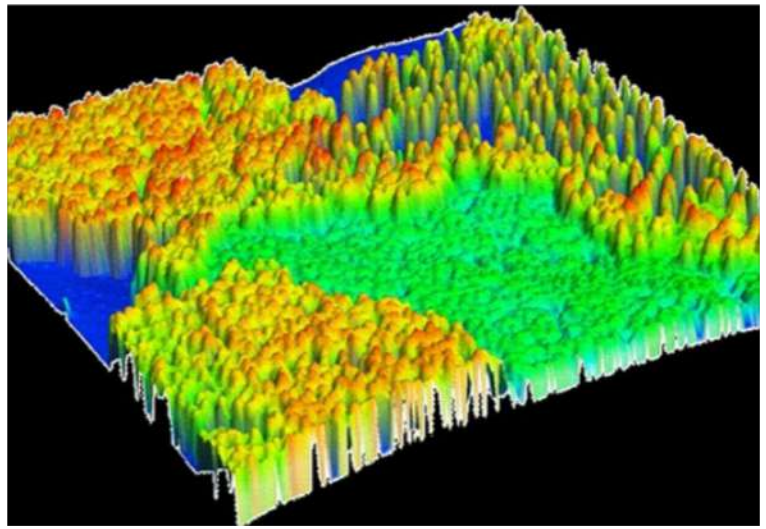
LiDAR

GRAS develops methodologies to estimate above ground biomass and carbon stock of forests with LiDAR (Light Detection and Ranging) (I)

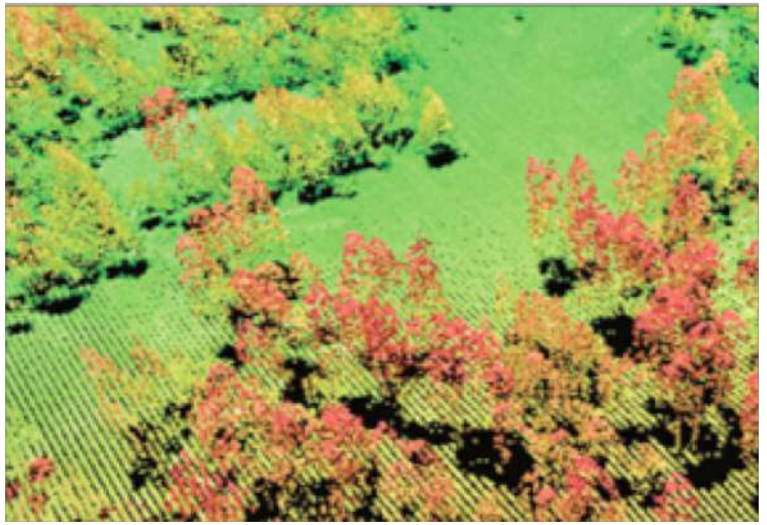
LiDAR sensors can be placed on drones and satellites to scan the earth surface



Landscape Modelling



Forest Carbon Estimation



Single Tree Analysis

GRAS develops methodologies to estimate above ground biomass and carbon stock of forests with LiDAR (Light Detection and Ranging) (II)

Support of effective certification

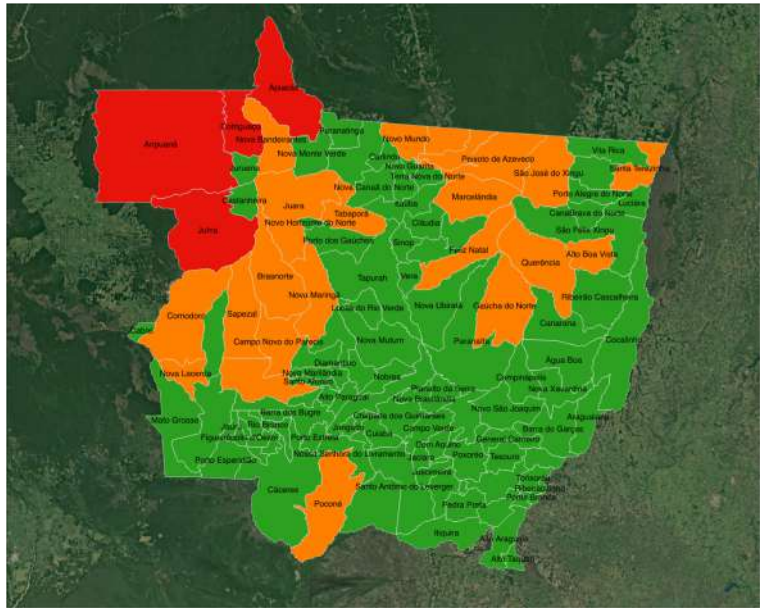
Needs

- Efficient preparation for audit
- Support LUC assessments (e.g. ISCC or RSPO)
- Know high risk areas
- Determination of sample size based on risk assessment?

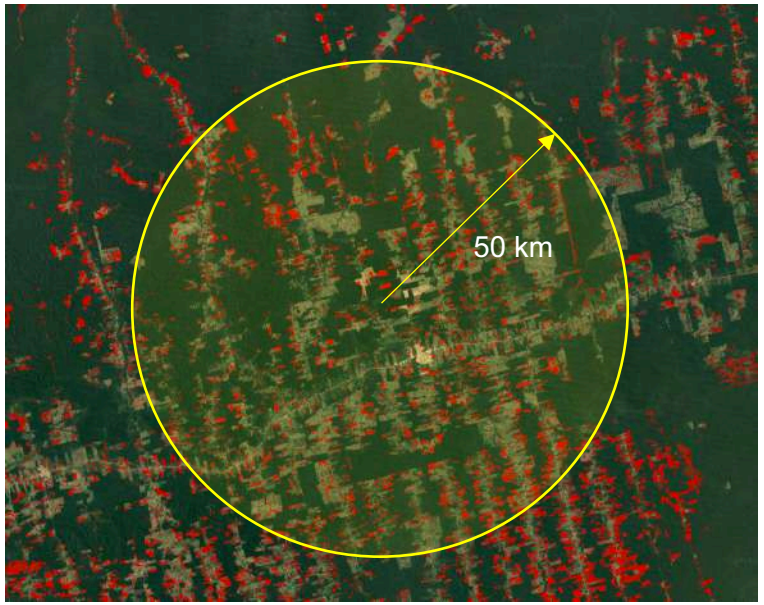
Solutions

- Provide detailed information on land use change and HCV areas
- Objective risk assessment

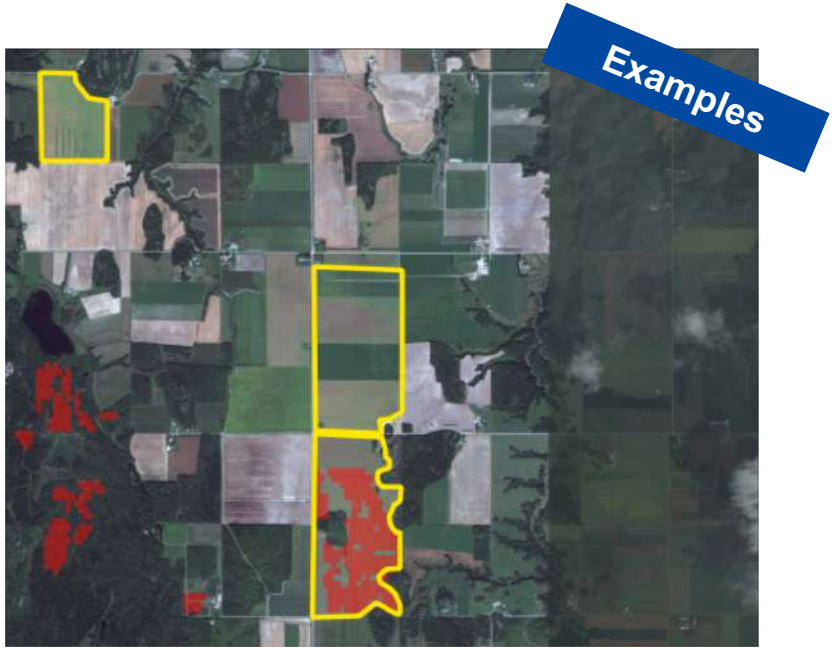
GRAS analyses sustainability risks globally on different levels, depending on your strategy and goal



Administrative level & cluster analysis



Sourcing areas with a specific radius



Detailed field analysis

02 **Case Study:** Oil Palm Plantations

Case Study: Palm Plantations

Analysis of plantation with a defined production area

Needs

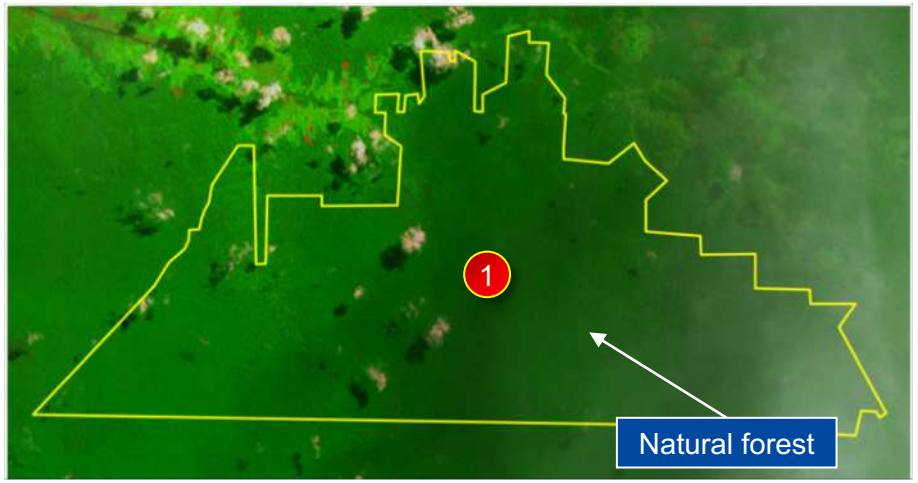
- Are plantations deforestation-free? When was replanting? What is happening in the surrounding of my plantations?
- Is the plantation located in HCV areas?
- Is the plantation suitable for certification?

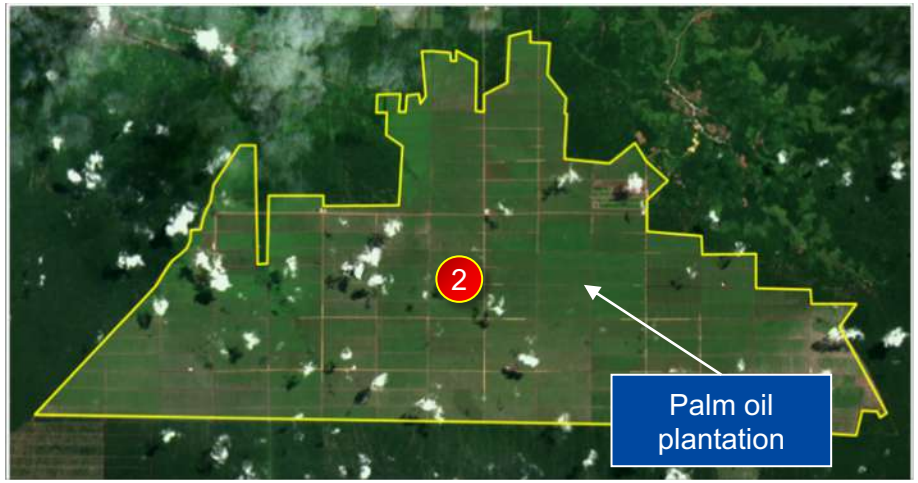
Solutions

- Detailed land use change assessment over time for each plantation
- Check if plantation overlaps with HCV areas

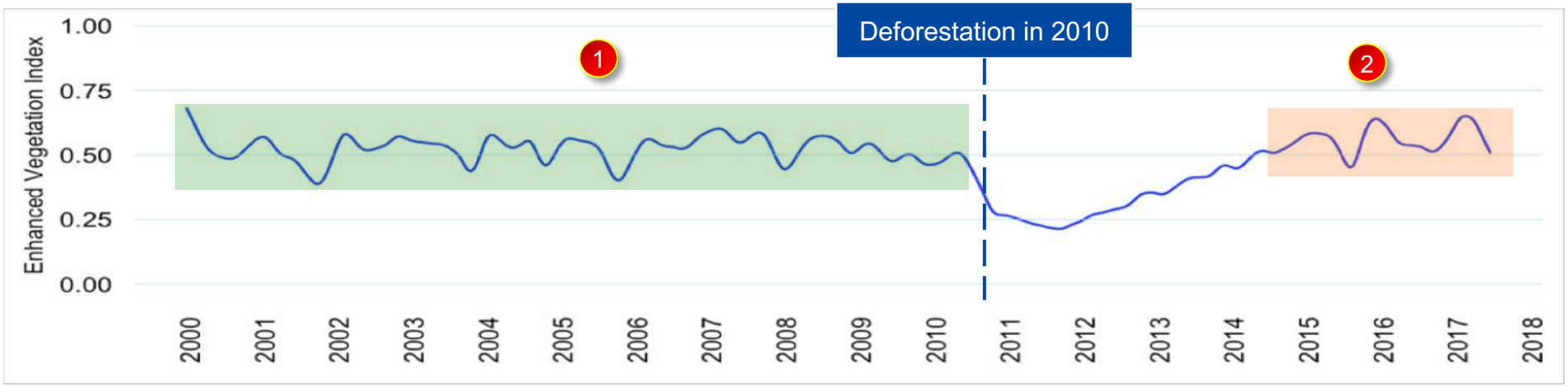
On plantation level GRAS conducts detailed assessments to identify date and type of LUC, using EVI time series and high resolution satellite images

Landsat 5, 2005

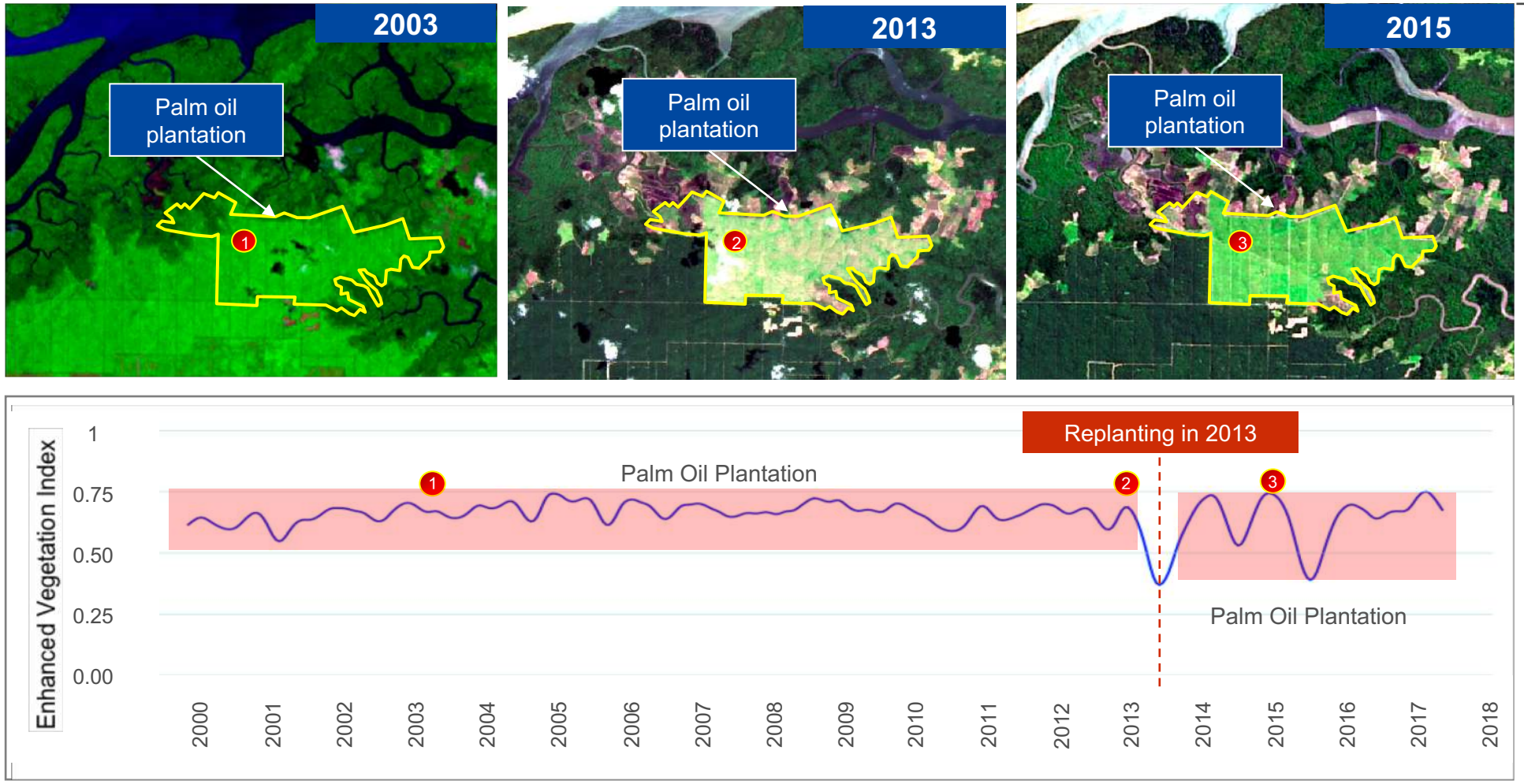




Landsat 8, 2015



Satellite images help to identify replanting activities of palm plantations, which are not considered as incompliant

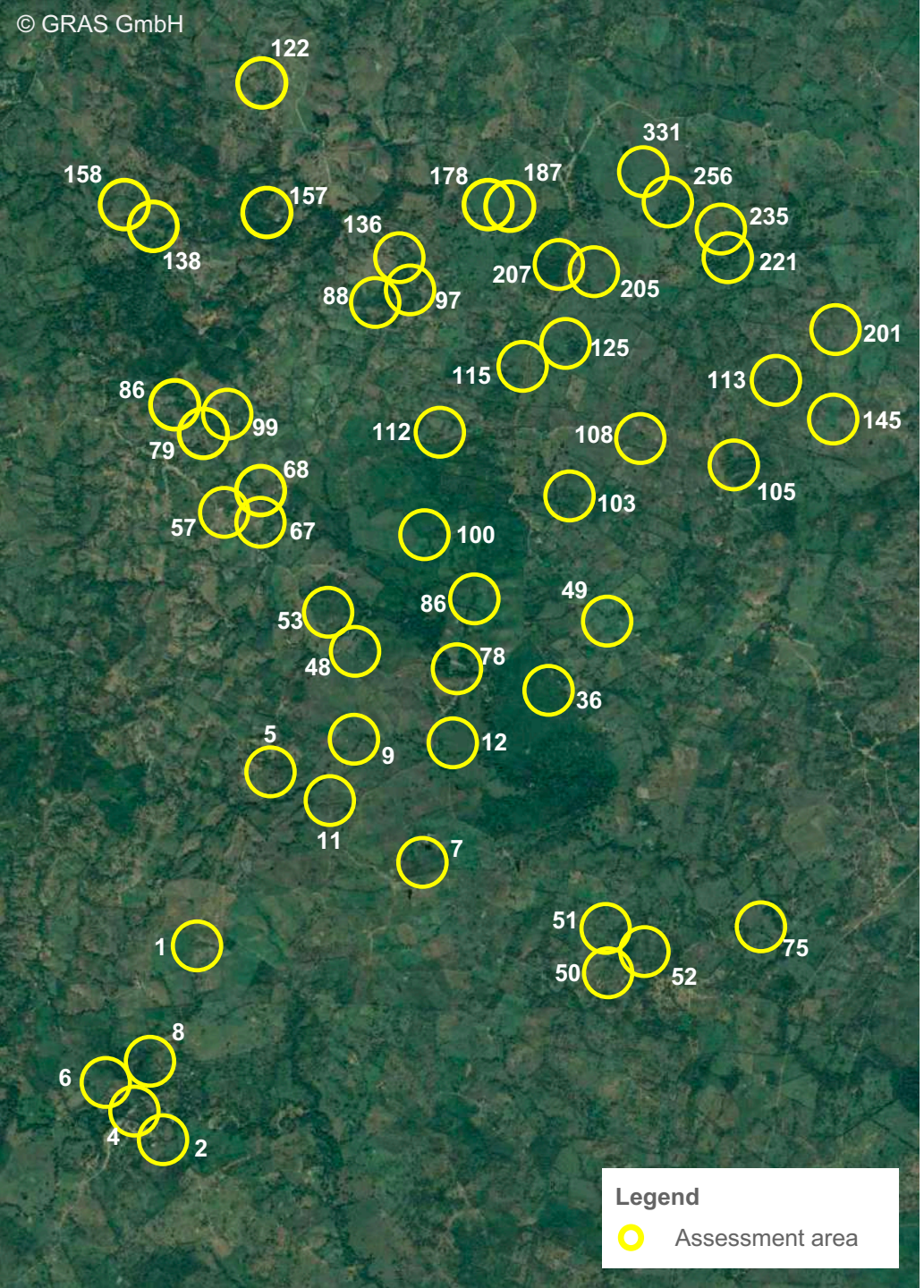


GRAS can support the identification of low iLUC biofuels, e.g. the cultivation of crops on areas which were previously not used for cultivation (Unused land)

Certification issues

- ISCC is able to proof the history of land use with remote sensing technology (land cover and utilization assessments, image interpretation, EVI time series approach, digital geo-portals, cadastre systems; on site assessments)
- Approach covers annual and perennial crops
- For new cultivation areas, compliance with sustainability criteria for biofuels is done within the regular audits
- Criteria need to be set by the EC for determining unused land

03 Case Study:
Coffee Farmers in Colombia



Case Study: Coffee Farmers in Colombia

A large number of production areas are analyzed efficiently and a risk ranking can be derived

Scenario

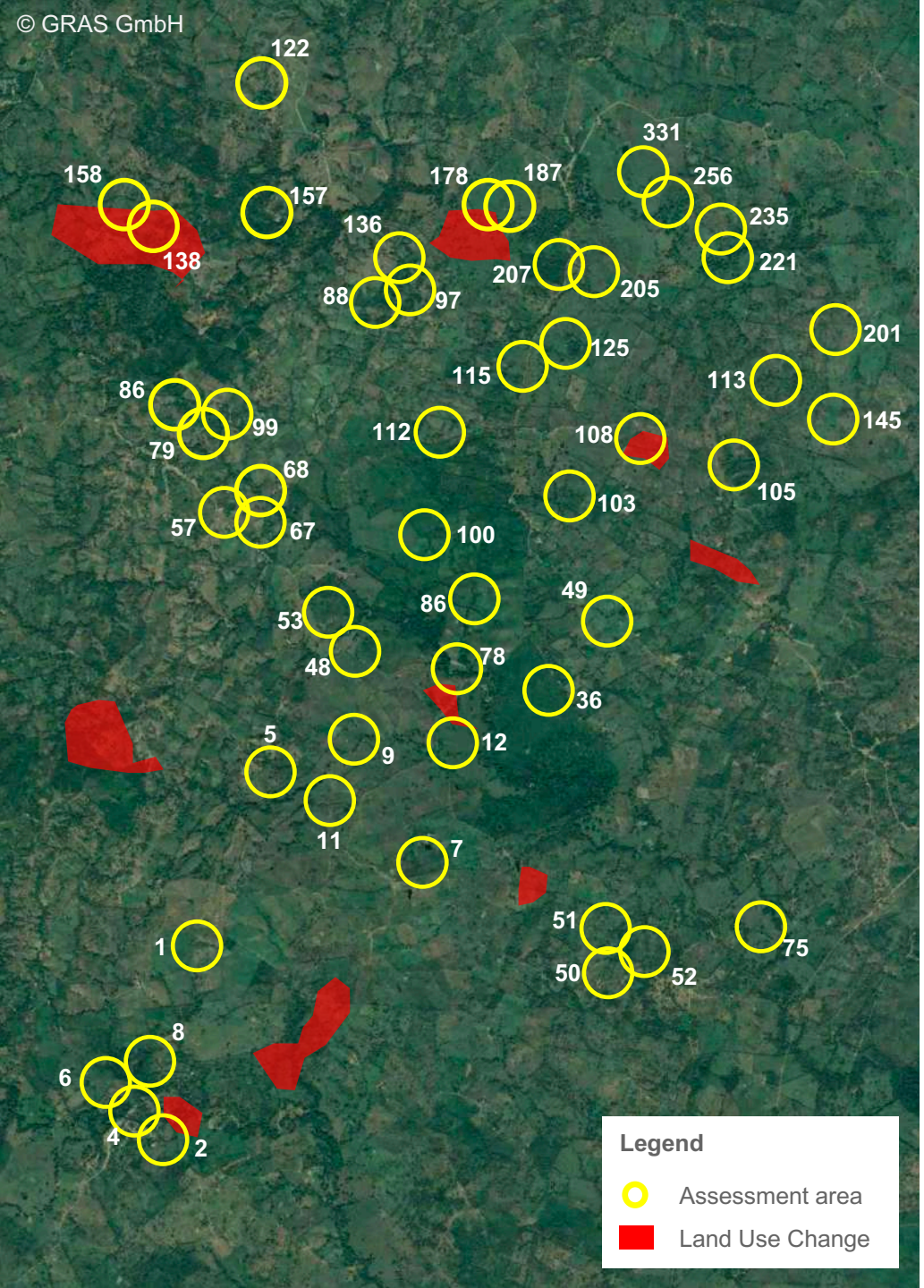
- **Analysis of the supply base** against predefined sustainability criteria (e.g. Land Use Change after a certain cut-off-date) to **proof your partners and customers** that you fulfil your commitments

OR

- **Preparation of a sustainability certification** audit and check compliance of farmers with the needed criteria

OR

- **Evaluation of potential investments** against sustainability criteria and exclusion of non-compliant spots

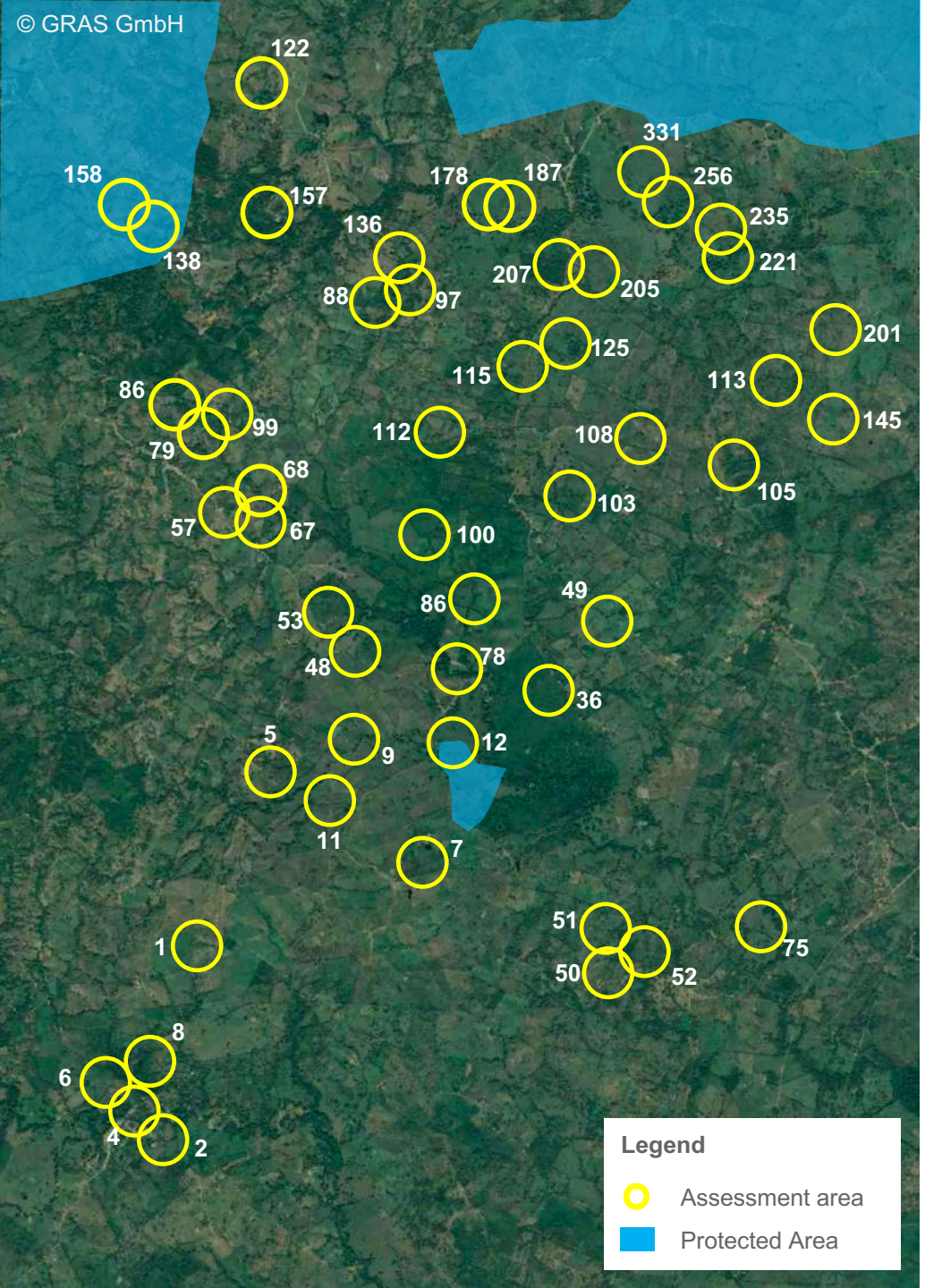


Case Study: Coffee Farmers in Colombia

A fixed radius for an assumed sourcing area per farmer can be applied and compared to land use change heat maps

Land Use Change

- A case-specific sourcing area is applied, e.g. a radius of 150 m
- For each farmer, case-specific sustainability criteria will be checked for the assumed sourcing area, e.g. LUC, biodiversity, indigenous areas and others

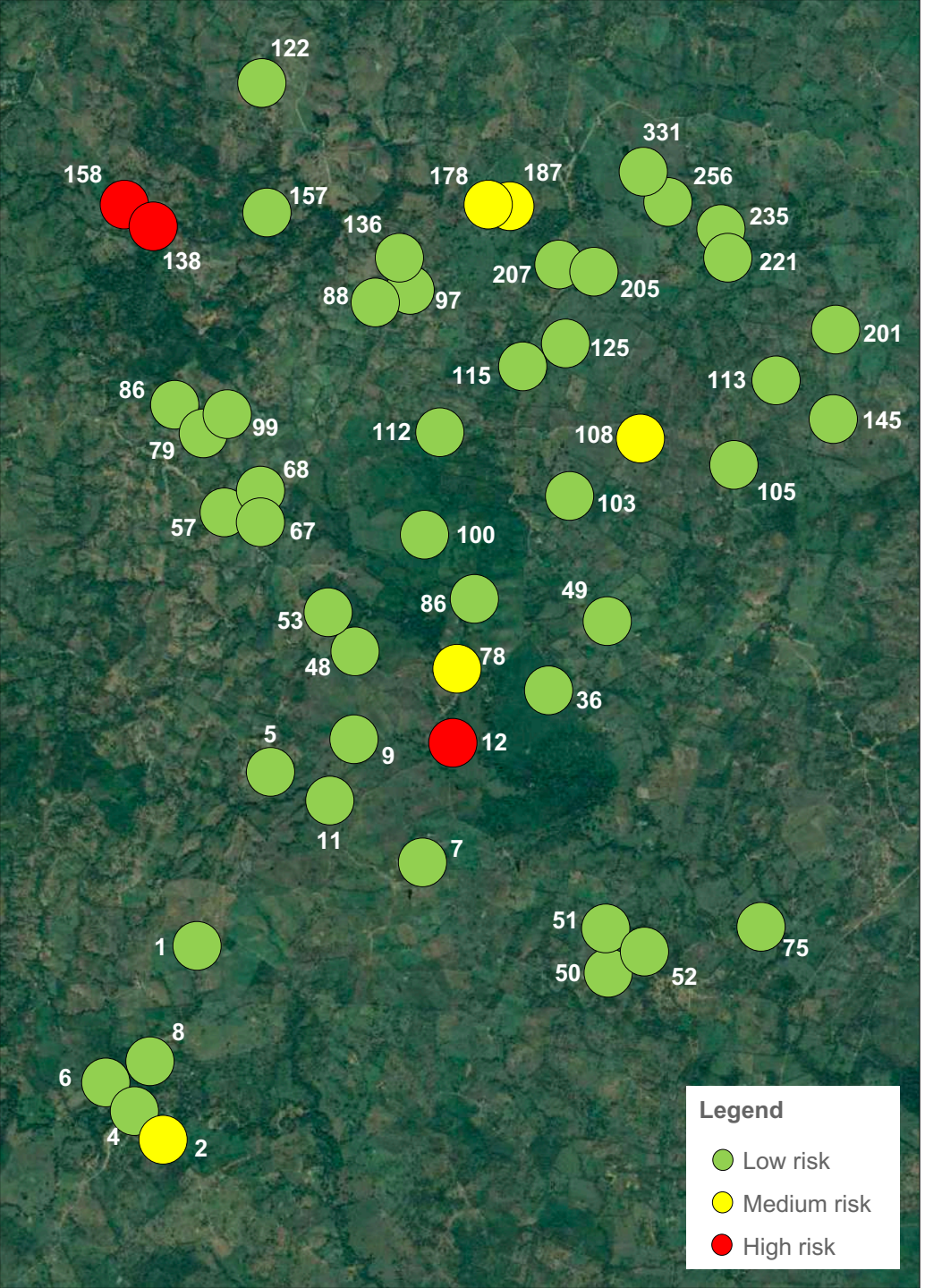


Case Study: Coffee Farmers in Colombia

Available local and national datasets on biodiversity and protected areas area used to check the overlap with the assessment areas

Overlap with Protected Areas

- Datasets on protected areas and areas with high biodiversity or high carbon stock (e.g. peatland) to check for overlaps
- Protected areas are usually classified into areas with very strict protection rules and areas, where agricultural production is allowed under certain restrictions



Case Study: Coffee Farmers in Colombia

The comprehensive GRAS Index can be calculated for each farmer, covering a defined set of sustainability criteria

GRAS Index and Ranking (1/2)

- GRAS calculates the comprehensive GRAS Index for each farmer
- The transparent GRAS Index allows for ranking, identification of risk hotspots and impact assessment through continuous monitoring
- Individual reports per farmer can be produced if needed

Risk level of the GRAS Index		
< 0.2	0.2 – 0.4	> 0.4
Low Risk	Medium Risk	High Risk

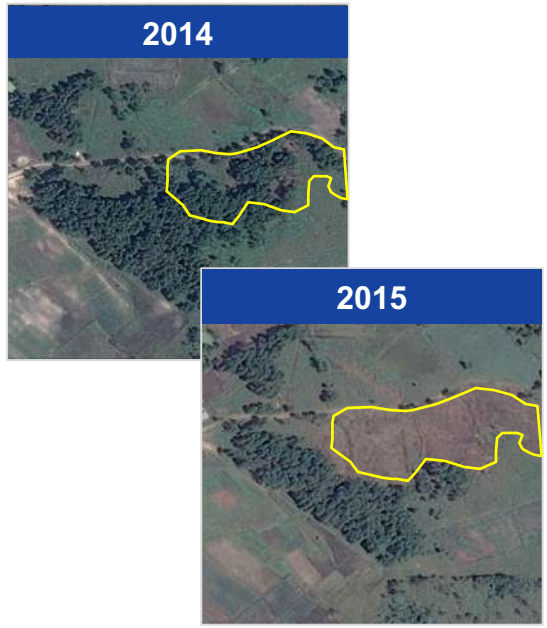
Case Study: Coffee Farmers in Colombia

Depending on the aim of the analysis, a detailed assessment of selected plantations can be conducted (e.g. those in high risk areas)

GRAS Index and Ranking (2/2)

Farmer	Analysed area	Land Use Change	Overlap with No Go Area	Overlap with Risk Area	GRAS Risk Level
Example Farmer 108	7.2 ha	-	-	-	low
Example Farmer 221	7.2 ha	-	-	-	low
Example Farmer 12	7.2 ha	-	-	-	low
Example Farmer 103	7.2 ha	-	-	-	low
Example Farmer 53	7.2 ha	-	-	-	low
...	...	...	...	...	...
Example Farmer 5	7.2 ha	1.2 ha	-	-	medium
Example Farmer 100	7.2 ha	1.2 ha	-	-	medium
Example Farmer 122	7.2 ha	-	1.5 ha	-	medium
Example Farmer 342	7.2 ha	1.5 ha	-	-	medium
Example Farmer 296	7.2 ha	2.2 ha	-	-	medium
...	...	...	...	...	...
Example Farmer 78	7.2 ha	2.5 ha	-	1.7 ha	high
...	...	...	...	...	...

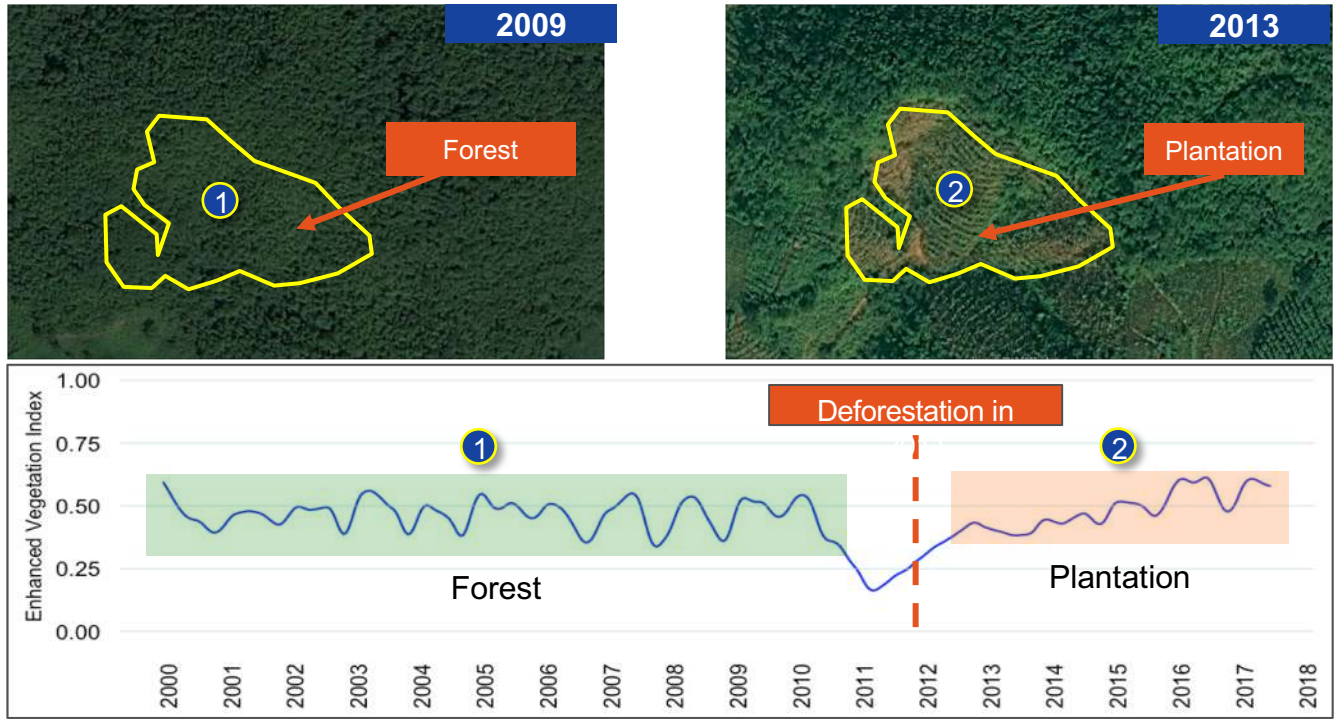
Detailed Farm Analysis

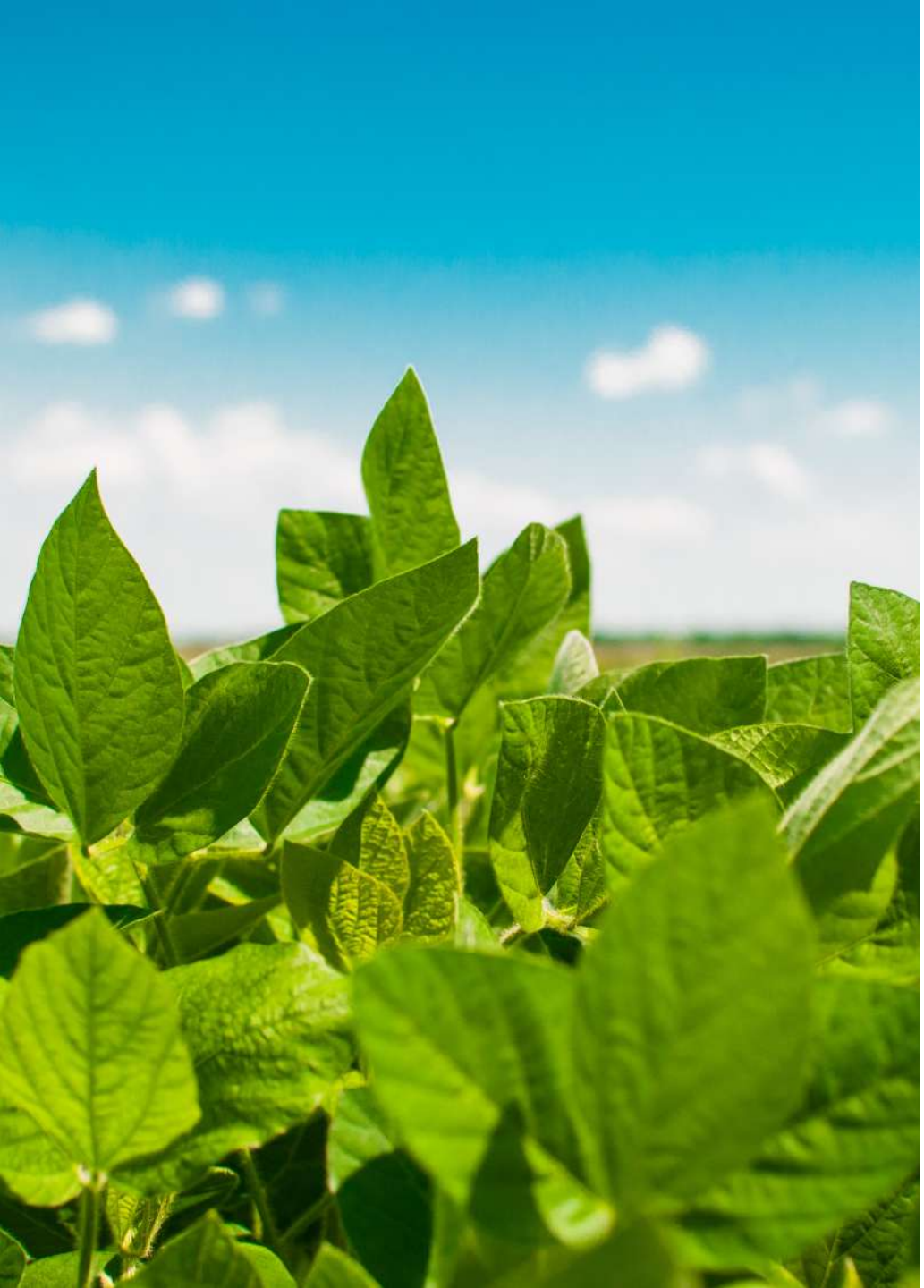


Case Study: Coffee Farmers in Colombia

High resolution satellite imagery and the EVI time series verify the conversion from forest to plantation

Detailed field analysis

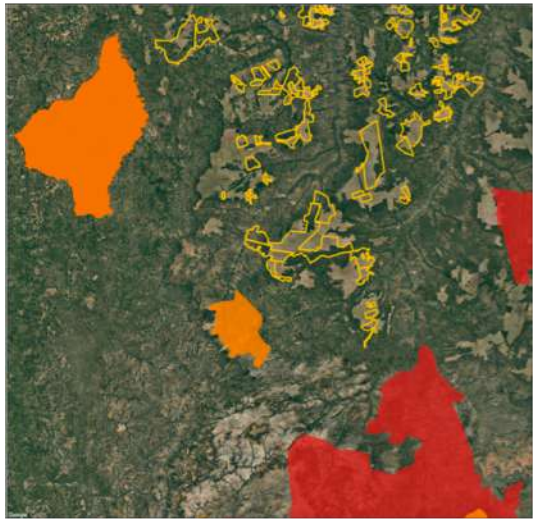




04 Case Study: Soy Farmers in Brazil

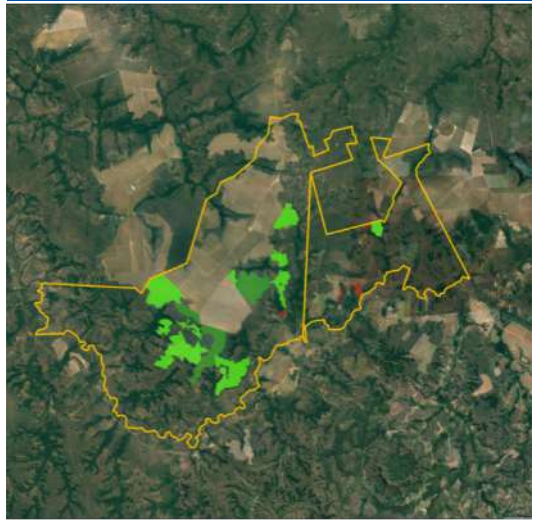
For an assessment in Brazil, GRAS has used multiple databases methods to identify land use change and violations against legal requirements

Protected areas



- Data from the Ministerio de Meio Ambiente
- PROBIO
- Ramsar Sites
- Intact Forest Landscapes
- Classification based on IUCN categories (e.g. National Parks)

Deforestation & grassland/ shrub conversion

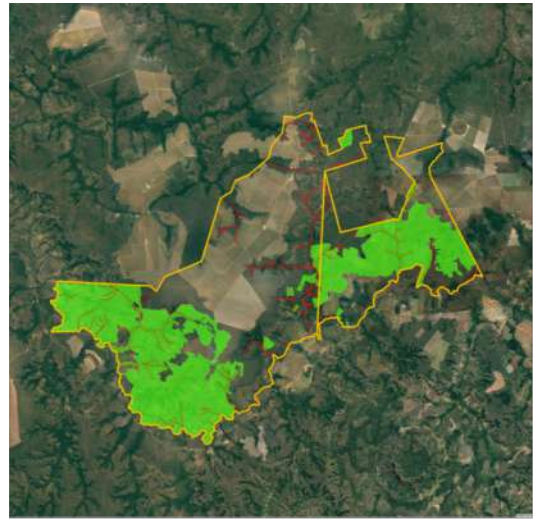


- Use of different kind of satellite data (Landsat, MODIS, Sentinel, ASTER, etc.)
- Processing of satellite images
- Verification of results in a multi-step approach

Environmental & social data

- FUNAI (Fundaçao Nacional do Índio) – Ministério da Justiça
- INCRA (Instituto Nacional de Colonização e Reforma Agrária) – Ministério do Desenvolvimento Agrário
- Transparency list on contemporary slave labour and IBAMA embargo list

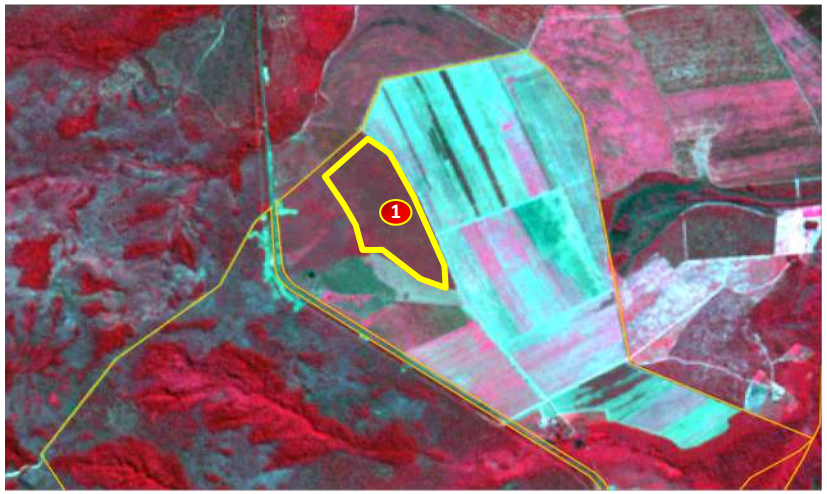
Legal requirements

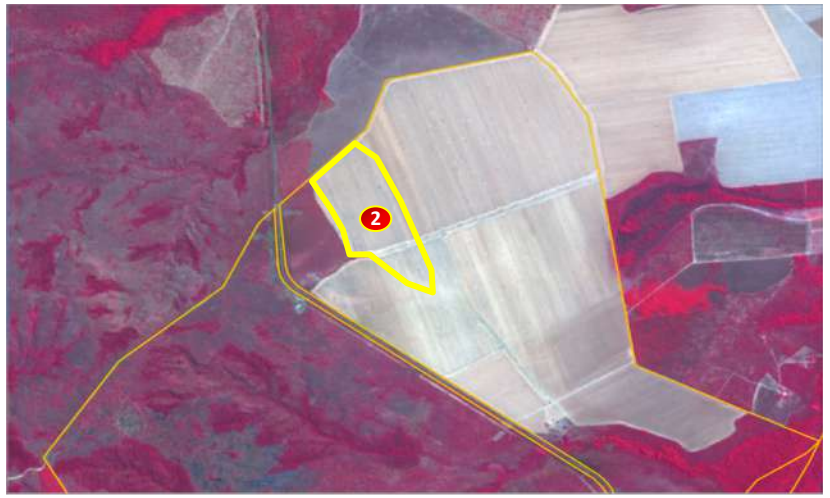


- Data based on CAR
- Areas of Permanent Preservation (APP)
- Legal Reserves (LR)

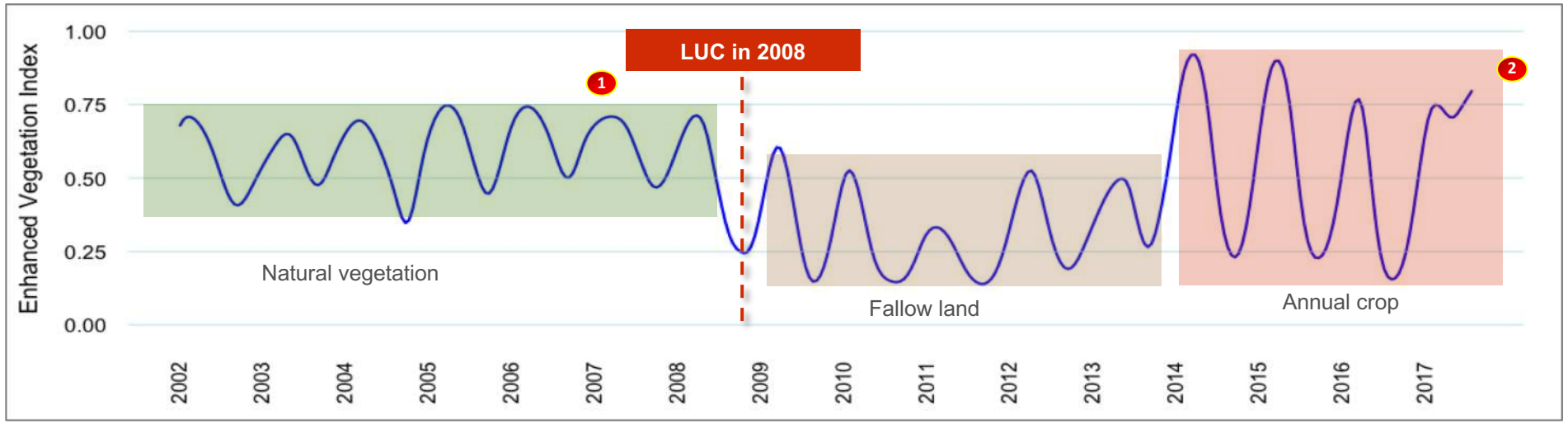
EVI time series and high-resolution imagery have been used to verify the Land Use Change (deforestation and the conversion of other natural vegetation)

ASTER, 2006



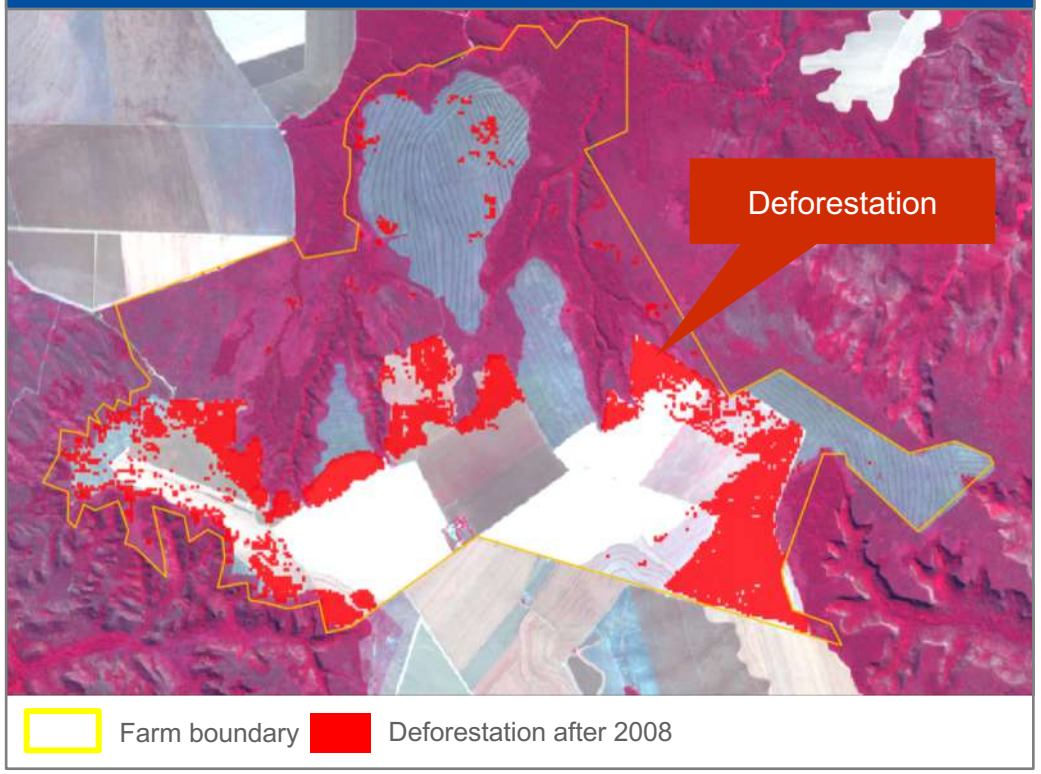


Sentinel-2, 2017

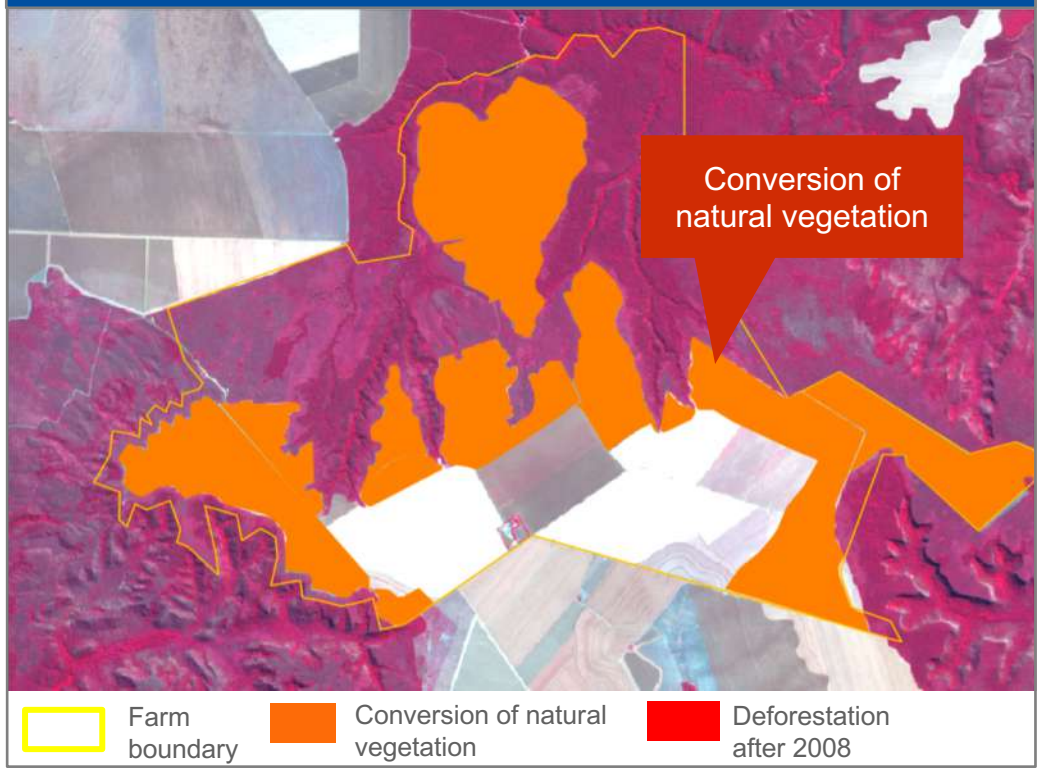


GRAS has cleaned, updated and improved available deforestation maps by own methods to provide detailed Land Use Change maps

Available deforestation data (GFC, PRODES)



GRAS – Deforestation and grassland/ shrub conversion

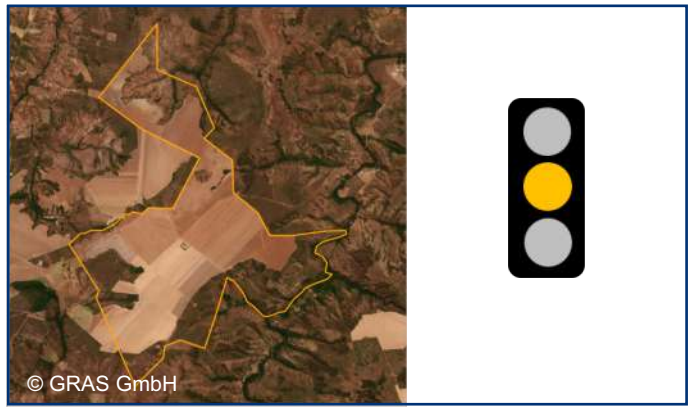


Background: Sentinel-2, 03/08/2017

- A detailed Land Use Change analysis by GRAS delivers more precise results than publically available datasets (e.g. GFC, PRODES)
- GRAS differentiates between conversion of managed grassland (e.g. pasture) and unmanaged grassland/ shrub (e.g. Cerrado)

ISCC International Sustainability & Carbon Certification

GRAS can produce a concise report for each farmer. Every report starts with an overview and main findings of the GRAS analysis



Basic data	
Biome	Cerrado
Area	1698 ha
Cropland Area 2008	1288 ha (Main crop: Soybeans)
Cropland Area 2017	1566 ha (Main crop: Soybeans)

	Criteria		Summary	Area / Share	Compliance
Land Use Change	**Deforestation and other conversion of natural vegetation**	**2008 - 2017**	Deforestation or conversion of natural vegetation identified within the farm area	156 ha (7%)	-
Legal Compliance	**Legal Reserves**		47% of the area designated as Legal Reserve (Farm registered in CAR)	741 ha (52%)	✓
	Areas of Permanent Preservation (APP)		2% of the area designated as APP	37 ha (2%)	✓
	Indigenous Areas		No overlap with indigenous areas	0 ha (0%)	✓
	Protected Areas (HCV)		No overlap with protected areas	0 ha (0%)	✓
	Embargo List		Not on the list		✓
	Slavery List		Not on the list		✓

GRAS supports sustainability certification processes on different levels

- Preparation of Audit Process
  - Identification of risk hot spots
  - Exclusion of incompliant farmers
- Preparation of On-Site Audit
  - Evaluation of risk level
  - Indication for sample size
- Monitoring of the Supply Base
  - Ongoing verification of compliance
  - Improvement and impact assessment

With GRAS certification becomes…

… more digital

… more transparent

… more effective

… less costly

Many thanks for your attention!

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