

Grass Global Risk Assessment Services



TARGET USERS

Governments, NGOs, companies, public and private investors and certification bodies and systems seeking to understand and monitor the sustainability risks they are exposed to. GRAS offers georeferenced data sets for sustainability risk assessments, based on biodiversity, carbon stock, land use change and social issues. It enables companies to implement and verify zero-deforestation within the supply chain, monitor the supply base and communicate results to partners and customers.

CREATED BY

The development of GRAS is supported by the German Ministry of Food and Agriculture through the Agency for Renewable Resources (FNR). It evolved in a joint effort of a multidisciplinary team with partners from Europe, USA and Canada, South America and South East Asia from different sectors, e.g. DLR (Deutsches Zentrum für Luft- und Raumfahrt), Kiel Institute for the World Economy (IfW), The Nature Conservancy (TNC), Meo Carbon Solutions and ISCC (International Sustainability and Carbon Certification).

HOW IT WORKS

The tool provides datasets and information about biodiversity, carbon stock, land use change or social issues. Based on these four important pillars of sustainability and the established methodology, users can conduct their own sustainability risk assessment for an area of their own choice. Using the GRAS Risk Index as a starting point, more detailed analyses and verification of sustainability and land use change criteria can be conducted by

GRAS within the scope of a customized analysis.

Further, the tool provides the option to set up individual fire alerts, that inform the user about appearing fires within the self-defined region on a daily basis.

QUESTIONS THE TOOL CAN ANSWER

- What is the overall sustainability risk of my observation area?
- Where are the high-risk areas and which regions are highly affected by forest clearings?
- Where are the protected areas, intact forest landscapes and Ramsar sites?
- When was the first land clearing within the area of interest?
- When was the field/plantation established?
- What land cover type was on the area before the establishment of the field/plantation?
- Where are the vulnerable sustainability risk hotspots within my supply base?
- On which region or sustainability criteria should I focus my improvement strategy to achieve most impact?
- Where are the coffee production areas for different production systems?

DATA UPDATES

Based on different datasets and remote sensing analysis that are updated regularly.

Grass Global Risk Assessment Services



SPATIAL COVERAGE

More than 70 datasets currently covering 45 countries in North and South America, Africa, South East Asia and Europe.

LEARNING CURVE

The tool provides an interactive map based on several data sets with an interactive online GRAS Tool. The GRAS Index is capable to gather and merge the relevant data from the fields Biodiversity, Land Use Change, Carbon Stock and Social Indices and displays the overall score as a simple and easy-to-use value that can be applied to a region or a whole country.

AVAILABILITY

Registration and using the GRAS Tool is free. Registered users have access to the full functionality of GRAS.

FIND OUT MORE

<https://www.gras-system.org>

GRAS offers efficient and effective solutions to support the risk assessment process and to verify and monitor deforestation-free supply chains

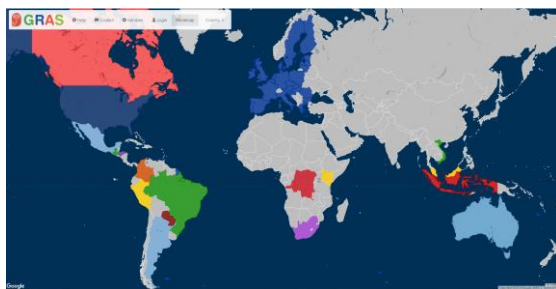


IDENTIFY
... risk level of the coffee sourcing areas
... farmers that are compliant with specific criteria
... risk hot spots within the supply base

IMPLEMENT
... sustainable supply chains and avoid risks
... manage efficient supplier on-boarding
... focus improvement measures

MONITOR
... environmental risks
... management practices
... yield improvements
... dynamic supply base

REPORT
... results and decisions to partners and clients
... user-friendly options for transparent communication



STEP 1: DEFINE THE AREA

- Administrative areas
- Sourcing areas with a defined radius
- Specific production areas on field or plantation level



STEP 2: SELECT CRITERIA

- Biodiversity
- Carbon stock
- Land use change
- Social indices
- Individual criteria



STEP 3: CHOOSE DELIVERABLES

- Detailed farm/plantation reports
- Summary report
- Company dashboard
- Visualization tool
- Database

Climate Change Suitability Analysis

TARGET USERS

Governments and companies seeking to understand the climate change implications and suitability for coffee.

QUESTIONS THE TOOL CAN ANSWER

- What areas are currently suitable for coffee cultivation?
- What areas may be suitable for coffee cultivation in 2050?
- Forthcoming: Which coffee areas require transformation, systemic adaptation or incremental adaptation?

DATA UPDATES

When improved climate data emerges.

SPATIAL COVERAGE

Global, regional to national.

LEARNING CURVE

There is a multi-week training required.

VALIDATION PROCESS

Data has undergone local expert validation and peer-review.

ABILITY TO ADD DATA

Update only sensible if major data improvements can be expected.

AVAILABILITY

CIAT shares existing work freely.

ASSUMPTIONS

Users have knowledge of its supply base (where coffee is being grown) to understand the actual risk.

LIMITATIONS

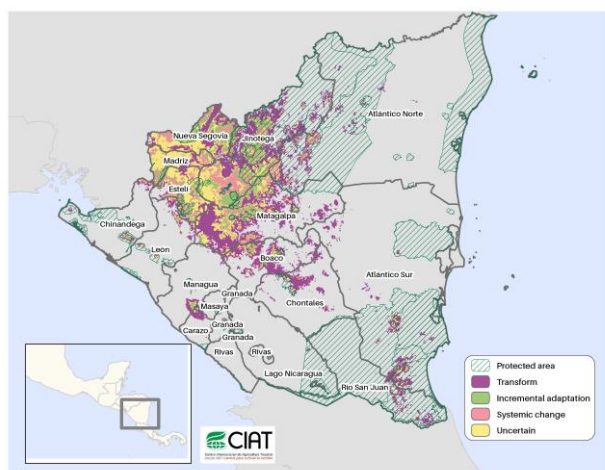
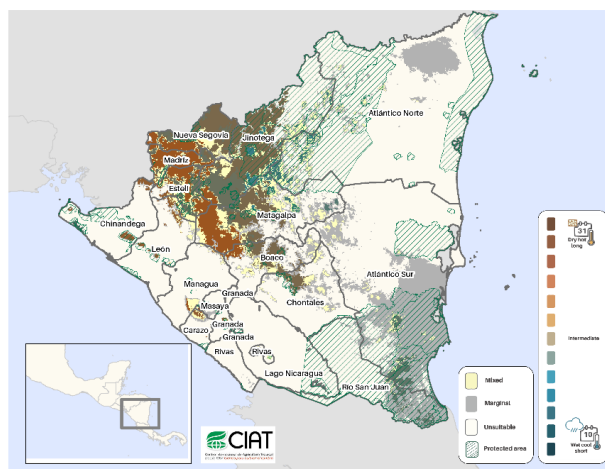
Analyses were completed at global or national levels and need validation on the ground. Focuses on climate potential and does not necessarily represent where coffee is actually being grown.

MODELING SYSTEM

The tool uses artificial intelligence to learn the relationship between current climate variables and coffee production. The trained algorithm can then be used to evaluate future climate scenarios.

WHERE TO FIND OUT MORE

<http://ciat.cgiar.org/>



Coffee in the 21st Century



CONSERVATION
INTERNATIONAL

TARGET USERS

Investors, government agencies and companies interested in the future of coffee production.

QUESTIONS THE TOOL CAN ANSWER

- Where does coffee suitability overlap with forest cover today and potentially pose a deforestation threat?
- Which forest areas are under threat of becoming suitable for coffee in the future?
- Which forest areas are under less threat due to declining coffee suitability?

HOW IT WORKS

Published in 2016, this report presents an analysis of future coffee supply and demand models as well as climate suitability changes and forest risk for coffee production.

SPATIAL COVERAGE

Pantropical: Latin America, Asia, Africa, Oceania.

SUSTAINABILITY OF THE TOOL

Currently, there are no plans to update the study.

AVAILABILITY

The report is freely available.

ASSUMPTIONS

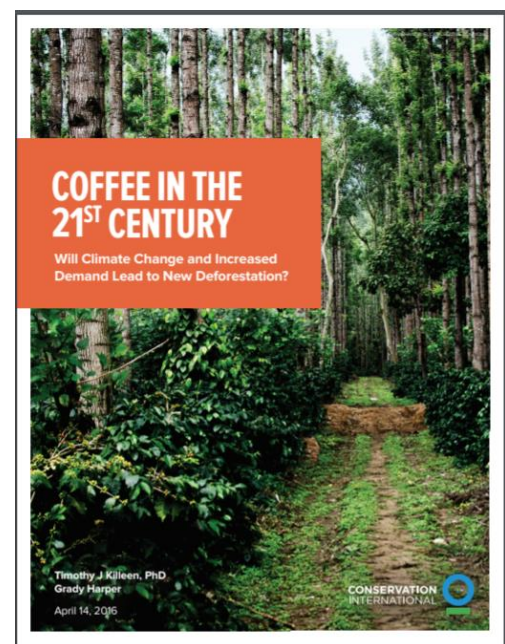
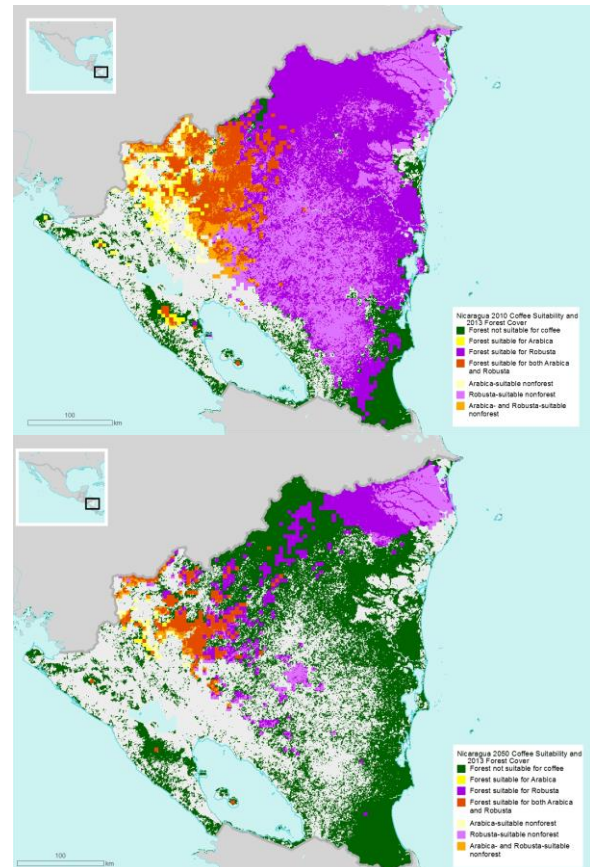
User has knowledge of its supply base (where coffee is being grown) to understand the actual risk.

LIMITATIONS

Static report, no interactive map capability. Analyses completed at country level and need to be validated. Difficult to distinguish between forest and shade coffee.

WHERE TO FIND OUT MORE

<https://www.conservation.org/publications/Documents/CI-Coffee-Report.pdf>



Commodity Mapping Tool

TARGET USERS

Retailers and roasters wanting to understand where the supply chain is most at risk from deforestation and other issues.

QUESTIONS THE TOOL CAN ANSWER

- If I am sourcing coffee from this country, where would it be most likely to come from?
- What is the risk exposure of my supply chain to deforestation (and other issues)?

HOW IT WORKS

The tool identifies growing regions that may grow arabica and/or robusta coffee, and overlays these with deforestation data from Global Forest Watch to identify hotspot areas where coffee could be a driver of forest loss.

ASSUMPTIONS

The user has knowledge of its supply base (at a country level) for the TSC tool to calculate the risk.

LIMITATIONS

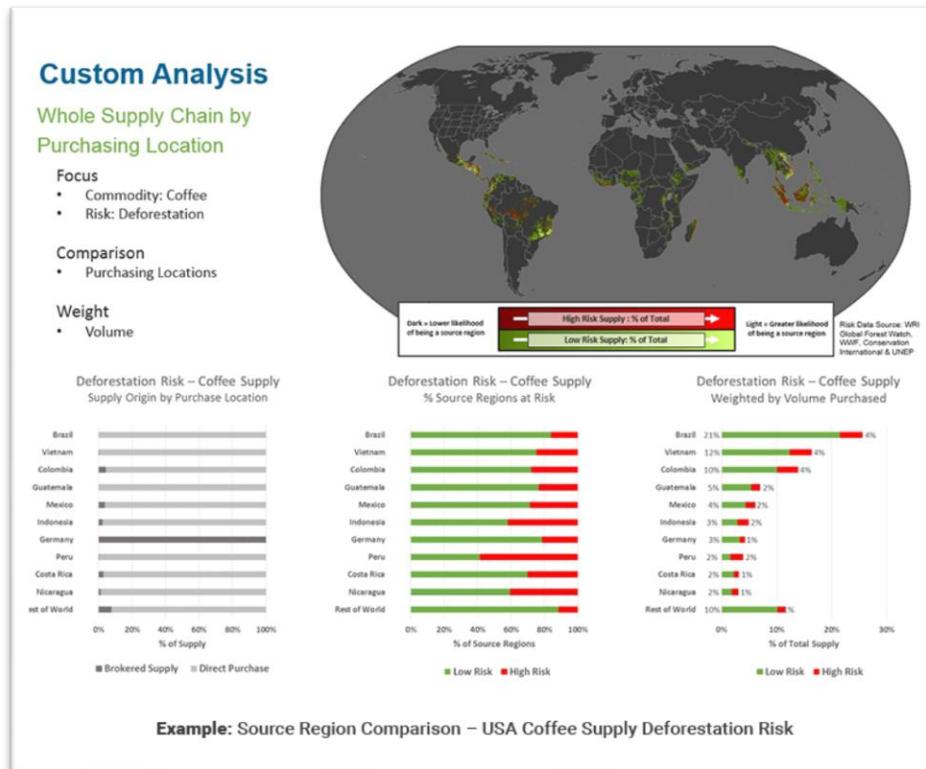
Coffee area is based on modeling and would need to be validated on the ground. Deforestation may or may not be driven by coffee.

HOW HAS IT BEEN USED

Coffee Production and Sustainability Commodity Mapping Report used TSC Commodity Mapping to identify where coffee is produced, risks in producing regions, and how companies can address these risks

WHERE TO FIND OUT MORE

<http://www.sustainabilityconsortium.org/projects/commodity-mapping/>



TARGET USERS

All stakeholders including retailers, associations, and governments that wish to monitor forest cover change and trends.

QUESTIONS THE TOOL CAN ANSWER

- Where is the forest area in the country, state, or department?
- Where has forest cover change occurred historically?
- Where has gain in tree cover occurred?
- Where are the current hotspots of forest change?
- Where are the important sites for conservation (e.g. protected areas, Alliance for Zero Extinction Sites, biodiversity hotspots)?
- How does deforestation impact these important sites?

HOW IT WORKS

The tool provides an interactive map based on over 100 global and local data sets of trends on tree cover change, land cover, land use (including various concessions and infrastructure), intact forest landscapes, biomass, mangrove forests, and conservation areas. The tool can also potentially inform on post deforestation land use class depending on the land cover data. Users can upload their own area of interest or can delineate an area of interest directly on the map.

DATA UPDATES

Some of the products are static but others are updated annually, such as land cover, and some are updated weekly, such as tree cover loss in near-real time.

SPATIAL COVERAGE

While the tool is global in scope, some data products are regional, and some are only available for specific countries.

LEARNING CURVE

While there is not a learning curve associated with the tool, some data layers require careful interpretation.

VALIDATION PROCESS

Most of the input data has been thoroughly validated and published in peer-reviewed journals.

ABILITY TO ADD DATA

Community users can elect to contribute their data to Global Forest Watch (GFW).

AVAILABILITY

The tool is freely available. If a user chooses to upload data, they agree to the GFW Terms of Service. Users can also choose to create an account to generate subscriptions and receive alerts on forest change.

ASSUMPTIONS

User has some knowledge of sourcing area or coffee area to make the data useful and applicable.

LIMITATIONS

Forest change trends constitute all sources of land use including agroforestry, palm oil production, and mining (not just coffee production).

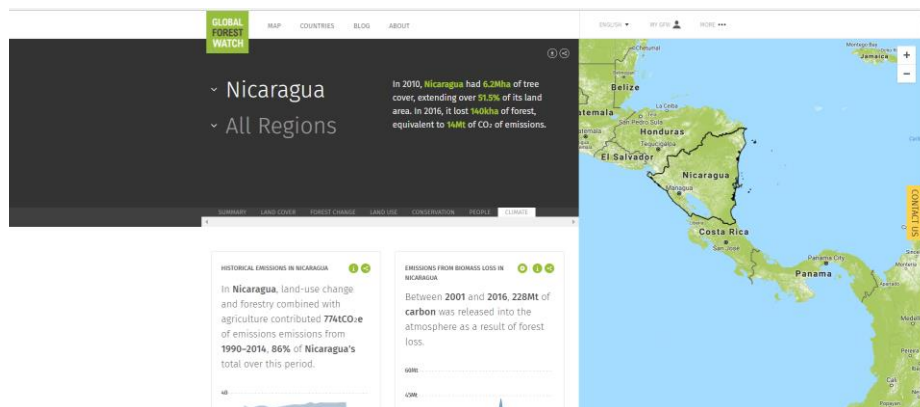
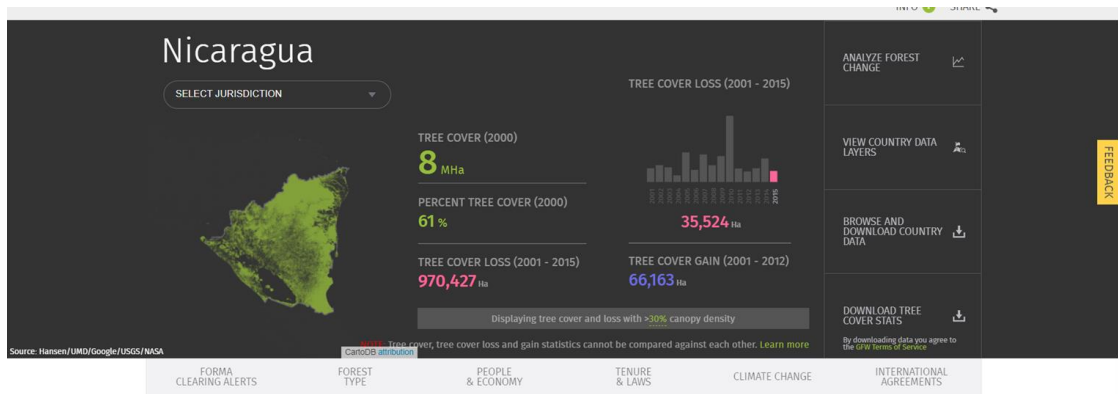
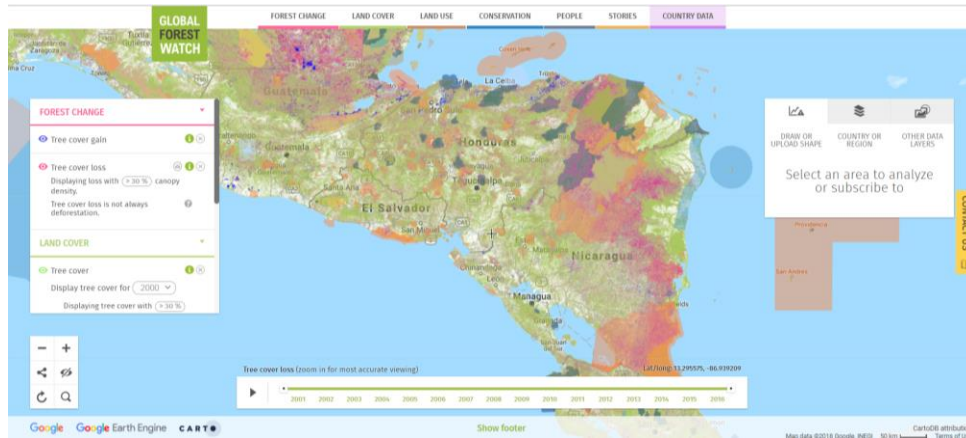
HOW HAS IT BEEN USED

Conservation organizations, policymakers, and companies use GFW tools to receive forest alerts and monitor and manage forest change in relevant regions.

WHERE TO FIND OUT MORE

<http://www.globalforestwatch.org/>

The underlying data identifying tree cover includes all vegetation taller than 5 meters in height. This has important implications for how the data are interpreted by users. For example, tree cover loss is not always deforestation and tree cover would include plantations and secondary growth.



Landscape Assessment Framework



TARGET USERS

Companies (roasters and traders), government agencies, investors and donors

CREATED BY

Coalition for Coffee Communities (with Conservation International and COSA) to assess the progress of socio-economic and ecological development within the coffee industry

QUESTIONS THE TOOL CAN ANSWER

- What is the annual rate of deforestation and how is this changing over time?
- How much of the area that was deforested is now under coffee cultivation (compared to other crops)?
- How much land is currently suitable for coffee cultivation? How much will be suitable in 2050?
- How do supply chains of multiple roasters overlap in a landscape?
- To what extent could coffee cultivation be driving forest loss in the landscape?

HOW IT WORKS

The tool assists in assessing the overall sustainability of a landscape by providing relevant indicators, based on available datasets and remote sensing, to help users in informing sustainability commitments or sustainable development goals. This assessment includes a detailed analysis of the drivers of deforestation by looking at the pre- and post-deforestation land use of sampled points to determine the percentage of deforestation driven by coffee in comparison to other types of land use.

DATA UPDATES

The CCC does not have immediate plans to update the analysis.

SPATIAL COVERAGE

The tool is very flexible and could be applied in any geography. The limitation would be tagged to data availability.

LEARNING CURVE

Since only the landscape-level tool was applied/tested we did not have chance to fully understand the caveats and gaps (if any) in integrating it with farm and producer organization's tools. However, the experience from Jinotega, helped us to create better guidelines for the delineation of the landscape boundaries, as well as tailor the results into a strength, threats and recommendations framework

VALIDATION PROCESS

There is not a formal verification process, but the results are being validate by the users. The tool relies mostly on exiting data from credible sources (government census, peer reviewed publication and global datasets), thus some level of accuracy is provided. Some of the input data (for example, the deforestation and land use analysis) is validated by field visits or using high resolution satellite images.

ABILITY TO ADD DATA

The tool is very flexible and can (and should) incorporate more data, as new information, more accurate data is available, or stakeholders/ decision makers request additional analysis.

SUSTAINABILITY OF THE TOOL

CI developed a guidebook for the Landscape Assessment Framework and provides training upon request. CI has great interest in disseminating and incentivizing the use of the LAF internally, as part of the monitoring system for the landscape initiatives.

Landscape Assessment Framework



AVAILABILITY

The tool is freely available.

ASSUMPTIONS

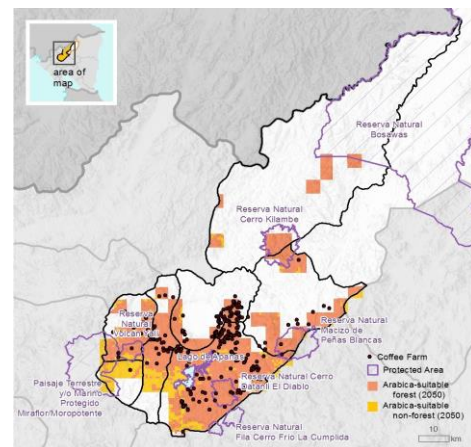
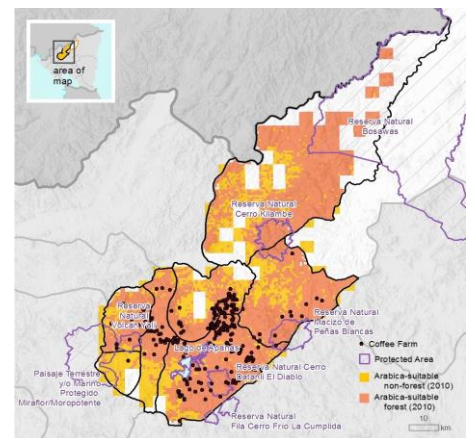
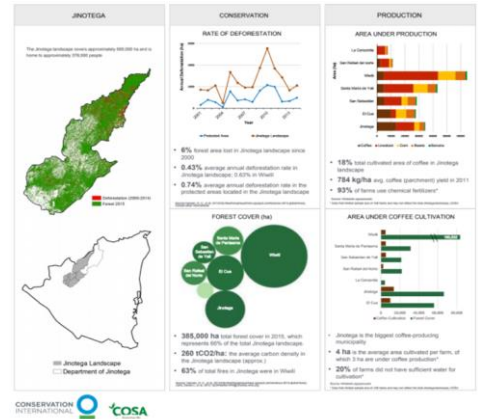
User has knowledge of its supply base (where coffee is grown) to understand the actual risk.

LIMITATIONS

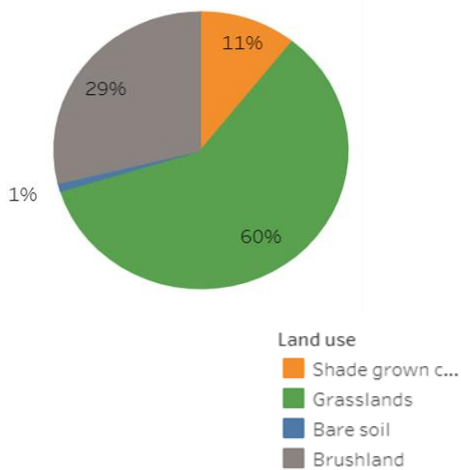
Data availability (e.g. no data on extent of coffee cultivation), inability to distinguish between some shade systems and forest cover, does not provide guidance to extension analysts or farmers on climate change related actions.

WHERE TO FIND OUT MORE

<http://www.safeplatform.org/coffee-landscape-assessment/>



Post deforestation land use





TARGET USERS

Companies and governments committed to more sustainable production.

QUESTIONS THE TOOL CAN ANSWER

- Which regions of production are linked to which countries of import?
- What are the sustainability risks and investment opportunities associated with a region of production?
- Which companies export, ship, or import a given commodity (coffee)?

HOW IT WORKS

Trase uses Spatially Explicit Information on Production to Consumption Systems (SEI-PCS) and national-level export data to map and provide transparency for commodity supply chains.

DATA UPDATES

Data is updated yearly. Currently there is not a set schedule for addition of data but there will be an update plan soon.

SPATIAL COVERAGE

Brazil, Argentina, Paraguay, Indonesia, Colombia.

LEARNING CURVE

The tool allows data hosted in the platform to be visualized in a use friendly manner. Data can also be downloaded and applied to any other program or used on other analysis. The tool is used to visualize the information, and the visualizations/platform can be understood after a ~15-30-minute presentation.

VALIDATION PROCESS

The Trase Initiative uses official government bills of landing and export data. Errors within the connections in the supply chains or from the government data are corrected. Each commodity has various checks prior to the information being released on the site.

ABILITY TO ADD DATA

The initiative is about transparency, and the data can be used with any other data

SUSTAINABILITY OF THE TOOL

The Trase initiative has long term support to maintain the platform.

AVAILABILITY

The Trase data is free and downloadable by all.

ASSUMPTIONS

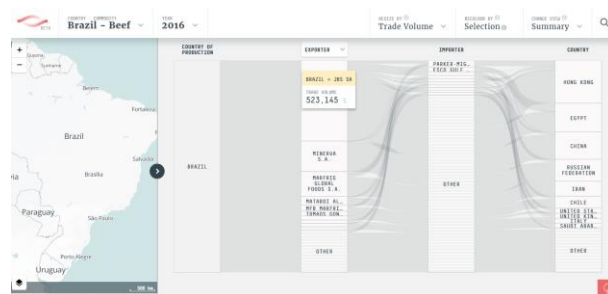
Users should have knowledge of their supply base to analyze their specific risks to the supply chain.

LIMITATIONS

Currently focuses on soy, cattle, and palm oil but there are plans (in next 5 years) to expand to coffee; does not yet analyze down to the individual level of farms and retailers. Coffee analysis limited to Colombia.

WHERE TO FIND OUT MORE

<https://trase.earth/>



Visualization Tool



TARGET USERS

Public actors, NGOs but also private sector companies with deforestation commitments.

QUESTIONS THE TOOL CAN ANSWER

Detects land-cover changes resulting from human activities in near real-time. This tool allows the user to visualize and obtain statistical data on decrease detections from 2004 until the most recent data at different levels or target areas such as country, second and third administrative level, protected and indigenous areas or ecosystems.

DATA UPDATES

Data is updated every 16 days.

SPATIAL COVERAGE

Pantropical: Latin America, Asia, Africa, Oceania

LEARNING CURVE

The learning curve is low because it has a simple design for searching and visualization information. Line and bar graphs are presented, and the data can be downloaded in csv and ascii format. Additionally, there are manuals for the use of the website and the data.

VALIDATION PROCESS

The data distributed here is in RASTER ARC ASCII format at 250m spatial resolution, in decimal degrees and datum WGS84. It is derived from the USGS/NASA MODIS data. CIAT processed this data to provide habitat change maps. The detections were made using algorithms described by Reymondin et al. (2012). The data represents yearly cumulative detections of land cover change since 2004. The value 0 means that the pixel remained unchanged, whilst the other values represent on which 16 days period a given pixel has been

detected as converted. For example, if in the grid for 2004 you find a pixel with the value 1, it means it has been detected as converted the 2004.01.01 and with the value 2 it has been detected on the 2004.01.17.

ABILITY TO ADD DATA

The web tool can incorporate additional layers for visualization in kml format. The Terra-i team can also include new ascii layers, but these require a preprocessing.

SUSTAINABILITY OF THE TOOL

There are currently funds from the CGIAR Research Program on Forests, Trees and Agroforestry (FTA) and from other projects in Colombia and Honduras.

AVAILABILITY

The tool is freely available.

ASSUMPTIONS

Ability to procure new projects in Latin America, Asia and Africa for expanding the analysis in the land cover change and relationship with other ecosystem services.

LIMITATIONS

Terra-i only provides data about vegetation change (gain or loss). Secondary data (i.e. spatial distribution of natural coverage, forest plantations, crop areas, among others) must be used to get more proximate results about which sort of vegetation changed or which land-use activity could be associated with the change.

MODELING SYSTEM

The system is based on the premise that natural vegetation follows a predictable pattern of changes in greenness from one date to the next brought about by site-specific land and

Visualization Tool



climatic conditions over the same period. A so-called computational neural network is 'trained' to understand the normal pattern of changes in vegetation greenness in relation to terrain and rainfall for a site and then marks areas as changed where the greenness suddenly changes well beyond these normal limits. Running on many computers this analysis is refreshed with new imagery every 16 days and for every 250m square of land.

FIND OUT MORE

<http://terra-i.org>

