



Uptake of Deforestation Alerts with WRI tools

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GFOI Session on Tropical Forest Monitoring

ESA Living Planet Symposium 2025

How Satellite-Based Deforestation Alerts Work

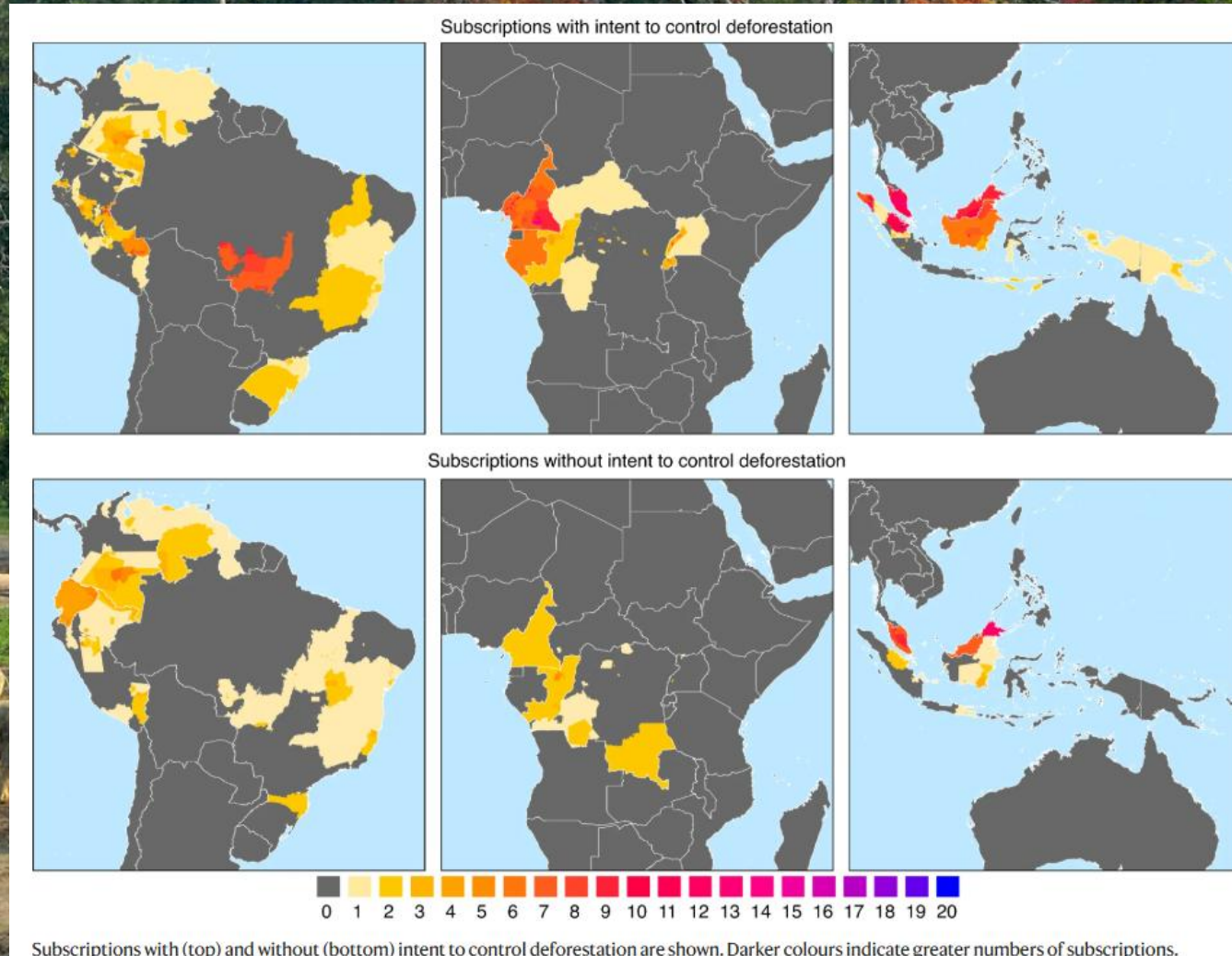


bit.ly/EWsystems



WORLD RESOURCES INSTITUTE

Use of near real-time deforestation alerts led to **18% reduction in deforestation** in monitored African forests



Dzanga-Sangha National Park, Central African Republic (Photo: WCS).

Citation: The impact of near-real-time deforestation alerts across the tropics <https://www.nature.com/articles/s41558-020->

Making alerts actionable

- Open and free data
- Easy access – alert integration
- Tools for application – Forest Watcher, GFW, MapBuilder
- Thematic detail – confidence information, contextual data, drivers information
- Scaling success – funding and support e.g. Small Grants Fund
- Guidance, documentation and South-South exchange

GLOBAL FOREST WATCH

- GFW offers a suite of forest monitoring tools designed to:
 - Increase **knowledge** and **transparency** about forest landscapes
 - **Advance private sector action** to stop commodity-driven deforestation and manage forests sustainably
 - Harness information to **mobilize local action** by governments and civil society



Global Reach, Real Impact: Who Uses GFW



NGOs

Rainforest
Foundation



Companies

Cargill



Journalists

InfoCongo



Government

KPH III Aceh

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Over the past 10 years, GFW has empowered a global community of journalists, NGOs, governments and financial institutions to detect deforestation in near-real-time.

Global Reach, Real Impact: Who Uses GFW

And more!



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Over the past 10 years, GFW has empowered a global community of journalists, NGOs, governments and financial institutions to detect deforestation in near-real-time.

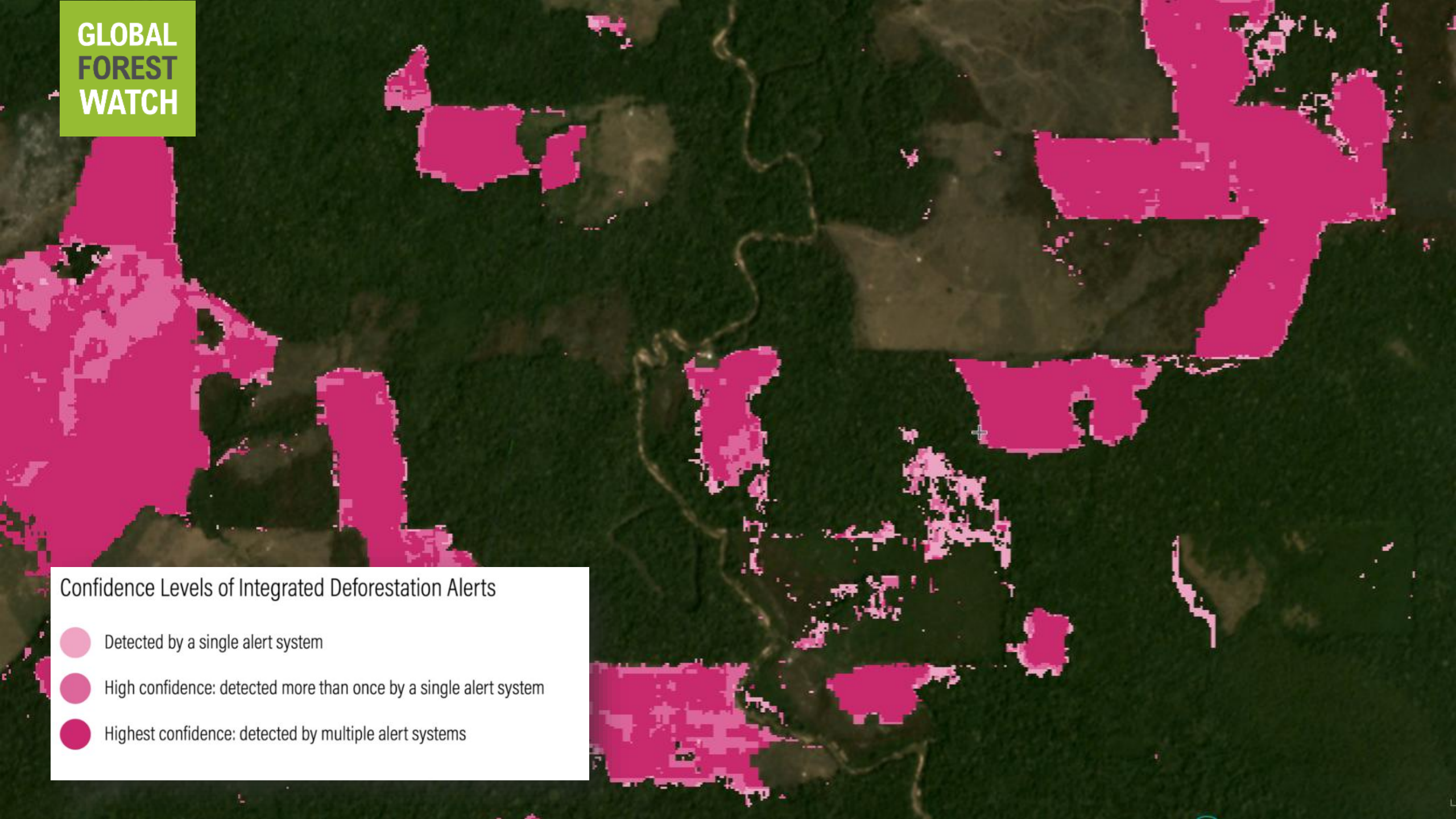
What can users do with alerts?

- Investigate an area for potential deforestation
- Subscribe to monitor alerts in an area
- On-the-fly analysis
- Download alerts as coordinates or a raster
- Bring to the field with Forest Watcher mobile app
- Visualize alerts
 - Play an animation of alerts over time
 - Share a link to a map view
 - Embed a map of alerts

Dataset	Function	Resolution	Geographic Coverage	Frequency of Updates
DIST-ALERT	Monitors global vegetation disturbance in near-real-time using harmonized Landsat-Sentinel-2 (HLS) imagery	30 X 30 meters	Global	Updated weekly, image revisit time every 2-3 days
Integrated deforestation alerts	Monitors forest disturbance in near real-time using integrated alerts from three alerting systems.	10 X 10 meters	30°N to 30°S	Daily
GLAD-L (Global Land Analysis and Discovery – Landsat)	Identifies areas of likely tree cover loss in near real-time.	30 x 30 meters	30°N to 30°S	Updated daily, revisit time every 8 days
GLAD-S2 (Global Land Analysis and Discovery- Sentinel 2)	Identifies areas of primary forest loss in near real-time using Sentinel-2 imagery.	10 x 10 meters	Amazon basin	Updated daily, image revisit time every 5 days
RADD (Radar for Detecting Deforestation)	Identifies near-real-time forest disturbance alerts in primary humid tropical forests using Sentinel-1's cloud-penetrating radar sensors.	10 x 10 meters, with a minimum mapping unit of 0.1 hectare	Humid tropical forest in South America, Central America, sub-Saharan Africa and Southeast Asia	Updated weekly, image revisit time 6-12 days

Confidence Levels of Integrated Deforestation Alerts

- Detected by a single alert system
- High confidence: detected more than once by a single alert system
- Highest confidence: detected by multiple alert systems



LEGEND ANALYSIS

Fire Alerts (VIIRS)

● Fires Alerts (VIIRS)

Show **high confidence** alerts

Select up to 3 months of alerts:

From **30 MAR 2025** to **09 JUN 2025**

2025-03-30 2025-06-09

GOOGLE SATELLITE IMAGERY (GLOBAL)

VIIRS Active Fire alerts

New alert drivers data coming soon



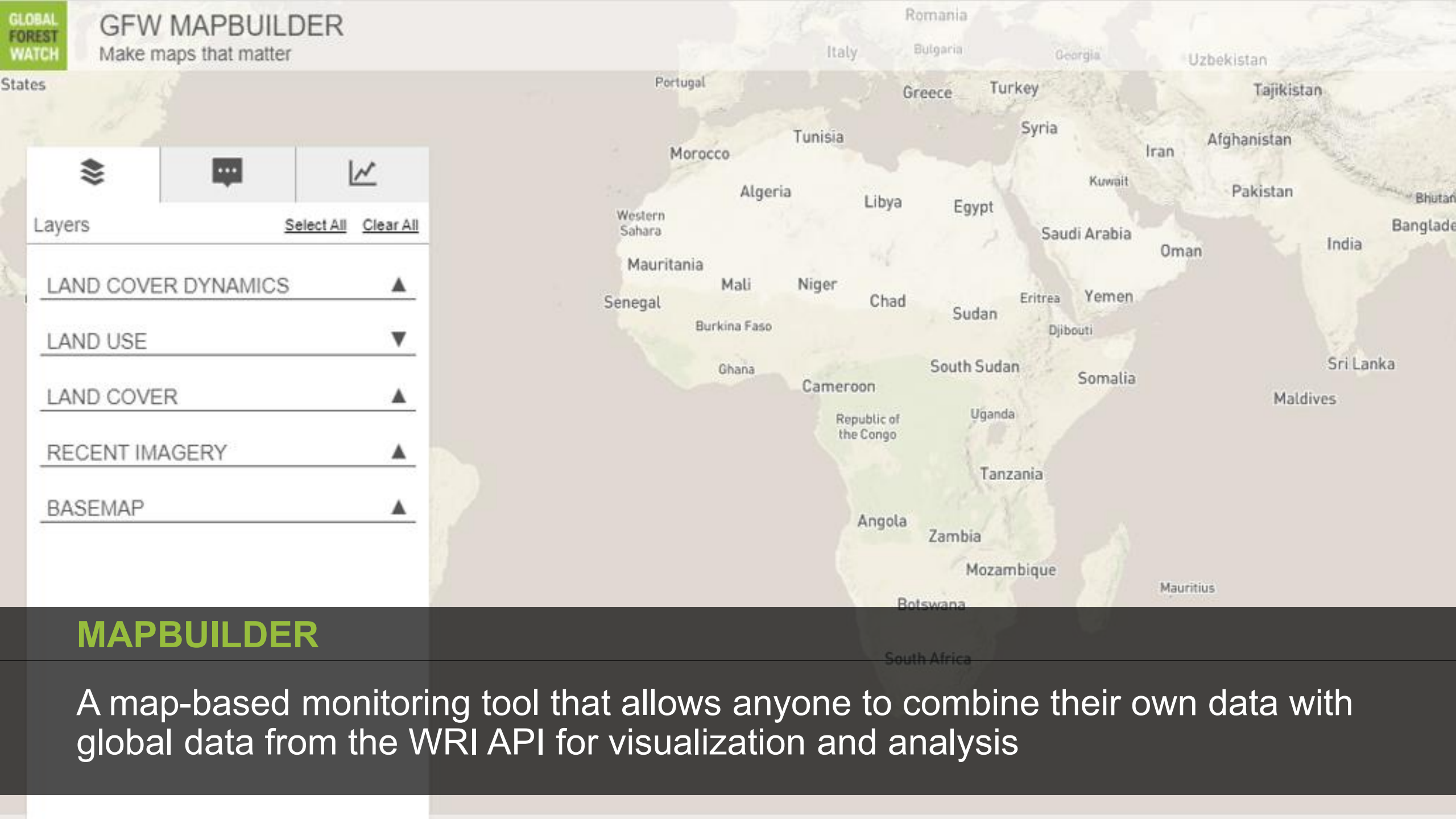
MOBILE SOLUTION FOR LOW CONNECTIVITY

Photo: Axel Fassio/CIFOR



- Field project managers
- Forest managers
- Forest rangers and law enforcement officials
- Local communities and indigenous peoples
- Conservation NGOs
- Researchers





The screenshot shows the GFW Mapbuilder interface. On the left is a 'Layers' panel with a list of map layers and their visibility status. The layers are: LAND COVER DYNAMICS (visible), LAND USE (hidden), LAND COVER (visible), RECENT IMAGERY (visible), and BASEMAP (visible). Above the list are icons for layers, a chat bubble, and a line graph. At the top of the panel are links for 'Select All' and 'Clear All'. The main area of the interface is a map of Africa, with various countries labeled. The map uses a color-coded system to represent different land cover types, with green indicating forested areas.

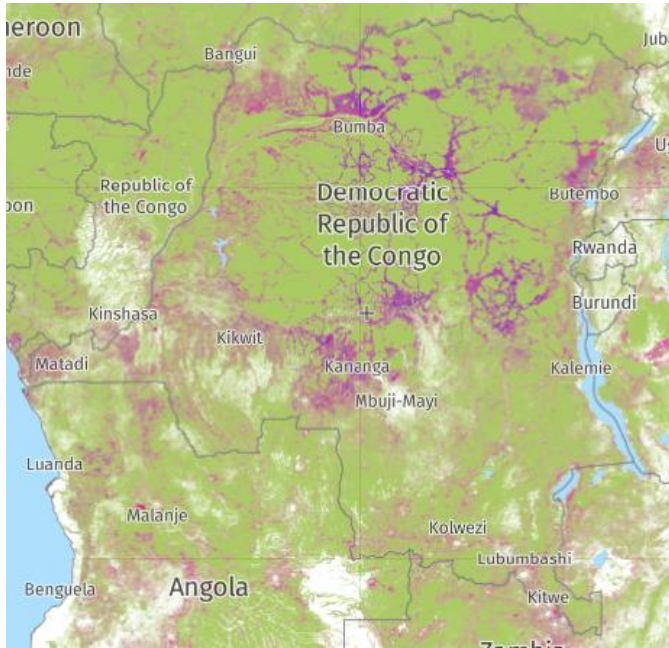
Layers [Select All](#) [Clear All](#)

- LAND COVER DYNAMICS ▲
- LAND USE ▼
- LAND COVER ▲
- RECENT IMAGERY ▲
- BASEMAP ▲

MAPBUILDER

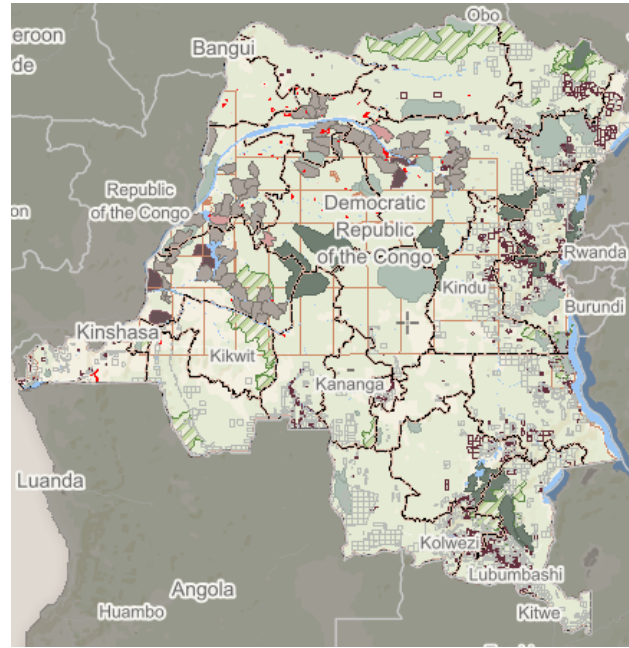
A map-based monitoring tool that allows anyone to combine their own data with global data from the WRI API for visualization and analysis

GFW Global Data



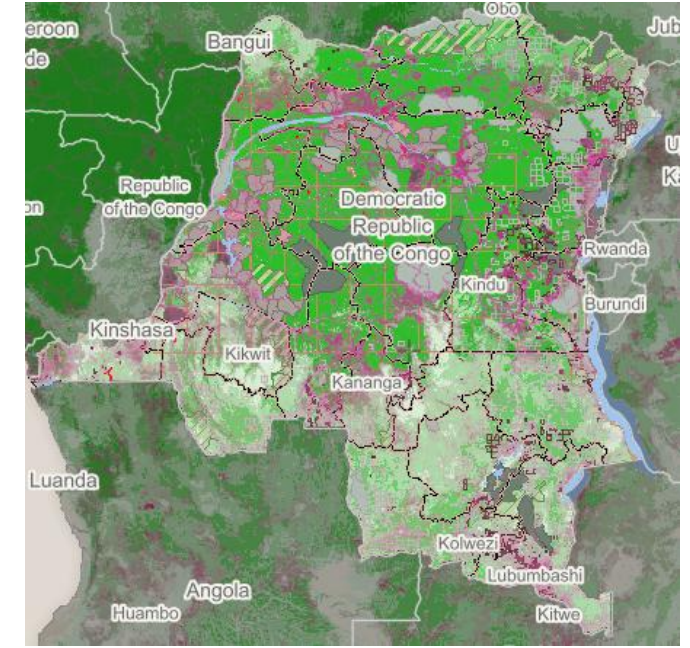
- Alerts
- Fires
- Tree cover loss / gain
- Land cover
- Intact forest landscape

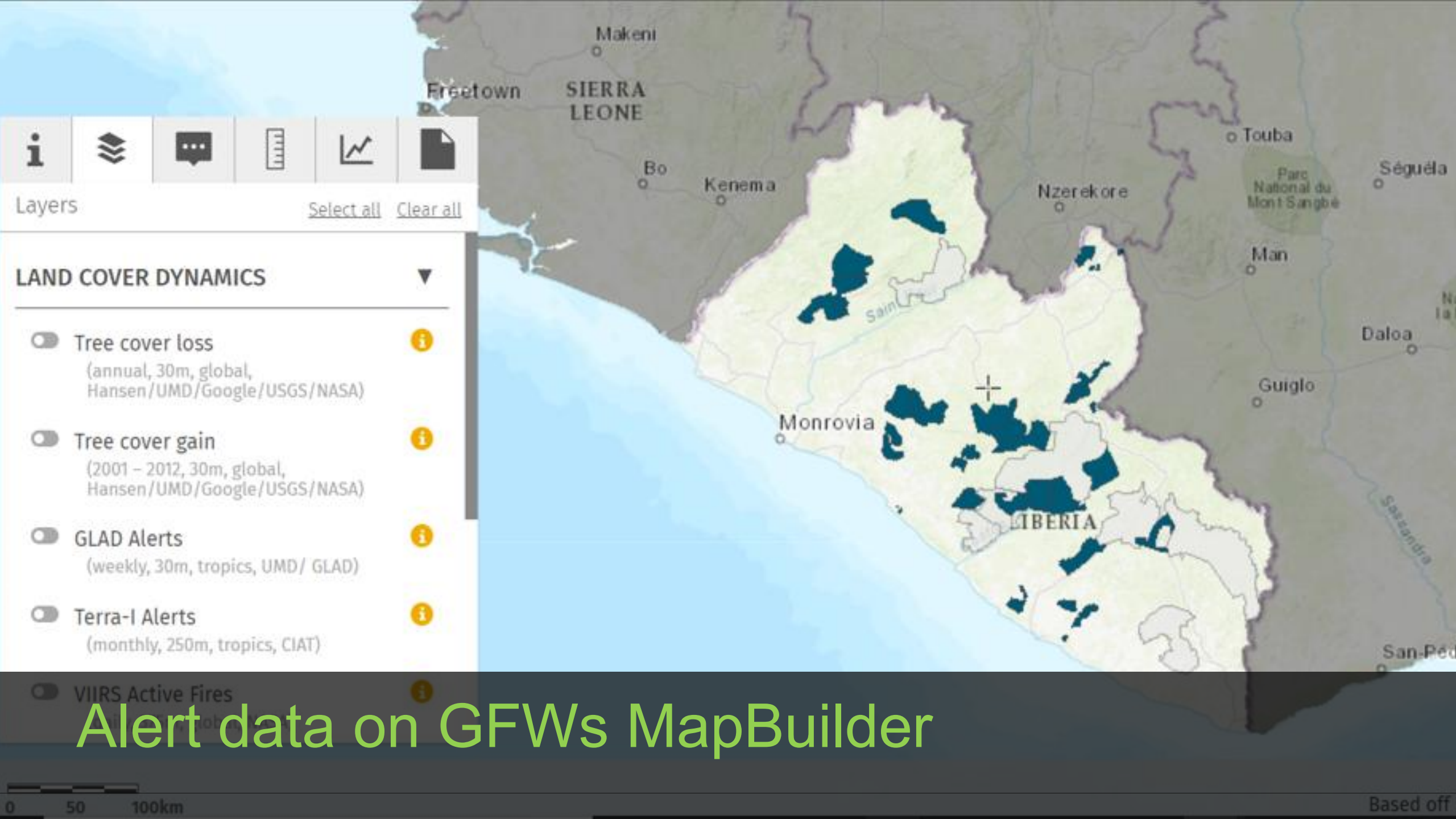
Contextual Data



- Land use
 - Protected areas
 - Plantations
 - Community forests
- National land cover

MapBuilder!





Alert data on GFWs MapBuilder

Forest Watcher on the ground

- Asociación Amazónicas por la Amazonía (AMPA)
 - Trained members of the Voluntary and Communal Conservation Network of the San Martín region of Peru on GFW and Forest Watcher, which is now used by 42 conservation initiatives that cover an area of approximately 605,000 hectares of Amazon forest
- Rainforest Foundation US (RFUS)
 - RFUS partnered with two regional Indigenous organizations in Peru to build four satellite data hubs that service 64 native communities helping them to quickly download alerts, analyze satellite imagery, and conduct more efficient field patrols to protect their territories



Alerts in action



- In Colombia, [Medellin Botanical Garden](#) has integrated GFW alerts with national alerts from Instituto Hidrologia, Meterologia, y Estudios Ambientales (IDEAM) to create a bespoke platform that features both alert systems for the most up-to-date information for citizens and civil society to take action
- [HAKA](#), a grassroots NGO based in Indonesia use alerts on GFW to coordinate field investigations on deforestation. Local forest authorities requested capacity building from HAKA after seeing how successful their model was. Deforestation in Aceh decreased by 5% from 2022 to 2023 and law enforcement cases against illegal deforestation increased due to their activities.
- [Fundacion Conservacion de los Andes Tropicales \(FCAT\)](#), Ecuador has created a platform called Chocó Forest Watch. They've developed the platform on MapBuilder and created a semi-automatic workflow that continuously updating local forest maps

Deforestation Alerts: the near-real time path to impact

The screenshot displays the Global Forest Watch (GFW) website interface. The top navigation bar includes links for MAP, DASHBOARD, HELP, ABOUT, BLOG, and OTHER TOOLS. The main content area is divided into several sections:

- Forest Topics:** Includes a section for OIL PALM, stating "PLACE TO WATCH: OIL PALM" and "This location is likely in non-compliance with company no-deforestation commitments if cleared for or planted with Oil palm." Below this is a "VIEW ON MAP" button.
- Places to Watch:** Includes a section for MONGABAY REPORTING, titled "EXPANSION OF MENNONITE FARMLAND IN BOLIVIA ENCROACHES ON INDIGENOUS LAND". It features an image of a field and text stating "As Mennonite colonies continue to expand, so too are their massive crop fields, which are putting pressure on Santa Cruz's Indigenous Territories and other protected are...". Below this is a "READ MORE" button and a "VIEW ON MAP" button.
- Stories:** Includes a section for MONGABAY REPORTING, titled "IN A BOLIVIAN PROTECTED AREA TORN UP FOR GOLD, FOCUS IS ON LIMITING DAMAGE". It features an image of a person holding a yellow bag and text stating "Artisanal gold mining by local cooperatives abounds in protected areas across Bolivia, raising concerns over mercury contamination as well as the diver...". Below this is a "VIEW ON MAP" button.

The right side of the interface features a large satellite map showing deforestation alerts. The map is overlaid with a legend and analysis panel:

- LEGEND:** Includes a list of alert types: "Detected by a single alert system", "High confidence: detected more than once by a single alert system", and "Highest confidence: detected by multiple alert systems".
- ANALYSIS:** Includes a section for "Integrated deforestation alerts" with a dropdown menu for "Integrated layer of GLAD-L/GLAD-S2/RADD". It also includes a date range selector (From 26 FEB 2022 to 29 AUG 2023) and a "Show only high and highest confidence alerts" checkbox.
- Geographic coverage:** Includes a checkbox for "Geographic coverage".
- Feedback:** Includes a message: "We are collecting user feedback for how we can improve the integrated deforestation alerts. Please provide your feedback through this survey or email us at gfw@wri.org!"
- Places to watch:** Includes a list of "Places to watch" with icons for "Mongabay reporting", "Oil Palm", and "Soy".
- Sign up for monthly PTW email updates:** Includes a button for "Sign up for monthly PTW email updates".

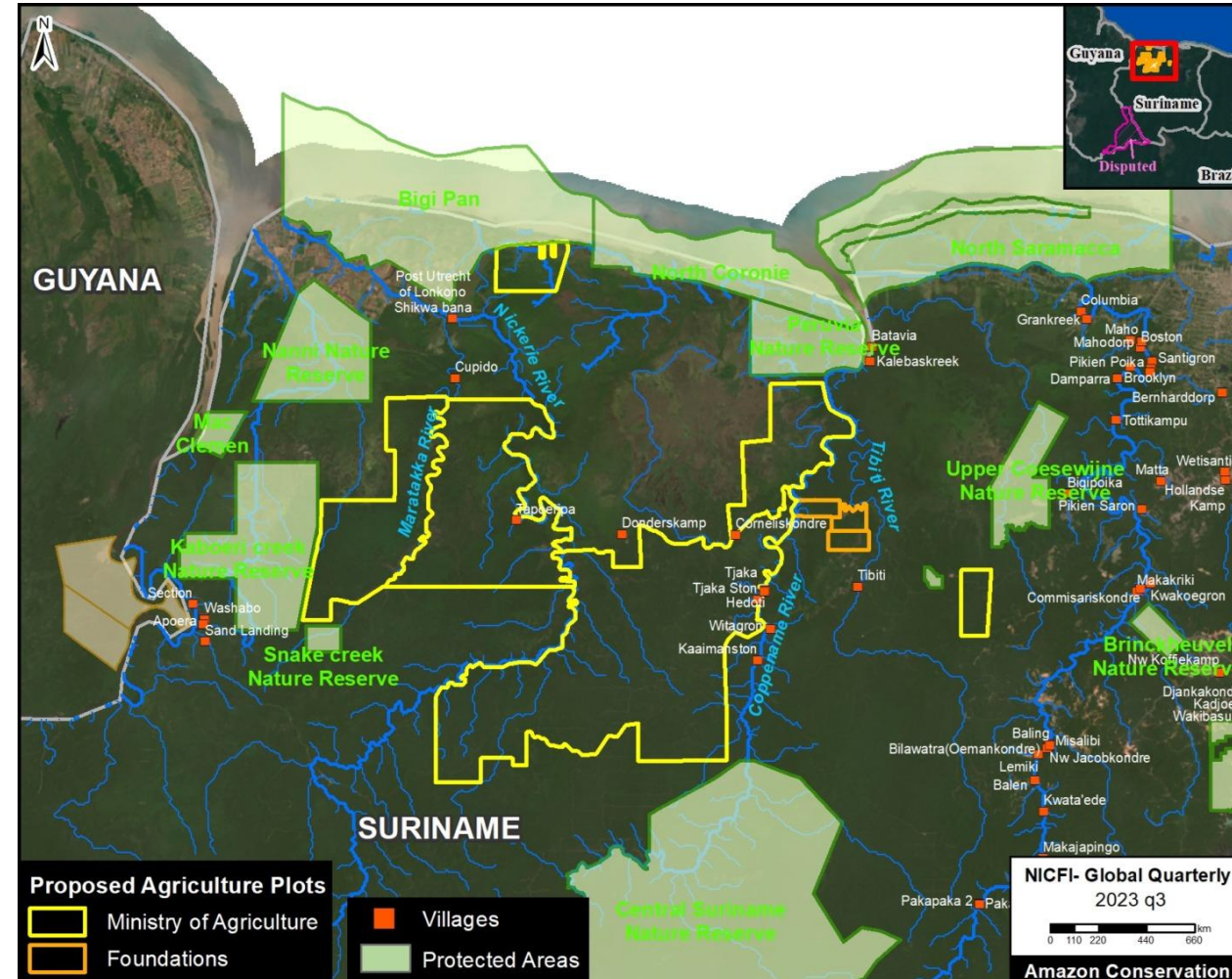
The bottom of the interface shows the "PLANET SATELLITE IMAGERY (TROPICS)" section, a "planet." logo, and a "Map data ©2023 Google" attribution. The map also includes a scale bar (0 to 5 km) and a zoom level of 9.53.

MENNONITE COLONIES HALTED IN SURINAME

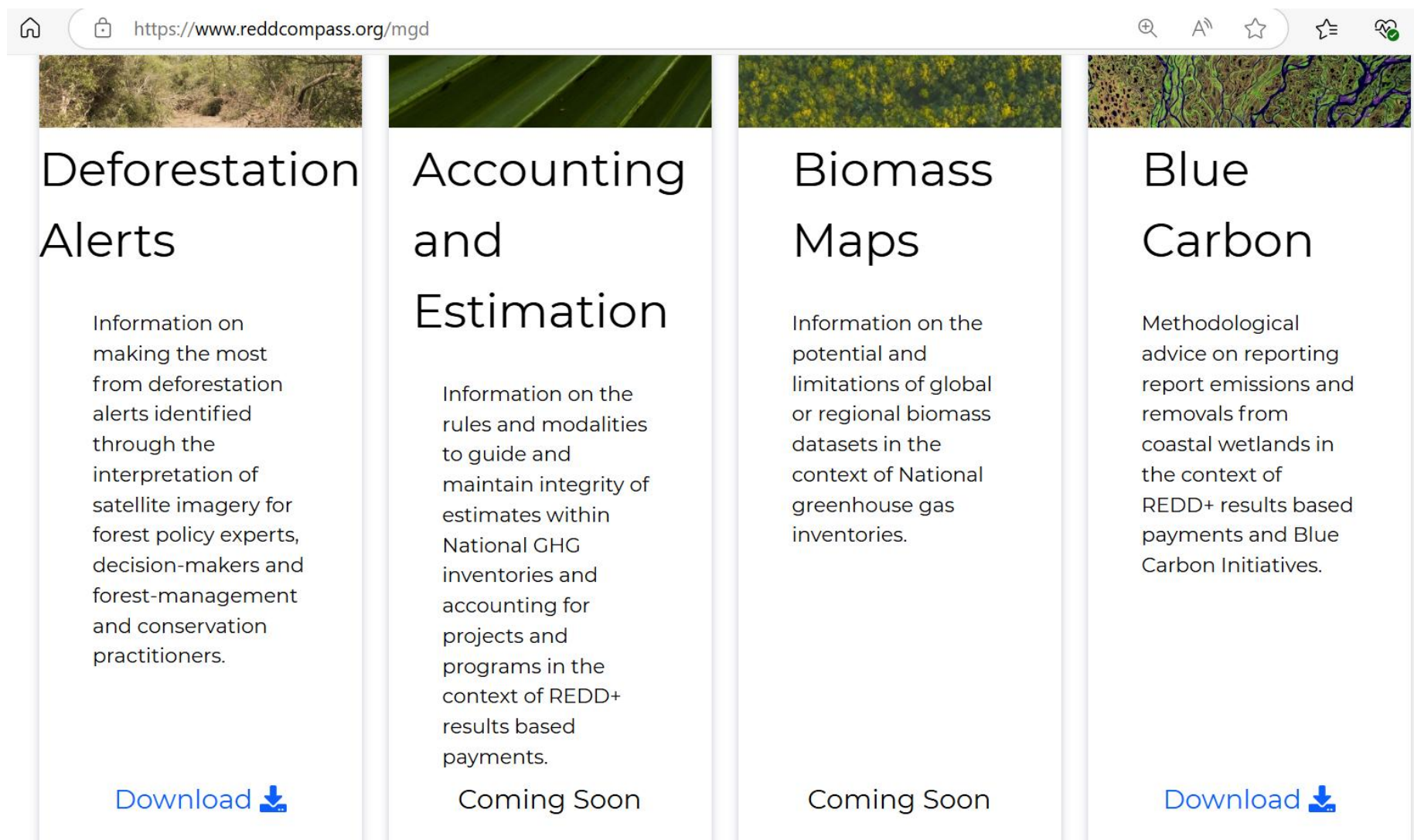


In December 2023, Mongabay revealed plans to develop the 535,000 hectares of rainforest, around 1% of the country's forest cover. The projects would have been carried out by Mennonites, the Ministry of Agriculture and private entities.




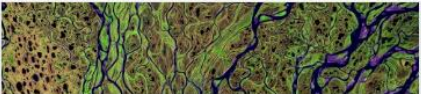


In June 2024, a court in Suriname approved an injunction filed on behalf of twelve Indigenous and maroon groups. After reviewing the injunction, the court said the government doesn't have the right to grant land without free, prior and informed consent, a process in which developers meet with residents to explain how projects would impact daily life.



GFOI guidance materials: Deforestation Alerts

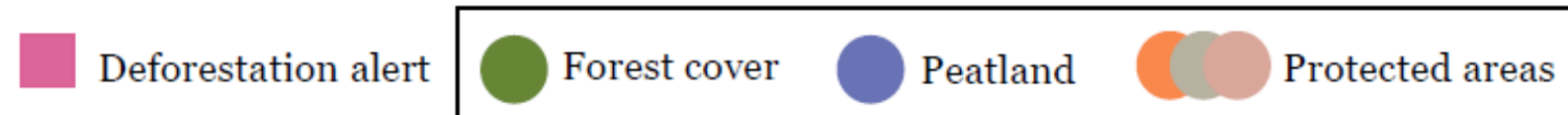
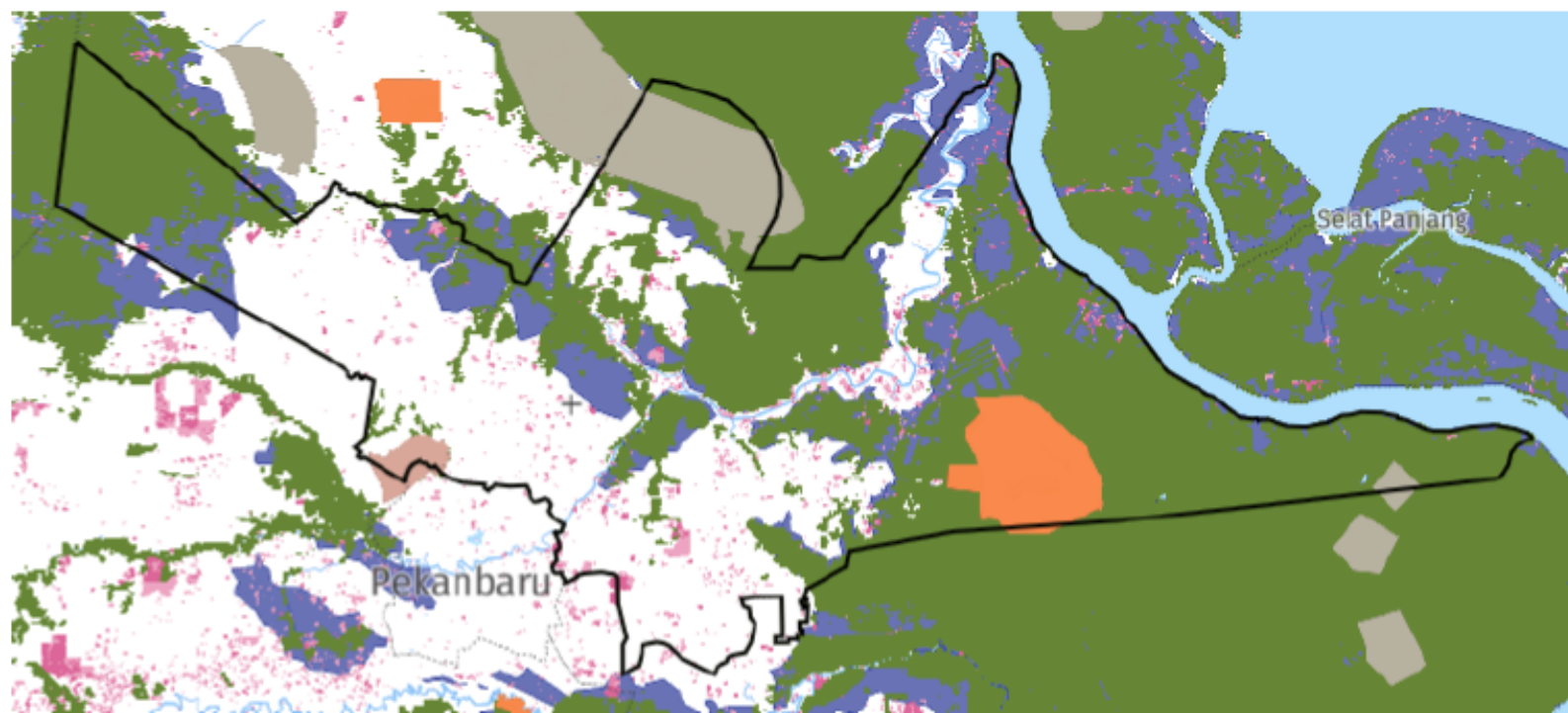


The screenshot shows a web browser interface with the URL <https://www.reddcompass.org/mgd>. The page features four vertical columns, each representing a different guidance material category. Each column has a header image, a title, a descriptive paragraph, and a download or status button at the bottom.

Deforestation Alerts	Accounting and Estimation	Biomass Maps	Blue Carbon
			
<h2>Deforestation Alerts</h2>	<h2>Accounting and Estimation</h2>	<h2>Biomass Maps</h2>	<h2>Blue Carbon</h2>
<p>Information on making the most from deforestation alerts identified through the interpretation of satellite imagery for forest policy experts, decision-makers and forest-management and conservation practitioners.</p>	<p>Information on the rules and modalities to guide and maintain integrity of estimates within National GHG inventories and accounting for projects and programs in the context of REDD+ results based payments.</p>	<p>Information on the potential and limitations of global or regional biomass datasets in the context of National greenhouse gas inventories.</p>	<p>Methodological advice on reporting report emissions and removals from coastal wetlands in the context of REDD+ results based payments and Blue Carbon Initiatives.</p>
Download 	Coming Soon	Coming Soon	Download 

GFOI guidance materials: Deforestation Alerts

	Use case	Type of Deforestation alert system	Ownership	Purpose-built, or existing alert use
1	Mapbiomas, Brazil	Near-real-time	Civil society	Existing alerts
2	INPE, Brazil	Near-real-time	National	Existing alerts
3	Ethiopia	Near-real-time	NGO	Existing alerts
4	Guatemala	Near-real-time	National	Existing alerts
5	Indonesia	Near-real-time	NGO	Existing alerts
6	Lao	Near-real-time	National	Purpose built
7	Peru	Near-real-time	National	Purpose built
8	Forest foresight, Gabon	Early warning	NGO	Existing alerts



Concern area



MONITORING SYSTEM

Data

Provides total number of alerts detected in near real time, but lack of focus on where deforestation occurs

Prioritization

Filter alerts that occur in concern areas to help mobilize effort more effectively

Jurisdiction

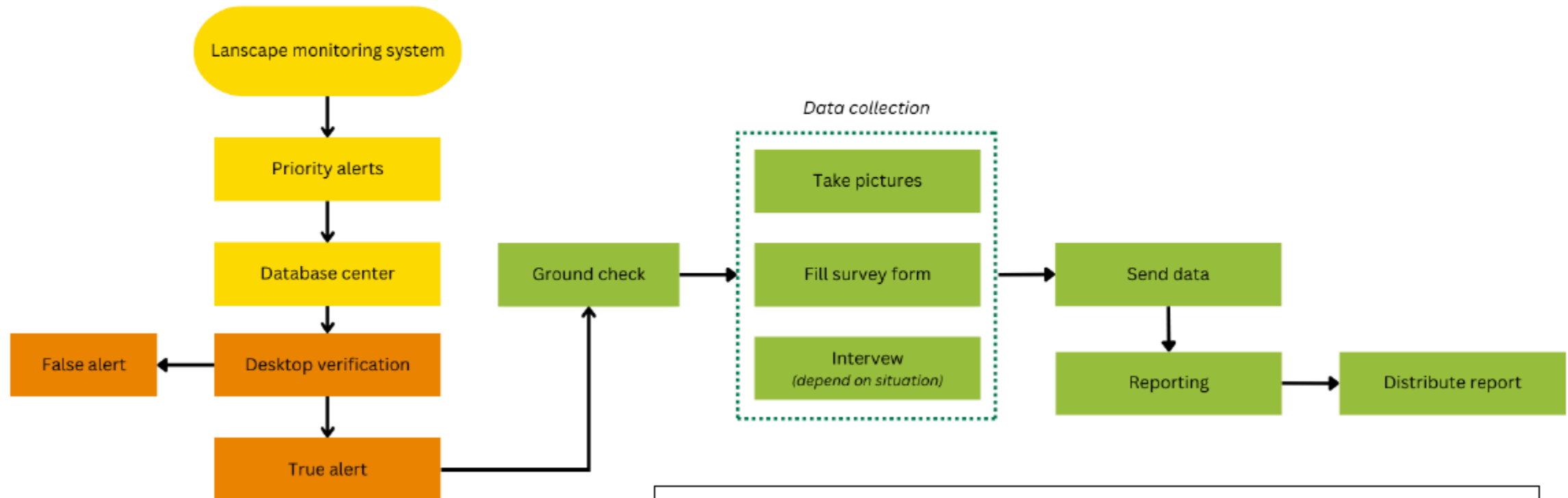
Provincial and district governments are decision makers regarding land use, have legal authority, and are close to the community



WRI INDONESIA

2 VERIFICATION PROTOCOL

Priority alerts that are produced every month **require a validation process** to confirm the alerts are true deforestation and to collect contextual data and information to determine the driver of deforestation. There are two methods to validate the alert, first is by using **high-resolution satellite imagery** (desktop verification), and second is by **field verification**.



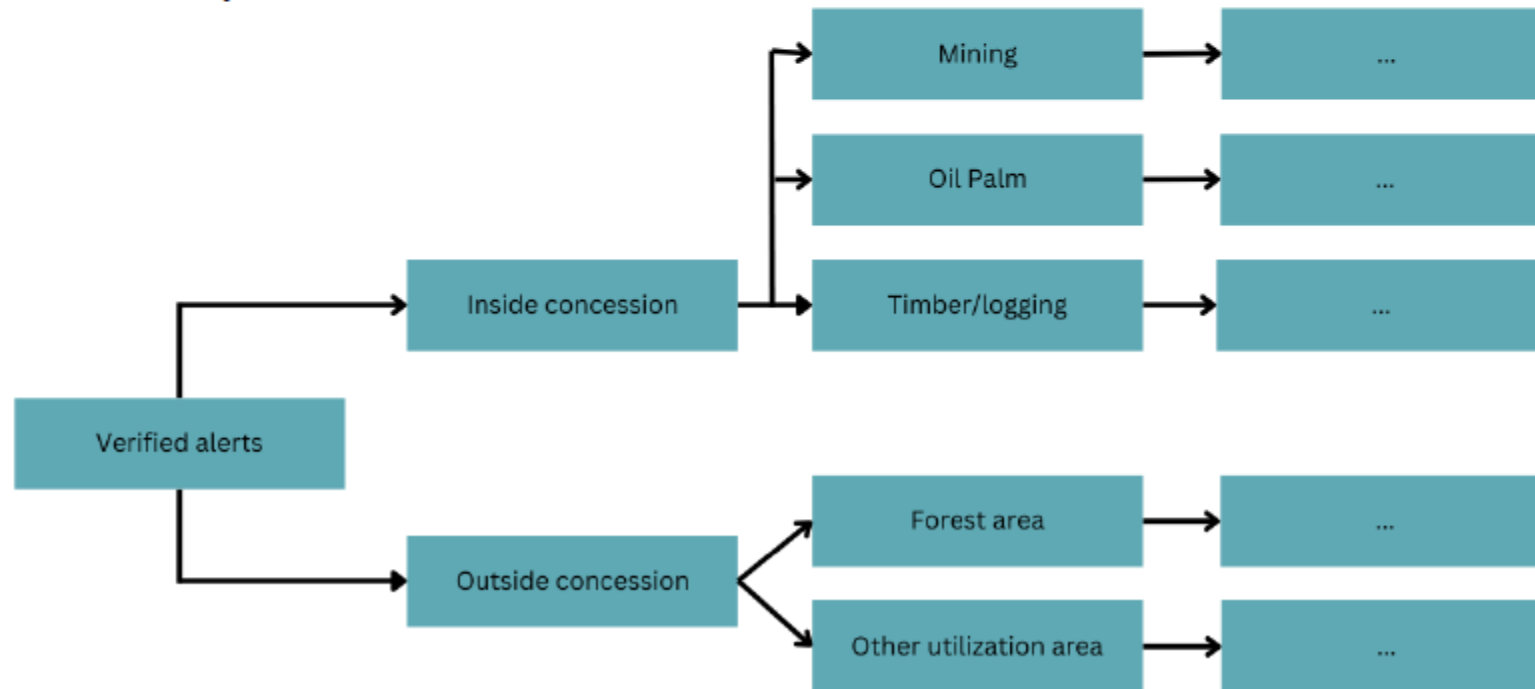
Development of verification protocol

- Form a monitoring/verification team to verify alerts (desktop and ground check)
- Create a standardize data collection and reporting
- Manage database and deliver report to broader stakeholders

3 RESPONSE PROTOCOL

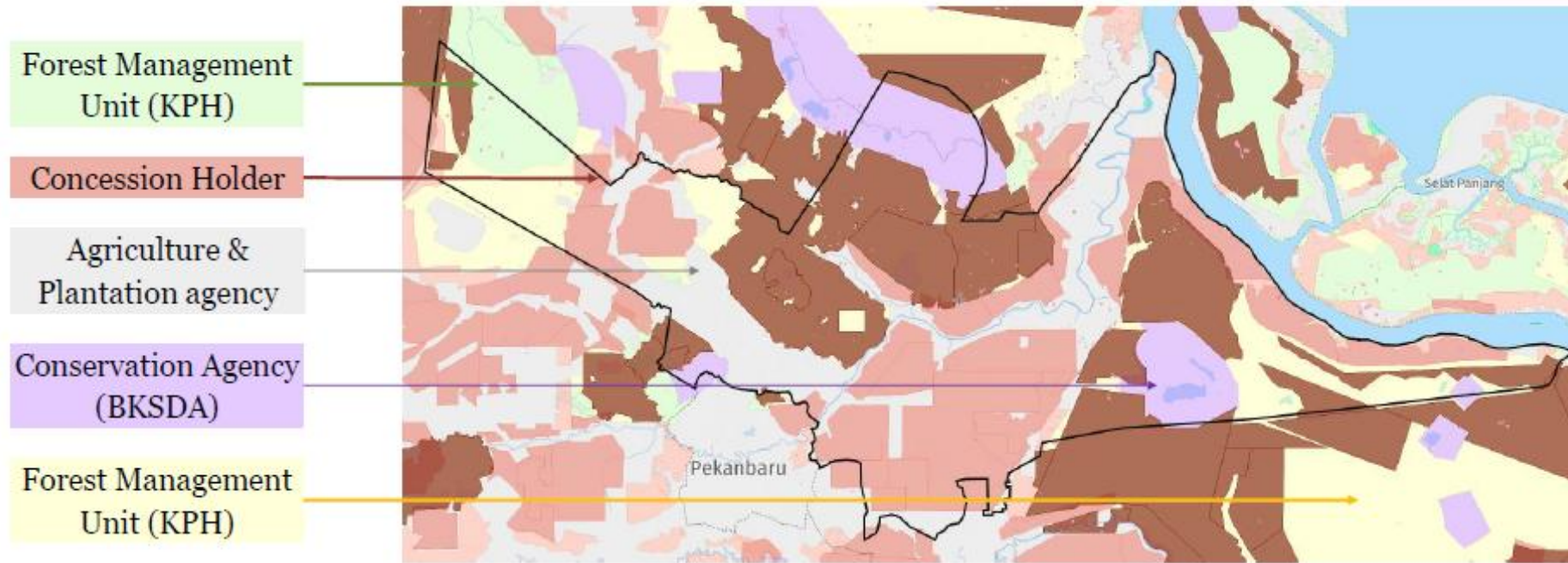
The development of response protocol has considered various potential scenarios of forest and land clearing, **based on land status (forest area and non-forest area), and land ownership (concession and non-concession).**

We structured this categorization to make it easier to incorporate this protocol into other approaches or initiatives, for instance, it is aligned with the Consumer Goods Forum (GCF) palm oil roadmap of deforestation monitoring and response framework (MRF). Also align with the existing law and regulation of Indonesia's government under Ministry of Environment and Forestry.



JOINT EFFORT IN DEFORESTATION MONITORING

Verification protocol and follow up action based on land status where deforestation alert occur



Prioritizing deforestation monitoring and collective effort aims to systematically address deforestation challenges, **set up monitoring protocols, and provide a framework for local stakeholders to collaborate and develop intervention mechanisms** to stop future deforestation

HIGHLIGHT STUDY CASES - 1

Bener Meriah – illegal logging in production forest

Field Verification - Nov 2022

KPH Unit 2 found the encroachment area, estimated 15 ha. During the field verification, the team visited local community to socialize about prohibition of forest area encroachment



Revisit - September 2023

A revisit of the land clearing site was done in September 2023 as an exercise of response protocol. The team found that the land clearing site had been abandoned, with no sign of expansion or land utilization.



RADD Alerts in August – September 2022

GLOBAL FOREST WATCH

Stay tuned for upcoming office hours and webinars on how to use new and existing datasets.

Find tutorials and resources on our Help Center:
<https://www.globalforestwatch.org/help/>

For questions on Global Forest Watch, get in touch at
GFW@wri.org