



Colombia

Forest and Carbon Monitoring System: An official tool to update forest and deforestation data in Colombia

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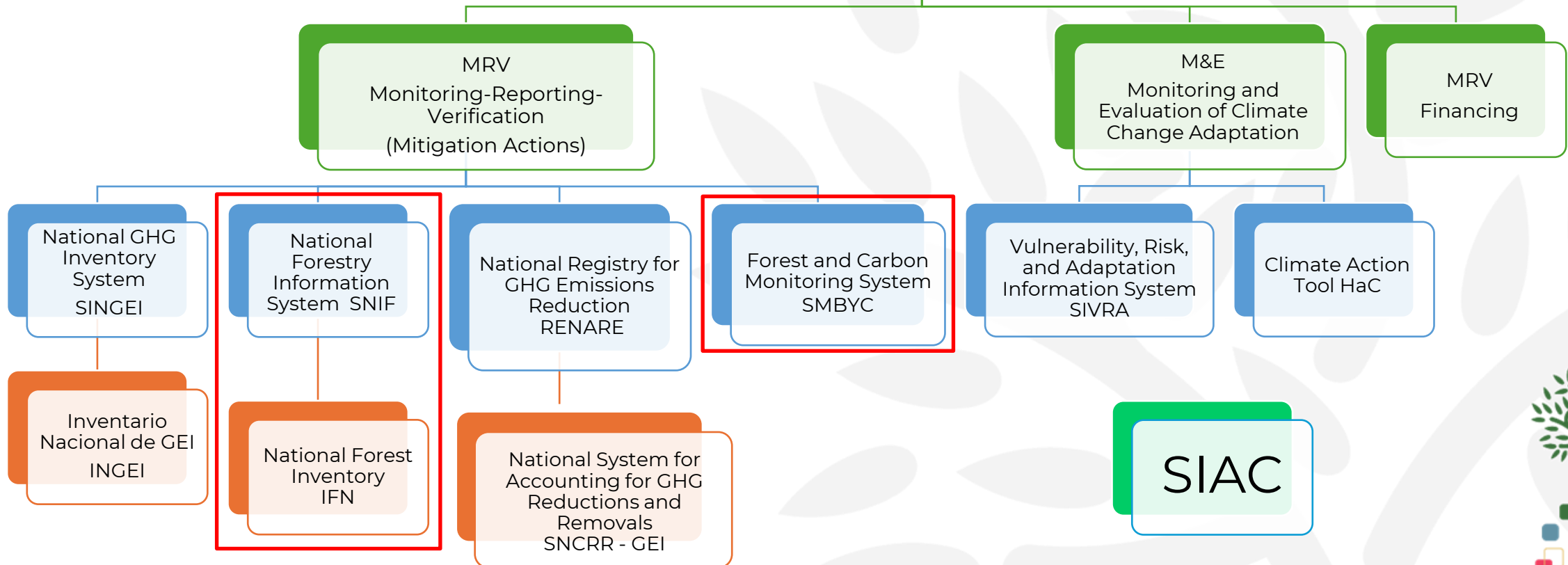


1. Introduction

NATIONAL CLIMATE CHANGE INFORMATION SYSTEM

National Climate
Change
information
System - SNICC

Law 1931 of 2018
Climate Change Law.



1. Introduction



Nacional Forestry Monitoring System - NFMS



National
Forestry
Information
System - SNIF



National
Forest
Inventory -
NFI



Forest and Carbon
Monitoring System -
SMBYC

Decree 1655 / 2017



National Registry of
Deforested Areas-
RNZD

Decree 0909 / 2024



2. NFMS Progress

How do we monitor the country's forests?



O INVENTARIO FORESTAL NACIONAL (Diversidad, estructura, Carbono...)

O SISTEMA NACIONAL DE INFORMACIÓN FORESTAL -SNIF



Efficiency in the use of satellite images for forest monitoring in Colombia



2. NFMS Progress

TECHNOLOGICAL INNOVATIONS IN FOREST MONITORING IN COLOMBIA

5

Algoritmos

Development of pre-processing
algorithms:

- Cloudmasking
- StackComposed
- ActiveFires,
- ArrNorm. ATD,



3

Algoritmos

Development of processing and analysis
algorithms:

- ThRase,
- PCA4CD
- AcATaMa.



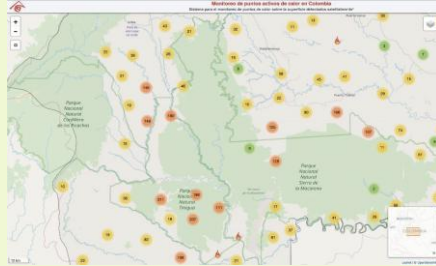
2. NFMS Progress

FREQUENCY OF THE REPORTS:



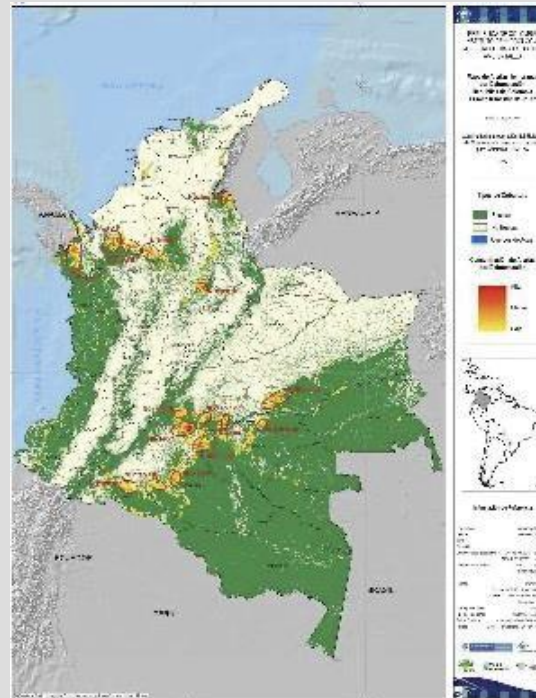
Daily reports

Monitoring of hot spots in Colombia, detected by satellite sensors as a proxy to the occurrence of fires..



Quarterly bulletins.

43 Bulletins have been generated, identifying the main cores of forest loss in Colombia.

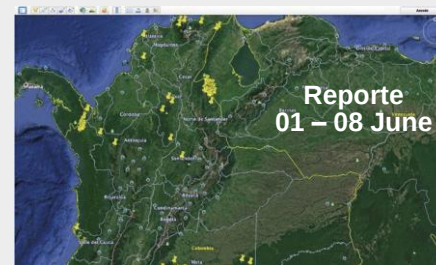


Annual Reports

12 annual official reports has been generated, identifying reporting the forest cover and deforestation statistics.

Weekly reports

340 reports as input for control actions with environmental authorities, identify >5 ha alerts.



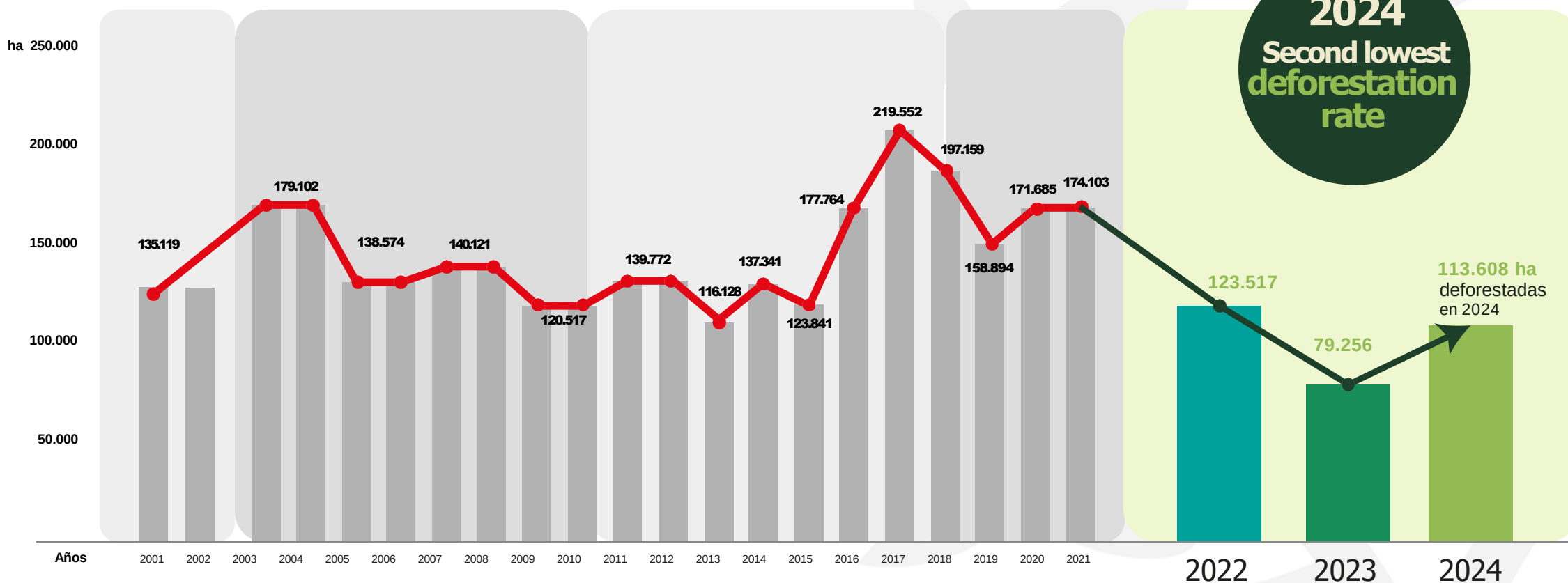
Reportes mensuales

With high resolution images (3-5m) technical reports are generated in areas of high deforestation.



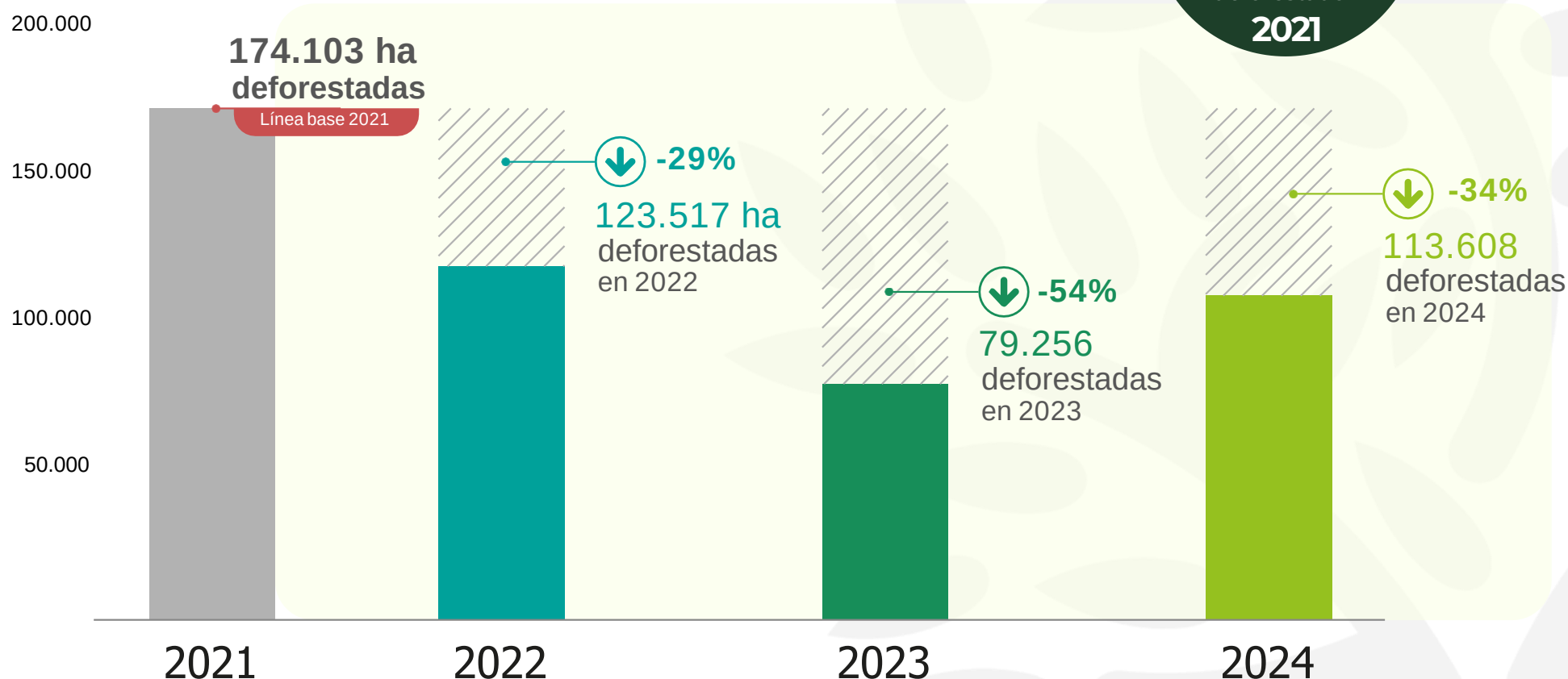


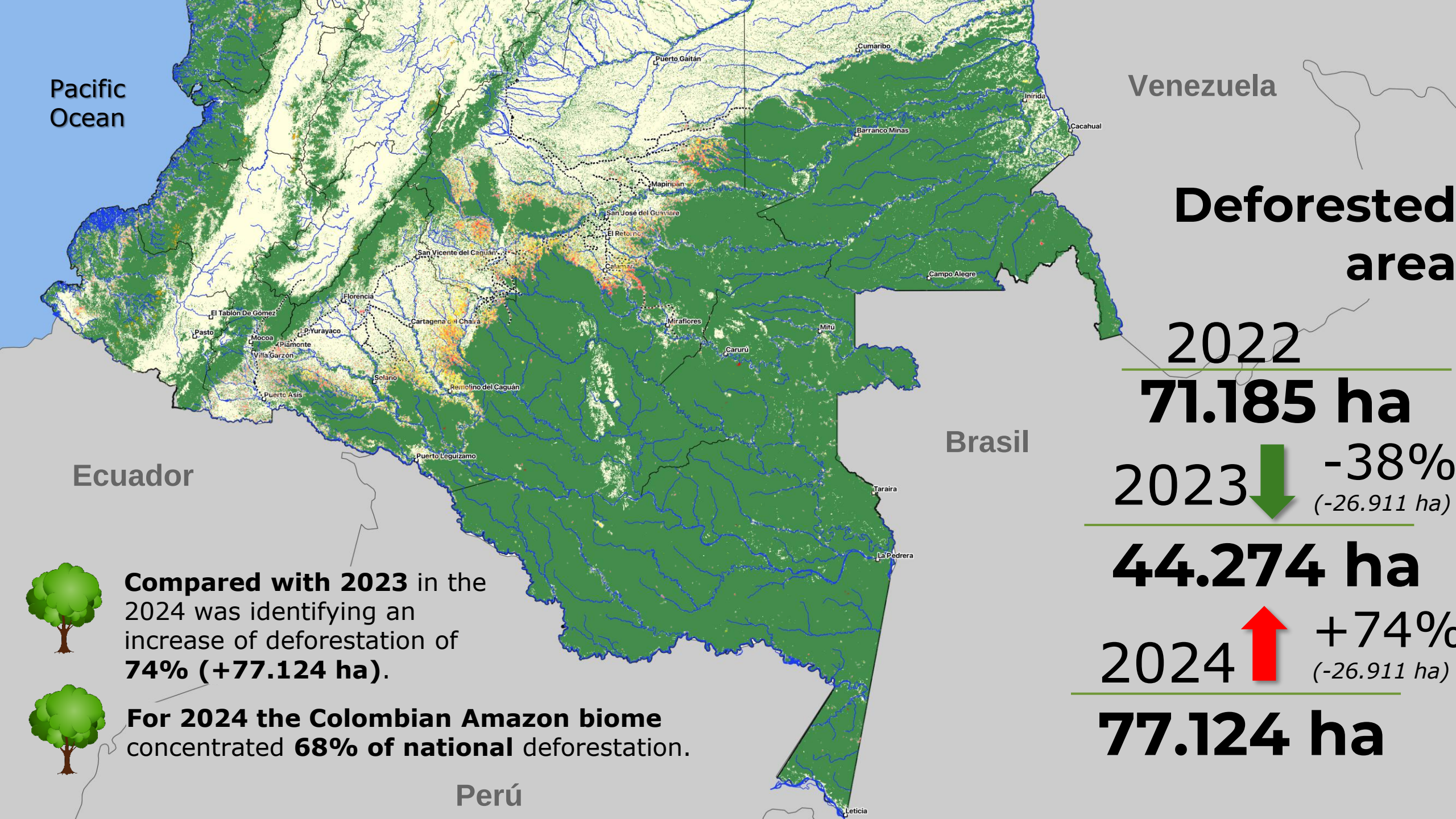
Historical Reduction of deforestation 2022-2024



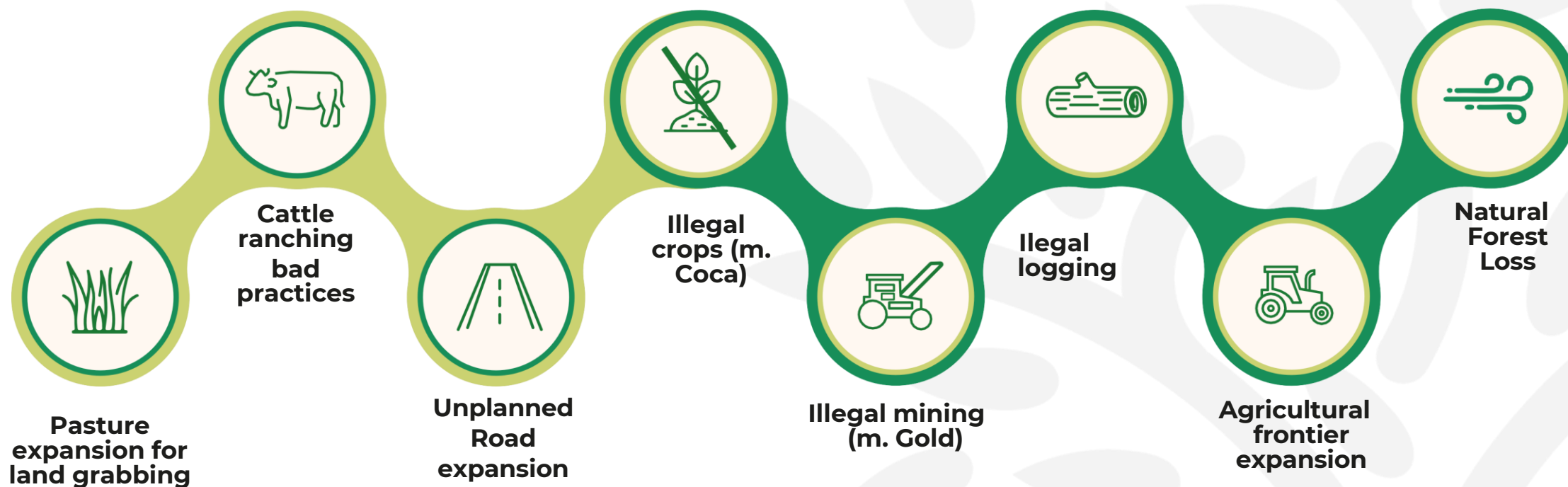
Successfully achievement of the deforestation goal for NDP

NDP Goal
-20%
deforestation
2021

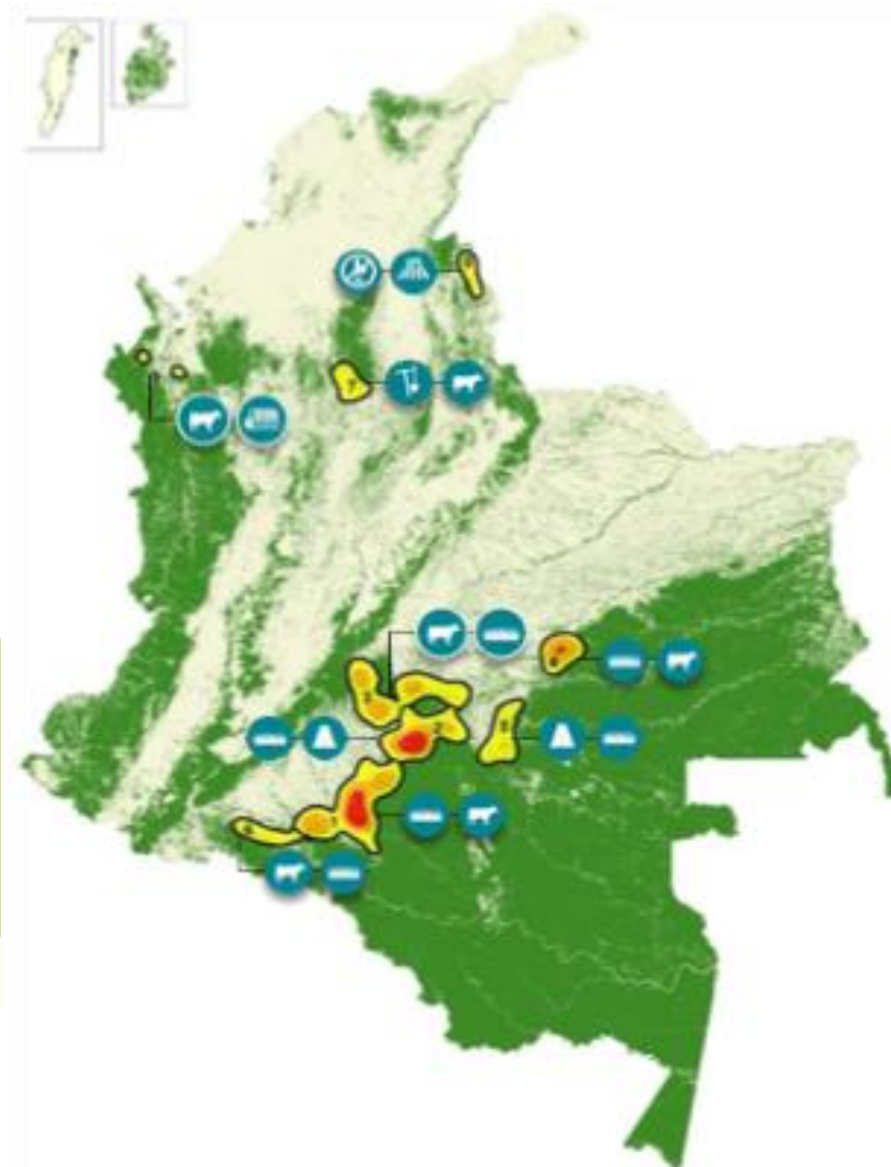




Direct Drivers of Deforestation in Colombia



Active Deforestación Hotspots -NAD



Over **2024 57% of the national** deforestation was concentrated in **9 principal Hotspots**

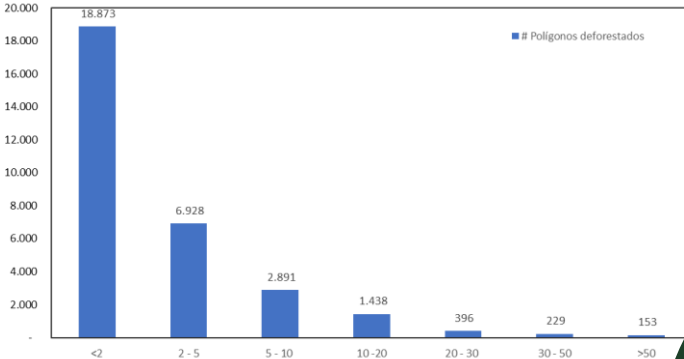
1	Sabanas del Yarí Caguán	18,1 %
2	Llanos del Yarí Marginal de la Selva	11,5 %
3	Sur del Meta Meta	11,1 %
4	Mapiripán Meta	5,0 %
5	Guaviare	4,3%
6	Putumayo	2,6%
7	Andina Centro Norte - Nororiente de Antioquia / Sur de Bolívar	2,1%
8	Andina Norte Catatumbo	1,7%
9	Pacífico Norte	0,9%



Deforestation Dynamics

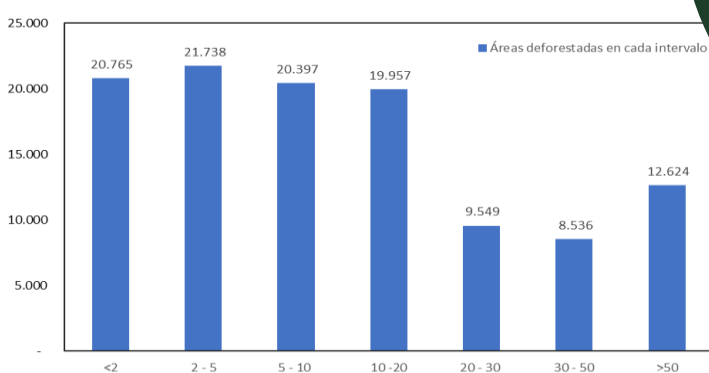
Patch size Analysis

Polígonos deforestados

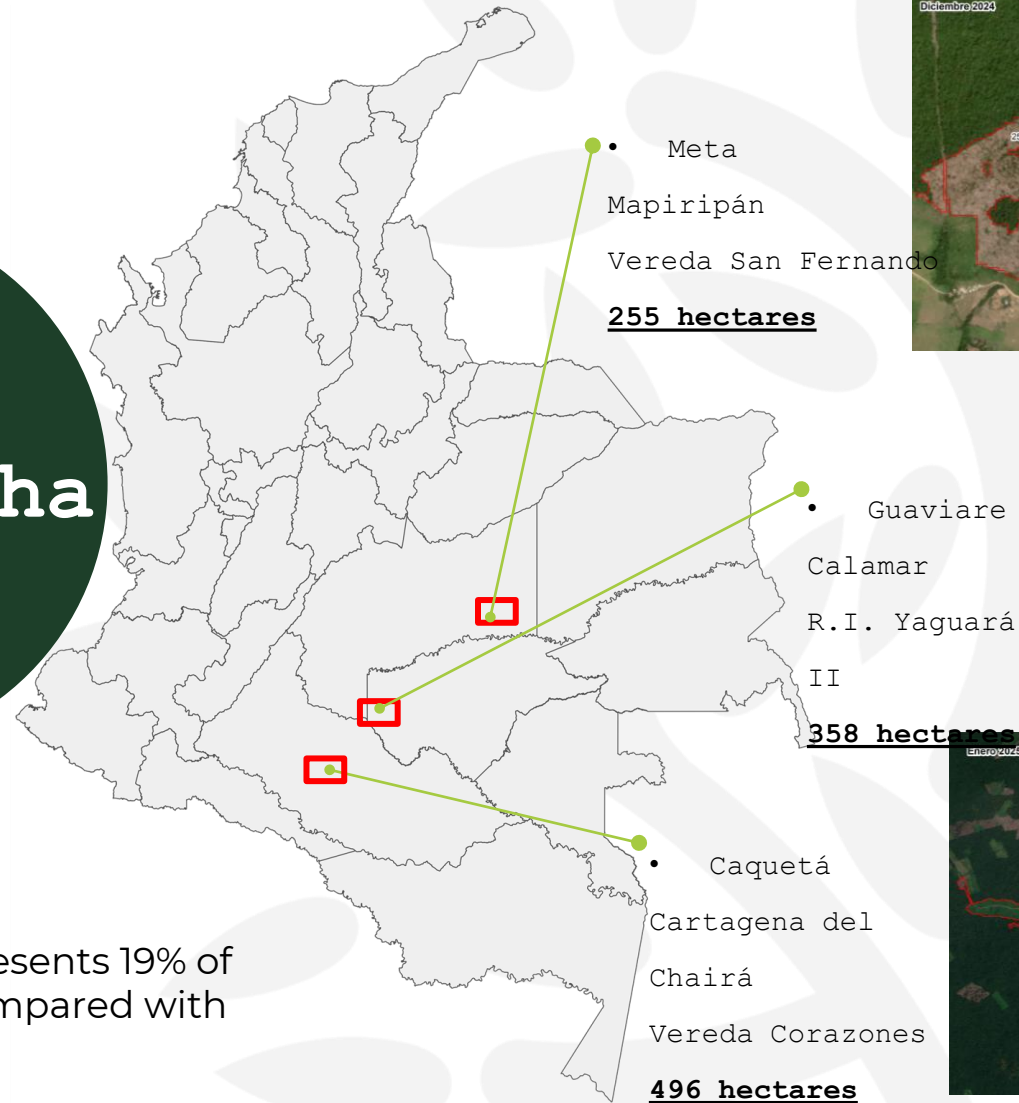


Patches
>30 ha
21.160ha
in 2024

Áreas deforestadas en cada intervalo

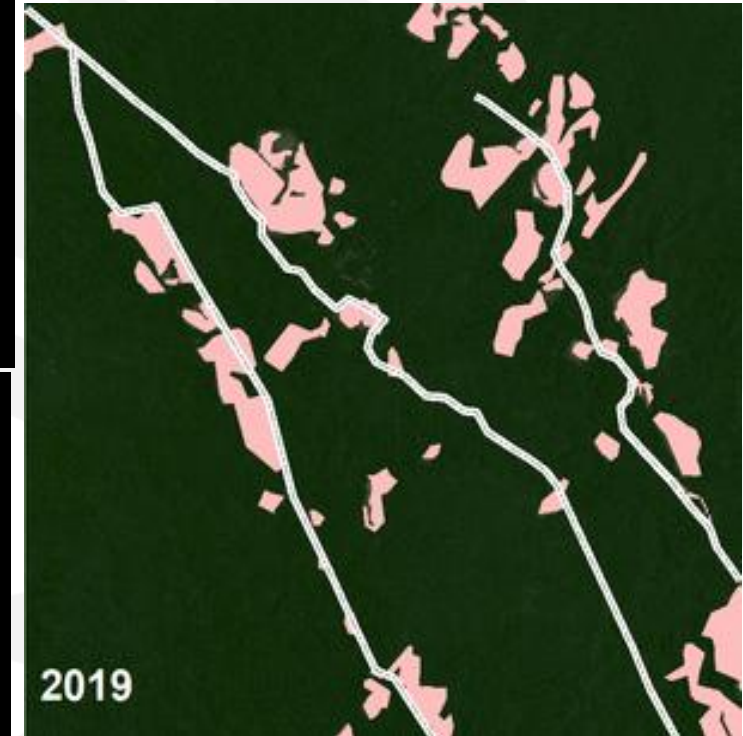
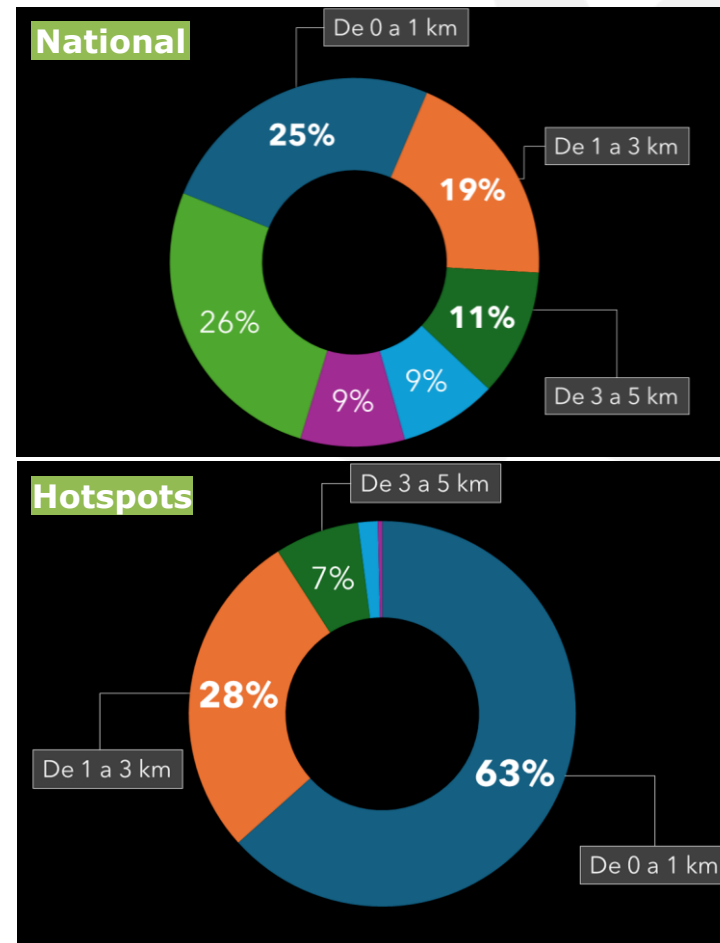
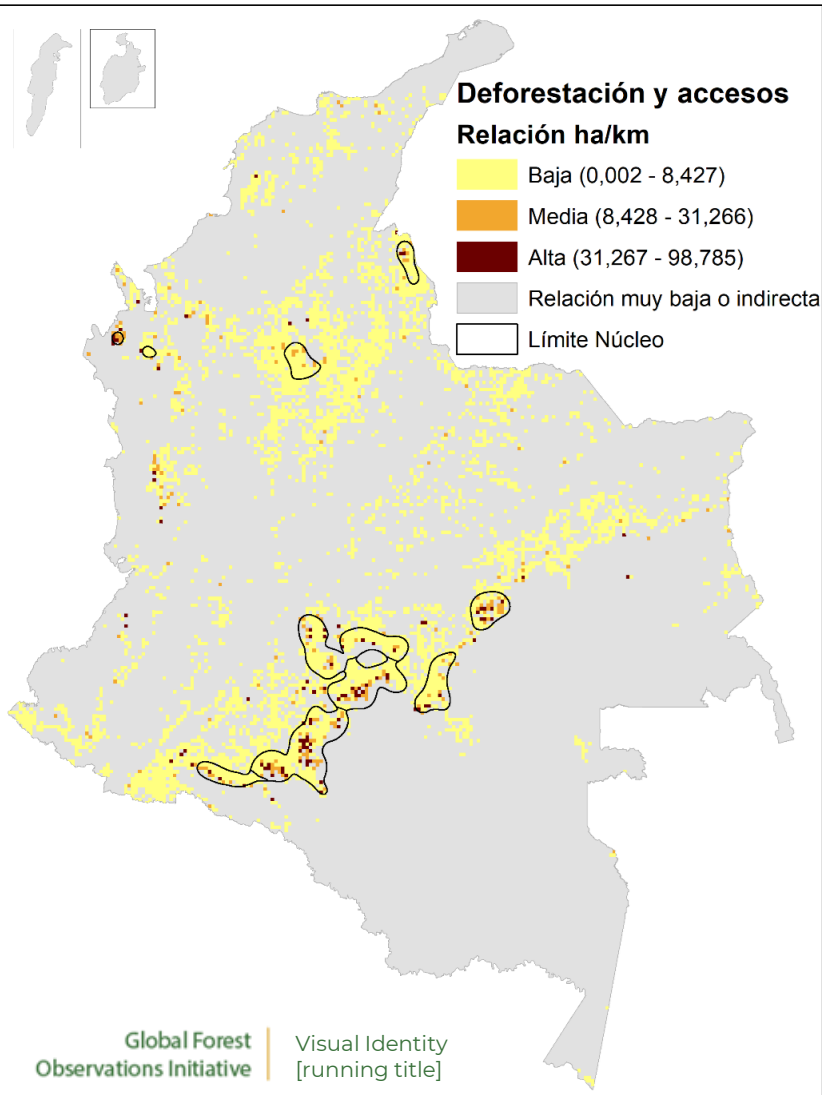


For 2024 patches greater than 30 ha (327 patches) represents 19% of national deforestation, identifying an 66% increase compared with 2023 (197 patches).



Relationship between **deforestation** and **road accessibility**

For **2024** was identified **medium-high relation** between the magnitude at deforestation areas and the longitude of illegal roads mainly for the **High Deforestation Hotspots (NAD)**



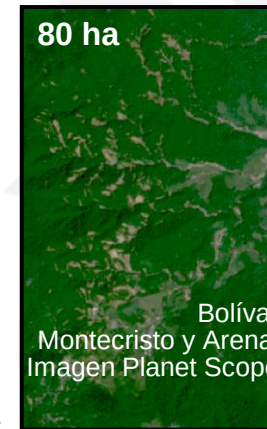
Deforestation Dynamics

Natural Forest Loss

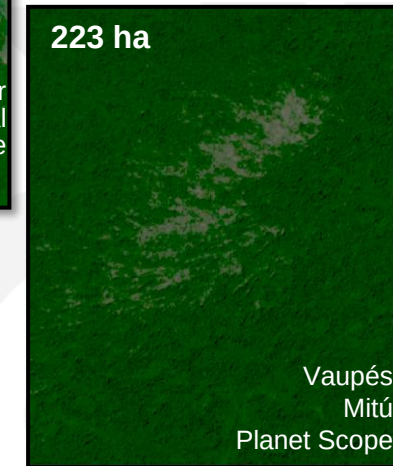
**Natural
loss**
5.282ha
in 2024



Landslide



Windstorm Chagra de viento



Chagra de viento



For 2024 that phenomenon was related with the 4.6% national deforestation.



3. GFOI Capacity Development Impact

- With the support of GFOI the Colombian FNMS address advance for international reporting and national information needs.

- Methods and guidance documentation (also joint building) provided critical orientations to national developments through User-friendly methods

- Capacity building component allows Colombian NFMS building an effective knowledge and technology transfer.

- Data coordination allow access to data and tools for forest monitoring..

- Research and development component promote to solve knowledge gaps to progress in forest monitoring.



Dense time series
2001 – 2025*

FREL

BUR/BTR
(Technical Annex)



Digital image Processing
Protocol (Galindo et al.)



Tools and platforms
like Collect Earth (IFN)
and SEPAL (SMBYC) contribute to
generate and collect data



Spatial agencies archive
(Landsat, Sentinel), OBIWAN,
NISAR, etc.

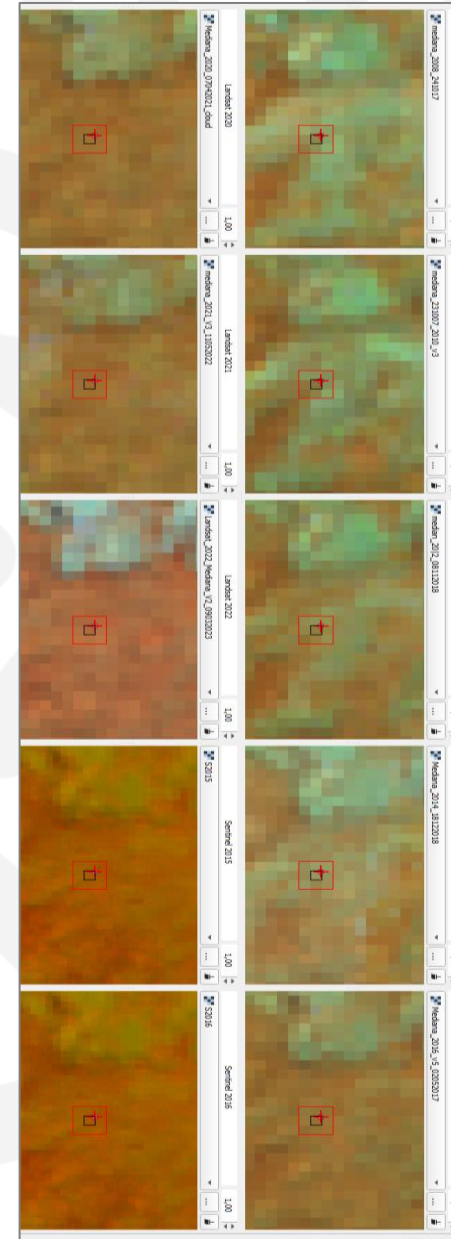


Promote the technical
integration of Resul based
payment and voluntary markets.



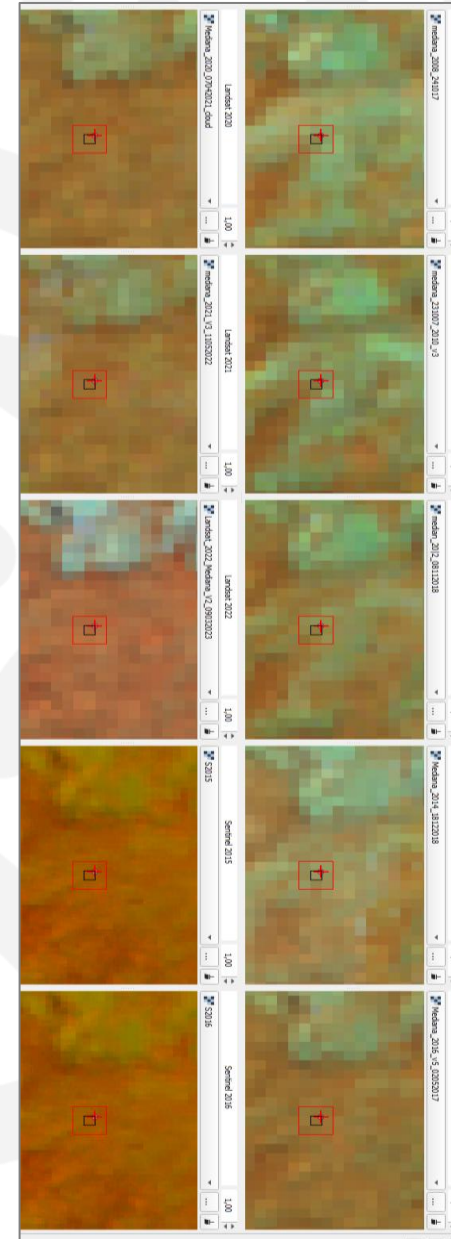
4. Challenges & Emerging Needs

- Recently reduction of budgets to warranty the availability of a robust cloud processing infrastructure to support the forest monitoring process.
- Stablish and implement (by Law?) an effective Deforestation reduction national plan, with clear objectives and goals.
- Stablish and maintain updated a Registry for national accounting of GHG Reductions /Absorptions at national level, that prevents double accounting between RBP Programs with voluntary Carbon market initiatives.
- Advance in the generation of Net zero deforestation estimates to follow the compliance of Paris NDC.



4. Challenges & Emerging Needs

- Assure a frequent and detailed flux of Remote sensing data to support the monitoring process (Replacement of NICFI Program?).
- Prepare and report forest data for the TFFF program assuring consistency with other reporting bodies.
- Establish interoperability mechanisms between the monitoring and reporting of forests and forest restoration in CBD (Convention of Biological Diversity).
- Continue to articulate monitoring and reporting with local and private sectors especially related with article 6 of the convention.



5. Future Priorities & Recommendations

- Promote the availability of a robust cloud processing infrastructure to support the monitoring process.
- Improve capabilities to generate analysis and predictive modeling (deforestation, degradation...)
- Strengthen capacities to prevent double accounting between RBP Programs with private initiatives.
- Integrate the land use change (non-forest land) and forest monitoring to improve GHG inventories.
- Assure a frequent and detailed flux of Remote sensing data to support the monitoring process.
- Maintain the effort through a highly trained and updated technical team.



**Data
coordination**



**Capacity
building**



**Research and
development**



**Methods and
guidance**



**Capacity
building**



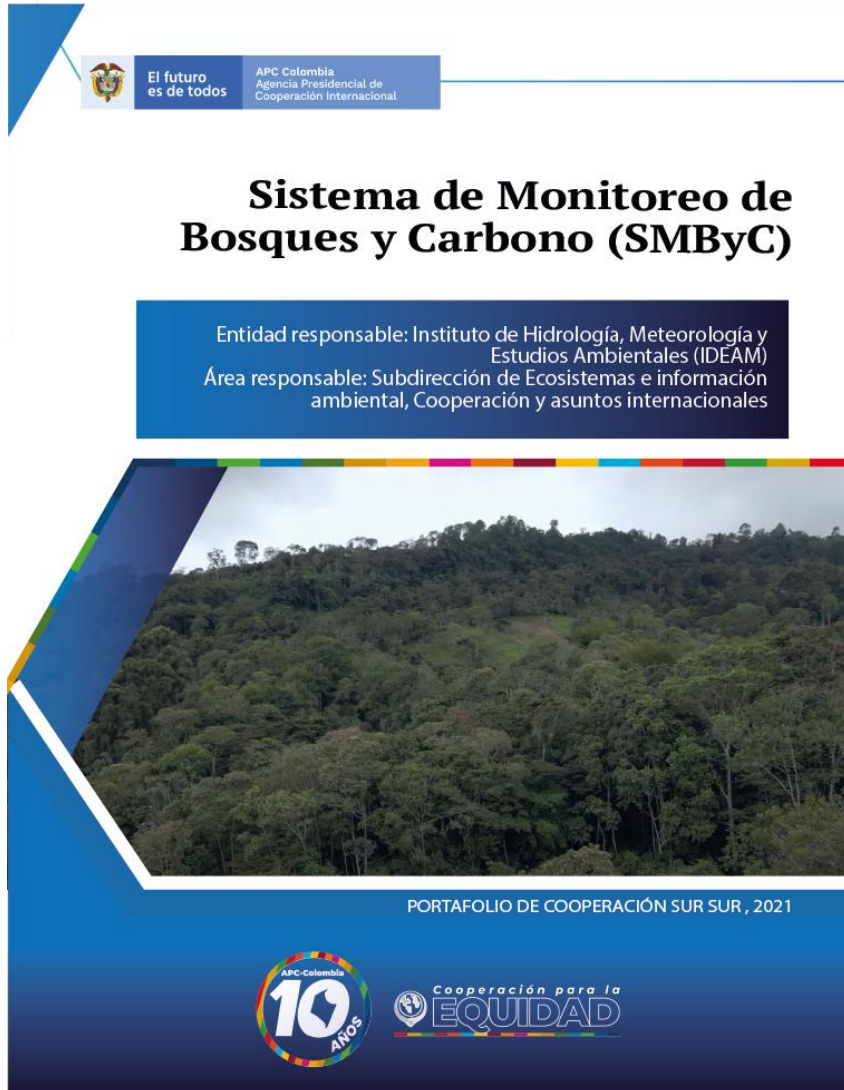
**Data
coordination**



**Capacity
building**



5. Colombian Contributions



Presidential Agency for International Cooperation of Colombia, APC-Colombia

- APC establish a good practices from Colombian entities that have wide international recognition and that in recent years have been requested by other countries.
- Explicitly contribute to cooperation for equity within the framework of the implementation of the 2030 Agenda and its 17 Sustainable Development Goals are included.
- The Forest and Carbon Monitoring System (SMBByC) is a South-South Cooperation Offer Portfolio of Colombia



Thank you!!

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