



Beyond the Field Trip: Practical Remote Sensing for Assessing Environment and Climate Interventions

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GIS Symposium- Unlocking the Potential of Geospatial Analysis for Evaluation

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Established
in 1992

US\$ 25billion

US\$ 140 billion leverage



Innovator and catalyst

>5,000 projects in

167 countries



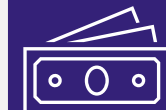
Unique partnership

18 implementing agencies



Financial mechanism

5 major environmental conventions



United Nations
Framework Convention on
Climate Change



**Convention on
Biological Diversity**



Stockholm Convention
on **persistent organic
pollutants (POPs)**

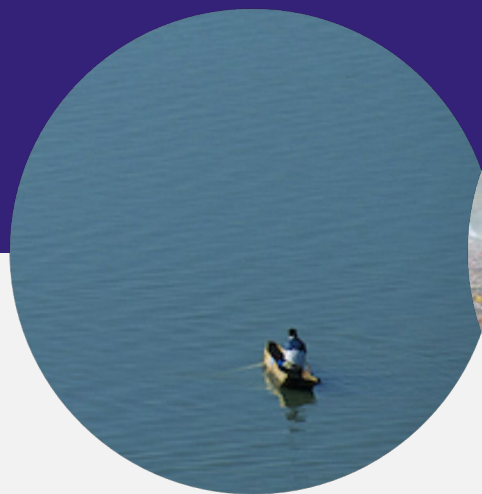


United Nations
Convention to Combat
Desertification



**MINAMATA
CONVENTION
ON MERCURY**

GEF THEMATIC AREAS—LINKED TO THE UN CONVENTIONS



**International
Waters**



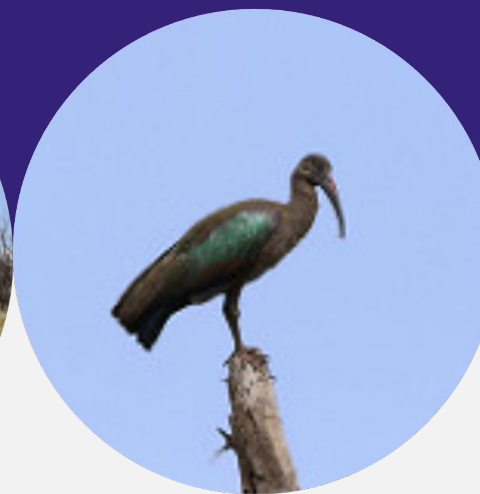
**Chemical
and Waste**



**Land
Degradation**

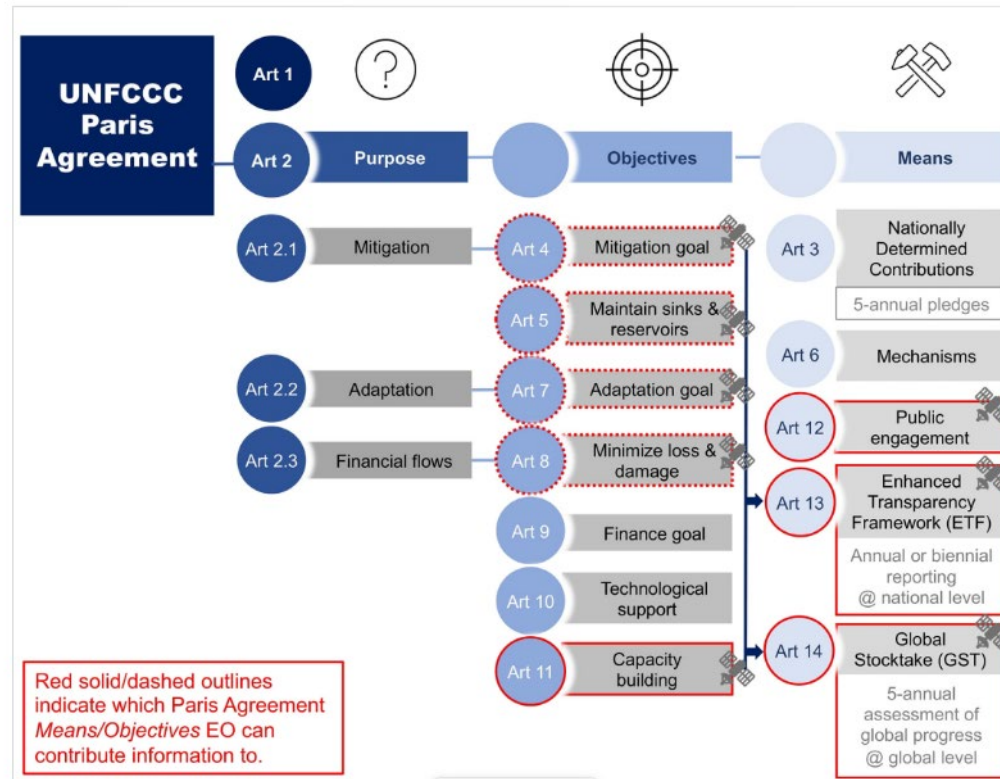


**Climate
Change**



Biodiversity

Environment, Climate Change and Geospatial methods



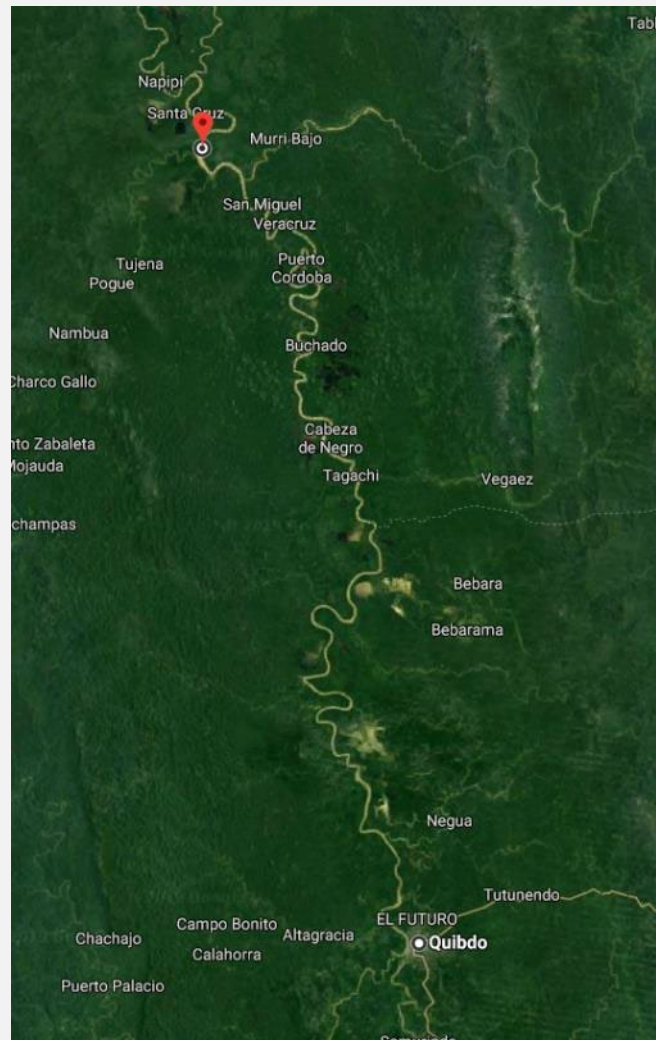
Paul et al, 2023

Target		Goal		Indicator	
Contribute to progress on the Target, not necessarily the Indicator				Direct measure or indirect support to the Indicator	
	1.4 1.5	1	No poverty	1.4.2	
	2.3 2.4 2.c	2	Zero hunger	2.4.1	
	3.3 3.4 3.9 3.d	3	Good health and well-being	3.9.1	
		4	Quality education		
		5.a	Gender equality	5.a.1	
6.1 6.3 6.4	6.5 6.6 6.a 6.b	6	Clean water and sanitation	6.3.1 6.3.2 6.4.2 6.5.1 6.6.1	
	7.2 7.3 7.a 7.b	7	Affordable and clean energy	7.1.1	
		8.a	Decent work and economic growth		
	9.1 9.4 9.5 9.a	9	Industry, innovation and infrastructure	9.1.1 9.4.1	
	10.6 10.7 10.a	10	Reduced inequalities		
11.1 11.3 11.4 11.5 11.6 11.7 11.b 11.c		11	Sustainable cities and communities	11.1.1 11.2.1 11.3.1 11.6.2 11.7.1	
	12.2 12.4 12.8 12.a 12.b	12	Responsible consumption and production	12.a.1	
	13.1 13.2 13.3 13.b	13	Climate action	13.1.1	
14.1 14.2 14.3 14.4 14.6 14.7 14.a		14	Life below water	14.3.1 14.4.1 14.5.1	
15.1 15.2 15.3 15.4 15.5 15.7 15.8 15.9		15	Life on land	15.1.1 15.2.1 15.3.1 15.4.1 15.4.2	
		16.a	Peace, justice and strong institutions		
17.2 17.3 17.6 17.7 17.8 17.9 17.16 17.17 17.18		17	Partnerships for the goals	17.6.1 17.18.1	

Credit: GEOS

Data from satellite imagery and sensor networks make environment and development indicators increasingly measurable

Evaluation in hard to reach, isolated and unsafe areas



WORLD Colombia

Kidnapping of six people in Colombia confirmed by the ELN

On August 1, the outgoing Government of Colombia and the National Liberation Army concluded their sixth cycle of talks in Havana without achieving their objective of specifying a bilateral ceasefire that guarantees the progress of the peace process, which began more than a year ago. year.

EFE AUG 4, 2018 11:35 AM

Pic: GEF IEO/ Anupam Anand

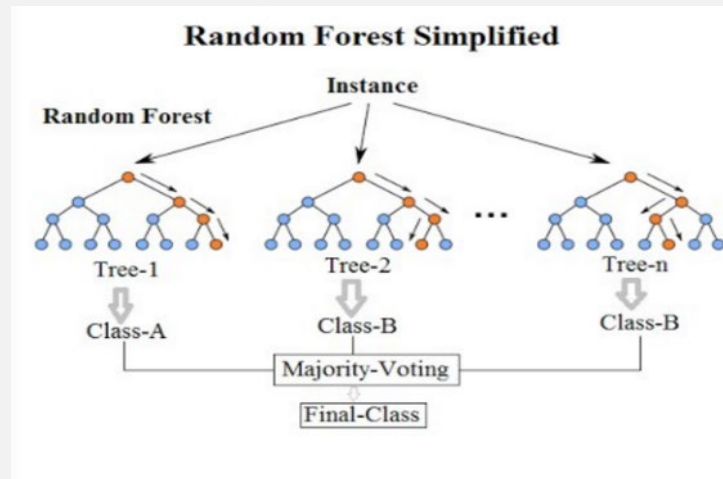
Evaluation in in hard to reach, isolated and unsafe areas



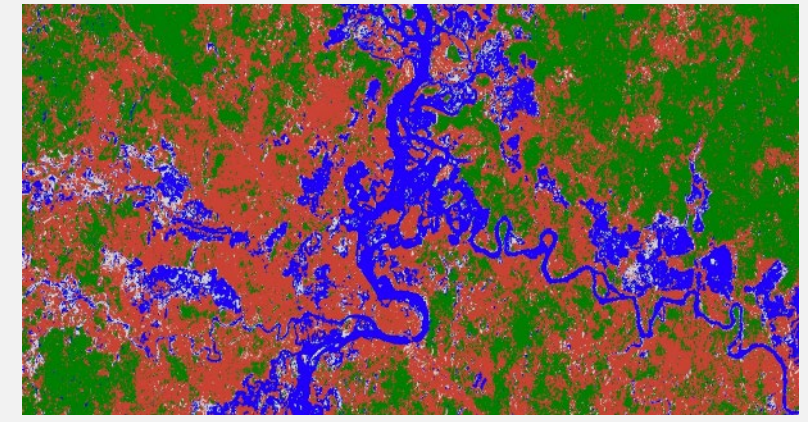
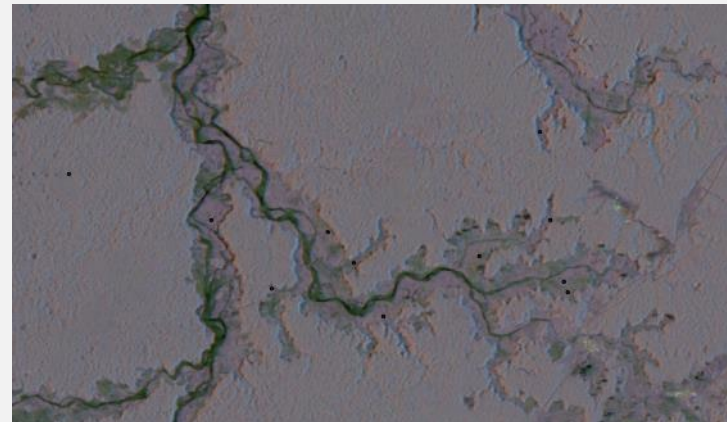
Drone Media/Image: GEF IEO/
Anupam Anand

Extent of the problem in hard to reach, isolated and unsafe areas

Model accuracy: 0.95

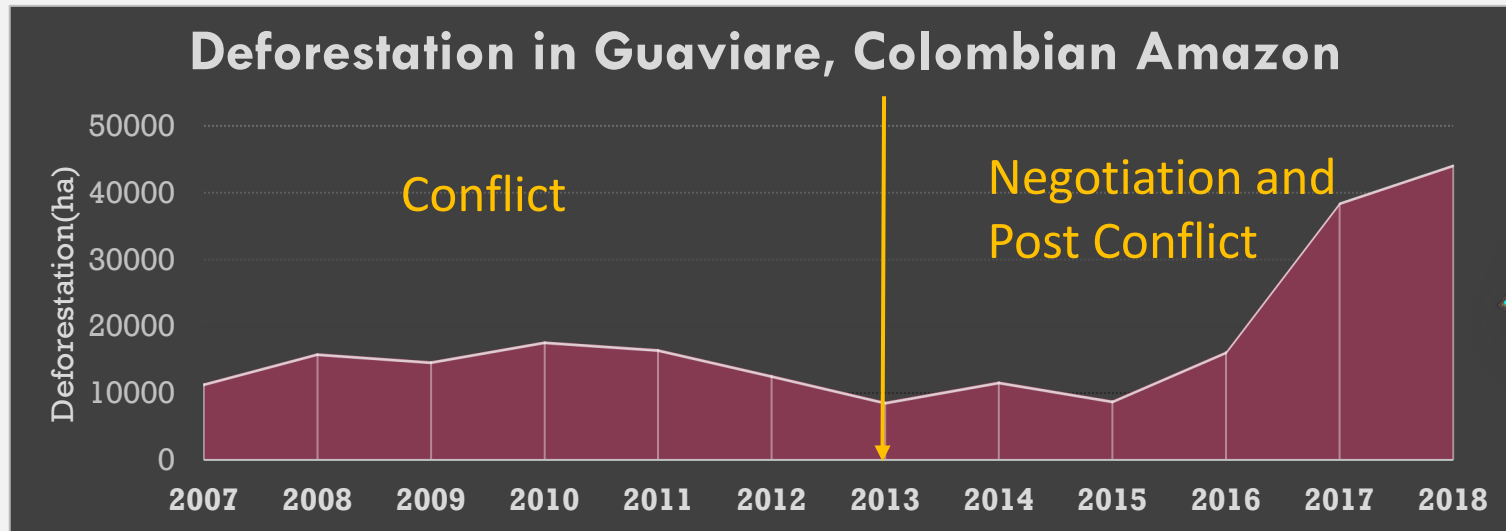


Validation Accuracy: 0.85



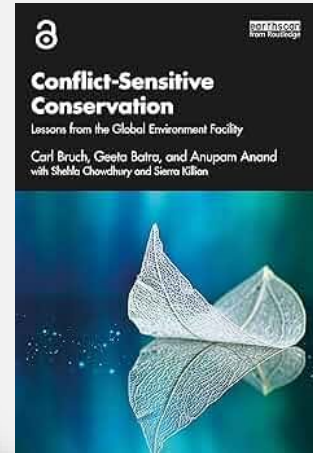
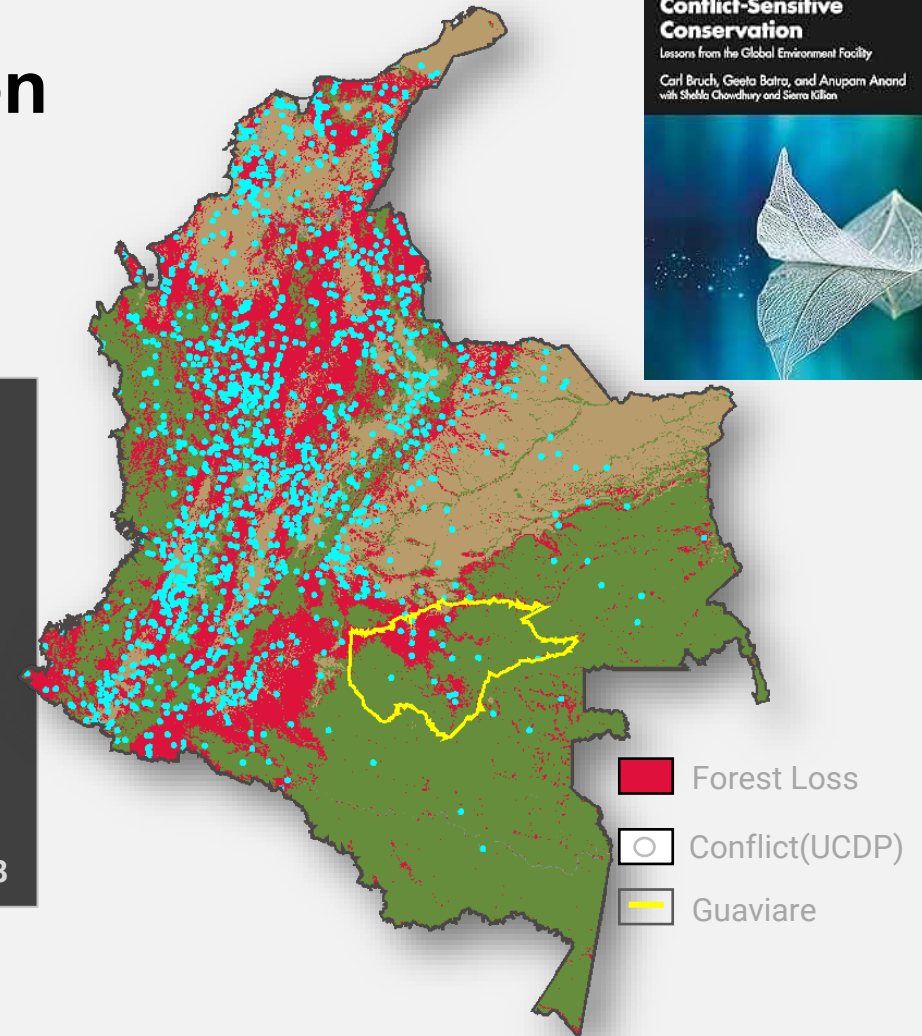
Extent of the problem in hard to reach, isolated and unsafe areas

Mining areas (mostly illegal), deforestation and hotspots of Conflict



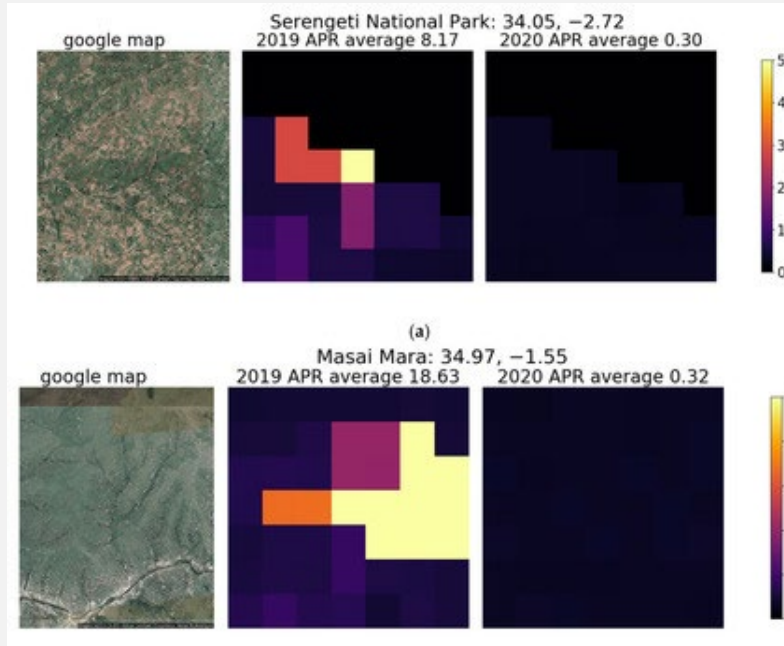
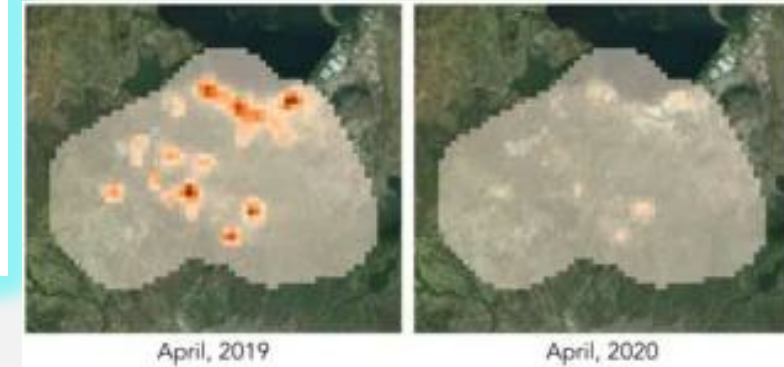
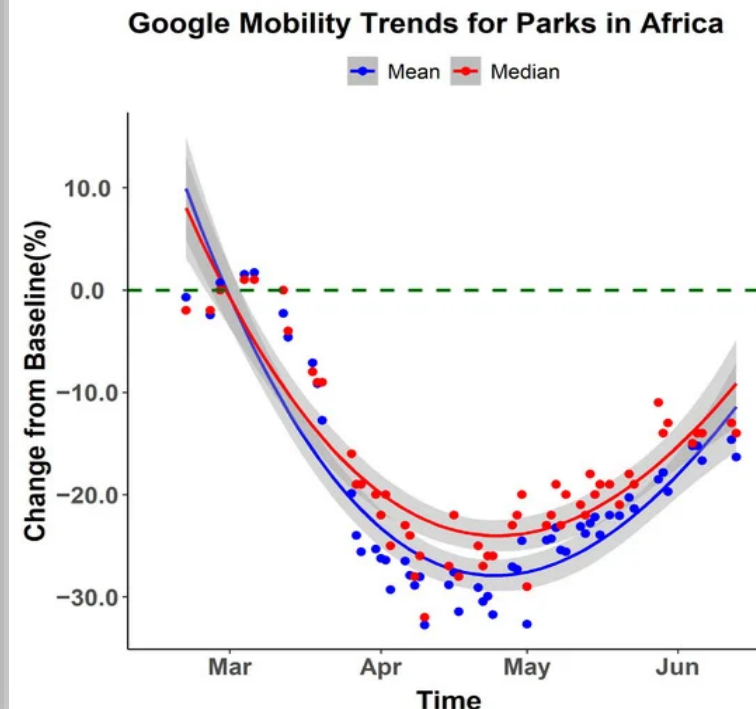
Forest Conservation and Sustainability in the Heart of the Colombian Amazon (GEF ID 5560, WB P144271)

“It’s the peace that brings deforestation” - A project participant.

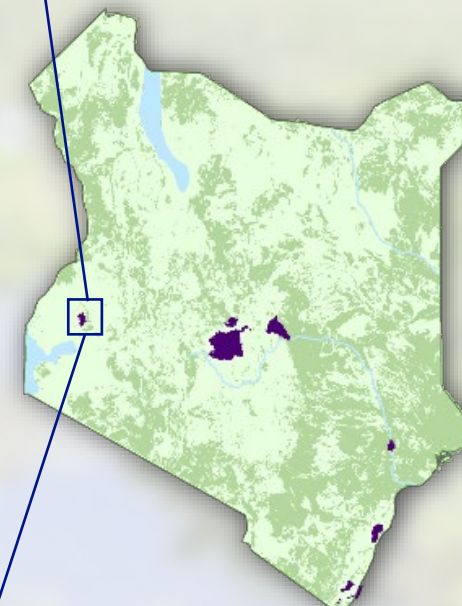
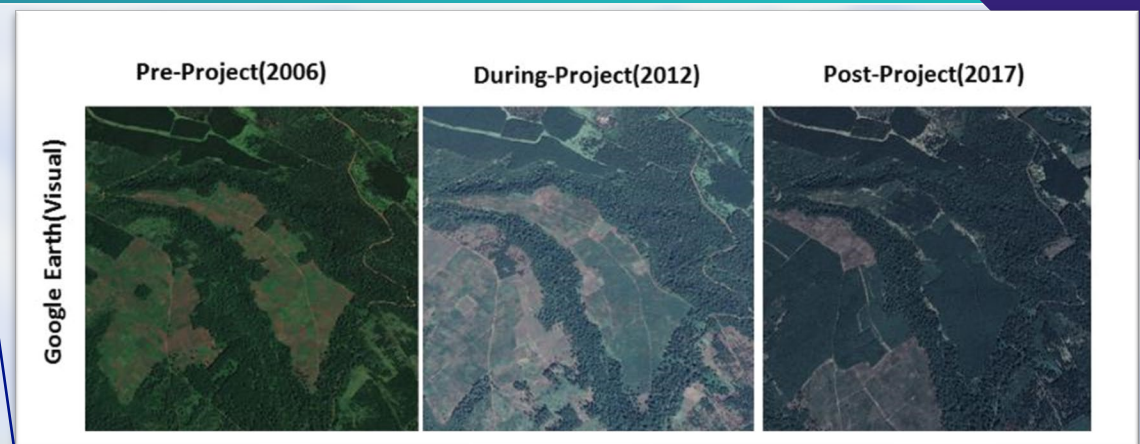
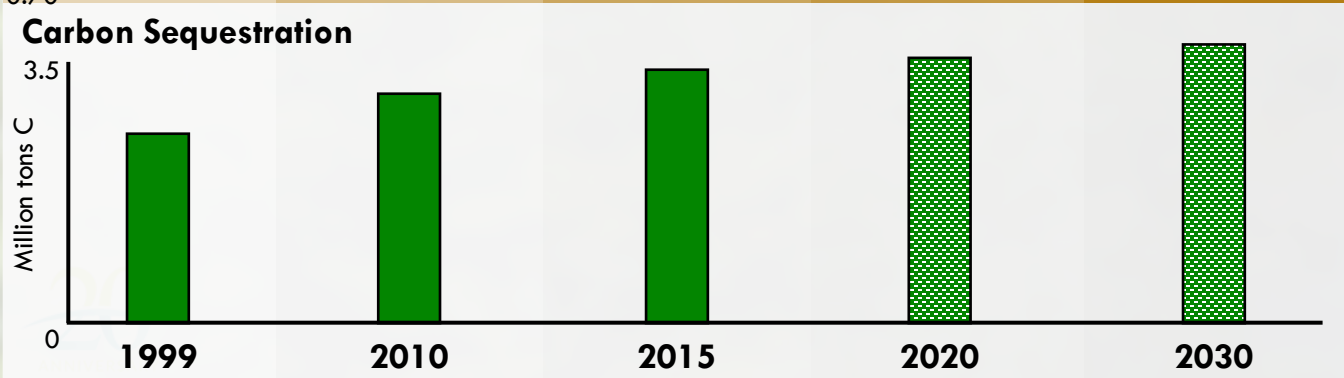
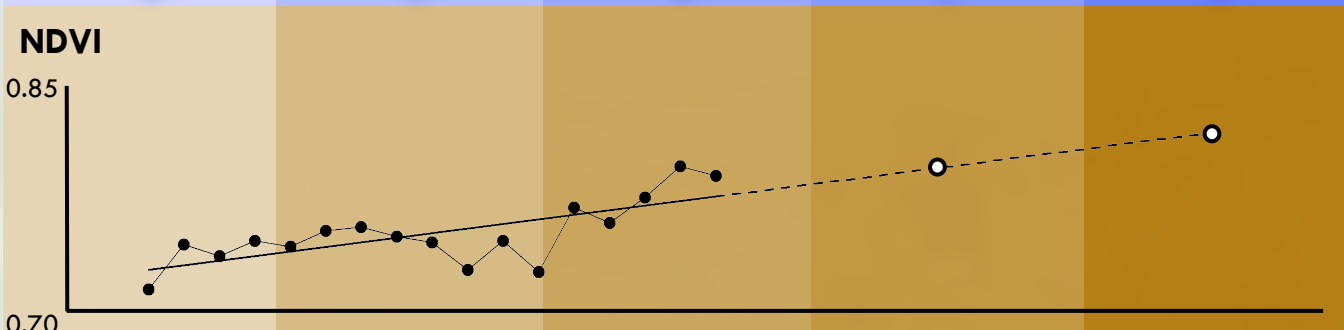
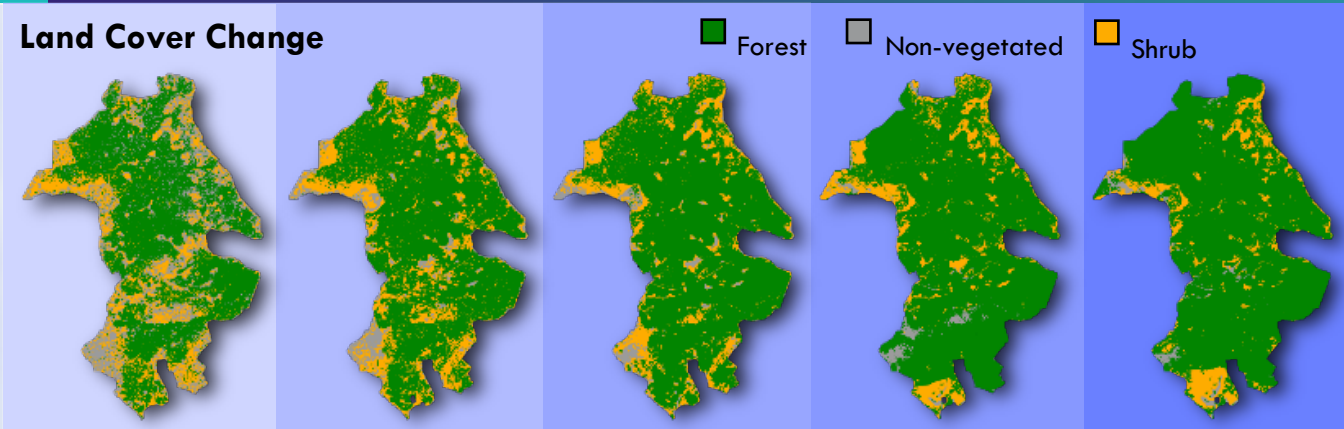
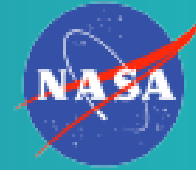


COVID: Rapid assessment

Overall, 75 percent protected areas saw a decrease in light intensity, many of these include GEF supported protected areas.



Ex-ante Assessment



Mixed methods framework and Triangulation



Geolocation



Satellite data



Socioeconomic
survey data



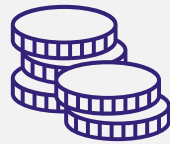
Machine learning



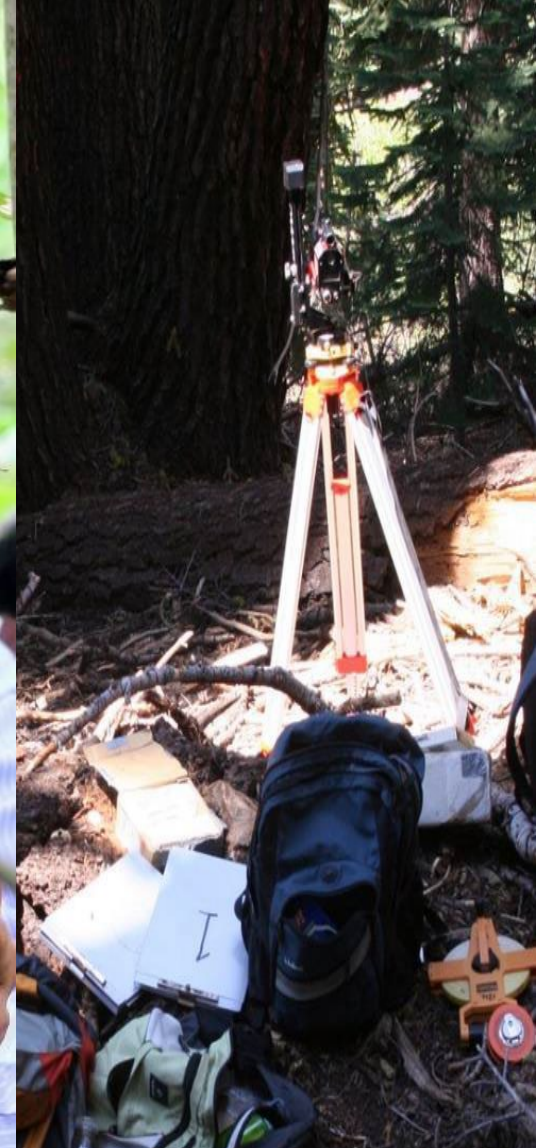
Quantitative methods



Qualitative methods

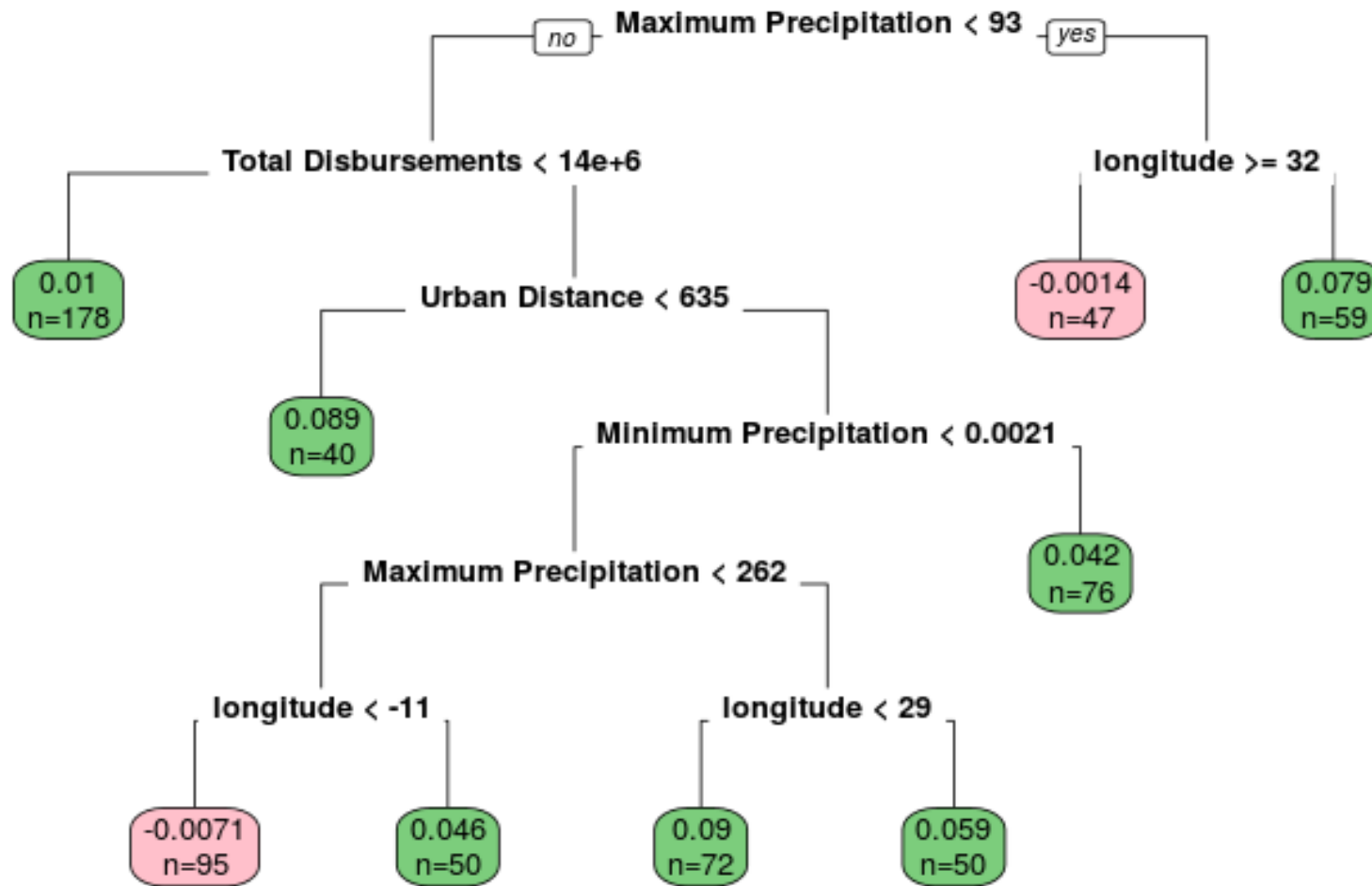


Value for Money



Machine learning and variable importance

Vegetation Productivity



Impact and Value for money

LD
\$1:1.08

+

Vegetation
productivity

-

Lag time of
4.5 to 5.5 years
for impacts to be
observed

Access to electricity
associated with
higher impact

Higher impact
observed in areas
with poor initial
conditions

forest loss and
land fragmentation

Influence on policy and practice



Spatial
location in
results
architecture



Increased
spatial
targeting



More spatial
measurements
indicators

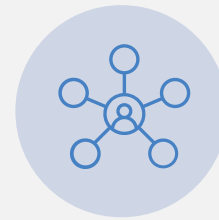


Spatial
platforms

Way ahead



Partnerships



Mixed methods

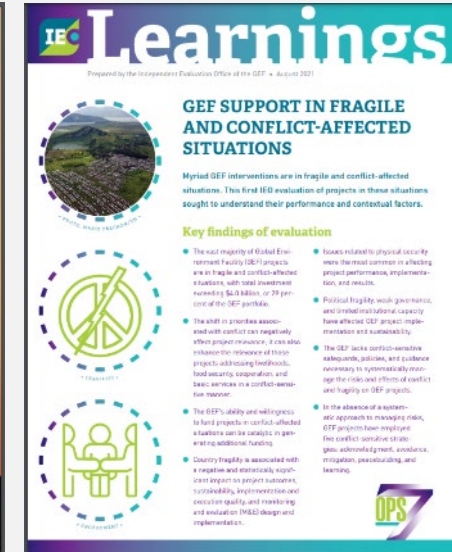
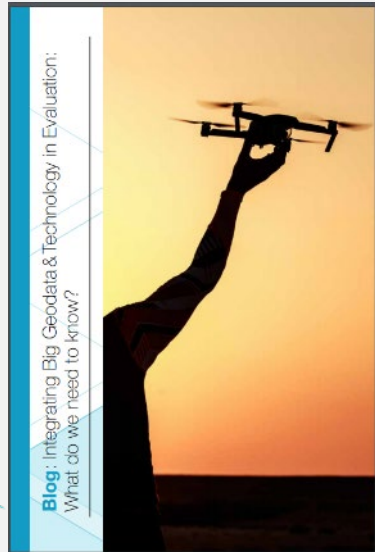
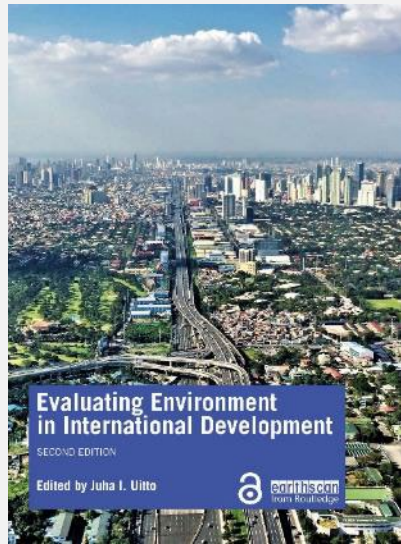


**Data risk,
ethical and
legal**



**Dynamic learning
process**

Resources and References



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Thank you

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