



Independent  
Evaluation Office  
GLOBAL ENVIRONMENT FACILITY

# Leveraging Geospatial Science in Evaluations

Geeta Batra, Dy. Director & Chief Evaluation Officer

[gbatra@worldbank.org](mailto:gbatra@worldbank.org)

Independent Evaluation Office, Global Environment Facility

# Outline for Today

Use of Geospatial Approaches in GEF IEO

Value for Money Analysis using Geospatial Analysis

Project Case Study: Indigenous Land Rights in the Amazon

Demo of the Geo-Query Tool

# Benefits observed in using Geospatial Analysis

Efficiency

Analysis at different scales

Objectivity and Transparency

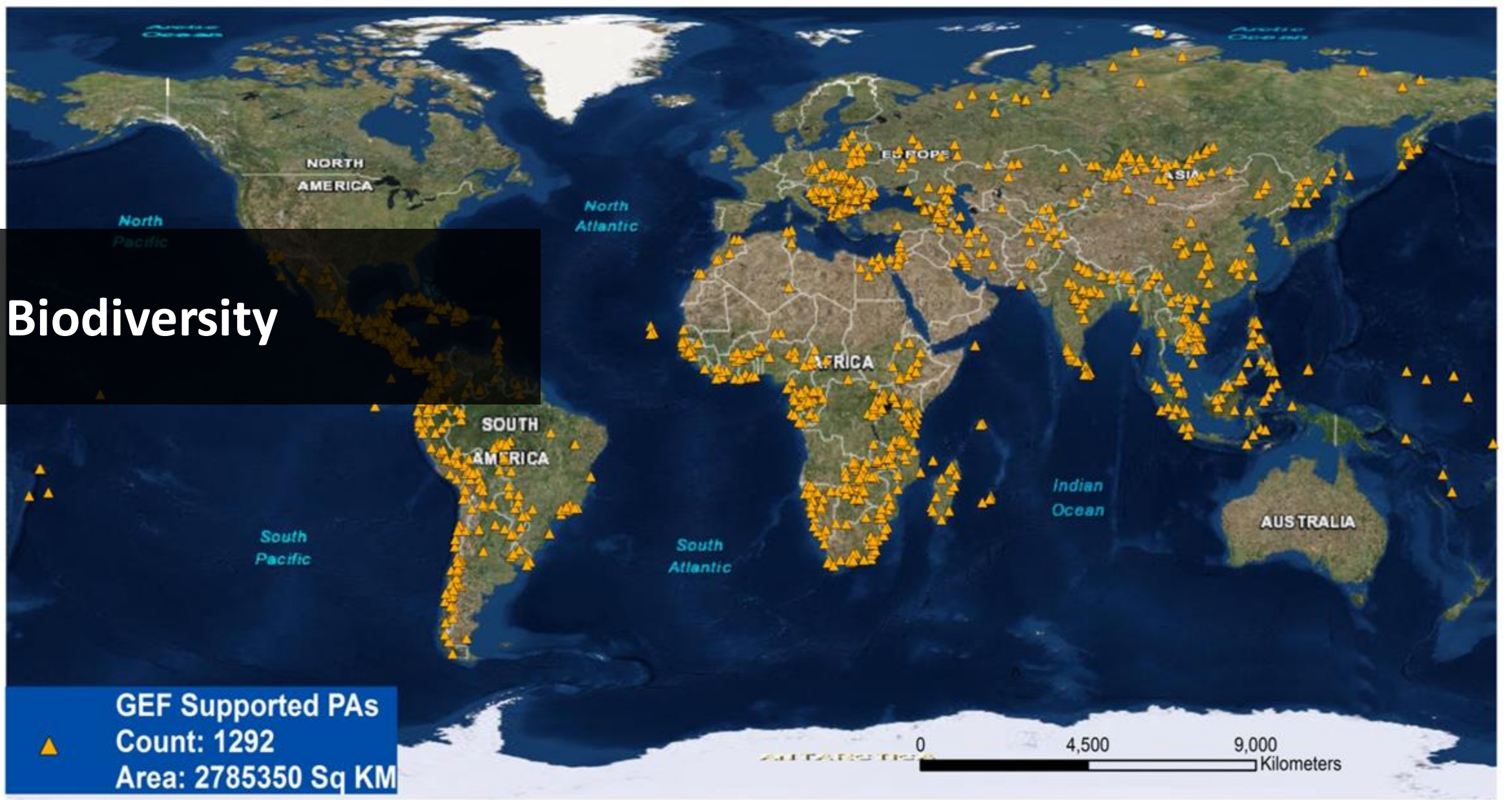
Complements variety of evaluation methods

# Issues addressed

- Location of Projects
- **Relevance** of the intervention—is it in the right context?
- Trends in performance and **impacts** going far back in time...even if we didn't have **baseline** data?
- Factors influencing the outcomes
- Does the intervention deliver **value for money**?

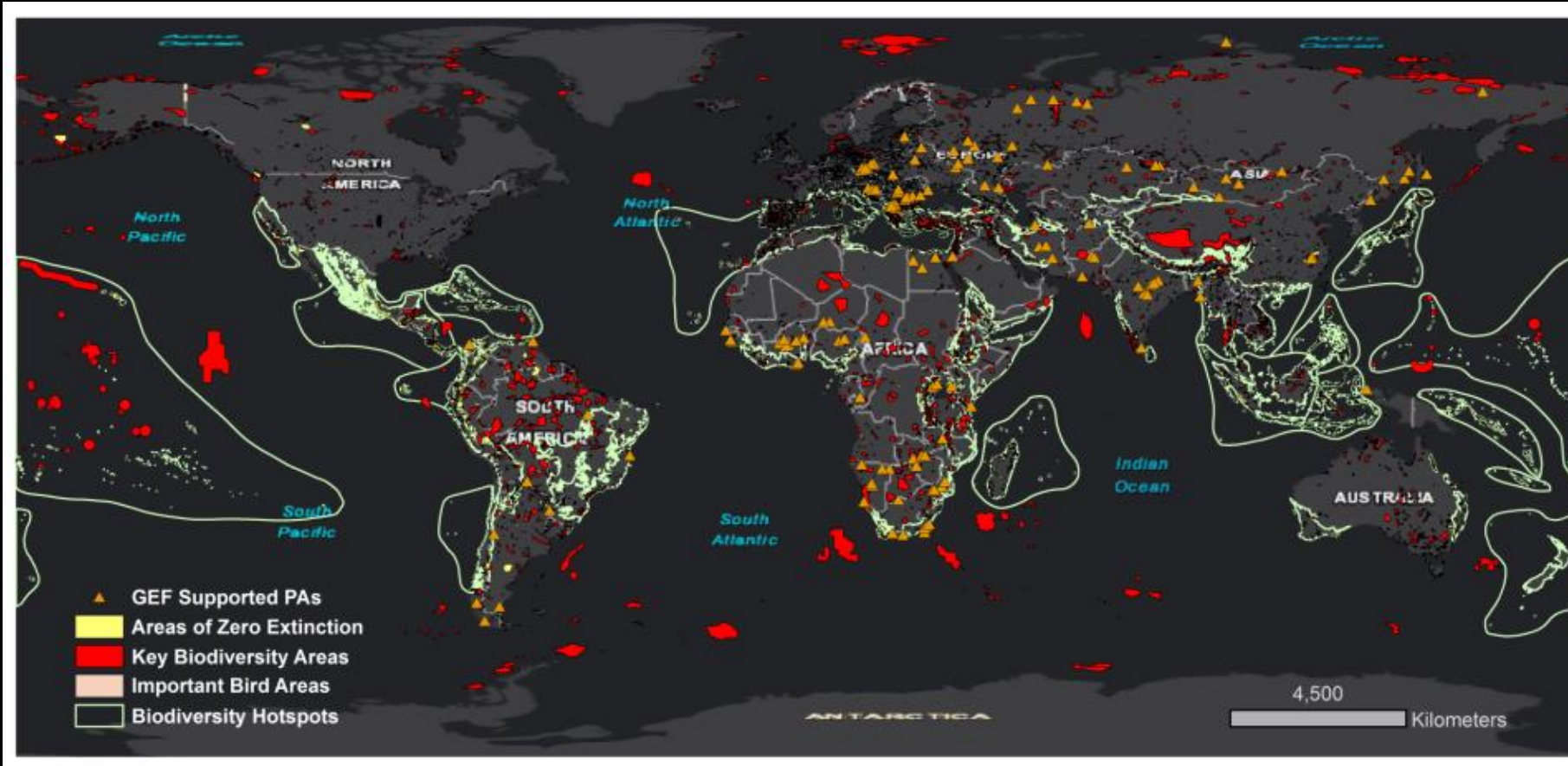


# Biodiversity

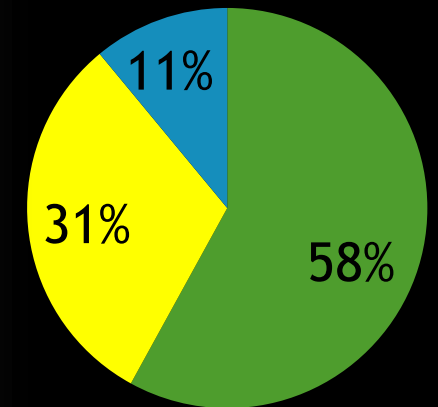




# Biodiversity: Relevance



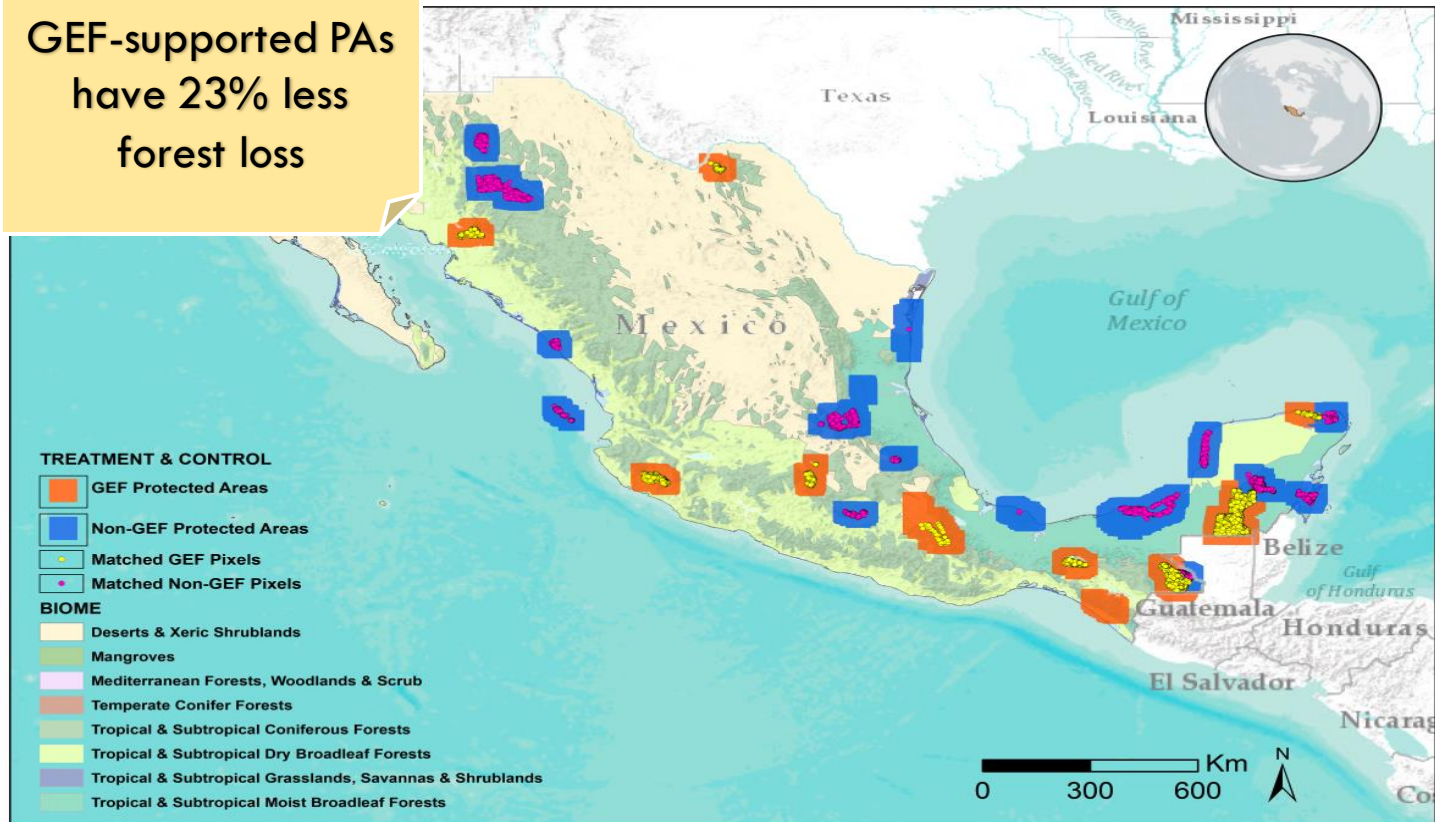
**KEY BIODIVERSITY AREAS (KBA)**, highest scientific designation of global biodiversity significance



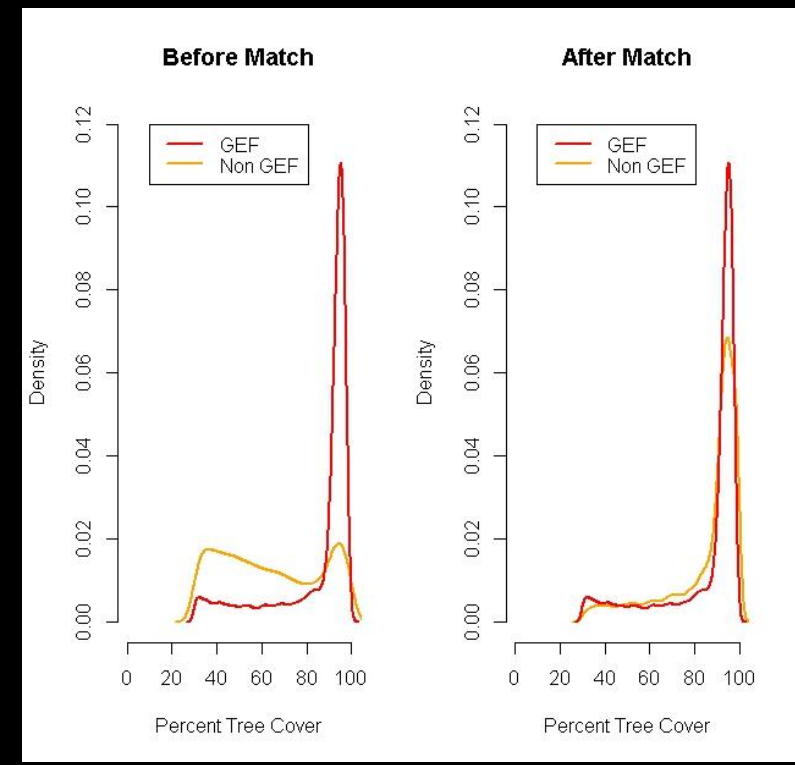
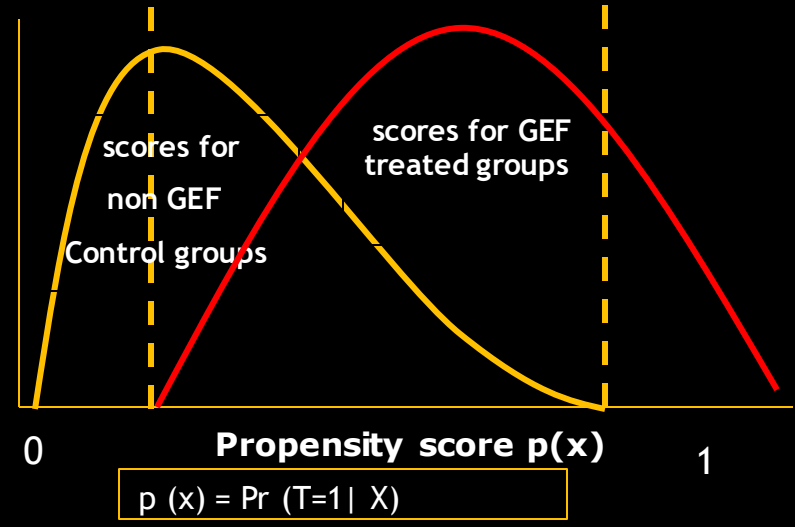
■ KBA ■ International Designation ■ National Importance

**Study the impact of GEF support to 1292 global protected areas across 147 countries.**

GEF-supported PAs have 23% less forest loss



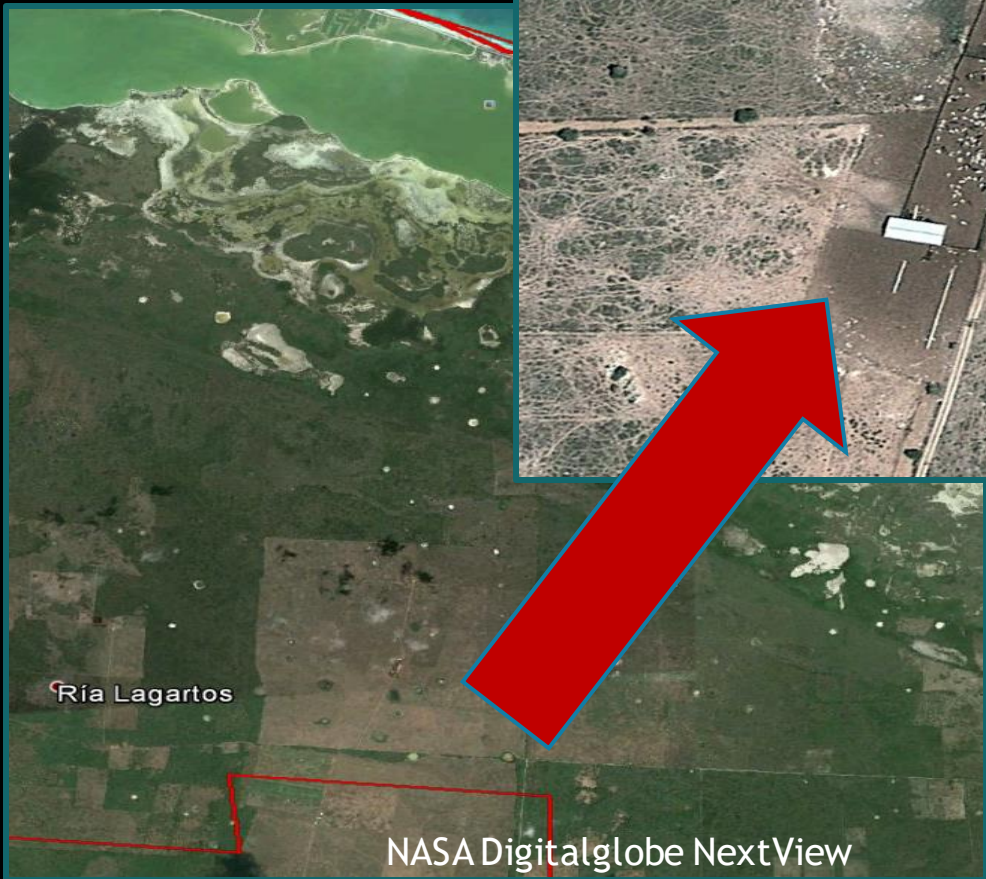
Probability



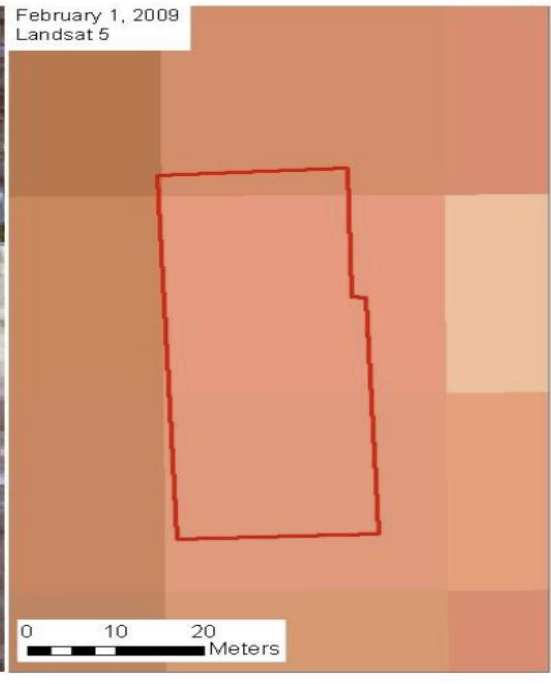
Quasi-experimental evaluation design based on PSM



# Identify the drivers



2.5 m



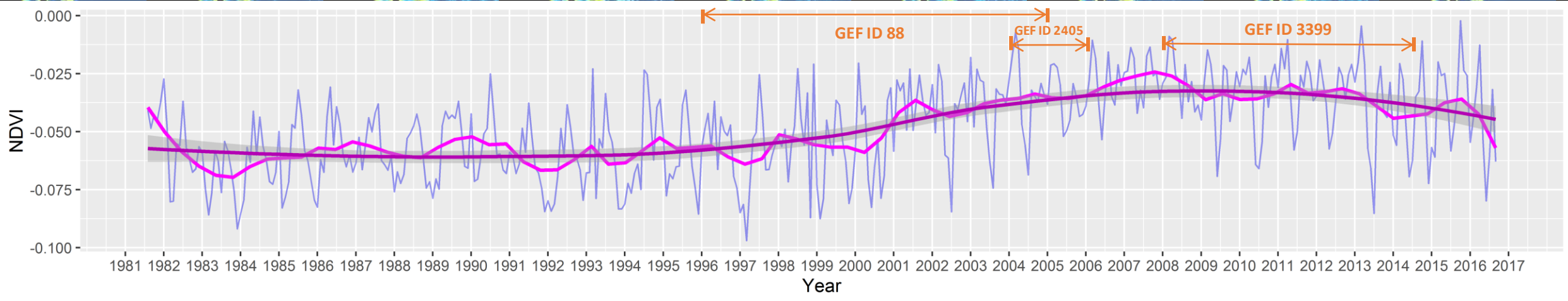
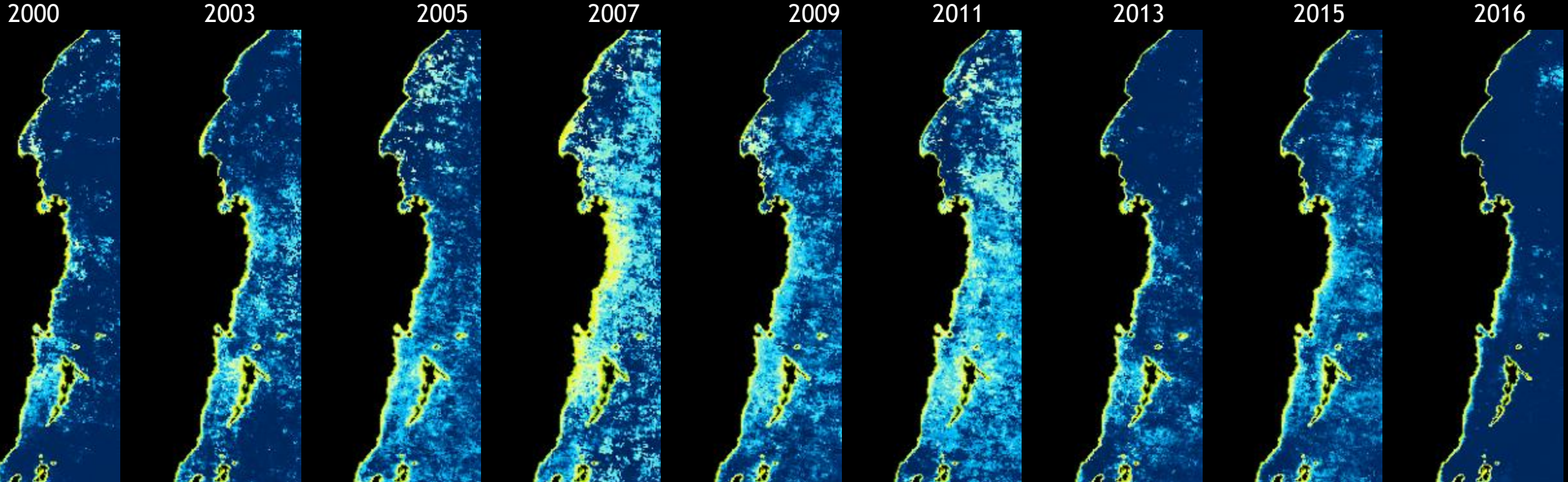
30 m zoomed in to 2.5 m

Images at 2.5 to 0.5 m resolution used to identify drivers of change that hinder success of GEF support



# DEMONSTRATING IMPACT

## International waters: Lake Victoria



# Ecological forecasting: Predicting the future

1

Estimating the impact

2

Project design

3

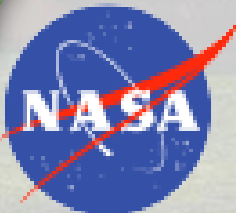
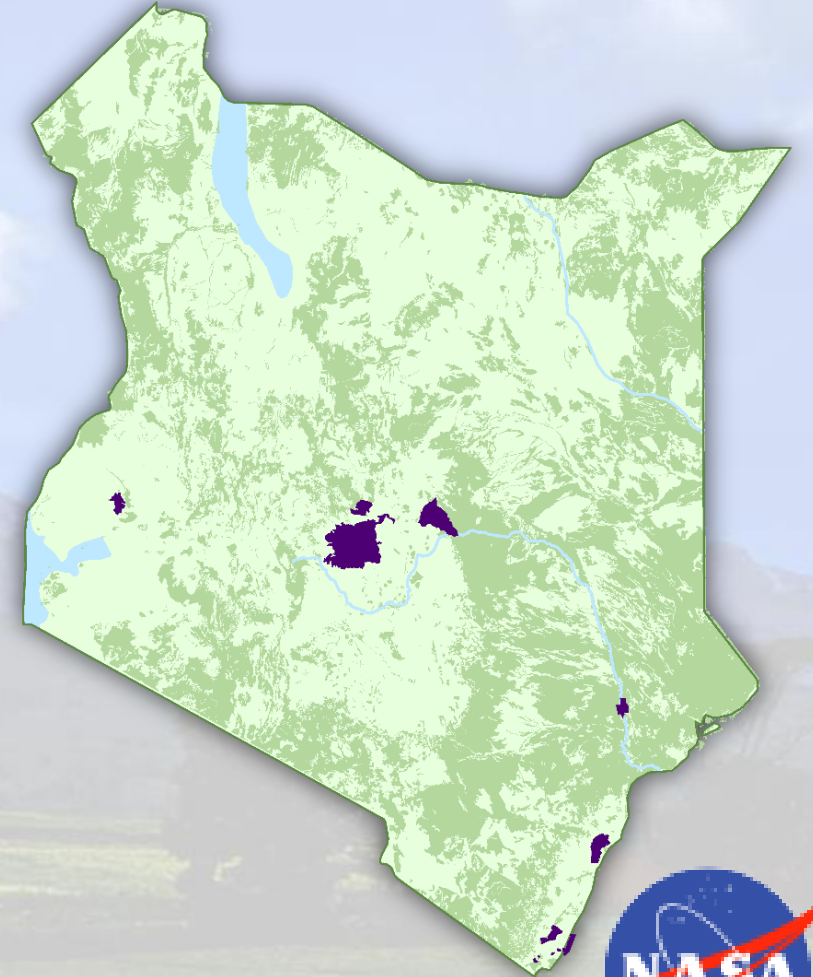
Scenario building



# Kenya Ecological Forecasting

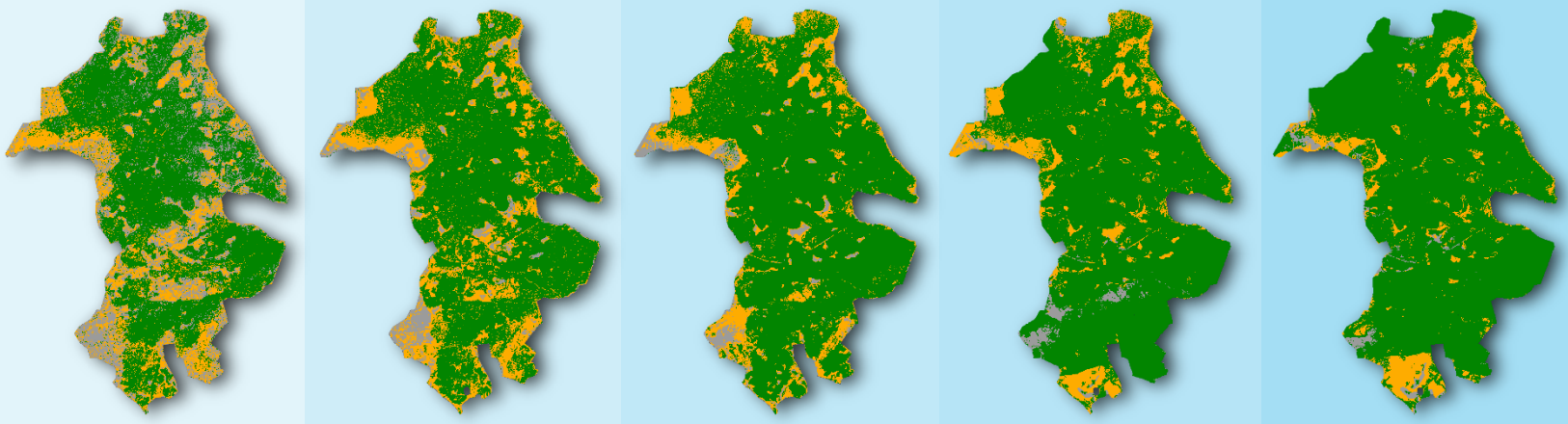
*“Estimating Carbon Sequestration within Global Environment Facility (GEF) Funded Protected Areas in Kenya to Aid Future Policy”*

- Research collaboration between the Global Environment Facility’s Independent Evaluation Office (GEF-IEO) and NASA DEVELOP program
- Evaluated land cover and aboveground carbon stocks for 12 GEF protected areas in Kenya

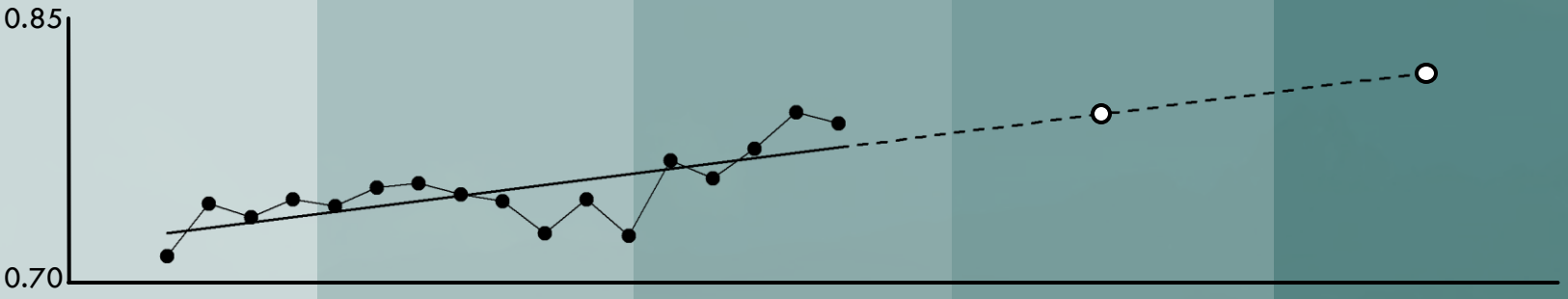


# Land Cover Change

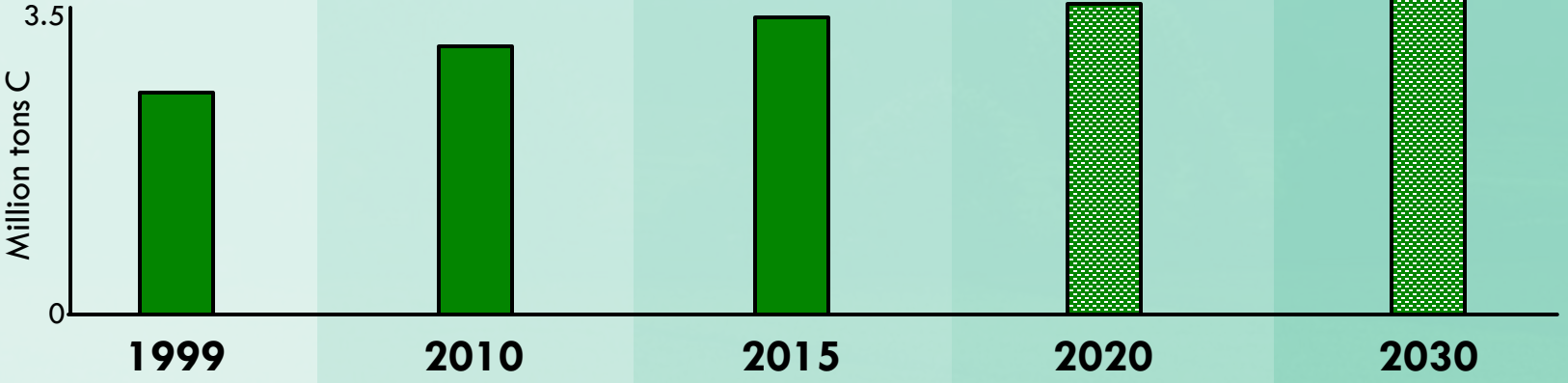
Forest Non-vegetated Shrub



# NDVI

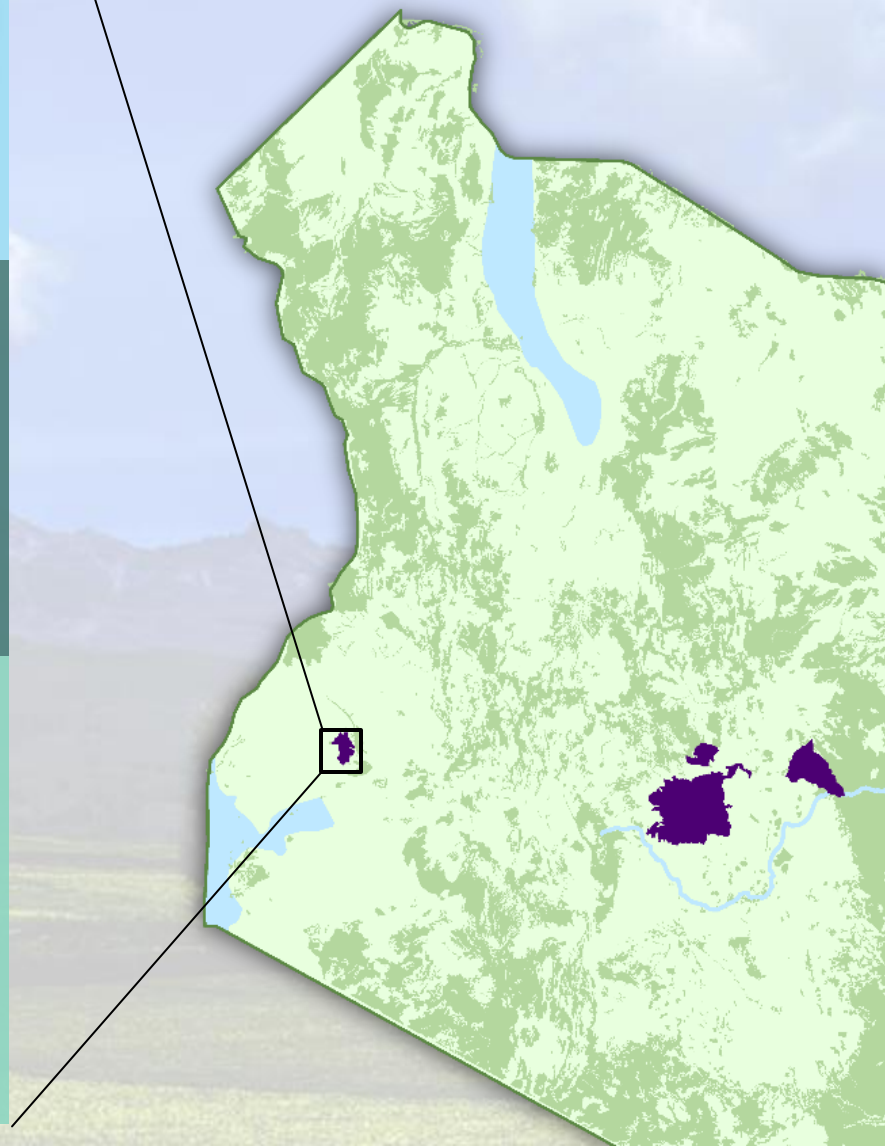


# Carbon Sequestration



# Case Study:

## Kakamega Forest Reserve





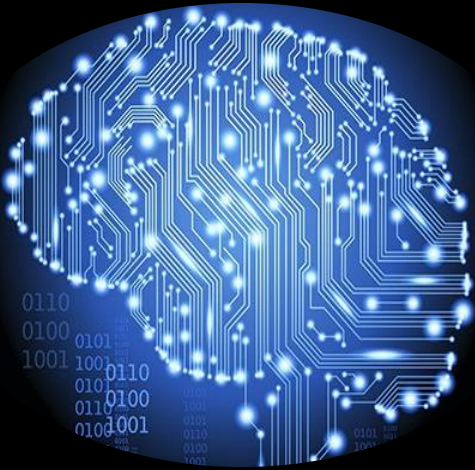


Thank you  
[gbatra@worldbank.org](mailto:gbatra@worldbank.org)

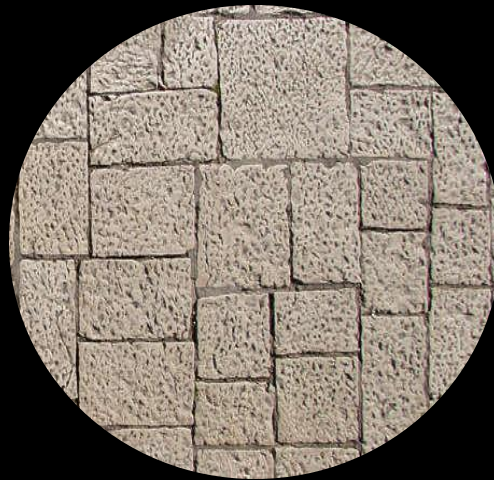
Over to Dan



# Challenges and Limitations



High computing power and technical skills needed



Uneven availability and accuracy of contextual variables across sites



Limitations on answering “how” and “why” questions



Needs to be combined with field verification/groundtruthing

# Lessons for the future



**Partner with  
global institutions**

**Use mixed  
approaches and  
methods**



**Continue exploring  
new methodologies and  
data sources**



**Approach evaluation as  
a dynamic learning  
process**

