



WTI/CWRC

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Impact Evaluation of GEF and UNDP Support to PAs and Adjacent Landscapes

Methods, Emerging Findings and Challenges

*Workshop on Biodiversity
Investments and Impact*

Mexico D.F. Mexico

May 5-7, 2015

PARTNERS

JOINTLY WITH THE UNDP Independent Evaluation Office

WITH TECHNICAL SUPPORT FROM

- Global Land Cover Facility, University of Maryland
- WCPA-SSC Joint Task Force on Biodiversity and PA sat IUCN
- National Aeronautics and Space Administration (NASA)
- Institute of Development Studies



WHAT WE WANT TO FIND OUT

- What have been the impacts and contributions of GEF/UNDP support in biodiversity conservation in PAs and their adjacent landscapes?
- What have been the contributions of GEF/UNDP support to the broader adoption of biodiversity management measures at the country level through PAs and PA systems, and what are the key factors at play?
- Which GEF-supported approaches and on ground conditions are most significant in enabling and hindering the achievement of biodiversity management objectives in PAs and their adjacent landscapes?

FRAMEWORK FOR ANALYSIS

INPUTS

PROTECTED AREAS



Species Richness

Management Capacities

Management Effectiveness

PEOPLE



Community Interactions

Governance Systems

Other Large-scale Drivers

TRANSFORMATIONAL PROCESSES

Adoption of Interventions at Scale

IMPACTS

WILDLIFE



Population Trends

FORESTS



Loss and Gain

HOW WE ASSESS IMPACT

- Portfolio Component

- Progress towards impact of almost 200 completed projects
- Evolution of GEF approach to biodiversity conservation

- Global Component

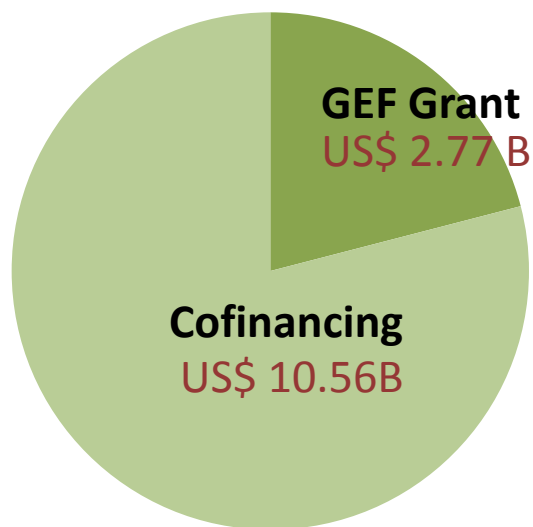
- Forest Cover Change
- Wildlife Abundance Change
- Management Effectiveness Tracking Tool (METT)

- Case Study Component

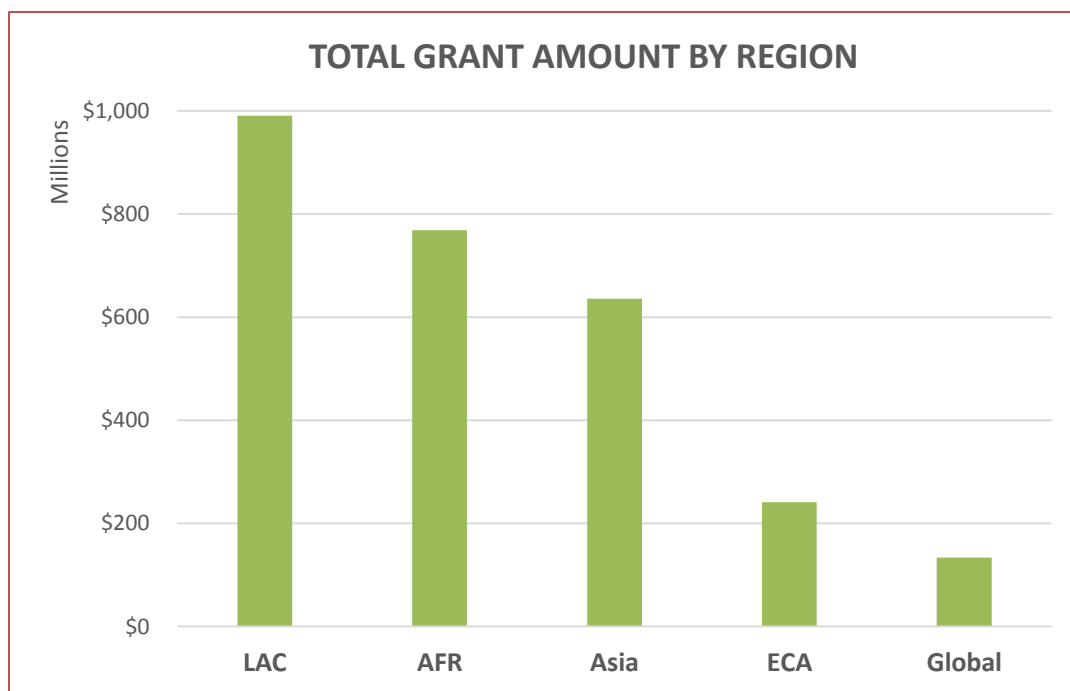
- Interviews and field visits in 7 countries, 17 GEF-supported PAs and 11 non-GEF PAs on changes/ trends and causal factors for biodiversity and management effectiveness outcomes
- Statistical analyses (mixed effects modeling & propensity matching at pixel level) and QCA are were used to identify factors and combinations of factors that lead to the outcomes

PORTFOLIO COMPONENT

- Total of 620 projects included in evaluation portfolio as having interventions in non-marine PAs and PA systems from 1992 to the present
 - More than half completed or implemented for at least 6 years
- \$ implemented by agencies: World Bank (49%), UNDP (40%), and UN agencies and regional development banks (11%)



TOTAL FUNDING



Progress towards Impact

EXTENT OF BROADER ADOPTION

Majority of projects (60%) had either most or some of the broader adoption initiatives adopted and/or implemented

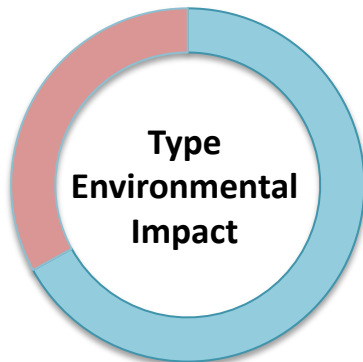
Mainstreaming was the most common BA mechanism reported

EXTENT OF ENVIRONMENTAL IMPACT

68% of projects reported environmental impact, 32% did not

Extent of Broader Adoption (BA)	No Env'tl Impact	Env'tl Impact	Total (n=191)
Most BA initiatives adopted/implemented	4%	16%	20%
Some BA initiatives adopted/implemented	11%	29%	40%
Some BA initiated	13%	20%	33%
No significant BA taking place	5%	2%	7%
Total	32%	68%	100%

Improved
Env'tl
Status
33%



Stress
Reduction
67%

FACTORS CONTRIBUTING/HINDERING PROGRESS

Contributing: Country Support (contextual) 61%

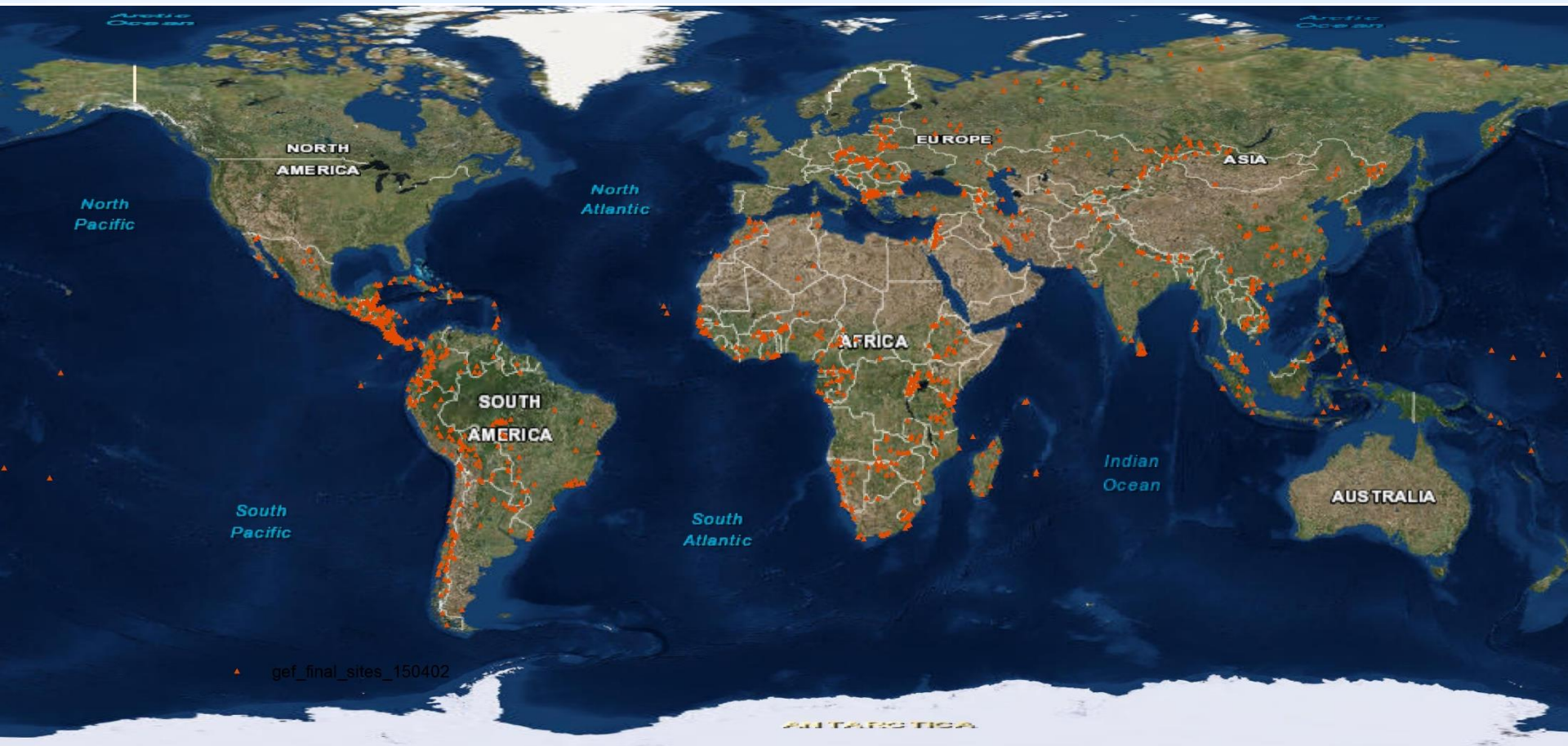
Good Engagement with Stakeholders (project-related) 59%

Hindering:

Unfavorable political conditions (contextual) 40%

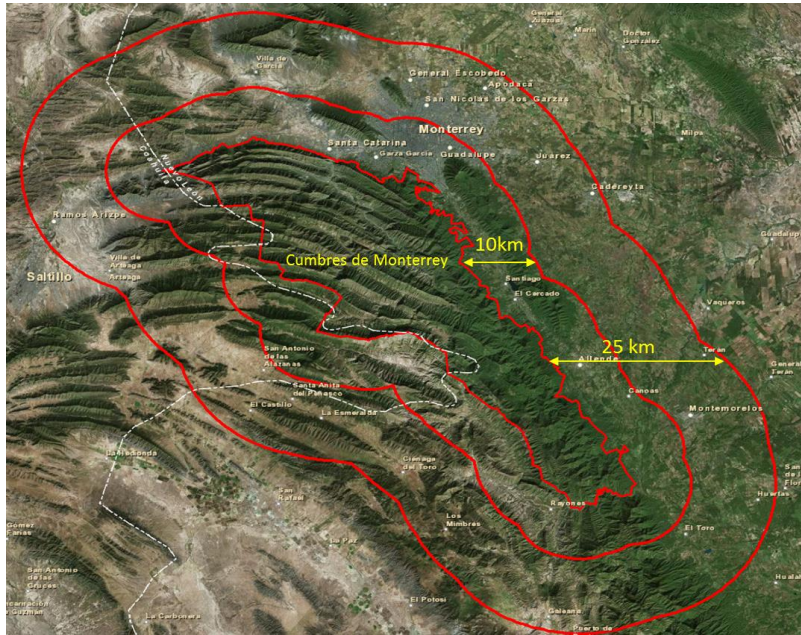
Poor project design (project-related) 30%

GLOBAL ANALYSIS COMPONENT

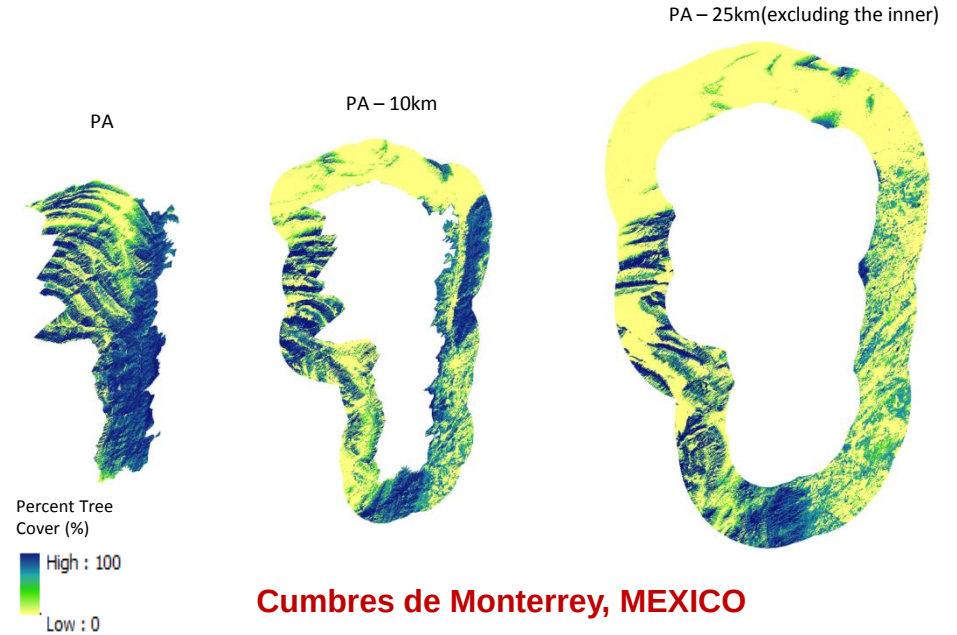


- 1109 identified terrestrial GEF-supported PAs in WDPA database
- Maximum area covered by GEF PAs in tropical & subtropical moist broadleaf forests
- ~130 countries, ~2,743,829 Sq. Km area covered

Forest Cover Change Analysis

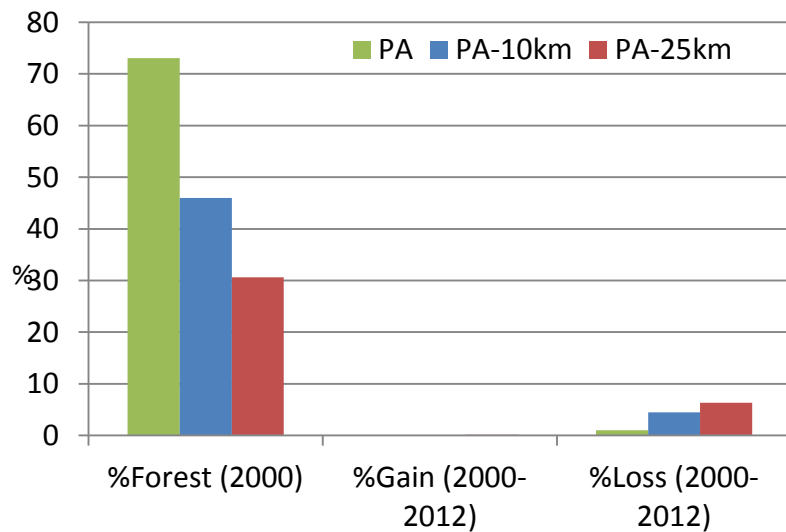


Percent Tree Cover (2000)

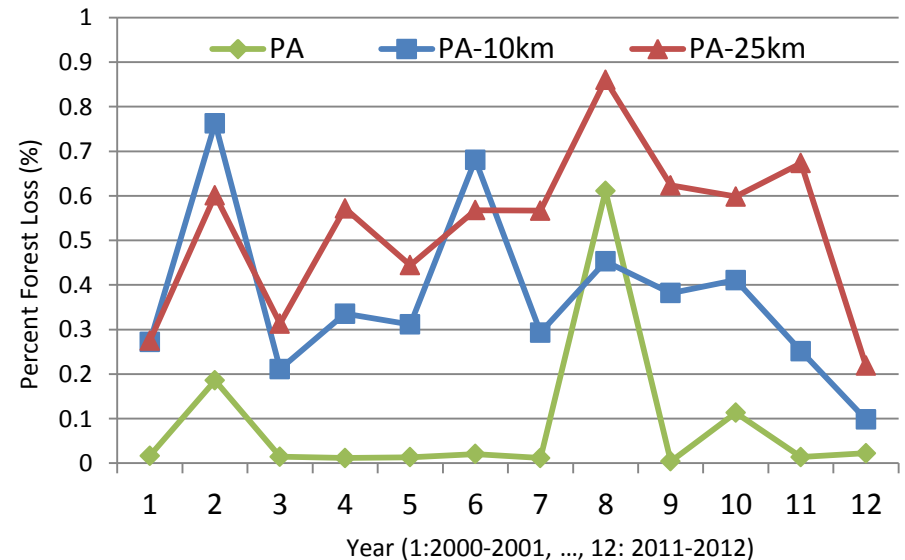


Cumbres de Monterrey, MEXICO

Decadal Forest Cover, Gain and Loss (2000 – 2012)

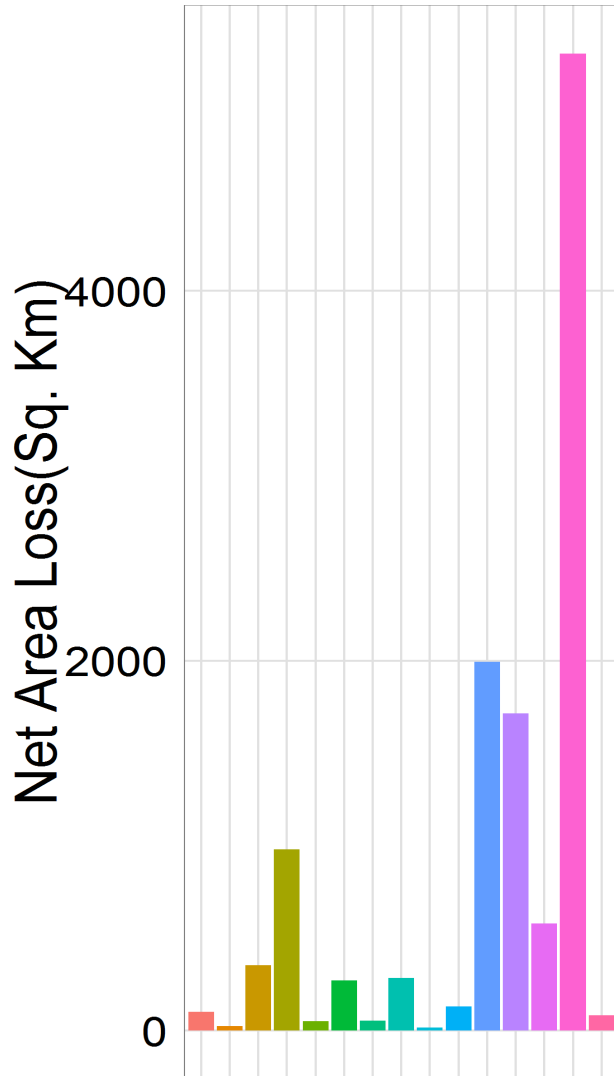


Yearly Percent of Forest Loss (2000 – 2012)

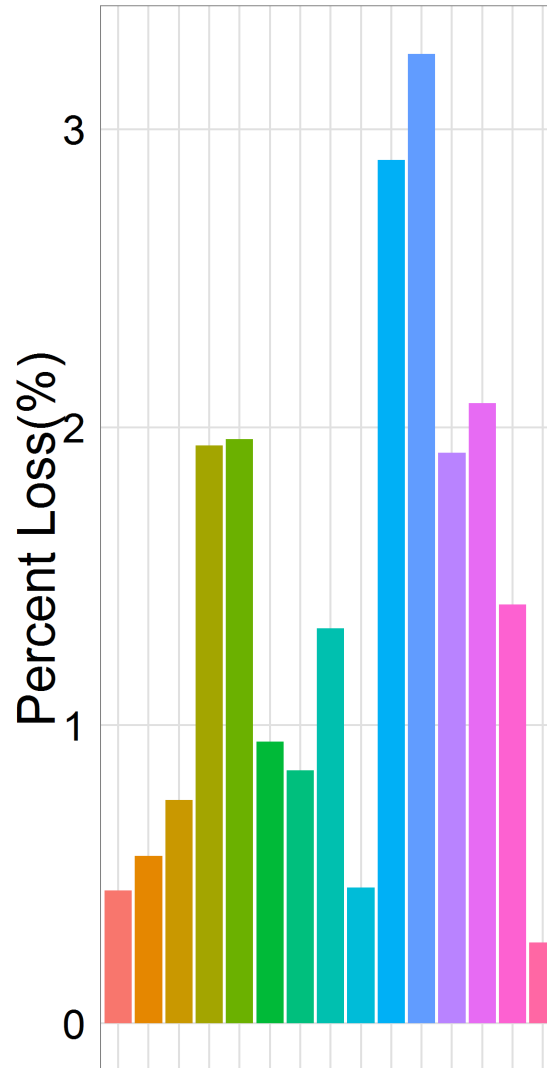


Global Forest Change Analysis in GEF supported PAs (2001-2012): Biome

Net forest area loss in each Biome



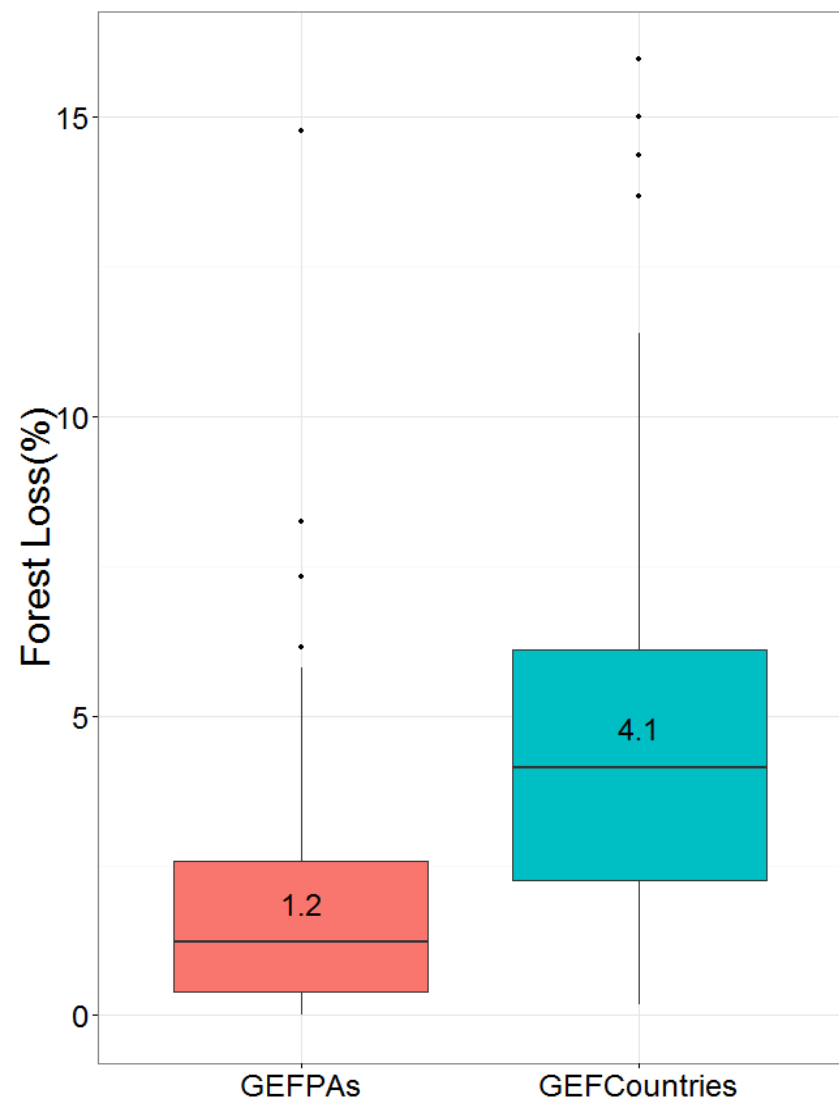
Percent loss in PAs in each Biome



- Maximum area loss by PAs in tropical & subtropical moist broadleaf forests
 - Consistent with the global trend of maximum forest loss in tropics
- Percent loss maximum in temperate conifers & temperate grassland

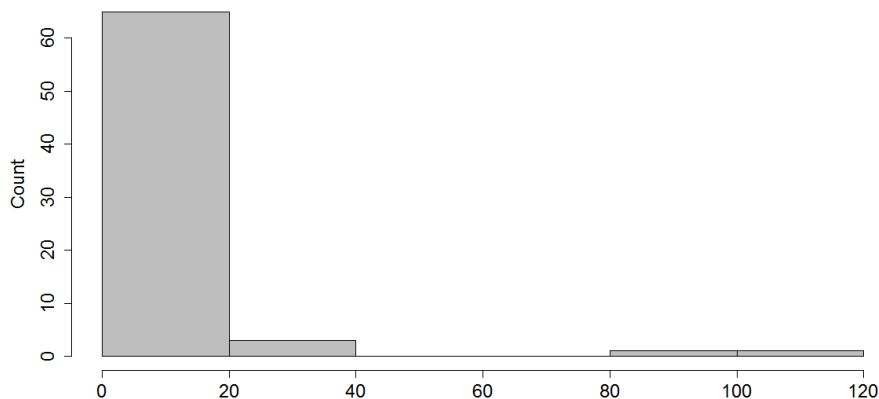
Total 500 forested PAs established before 2000

Global Forest Change Analysis in GEF supported PAs (2001-2012): By country

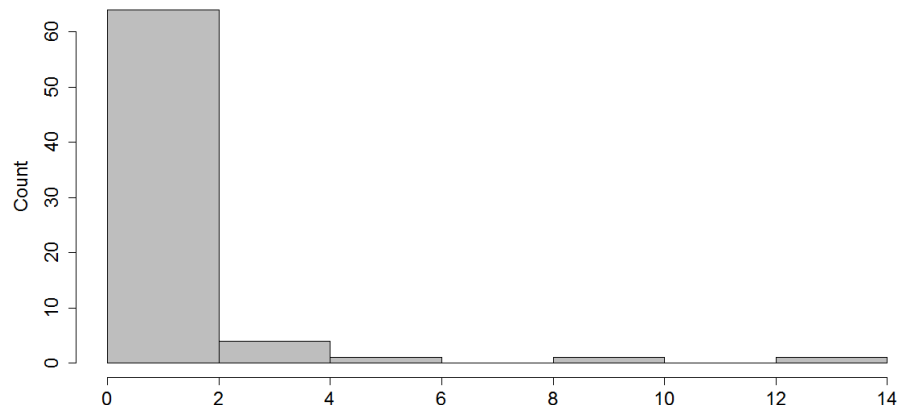


- PAs are effective in avoiding deforestation
- Median percent loss : GEF PAs= 1.2, GEF Countries = 4.1
- On an average the forest loss was 4 times less in PAs

Global Forest Change Analysis in GEF supported PAs (2001-2012): By Country



Loss Ratio (Country vs PA)

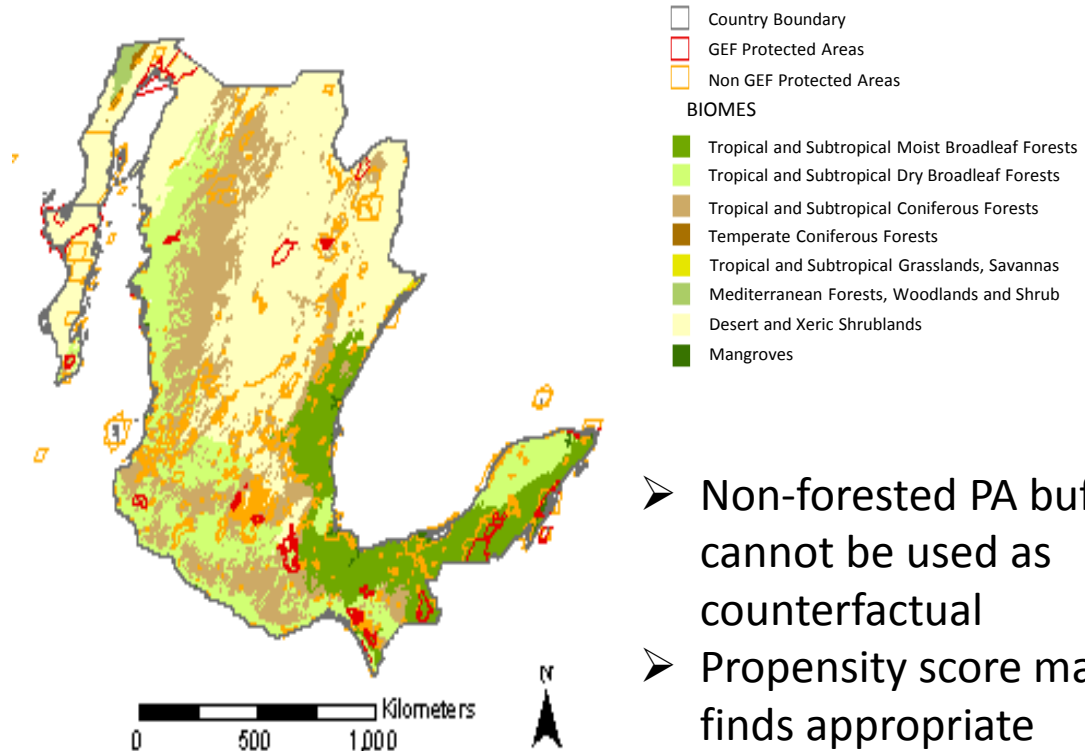
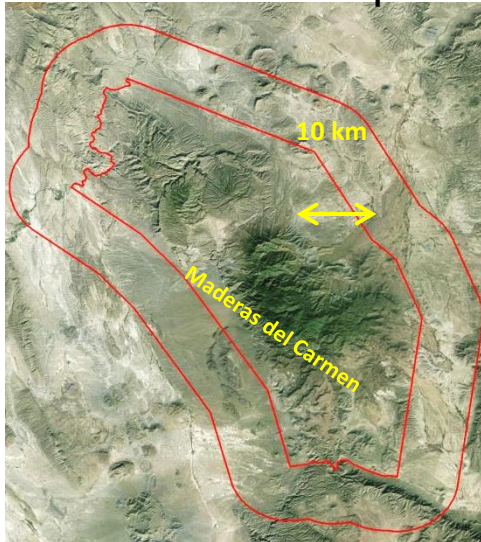


Loss Ratio (Country vs Buffer)

- Higher ratio means less forest loss compared to rest of country
- GEF PAs have higher ratio with Median = 3 and Mean = 8
- 10Km buffer has much lower ratio with Median= 1.1 and Mean = 1.5

Propensity Score Matching

Illustrative Example



- Non-forested PA buffer area cannot be used as counterfactual
- Propensity score matching finds appropriate counterfactual for each PA pixel

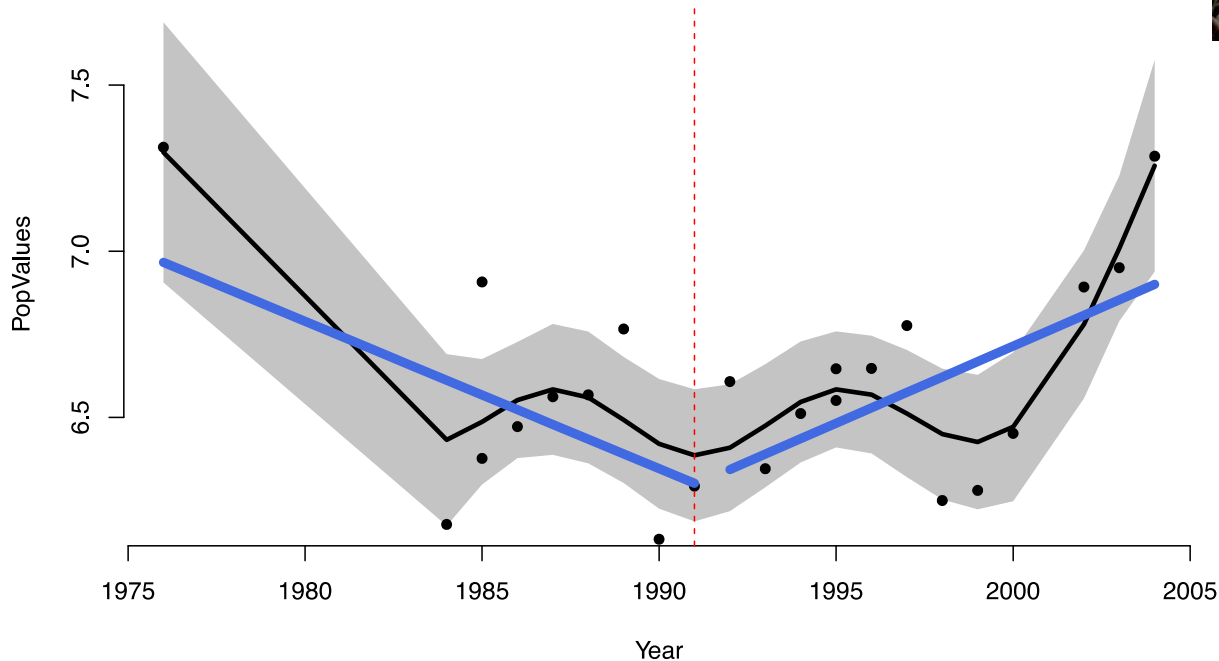
Preliminary finding :Propensity Score Matching in MEXICO

- At the national level, GEF-supported PAs have 17% less forest loss than other PAs.
- At ecoregion level, GEF-supported PAs performed best in the tropical and subtropical coniferous forest ecoregions, preventing 28% forest loss compared to non-GEF PAs in the same ecoregion.
- Non-GEF PAs performed better in the mangrove ecoregion conserving 18% more forests compared to GEF-funded protected areas.
- GEF-supported PAs performed exceptionally well in the Yucatan moist forests, where they prevented 65% forests loss compared to non-GEF PAs.
- GEF-supported PAs are located in the most extensive and intact montane and moist forests in the Chiapas forest ecoregion

Wildlife Abundance Change Analysis

Before / After GEF intervention

LPIID = 5661; GEFID = 50; WDPAID = 2299
Cercocebus_galeritus



Species: *Cercocebus galeritus* (Tana River Red Colobus)

Red List Category & Criteria: Endangered C2a(ii) ver 3.1



- A time series showing a clear change in population trend of Tana River Red Colobus after the GEF project started in Tana Reserve, Kenya
- Red line shows start of GEF intervention, blue lines show population trend
- Done for 88 cases of PA-species combinations; trends compared against project objectives

Management Effectiveness Tracking Tool (METT) analysis

SAMPLE SIZE

2440

METTs

1924

GEF-Supported PAs

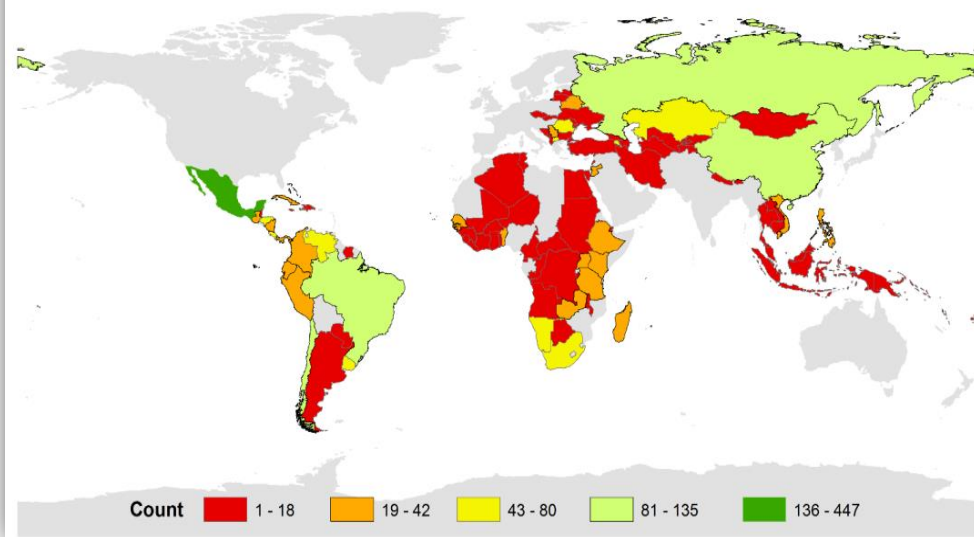
104

Countries

METT_s WERE ANALYZED FOR:

- Compliance and completeness
- Change in METT scores and quality of assessments
- Change in METT scores before and after GEF involvement (70 PAs)
- Changes in scores over time (275 PAs, 75 Countries)
- Effects of 11 contextual variables
- Effect of participants present during METT assessment

Global Distribution of METT Forms



Results of METT Analysis

VALIDITY OF METT SCORES:

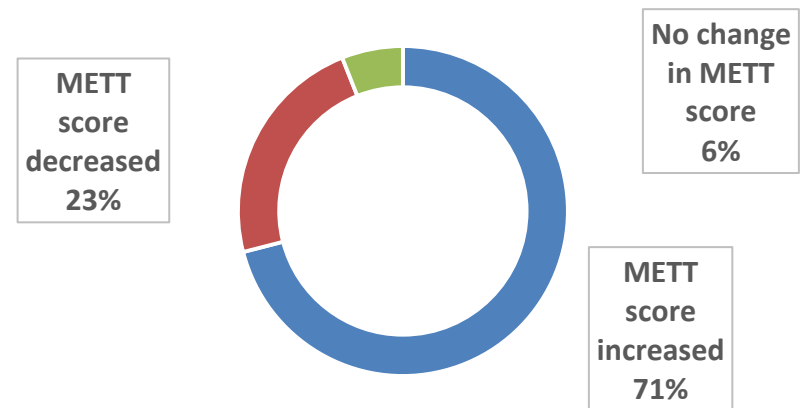
- METTs do capture real changes in management effectiveness, **but** other factors impact the score, e.g. the identity of the METT assessor

OVERALL SCORES:

- Overall mean combined score was 33.90 (scale 0-90); standardized score was 0.44 (scale 0-1)
- Individual question scores: (a) highest: legal status; PA boundaries; PA design, biological condition & PA objectives; (b) lowest: commercial tourism, indigenous people, local community involvement, fees and M&E
- PAs with high PA budget and staffing also had high over-all scores
- No correlation between contextual variables and over-all scores

TIME SERIES RESULTS

GEF-supported PAs saw improved METT scores over time (overall & for individual Qs)



BEFORE & AFTER GEF PROJECTS

Scores increased during GEF projects; **however** both PA outcome measures decreased (assessment of biological condition and assessment of economic benefits) after GEF project initiation

Contextual Analyses

- Mixed Effects Modelling, Principal Components Analysis, Random Forest Modelling, Factor Analysis
- 13 datasets used to derive 85 variables of which
 - 47 based on PA polygons
 - 19 each from 10-km and 25-km buffer surrounding the PAs
- Variables assessed to have significant correlation to positive outcomes:
 - Forest loss: higher terrain ruggedness, elevation and road density
 - Wildlife abundance: project focus on conservation and on specific species
 - Management effectiveness: None

CASE STUDY COMPONENT

PA Field Sites GEFO 2014

Field sites visited during the PA evaluation.
Please zoom in and click on the placemarks to



☒ Field Sites

📍 GEF(17)

📍 Non-GEF (11)

MEXICO

COLOMBIA

UGANDA

NAMIBIA

KENYA

VIETNAM

INDONESIA

3 REGIONS ♦ 7 COUNTRIES ♦ 28 PAs

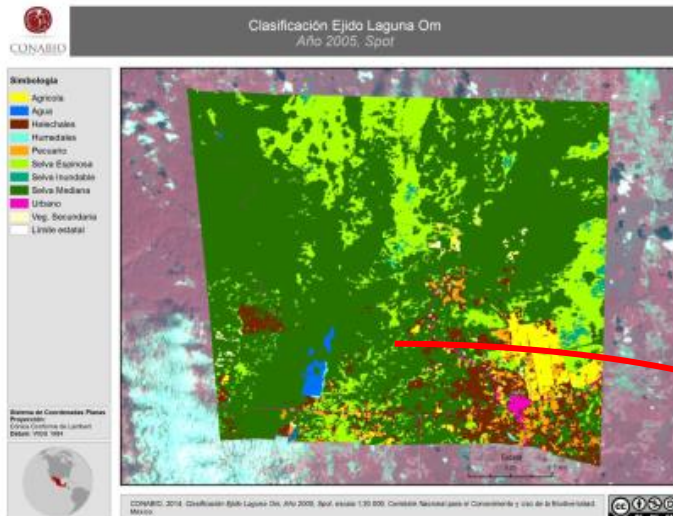


Google

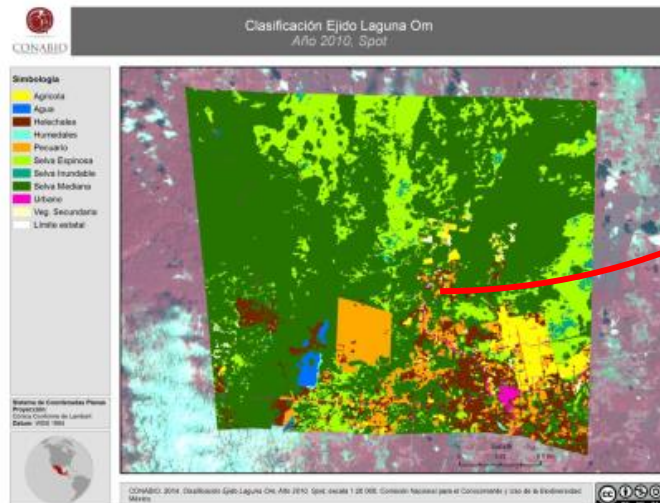
Land Use / Land Cover change analysis using high-resolution data

CONABIO: SPOT satellite data

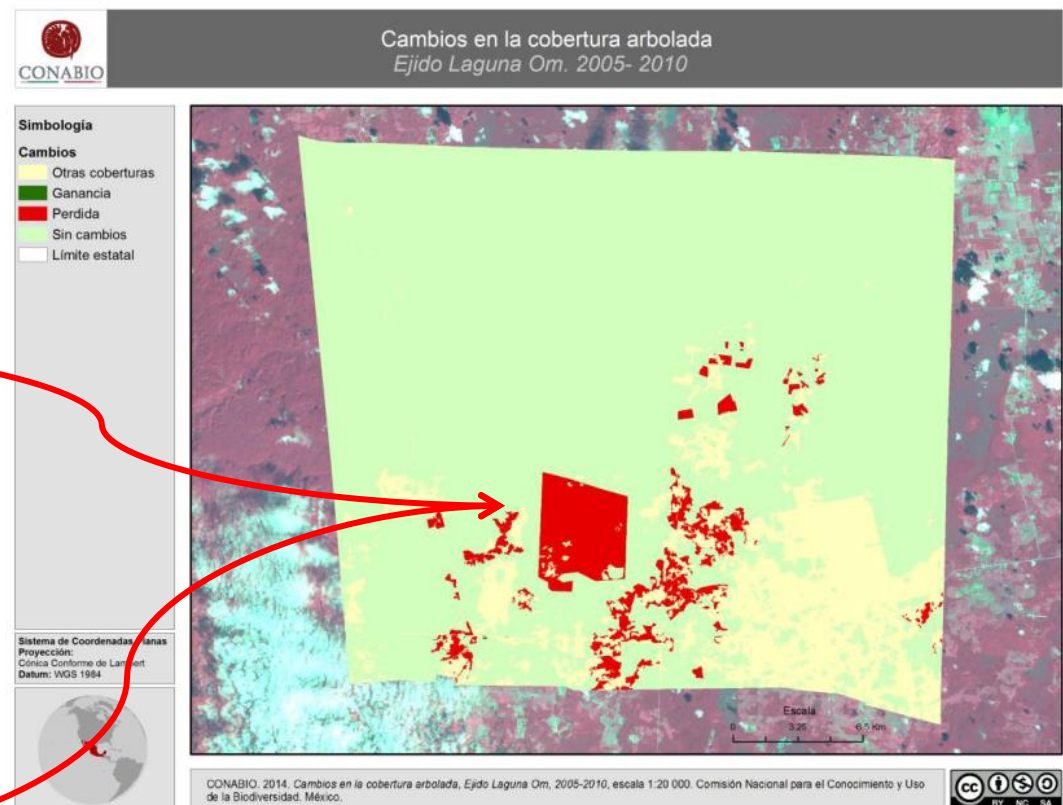
Change in tree cover in *ejidos* (2005-2010)



Classification: 2005



Classification: 2010



- 2 GEF and 2 Non-GEF supported ejidos compared
- High-resolution, 10-m SPOT data for 2005 to 2010
- GEF-supported ejidos (landscape management) had more than 10x less deforestation

Land Use / Land Cover change analysis using high-resolution data

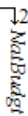
NASA: Digital-globe satellite data



- Ria Lagartos and Monarch butterfly biosphere reserve
- Use of sub-meter data to assess hotspots of forest loss and driving factors, e.g. cattle ranching, tourism etc.

Outcome: FUNCTIONAL PA SYSTEM

Outcome: DECREASE IN TRENDS IN ILLEGAL ACTIVITIES



- | | | | | |
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| | | | • Aketajawe, Lolobata | |
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| → 5COMcons | → 3CAotherexisupp | | • Nairobi NP, Mount Kenya NP, Herdare NP, Etosha NP, B | |
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Protected Area Systems

- 4 out of 7 visited countries received GEF support directly to PA system
- Combination of factors associated with functional PA systems = positive societal attitudes towards environment and conservation * national government budget allocation * (cross-subsidization/ trust fund in the absence of adequate government financing OR presence of champions in the presence of adequate government financing)
- GEF contribution greatest in strengthening political will towards conservation and improving financial transparency, least in improving coordination of mandates

Protected Areas

- 17 out of 28 visited PAs received GEF support
- Combination of factors associated with decrease in trends in illegal activities = professional (dedicated and trained) PA staff * community consultation * information on PA provided to communities * presence of threatened species or high-value resources * (good PA leadership OR other external support)
- GEF contribution greatest in developing professional staff (88% of PAs), least in engaging private sector in PA activities and improving PA capacity for revenue generation

GEF Role: Distinct from other donors

- More funding towards process-oriented activities
 - Faster adoption of innovations through communication
 - Encourages collaborative relationships across separate sectors
- Longer duration
 - More time for interventions to mature
 - More flexibility to adapt to changing conditions
- Builds on existing interventions /national initiatives
 - Greater likelihood of continuity within government
 - Reduces likelihood of duplication with other donors

Limitations and challenges of the analysis

- Weak counterfactuals!
 - Difficult to distinguish in global analysis between GEF and non-GEF due to lack of information on project sites
 - Use of buffer areas as counterfactual don't fully account for possible spillover effects
 - Difficult to find clear-cut successes and failures on the field, or clear-cut GEF and non-GEF PAs that are comparable on contextual aspects

Limitations and challenges

- Global scope of analysis
 - requires high level of resources
 - contextual variables often vary widely across countries and sites
 - unorganized, differently formatted datasets
 - inconsistency across datasets and information sources
- Sampling bias
 - not randomly selected, small samples, uneven spatial distribution dependent on availability of data from sites
- Data scarcity
 - we don't know what we don't know (unknown total global population and distribution of GEF sites, METTs and wildlife trends; lack of information on locations and activities of interventions)
- Multiple interests and perspectives
 - Mismatch between evaluation responsibilities to stakeholders and scientific criteria

How We Mitigate Information Gaps and Other Limitations

- Use of big data, including latest published global datasets
 - e.g. Living Planet Index, Protected Planet, GEF PMIS, Global METT Database
 - e.g. Forest change (Hanson et al 2013, *Science*, Kim et. al 2014, *RSE*)
- Mixed methods approach (spatial, qualitative, quantitative)
 - Sources of evidence and data types
 - Data collection methods
 - Latest analytical and verification tools
- Multidisciplinary expertise (core team, TAG, Reference Group, consultants, etc.)

NEXT STEPS

- Final Report: July 2015
- Presentation to UNDP Executive Board: September 2015
- Presentation to GEF Council: November 2015
- To be posted on <http://www.thegef.org/gef/ImpactEvaluations>

A wide-angle photograph of a vast landscape featuring rolling hills and mountains. The hills are covered in a mix of green vegetation and brown, eroded soil, creating a textured appearance. The sky is filled with large, white and grey clouds, suggesting an overcast day. In the foreground, there are tall, thin grasses and some green shrubs, slightly out of focus. The overall scene conveys a sense of natural beauty and tranquility.

Thank you

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