Evaluating the Nexus between Environment, Climate Change and Development

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Module 1: Introduction
Module 2: Sixth Comprehensive Evaluation of the GEF (OPS 6)
Module 3: Results and methods
Module 4: Governance and Institutional issues
Module 5: The road ahead
Module 1: Introduction

- Introduction to the participants and the session
- The state of the global environment including planetary boundaries
- Introduction to Global Environmental Facility, Conventions, IEO etc
- Linkages to the SDGs
Let’s get to know each other

- Briefly introduce yourself
- Your Name, Job description and Institution
- Why are you here?
- What are your expectations from this workshop?
The State of Global Environment

- CO₂ concentrations
- Biodiversity loss
- Land degradation
- Ocean degradation
- Fresh Water Depletion
- Chemicals Pollution

Source: SEI
Transgressing safe boundaries

The Global Environment Facility

Established in 1992

Innovator and Catalyst

Unique Partnership

Financial Mechanism

US$14.5 billion, and the leverage of US$75.4 billion

4,000 projects in 167 countries

18 implementing agencies

5 major environmental conventions

The Global Environment Facility
GEF Independent Evaluation Office

Mission
- To enhance global environmental benefits through **excellence**, **independence**, and **partnership** in evaluation

Functions
- Independent evaluation
- Setting of minimum standards (normative)
- Quality control (oversight)
- Knowledge sharing and dissemination
Thematic Areas (GEF Focal Areas)

- International Waters
- Land Degradation
- Biodiversity
- Chemical and Waste
- Climate Change
- Cities
- Commodities
- Food Security
The GEF and the SDGs

Credit: Stockholm Resilience Center
Module 2: Sixth Comprehensive Evaluation of the GEF (OPS 6)

- Introduction to OPS6
- Overall approach
- Description of the studies, including focal areas & cross cutting issues and 29 briefs
- **Brainstorming** on Transformational change. What does it mean? How it can be assessed etc.?
- Transformational change
Sixth Comprehensive Evaluation of the GEF (OPS6)
Outline

1 Objective, Quality Assurance, Methodology, Limitations
2 GEF Portfolio
3 Strategic Relevance
4 Performance and Impact
5 Focal Areas
6 Programmatic Approaches and Integrated Approach Pilots
7 Conclusions and Recommendations
SECTION 1
Overview
OPS6 Overview

Objective
To provide solid evaluative evidence to inform the replenishment negotiations for GEF-7

Methodology
29 evaluations and studies
Mix of qualitative and quantitative approaches including geospatial analysis
Formative approaches to evaluate ongoing programs

Limitations
Limitations imposed by data and timing
GEF-6 Overview

Portfolio (as of June 30, 2017)

Focal areas

- Multifocal
- Climate change
- Chemicals and waste
- Biodiversity
- International waters
- Land degradation

Modalities

- Full-size projects
- Programmatic approaches
- Small Grants Program
- Medium-sized projects
- Enabling activities

Agencies

- UNDP
- World Bank
- Others
- UNEP
- UNIDO
- FAO

Regions

- Africa
- Asia
- Latin America & Caribbean
- Regional and global
- Europe & Central Asia

444 projects
$2.4 billion
OPS6 Overview

Strategic relevance

Conventions. Main funding mechanism for: Countries

- Convention on Biological Diversity
- Framework Convention on Climate Change
- Convention to Combat Desertification
- Convention on Mercury

Support for middle income countries remains important

More than 140 recipient countries

Support to LDCs and SIDS has increased

Also relevant to the Sustainable Development Goals
SECTION 2
Performance and Impact
Performance and Impact

79% of projects have satisfactory outcomes.

63% of projects have outcomes that are likely to be sustained.

**Drivers of good performance:**
- Project design
- Quality of implementation and execution
- Materialized co-financing

- Performance and sustainability of outcomes > in middle income countries
- Institutional capacity challenges in Africa
FOCAL AREA STUDIES
Common findings

Relevant to conventions

Strong performance ratings on outcomes with limited variation

Sustainability of outcomes (Land degradation & Biodiversity)

M&E Design (International Waters and Chemicals)

M&E Implementation (International Waters, Chemicals and Multifocal)

Variation in private sector engagement

Transformational change
FOCAL AREA STUDIES
Biodiversity: Addresses specific drivers and pressures of biodiversity loss

Increase in the biodiversity mainstreaming portfolio with focus on reforms, and improved outcomes

Percent of forest loss in GEF supported protected areas was half that of protected areas not supported

Access to Benefits Sharing
Support to 100 countries in development legislation and discovery of “promising compounds”; project designs often “overpacked”
FOCAL AREA STUDIES
Climate change

- Upstream approaches including policy reform to accelerate market development and create an enabling environment for investment
- Risk sharing approaches
- Piloting innovative technologies
- Collaborating with other climate funds and MDBs to scale up investments

Niche areas in changing landscape
FOCAL AREA STUDIES
Climate change: Examples

China

Bosnia and Herzegovina

Mauritius
FOCAL AREA STUDIES
Climate change adaptation (LDCF/SCCF)

98% of projects have a high to very high probability of delivering tangible adaptation benefits

- Highly relevant to UNFCCC COP guidance and the GEF Adaptation Strategy
- Agriculture, NRM and climate information systems / disaster risk management

75% of completed projects received sustainability ratings in the likely range

- Resource availability: Constraint to actual scaling up

297 projects
1.37 billion
FOCAL AREA STUDIES

International waters

Support to multiple regional and global treaties

High level of contemporary relevance

Planetary boundaries and environmental tipping points

Significant emphasis on knowledge and learning

Dominance of marine and ocean investments

Decline of the funding envelope
FOCAL AREA STUDIES

International waters: Examples

Pacific Islands  GloBallast  Hai River Basin
FOCAL AREA STUDIES
Land degradation

Strategy
Shift towards integrated landscape
Shift from linkages towards land degradation neutrality

Portfolio
High level of effort in Africa
Addresses the local socioeconomic drivers

Climate risks, contextual factors, restoration
FOCAL AREA STUDIES

Land degradation

Gambia  Tanzania  Cuba
FOCAL AREA STUDIES
Chemicals and waste

- Strong government ownership
- Private sector commitment
- Balancing hard outcomes metrics against relatively softer interventions
- Promoting sector-wide approaches
FOCAL AREA STUDIES
Chemicals and waste

Georgia  China  Mauritius
FOCAL AREA STUDIES
Multifocal

Share of portfolio is growing
Pilot  GEF-1  GEF-2  GEF-3  GEF-4  GEF-5  GEF-6

77% satisfactory outcomes
61% likely sustainable

STAR focal areas
- Climate change
- Biodiversity
- Land degradation
- Chemicals & waste
- International waters
FOCAL AREA STUDIES

Multifocal

- Majority of projects generated multiple benefits
- Potential to enhance synergies and mitigate trade-offs
- Institutional arrangements for sectoral integration
FOCAL AREA STUDIES
Multifocal

Enhancing synergies

Mitigating trade-offs through value addition

Senegal  Brazil  China
Do GEF interventions yield positive returns on investment?

- Land degradation: $1.08
- Biodiversity: $1.04

43.52 tC/ha
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

Value for money: Factors

Vegetation productivity

Forest loss and land fragmentation
SECTION 3
Programmatic and Integrated Approach Pilots
Findings

Program child projects perform slightly better than standalone projects.

Outcome performance, cost effectiveness and efficiency decline with increased complexity.

Coherence in project-program objectives has improved, but results focused on projects rather than programs.
Global Wildlife Program

- Relevant to biodiversity strategy
- Comprehensive theory of change addressing illegal wildlife trade
- Global coordination grant
- Simplified M&E framework

- Gaps in geographic and species coverage
- Structural limitations caused by funding mechanism
- Political will and corruption not explicitly addressed
- Minimal funding for demand reduction
INTEGRATED APPROACH PILOTS

Designed to build on **linkages** and **connections** across focal areas
Formative evaluation based on **30** child projects approved

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**Sustainable cities**
Challenges to rapid urbanization in **28** cities

**Commodities**
Tropical Deforestation caused by soy, beef and palm oil in **4** producing countries

**Food Security**
Smallholder agriculture and food value chains in **12** African countries
INTEGRATED APPROACH PILOTS

Relevance

GEF has an important convening role.

Countries/cities relevant to drivers of environmental degradation.

Draw on comparative strength of the Agencies and think tanks.

93% of respondents agree that IAP child projects will address conventions at multiple levels.
INTEGRATED APPROACH PILOTS

Design

Coherence in objectives between program and child projects
Emphasis on knowledge exchange
Designed for scale up, replication and market transformation
Gender and resilience addressed

Demonstration of program additionality
Specification and measurement of GEB Targets
Alignment between project and program outcome indicators
INTEGRATED APPROACH PILOTS

Process

- Relevant selection of countries, cities, and agencies but process varied
- Set-aside funds provided incentives for countries
- Agency, city and country selection process not always clear
- Under estimate of time to design and launch a complex program
- Limited private sector participation
INTEGRATED APPROACH PILOTS

Lessons

Design

✓ Demonstration of GEF additionality and comparative advantage
✓ Alignment of objectives between child projects and programs should translate into alignment of indicators
✓ Standardized measurements for GEB targets

Process

✓ Agency selection based on comparative advantage
✓ Transparency and clear criteria for agency and country selection
✓ Clarity on partnership arrangements

Monitoring progress

✓ Effectiveness of knowledge platforms
✓ Program and Project Outcomes
### Comparative advantage

<table>
<thead>
<tr>
<th>RELEVANCE</th>
<th>PERFORMANCE</th>
<th>TRANSFORMATIONAL</th>
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<tbody>
<tr>
<td>1. Serves multiple conventions and broad range of environmental issues</td>
<td>3. Long history of good performance</td>
<td>5. Ability to Create an enabling environment in countries through legal and regulatory reforms</td>
</tr>
<tr>
<td>2. Strong Support to LDCs and SIDS</td>
<td>4. Ability to address linkages and synergies between focal areas</td>
<td>6. Delivers innovative financial models and risk-sharing approaches</td>
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Recommendations

**Strategic**
1. Strategic positioning
2. Transformational change
3. Integration based on additionality

**Financial**
4. Financial management
5. Private sector management

**Policies**
6. Gender equality
7. Safeguards and indigenous people

**Institutional**
8. Operational governance
9. Systems for data, monitoring and knowledge
GEF’s Support for Transformational Change

- **Brainstorming** on Transformational change.
- What does it mean?
- How it can be assessed etc.?
GEF’s Support for Transformational Change

4 criteria:
✓ Relevance
✓ Depth of Change
✓ Scale of Change
✓ Sustainability
Internal Factors
- Quality of implementation
- Quality of execution
- Pre-intervention analytical and advisory activities
- Partnerships with donors

Transformational Mechanism
A mechanism to expand and sustain the impact of the intervention (through mainstreaming, demonstration, replication, or catalytic effects)

Contextual Conditions
- Government ownership and support
- Implementation capacity
- Policy environment
- NGO & community participation
- Private sector participation
- Economic and market conditions

Outcome
- Depth of change
- Scale of change

Sustainability
- Financial
- Economic
- Environmental
- Social
- Political

Relevance
- Climate Change
- Biodiversity
- Land Degradation
- Chemicals and Waste
- International Waters
- Sustainable Forest Management

Ambition Level and Focus
(of intervention objectives)
- Depth of change (market and system focus)
- Scale of change

Outcome
- Depth of change
- Scale of change
PERFORMANCE AND IMPACT

Broader adoption and transformational change

61% of projects achieved broader adoption
59% of projects achieved environmental stress reduction

Mechanisms for broader adoption:
+ Mainstreaming and replication
  Scaling-up and market change

Success factors for transformational change:
• Clear ambition in designs
• Addressing market reforms through policies
• Mechanisms for financial sustainability
• Quality of implementation and execution
• May be achieved by projects of different size
EXAMPLES
Transformational Change

**Uruguay**
Wind power
2008: 0%
2016: 33%

**Africa**
1.3 mln – quality solar lanterns;
Private market transformed

**Amazon**
13.2 mln ha – strict protection
10.8 mln ha – sustainable use

**China**
Wind power
2005: 1.3 GW
2015: 129.3 GW

**Namibia**
98% PAs improved;
Doubled number of wild dogs, leopards, cheetahs, lions (2004–12)

156 projects - nominated and screened
30 cases (49 projects) - first review round
13 cases (29 projects) - second review round
8 cases (13 projects) - selected
Uruguay Wind Energy Program

2007–2011
GEF: USD 1 mln; UNDP: USD 35,000; National government: USD 53.7 mln

Result: Wind power - 2008: 0%; 2016: 33% of all electricity in the country

✔ Relevance: decreasing greenhouse gas emissions
✔ Depth of change: system and market-level
  (removing barriers to the wind energy market)
✔ Scale of change: national
✔ Sustainability: credible financial sustainability of investments; prices competitive with those of the fossil-fueled alternatives
Lighting Africa

2007–2013
GEF: USD 7.85 mln; co-financing: USD 14.09 mln

Result: about 1.3 mln households in remote off-grid areas of Africa purchased quality-certified solar lanterns at market prices

✔ Relevance: decreasing greenhouse gas emissions; increasing electricity access

✔ Depth of change: system and market-level
  (removing barriers to the markets for quality, affordable, clean, and safe off-grid lighting)

✔ Scale of change: multi-national

✔ Sustainability: self-sustaining market; people continue using and buying lamps; suppliers continue supplying; micro-financing available for end users
Amazon Protected Areas Program

2002–2008
GEF: USD 30 mln; co-financing: USD 55.38 mln

Result: Doubled the amount of Brazilian Amazon under “strict protection” from 12 mln ha in 2004 to over 25 mln ha in 2009. Added another 10 mln ha in “sustainable use”.

✔ Relevance: conserving biodiversity of global importance in Brazil’s Amazon Region

✔ Depth of change: system-level
(expanding and consolidating the protected area systems in the region)

✔ Scale of change: regional

✔ Sustainability: endowment fund ($23.4 mln), however government contributions to PAs continue to be necessary
SUCCESS FACTORS FOR

Transformational change

✔ Clear ambition in design
✔ Addressing market reforms through policies
✔ Mechanisms for financial sustainability
✔ Quality of implementation and execution
✔ May be achieved by projects of different size
[Coffee Break] 11:00-11:20 am
Module 3: Results and methods

- [Group Work: Context-Question-Discussion-Approach-Result]
- Focal Area Studies with demonstration of methods
- Multiple Benefits, Trade-off and Synergies, Integrated approaches
Focal Area Studies with demonstration of methods

Anupam Anand
Questions we seek to answer through evaluation

- **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?

- **Attribution**: Did the intervention make a difference?—counterfactuals

- Does the intervention deliver **value for money**?
Biodiversity
Biodiversity: Relevance

Study the impact of GEF support to 1292 global protected areas across 147 countries.
Forest Cover Change Analysis

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

Percent Tree Cover (2000)

Yearly Percent of Forest Loss (2000 – 2012)

Cumbres de Monterrey, MEXICO
GEF-supported PAs have 23% less forest loss

Attribution: Did the intervention cause the change?

Quasi-experimental evaluation design based on PSM
Identify the drivers

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

- Indicators
  - Annual change in forest area and land under cultivation*: Satellite Data analysis
  - Area of forest under sustainable forest management as a percent of forest area: Geospatial data/Administrative data
  - Red List Index: Telemetry, Tracking Data, Surveys/International monitoring
  - Protected areas overlay with key biodiversity areas (KBAs)
Distribution of GEF land degradation projects
LAND DEGRADATION

Value for money analysis: 3 main objectives

1. Impact of GEF land degradation interventions
2. Factors associated with the environmental outcomes
3. Value for money in terms of carbon sequestered
Methodology

1. Geocoding
2. Geospatial data
3. Data integration
4. Matching analysis
5. Causal tree analysis
6. Valuation of Carbon sequestration
LAND DEGRADATION

Quasi-experimental method
LAND DEGRADATION

Machine learning and causal tree

```
no
Maximum Precipitation < 93

yes

Total Disbursements < 14e+6

Urban Distance < 635

Minimum Precipitation < 0.0021

Max Distance < 262

Longitude < -11

-0.0071
n=95

Longitude < 29

0.046
n=50

0.09
n=72

0.059
n=50

Longitude >= 32

-0.0014
n=47

0.079
n=59
```
LAND DEGRADATION

Bang for the buck

$1:1.08
DEMONSTRATING IMPACT

International waters: Lake Victoria

Vegetation Water
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
Case Study: Kakamega Forest Reserve

Land Cover Change

NDVI

Carbon Sequestration

Million tons C

0 0.7 0.85

1999 2010 2015 2020 2030
Triangulating Across Methods
Beneficiary survey

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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<tbody>
<tr>
<td>Where is the current date and time?</td>
<td>2014-01-20 12:30:00</td>
</tr>
<tr>
<td>Village</td>
<td>Bamboo Forest</td>
</tr>
</tbody>
</table>

Bamboo Forest

Mixed methods and triangulation of findings

Qualitative methods

- Case study
- Field visits
- Focused group interview
- Stakeholders interview
Challenges and Limitations

- High computing power and technical skills needed
- Uneven availability and accuracy of contextual variables across sites
- Cannot always answer “how” and “why” questions
- Need for field verification/groundtruthing
Multiple Benefits, Trade-off and Synergies, Integrated approaches

Jeneen Garcia
Module 4: Governance and Institutional issues

- Cross cutting issues (Gender, CSO, Ips, KM, Private Sector)
Cross Cutting Issues: Institutional Framework
INSTITUTIONAL FRAMEWORK

Financing

- Exchange rate volatility
- Donors have delivered on funding commitments
- Fragmentation in donor funding
- Ability to offer grants and non-grants appreciated

Donors have delivered on funding commitments.
INSTITUTIONAL FRAMEWORK

Private sector

Not an area of comparative advantage
Operational restrictions constrain engagement
Climate change investments feature heavily

Needs to be seen as a partner, not only a source of funding

460 projects
$2,5 million in GEF investments
INSTITUTIONAL FRAMEWORK
Non-grant instrument

91 projects
$732.6 million in GEF investments

Greater diversity in use of NGI, beyond climate change
Technical assistance plays a significant role
Accessing NGI funds
In-house capital markets expertise
Gender

Modest improvements = higher gender ratings

Policy does not provide a clear framework

Gender Partnership is evolving into a platform to build a constituency
INSTITUTIONAL FRAMEWORK

Safeguard policies and indigenous people

- Catalytic role in many GEF agencies
- Gaps in the GEF Minimum Standards
- Absence of guidance on safeguards reporting during project implementation
- GEF projects that include indigenous peoples has increased substantially
- Most agencies fully consistent with obligations under Minimum Standard 4:IP
- UNDP SGP is primary modality for engagement with IPs
INSTITUTIONAL FRAMEWORK

PMIS, RBM, Knowledge management: PROGRESS OBSERVED

Project Management Information System
Data quality needs to keep up with partnership needs

Results-Based Management
Promotes accountability, limited learning

Knowledge Management
Used, and facilitates information sharing and, but access is limited
Module 5: The road ahead

- Addressing complexity
- Technological Innovations
- Open discussion, Q&A and concluding remark
Addressing complexity

Jeneen Garcia
Innovative Methods in M&E

Anupam Anand
BIG DATA?

- No fixed definition
- Data sets that are so large or complex that traditional data processing applications are inadequate
- Characterized by
  - Volume from various sources needing large storage
  - Velocity at which they are generated
  - Variety of unstructured formats needing additional processing
  - Value or meaning not immediately apparent

Adapted from Laney 2001, [www.oracle.com](http://www.oracle.com) and [www.sas.com](http://www.sas.com)
The FOUR V’s of Big Data

Volume
- Scale of Data
- 40 Zettabytes (exabytes) of data will be created by 2020, an increase of 300 times from 2005
- 2.5 Quintillion Bytes of data are created each day
- 6 billion people have cell phones
- World population: 7 billion

Variety
- Different Forms of Data
- 30 billion pieces of content are shared on Facebook every month
- 400 million tweets are sent per day by about 200 million monthly active users
- 4 billion hours of video are watched on YouTube each month

Velocity
- Analysis of Streaming Data
- The New York Stock Exchange captures 1 TB of trade information during each trading session
- Modern cars have close to 100 sensors that monitor items such as fuel level and tire pressure
- By 2016, it is projected there will be 18.9 billion network connections – almost 2.5 connections per person on earth

Veracity
- Uncertainty of Data
- 1 in 3 business leaders don’t trust the information they use to make decisions
- 27% of respondents aren’t sure of how much of their data is even accurate
Social Media

- Crowdsourcing
- Network Analytics
- Text analytics
- Sentiment analysis

#EvalGlobalAC17
“Anything that can be connected, will be connected.”
Open Source data, Blockchain

- Phenomenal increase in Open data and tools
- Blockchain technology will make data more secure and transparent
Geospatial Science

- 1,400 active satellites
- Many more planned
- High resolution data available

Tambopata National Reserve, Peru

Application in Multiple Areas
Big data such as from satellite imagery and sensor networks make environment and development indicators increasingly measurable.
Drones/UAVs

- For Rapid Assessments and baseline data

**Application areas**

- Payment for Ecosystem services (land productivity, biomass)
- Infrastructure projects
- Conflict area
Machine Learning, Artificial Intelligence

- Process all kinds of raw data faster
- Predictive analysis, likelihood of future outcome
- Pattern identification
Lessons for the future

- Partner with global institutions
- Use mixed approaches and methods
- Approach evaluation as a dynamic learning process
- Continue exploring new methodologies and data sources
Open Discussion
Thank you