



Assessing Investment & Financial flows for Adaptation in the **Biodiversity** Sector

UNDP I&FF Methodology Guidebook

Definition of the biodiversity sector

- “The variability among living organisms from all sources including, inter alia, terrestrial, marine, & other aquatic ecosystems & the ecological complexes of which they are part: this includes diversity within species, between species, & of ecosystems.”

(Convention on Biological Diversity, Art. 2. United Nations Treaty series, 1993)

1. Establish key parameters of the assessment

- Define scope & boundaries for the assessment
- Define the institutional framework
- Specify the time horizon for the analysis: 2015-2030 recommended
- Build on existing model for the sector where possible

1. Establish key parameters of assessment

Define boundaries for the assessment

Examples of potential subsectors & their impact pathways

Ecosystem	Vulnerabilities	Impacts
Deserts	Desiccation, Drier & warmer conditions	More episodic climate events & inter-annual variability, more severe & persistent droughts
Grasslands & savannas	Warming, fire frequency, Increased rainfall variability	Vegetation affected Production & soil water balance
Mediterranean	Warming, Desertification	Desert & grassland expansion, fire frequency
Forests	Forest dieback, Drought	Potential reduction in resilience, Insect outbreaks
Tundra & Artic/Antartic	Species extinction, dryness	Threats to the livelihoods & food security
Mountains	Earlier snow melt period	Genetic diversity reduction within species
Wetlands, lakes & rivers	Raising temperatures	Dependence on water availability controlled by outside factors, lower water quality
Oceans & shallow seas	Higher seawater temperatures	Sea level rise, loss of sea ice, increases in wave height & frequency, diseases in marine biota

2. Compile historical I&FF data and other input data for scenarios

- Data collection, rely on national accounts data
- The **System of National Accounts** (SNA) constitutes the primary source of information about the economy
- **Systems of integrated environmental & economic accounts** (SEEA) developed to address statistical gaps
- Other sources: **Biodiversity Inventories, National Communications, FAO reports** etc.

2. Compile historical I&FF data and other input data for scenarios

Data collection, rely on national accounts data

Examples of data to be collected

Activity needed (examples)	Investm US\$	FF cost US\$	O&M US\$	Potential funding
Effective conservation of Protected Areas <ul style="list-style-type: none"> • Effective management of protected areas. • Implementation of REDD demonstration projects 				
Enhancement of degraded ecosystems & restoration <ul style="list-style-type: none"> • Decentralization of ecosystem management • Silviculture (natural regeneration, enrichment planting) • Ecological restoration 				
Enhancing capacity of community groups <ul style="list-style-type: none"> • Protect rights of indigenous peoples 				
Total				

- Information should be disaggregated by:
 - ▣ Year (starting 10 years before the assessment's Base Year)
 - ▣ Source (by corporations & government)
 - ▣ Type (national funds, foreign direct investment, official development assistance)
- 3 principles of the Convention of Biological Diversity:
 - ▣ To conserve biological diversity
 - ▣ To use biological diversity in a sustainable fashion
 - ▣ To share the benefits of biological diversity fairly & equitably

2. Compile historical I&FF data and other input data for scenarios

Data collection, rely on national accounts data

Examples of I&FF data disaggregation in each sub-sector

Category of Investment Entity	Source of I&FF Funds	Investment Flows (2005 \$)		Financial Flows (2005 \$)	
		Facility / Technology Type 1	Facility / Technology Type 2	Practice / Measure Type 1	Practice / Measure Type 2
Households	Domestic				
	Total Household Funds (all domestic)				
Corporations	Domestic (e.g. Business investments in hotels, restaurants)				
	Foreign (e.g. Int'l service industry- travel agencies, tourism info centers)				
	Total Corporation Funds				
Government	Domestic (e.g. Physical infrastructure- roads, communication)				
	Foreign				
	Total Government Funds				

3. Define Baseline Scenario

- Define the physical basis for the Baseline Scenario
- **A baseline scenario:** description of what is likely to occur in the absence of ADDITIONAL policies to address climate change; expected socioeconomic trends (e.g., population growth & migration, economic growth), technological change (if relevant), & expected business-as-usual investments in the sector

3. Define baseline scenario

Define baseline scenario

- Characterizing each relevant biodiversity subsector over the assessment period
 - ▣ Assuming no new climate change policies are implemented
- Baseline scenario reflects
 - ▣ Current sectoral & national plans
 - ▣ Expected socioeconomic trends
 - ▣ Expected investments in the subsectors

4. Derive I&FF for baseline scenario

- Building on the measures identified in the previous step, now the I&FF that are involved in each activity are added to the scenario
- **Estimate current I&FF for the sector**
- **Project future I&FF**
- As far as possible, project sub-sectors first & then aggregate the I&FF for the whole sector.

4. Derive I&FF for baseline scenario

Estimate current I&FF for the sector

Examples of activities that possibly go into the baseline & adaptation scenario

List of Investment types	IF	FF
Policies & measures Relocation allowances, fiscal incentives, emergency funds	X	X
Regulations Concessions, limits in the access to resources		
Land & water management Reforestation, sustainable forest management	X	
Integrated coastal fisheries management		X
Sustainable agricultural & rural development Agroforestry systems, reduce pesticides & herbicides		X
Moving species Reduce & manage stresses on species & ecosystems		X

4. Derive I&FF for baseline scenario

Estimate current I&FF for the sector

Examples of activities that possibly go into the baseline & adaptation scenario (continued)

List of Investment types	IF	FF
Water use efficiency		X
Physical barriers avoidance Natural protection, expansion of reserve systems	X	
“Precautionary” activities Enforcement of building setback, land use regulation	X	
Controlled burning & other techniques		X
Training Job diversification, use of new technologies, management		
Research Forecasting, risk analysis, resource monitoring		X

4. Derive I&FF for baseline scenario

Estimate annual I&FF

Adding costs to baseline scenario

Funding entity category	Source of funds	Cumulative investment* (2015-2030)	
		(billion 2015 \$)	(%)
Households	Domestic funds		
Governments	Domestic funds (budgetary)		
	Foreign borrowing (loans)		
	Foreign aid (ODA)		
Corporations	Domestic equity		
	Foreign investment		
	Domestic debt		
	Foreign borrowing		
	Government support		
	Foreign aid (ODA)		
	Total		

*Ecosystem conservation, Species conservation, Genetic diversity conservation...

5. Define Adaptation scenario

- **Define the physical basis for the Adaptation Scenario**
- **An adaptation scenario:** description of what is likely to occur when measures are taken to adapt to climate change; & required investments in the sector to implement them
- The adaptation scenario should also describe expected socioeconomic trends, and technological change (if relevant)

5. Define adaptation scenario

Define physical basis for Adaptation Scenario

Examples of adaptation activities

Category of adaptation measure	Measure
Integrated land & water management	Removing policy distortions
Integrated approach to coastal fisheries management	Aqua & mariculture to reduce impact on remaining coastal systems, best as integrated approach
Integrated approaches to enhance sustainable agriculture	Appropriate management of agricultural production systems
Moving species to adapt to changing climate zones	Assistance for species by natural migration corridors

5. Define adaptation scenario

Define physical basis for Adaptation Scenario

Examples of adaptation activities (continued)

Category of adaptation measure	Measure
Reduction of use of pesticides & herbicides	Avoid damage to existing plant & animal communities, water quality & to human health
Water use efficiency	In response to increasing demand for water use due to socio economic conditions & warmer temperatures
Avoid physical barriers to cope with climate variability	Enhancement & preservation of natural protection
“Precautionary” approaches	Enforcement of building setbacks

6. Derive I&FF for Adaptation Scenario

- ❑ Project I&FF associated with the Adaptation Scenario
- ❑ Compile annual estimates, disaggregated by investment entity, source, investment flow type, & financial flow type
- ❑ Estimate annual investment costs associated with the alternative management plan

6. Derive I&FF for adaptation scenario

Project I&FF associated with the Adaptation Scenario

Adding costs to adaptation scenario

	Cumulative infrastructure (2015-2030)	Unit cost
Facility/Technology		
Aqua & mariculture	(# sites)	(2015 \$/site)
Moving species to adapt	(# activities)	(2015 \$/activity)
Reduction of use of herbicides and pesticides	(# kg reduced)	(2015 \$/kg reduced)
<i>Total</i>		

Adding costs to adaptation scenario

Funding entity category	Source of funds	Cumulative investment (2015-2030)	
		(billion 2015 \$)	(%)
Households	Equity & debt		
Governments	Domestic funds (budgetary)		
	Foreign borrowing (loans)		
	Foreign aid (ODA)		
Corporations	Domestic equity		
	Foreign investment		
	Domestic debt		
	Foreign borrowing		
	Government support		
	Foreign aid (ODA)		
	Total		

7. Estimate changes in annual I&FF needed to implement adaptation

- Subtract the baseline annual I&FF, by entity & source, from the adaptation annual I&FF, by entity & source.
- Subtraction of the Baseline Scenario from the Adaptation Scenario.
- Sum incremental amounts over all years, by entity & source.

7. Estimate changes in annual I&FF needed to implement adaptation

Subtract the baseline annual I&FF from the adaptation annual I&FF

- For each chosen biodiversity adaptation option, the analysis should identify the incremental investment (total dollars) by source (domestic funds, ODA, FDI etc.) up through 2030 to support the respective biodiversity management option

7. Estimate changes in annual I&FF needed to implement adaptation

Summarizing incremental investments

		Investment (billion 2015 \$)		
		Cumulative (2015-2030)		Incremental
Funding entity category	Source of funds	Baseline scenario	Adaptation Scenario	
Households	Equity & debt	Baseline value	Adaptation value	Baseline minus Adaptation value
Governments	Domestic funds (budgetary)			
	Foreign borrowing (loans)	...	...	...
	Foreign aid (ODA)	...	...	...
Corporations	Domestic equity	...	..	...
	Foreign investment	...	...	...
	Domestic debt	...	...	...
	Foreign borrowing	...	...	...
	Government support	...	...	...
	Foreign aid (ODA)	...	...	...
	<i>Total</i>	Sum (Baseline)	Sum (Adaptation)	Sum (Baseline minus Adaptation)

8. Evaluate policy implications

- Determine policy instruments & measures to encourage changes in I&FF
- Identify entities responsible for significant incremental changes in I&FF. Determine the predominant sources of their funds, distinguish between public & private sources of finance
- When addressing policy options, social, economic & environmental benefits should be assessed qualitatively

8. Evaluate policy implications

Assess policy options and summarize the projected I&FF for the key sector

- Biodiversity sector policies are likely to be needed to induce the relevant entities to implement the proposed measures
- Adaptation can occur quickly in some sectors, but is slower in sectors with long-lived infrastructure
- These characteristics suggest a mix of adaptation policies

9. Synthesize results and complete report

- For more information on synthesizing results, documentation & the completion of the report, please refer to the Reporting Guidelines

Q&A CLARIFICATIONS

