



Assessing Investment & Financial flows for Adaptation in the **LAND-USE CHANGE** Sector

Relevance of the Land-use change sector

- In terms of the national GHG inventories forestry mitigation options belong to the AFOLU sector, namely Agriculture, Forestry & Other Land Uses
- Previously, forestry options were included in the LULUCF sector (Land Use, Land Use Change & Forestry)

1. Establish key parameters of the assessment

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

Scoping the land-use change sector

Decision needed - What will be included in the sector?

- **Agriculture?** – What exactly?
 - Livestock / crop production?
 - Only production or also processing of products?
 - Irrigation?
 - ...

Scoping the land-use change sector

Decision needed - What will be included in the sector?

- **Forestry?** – What exactly?
 - Managed / unmanaged forest?
 - Plantations?
 - Soils?
 - ...

Scoping the land-use change sector

Decision needed - What will be included in the sector?

□ **Tourism?** – What exactly?

□ Scoping by infrastructure: Hotels etc.

□ Scoping by type of tourism: Safari tourism, cultural tourism etc.

□ ...

1. Establish key parameters of assessment

Define boundaries for the assessment

Example list of subsectors for screening & prioritization

Subsectors	Data availability	Investment (baseline & prior 10 years)	Priority in adaptation scenario			
			High	Medium	Low	Rank
Agriculture Livestock / crop production? Production / processing of products Irrigation						
Forestry Managed / unmanaged forest Plantations Soils						
Tourism Infrastructure: Hotels etc. Type of tourism: Cultural, Safari						

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)** were developed to address statistical gaps
- Other sources: **National agricultural & forestry plans, National Communications** etc.

Data sources complementing national sources

□ Agriculture:

<http://faostat.fao.org/site/291/default.aspx>

<http://www.fao.org/nr/water/aquastat/main/index.stm>

□ Forestry:

<http://www.fao.org/forestry/fra/en>

<http://faostat.fao.org/default.aspx>

<http://www.fao.org/statistics/countrystat/>

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

Examples of I&FF in the land-use change sector

Type of flow	Type of physical asset
Investment flows	Agricultural & forestal development
	Agricultural & forestal land resources & water resources
	Agricultural & forestal inputs
	Food crop & cash crop production, collection of foresty goods
	Livestock & game
	Agricultural & forestal alternative development
Financial flows	Agricultural extension & reform
	Policy & planning
	Education/training
	Agricultural & forestry research & services
	Plant/post-harvest protection & pest control
	Agricultural financial services
	Agricultural co-operatives
Livestock/veterinary services, forest management, soil management	

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 & eating habits), technological change (if relevant), & expected business-as-usual investments in the sector

Baseline scenario reflects

- Current sectoral & national plans
- Expected socioeconomic trends
- Expected investments in the subsectors

Information should be disaggregated by

- Year (starting 10 years before the Base Year)
- Source (by corporations & government)
- Type (national funds, foreign direct investment, official development assistance)

4. Derive I&FF for baseline scenario

- Compile annual estimates, disaggregated by investment entity, source, investment flow type, & financial flow type
- Calculate the **total investment cost** in real, unannualized terms over the planning period.
- Estimate **annual investment costs** associated with the new plan
- Develop a **breakdown of total investments** into major categories (e.g., ODA, FDI, domestic funds)

4. Derive I&FF for baseline scenario

Estimate current I&FF for the sector

Type of flow	Type of physical asset	Official development assistance (\$)		Investment (\$)	
		Bilateral	Multilateral	Private	Government
Investment flows	Livestock production				
	Crop products				
	Fuel wood/charcoal development				
	Management for promoting environmental services (e.g. enhancements of sinks)				
	Enterprise development				
	Infrastructure (including GIS systems, road infrastructure)				
Financial flows	Policy & Institutional management				
	Forest protection				
	Research activities				
	Ecosystem services				
	Education & training				

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		

*Infrastructure, organic material & fertilizers, equipment, labour, research, services ...

5. Define Adaptation scenario

- Adaptation scenario: a description of what is likely to occur in the sector, over the assessment period, in the presence of **additional** policies to address climate change
- Outcomes from local national strategies
- The adaptation scenario should include previously identified adaptation options, such as those used in a national communication or in a national NAPA.

5. Define adaptation scenario

Adaptation options in the land-use change sector

Example for adaptation options in the field of land-use change

Type of Measure	Component of LULUCF Sector	Adaptation Measure
Field-level	Crop Production	Change crop species/varieties
		Moisture management/irrigation ...
	Animal Production	Change animal species/breeds
		Change in animal management ...
	Forest management	Management of natural areas
		Soil management
Research, education, assistance, infrastructure, institutional	Sector-wide	Research, extension & training
		Forecasting & disaster management
		...

6. Derive I&FF for 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
- Calculate the total investment cost in real, unannualized terms over the planning period
- Develop a breakdown of total investments into major categories (e.g., ODA, FDI, domestic funds)

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		
Improved crop species	(# kg)	(2015 \$/kg)
Irrigation channel	(# meters)	(2015 \$/meter)
Soil management	(# activities)	(2015 \$/activity)
<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 annual adaptation 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 land-use change 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 land-use change 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 the entities that are responsible for the significant incremental changes in I&FF
- Determine the predominant sources of their funds, particularly important to distinguish between public & private sources of finance

8. Evaluate policy implications

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

- Public sector policies on land-use change 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

