



# Assessing Investment & Financial flows for Mitigation in the **FORESTRY** Sector

UNDP I&FF Methodology Guidebook: Mitigation

# Definition of the forestry sector

- Either use **UNFCCC definitions** or **national definition** of land use type, particularly to make the distinction between forest & non-forest
- FAO definition: Forest is a minimum area of land of 0.05-1.0 hectares with tree crown cover (...) of more than 10-30 % (...). A forest may consist either of closed forest formations (...) or open forest. Young natural stands & all plantations (...), as are areas normally forming part of the forest area which are temporarily unstocked (...)

# 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

| Mitigation options (general) | Mitigation options in the forestry sector (sub-sectors)  | Forest management type  |
|------------------------------|--|---|
| Reduction of GHG emissions   | Reducing emissions from deforestation & forest degradation (REDD) (which is currently under negotiation) | Managed (natural) forest  |
|                              |  | Unmanaged (natural) forest under deforestation or degradation threat        |
| Carbon sequestration         | Afforestation  | Non-forested land (abandoned land, waste land, pastures, agricultural land) |
|                              | Reforestation  |   |
|                              | Enhancement of sinks through forest restoration*   | Degraded forest**   |
| Carbon substitution          | Substitution through harvested wood products: using forest products for electricity & fuel               | Targeted biofuel plantations  |

## 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: **Forest Inventories, National Communications, FAO forest product reports** etc.

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

**Data collection, rely on national accounts data**

| Forest Mitigation Options                    | Baseline scenario                                     |  | Managem. System | La-bour | Equip ment | ...  |
|--|---|--|-----------------|---------|------------|------|
|  | Historical trend                                      | Future scenario  | I&FF            | I&FF    | I&FF       | I&FF |
| REDD   | Continuation of the deforestation & degradation trend | 1.Constant DD rate<br>2.Acceleration of DD<br>3.Deceleration of DD   |                 |         |            |      |
| Afforestation / reforestation                | Continuation of grazing land                          | 1.Grassland with increased / decreased productivity rate<br>2.Change to cropland or wasteland<br>3.Change to other land use          |                 |         |            |      |
|  | Continuation of cropland                              | 1.Grassing land with increased / decreased productivity rate<br>2.Change to grassing land or wasteland<br>3.Change to other land use |                 |         |            |      |
| Substitution through harvested wood products | Maintaining current use                               | Land use change<br>Change in productivity rate   |                 |         |            |      |
| ...  | ...   | ...  |                 |         |            |      |

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 forestry 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

### 3. Define baseline scenario

## Define physical basis for the Baseline Scenario

- Useful links:
  - <http://www.fao.org/forestry/fra/en>
  - <http://faostat.fao.org/default.aspx>
  - <http://www.fao.org/statistics/countrystat/>
  
- 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

- ▣ **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
- ▣ If not information over planning period available, analyze forest product supply/demand relationships for the country by comparing the projection of future demand for forest products with available annual timber yields, harvested sustainably

## 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)          |                                    |     |
|                         | <b>Total</b>               |                                    |     |

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

## 5. Define Mitigation scenario

- **Define the physical basis for the Mitigation Scenario**
- **A Mitigation scenario:** description of what is likely to occur when mitigation measures are taken; & required investments in the sector to implement them
- Consider national goals for minimum forest areas to be protected
- The mitigation scenario should also describe expected socioeconomic trends, & technological change (if relevant)

## 5. Define mitigation scenario

# Define the physical basis for the Mitigation Scenario

| Forest mitigation options   | Type of land (defined by forest cover) | Current land use   | Mitigation scenario   |  |
|---|--|--|---|--|
|   |  |  | Forestry option (examples)  | Possible activities in the forest management plan  |
| Reducing emissions from deforestation & forest degradation (REDD) | Forest                                 | Conservation areas & managed production & protection forests | <ul style="list-style-type: none"> <li>a) Forest conservation</li> <li>b) Sustained yield management</li> <li>c) Reduced logging</li> </ul>   | <ul style="list-style-type: none"> <li>• Clarification of land &amp; carbon tenure</li> <li>• Defining the system</li> <li>• FLC &amp; Monitoring</li> <li>• Labour</li> <li>• Training</li> <li>• Infrastructure</li> <li>• Machinery &amp; equipment</li> <li>• Miscellaneous</li> </ul> |
| Reducing deforestation by enhancing forests                       | Forest land                            | Accessible used/unsustainable managed forest                 | <ul style="list-style-type: none"> <li>a) Enrichment planting</li> <li>b) Guided natural regen.</li> <li>c) Ecological restoration</li> </ul> |  |
| Afforestation/reforestation                                       | Non-forest                             | Grassland  | CDM A/R Plantations   |  |
|   |  | Cropland   |   |  |
|   |  | Waste land   |   |  |
| Substitution through harvested wood products                      | Forest or non-forest                   | Forest plantations etc.                                      | Forest plantations for wood production  |  |
| ...   | ...                                    | ...  | ...   |  |

## 6. Derive I&FF for Mitigation Scenario

- Project I&FF associated with the Mitigation 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 mitigation scenario

# Project I&FF associated with the Mitigation Scenario

| Activity needed to achieve standards<br>(examples)   | Estim.<br>Investm.<br>US\$ | Estim. FF<br>cost<br>US\$ | Estim.<br>O&M cost<br>US\$ | Potential<br>funding<br>sources |
|--|----------------------------|---------------------------|----------------------------|---------------------------------|
| <b>Effective conservation of Forest Protected Areas (REDD)</b> <ul style="list-style-type: none"> <li>• Development of effective management of protected areas.</li> <li>• Implementation of REDD demonstration projects</li> </ul>                          |                            |                           |                            |                                 |
| <b>Effective management of Production Forests</b> <ul style="list-style-type: none"> <li>• Initiatives to contain illegal logging</li> <li>• Outcome based independent certification</li> <li>• Investment in Reduced Impact Logging</li> </ul>              |                            |                           |                            |                                 |
| <b>Enhancement of degraded forests by forest restoration</b> <ul style="list-style-type: none"> <li>• Decentralization of forest management</li> <li>• Silviculture (natural regeneration, enrichment planting)</li> <li>• Ecological restoration</li> </ul> |                            |                           |                            |                                 |
| <b>Enhancing capacity of community groups</b><br>Protect the rights of forest dependent indigenous peoples, reducing encroachment & forest degradation.  |                            |                           |                            |                                 |
| ...  |                            |                           |                            |                                 |
| <b>Total for initial 5-years program</b>   |                            |                           |                            |                                 |



## Adding costs to mitigation 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)          |                                   |     |
|                         | <b>Total</b>               |                                   |     |

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

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

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

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

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

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

Summarizing incremental investments

|                         |                            | Investment (billion 2015 \$) |                     |                                 |
|-------------------------|----------------------------|------------------------------|---------------------|---------------------------------|
|                         |                            | Cumulative (2015-2030)       |                     | Incremental                     |
| Funding entity category | Source of funds            | Baseline scenario            | Mitigation Scenario |                                 |
| Households              | Equity & debt              | Baseline value               | Mitigation value    | Mitigation minus Baseline 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 (Mitigation)    | Sum (Mitigation minus Baseline) |

## 8. Evaluate policy implications

- Assess policy options & summarize the projected I&FF for the key sector
- Prepare report

## 8. Evaluate policy implications

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

- 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, distinguish between public & private sources of finance
- When addressing policy options, social, economic & environmental benefits should be assessed qualitatively

## 8. Evaluate policy implications

## Assess contribution and suitability of different policy options given country conditions

### Examples of mitigation & policy options

|            | Regulations and standards  | Taxes & charges   | Tradable permits  | Subsidies & incentives                          | Information instruments                             | Reserach & development  | Voluntary agreements   |
|------------|--|---|---|---|---|---|--|
| Definition | Specific abatement technologies or minimum requirements for pollution output | A levy imposed on each unit of undesirable activity by a source | Limits emissions by specified sources, each source holds & trades permits | Direct payments, tax reductions, price supports | Public disclosure of environm. information          | Government spending and investment to generate innovation on mitigation | Agreement between government & private parties on environm. objectives |
| Benefit    | Good if clear thresholds can be defined & to ensure minimum standard         | Efficient, on the long run development of new technology        | Emission reductions are reached at the economically least cost            | Easily accepted by private sector               | Prerequisite for accept. of most other instruments. | Potential long-term benefit for national economy as research hub        | Often favoured by industry because of their flexibility                |
| Challenges | No incentive to go beyond the target   | High coordination challenge, low short-term effect              | Difficult to allocate initial shares to sources                           | Requires fiscal expenditures                    | Low effectivity if used alone                       | Almost no short- & medium-term effect                                   | Often lack of enforcement  |

## 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

