Intended Nationally Determined Contributions (INDCs) for the land use sector

Overview of the INDC process, current LULUCF methodologies and potential for UNCCD support to Parties

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Outline

1. The Lima call for climate action
2. Intended Nationally Determined Contributions (INDCs)
3. Current role of land use under UNFCCC
   3.1 Reporting under the Convention
   3.2 Accounting under Kyoto Protocol
4. Project-based approaches
5. Opportunities and challenges for UNCCD support
1. The Lima call for climate action

Decision -/CP.20, inter alia,...

-confirms that an outcome with legal force under the Convention, applicable to all Parties, shall be reached in 2015

-invites all Parties to communicate their Intended Nationally Determined Contributions (INDCs) by the first quarter of 2015

Annex to Decision -/CP.20 outlines „Elements for a draft negotiating text“ and provides the basis for the inclusion of the land use sector:

-Section D, 23: “In meeting their commitments / contributions / actions, Parties may make use of market mechanisms and actions in the land-use sector in accordance with X.” (UNFCCC 2014: 12)

-Section J, 69, Option 1 and 3: “Recognize the importance of greenhouse gas emissions by sources and removals by sinks resulting from land-use change and forestry activities” (UNFCCC 2014: 31)
There are basically 3 scales/forms of INDCs:

A  **National (economy-wide) targets (macro)**
   - e.g. reduce overall emissions by 40% below 1990 by 2040
   - Land use sector can be included in national target

B  **Sectoral targets (meso)**
   - e.g. reduce emissions related to land use and forestry by 20% below 2005 by 2030

C  **Policies and projects (micro)**
   - e.g. reduce emissions through a specific land use policy or project by 50% below 2015 by 2030

Scales of INDCs will vary according to country capacity
Two main generic processes for target setting (cp. Ecofys 2014):

1. **Politically driven process (top-down)**
   - First setting an inspirational goal
   - Then determining the pathway
   - Translation into sectoral target, policies and projects

2. **Technically driven process (bottom-up)**
   - Collect available information
   - Identify and analyze mitigation options
   - Aggregate mitigation options into a mitigation pathway

But: target setting to be understood as an **iterative process**
Potential entry points for UNCCD to support target setting in land use sector?

Source: Ecofys 2014: 14
3. Current role of land use under UNFCCC

3.1 Reporting under the Convention

All Parties are required to report for land use in national GHG inventories using IPCC methodologies. However, national data availability and reporting performance are limited.

<table>
<thead>
<tr>
<th></th>
<th>Annex I</th>
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</thead>
<tbody>
<tr>
<td>National Communications</td>
<td>Periodic (every 4 years); almost all Annex I Parties have submitted their 6th national communication.</td>
</tr>
<tr>
<td>National GHG Inventories</td>
<td>Annual submission including:</td>
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<td></td>
<td>- CRF tables</td>
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<td></td>
<td>- National Inventory Report[^37]</td>
</tr>
<tr>
<td>IPCC Guidance</td>
<td>Starting in 2015, Annex I shall use the 2006 Guidelines and updated CRF tables; plus the 2003 LULUCF-GPG and 2013 Wetlands Supplement</td>
</tr>
<tr>
<td>Additional reporting</td>
<td>Biennial reports; first submission by January 2014</td>
</tr>
<tr>
<td>(including national GHG inventories)</td>
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[^37]: Should be included as part of the National Communications (every 4 years)

[^37]: Periodic (every 4 years); the first was due within 3 years of ratification; a second and, where appropriate, 3rd has been encouraged by the COP. Most non-Annex I Parties have submitted their 2nd National Communication.

Source: Iversen, Lee and Rocha 2014
Summary of IPCC AFOLU/LULUCF guidelines 2006 (obligatory for Annex 1 reporting from 2015; encouraged for Non-Annex 1)

Basics:
- **Land-based approach:** all managed land is included in reporting (≠ activity-based approach of KP)
- 6 land use categories (forest, cropland, grassland, wetlands, settlements, other lands)
- 3 carbon pools (living biomass, dead organic matter, soil organic carbon)
- Equations and procedures for each land use category
- Tiered approach for estimating emissions and sinks (Parties can decide on tier, i.e. level of detail)
  - Tier 1: default parameters provided by IPCC
  - Tier 2: country or region-specific data
  - Tier 3: high resolution data
Simplified steps in preparing LULUCF inventory estimates according to IPCC 2006 guidelines

- Divide all land into managed and unmanaged
- Classify managed land into the 6 land use categories
- Further subdivide by climate, soil type and ecol. region (i.e. strata)
- Compile data on the area of land and the change in each land use category
- Categorize land area by specific management systems for each land use category
- If available, assign emission factors and stock change factors
- Estimate CO2 emissions and removals at the appropriate tier level
- Sum emissions and removals over the inventory period
Estimation example for GHG removal due to improved grassland management

Category: „grassland remaining grassland“ (no land use but management change)

Tier 1: use of IPCC default parameters

Example: The following example shows calculations for aggregate areas of grassland soil carbon stock change to a 30 cm depth. In a tropical moist climate on Ultisol soils, there are 1Mha of permanent grassland. The native reference carbon stock (SOC_{Ref}) for the climate/soil type is 47 tonnes C ha^{-1}. At the beginning of the inventory time period (1990 in this example) the distribution of grassland systems was 500,000 ha of unmanaged native grassland; 400,000 ha of unimproved, moderately degraded grazing land; and 100,000 ha of heavily degraded grassland. Thus, initial soil carbon stocks for the area were: 500,000 ha \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 1 \times 1 \times 1) + 400,000 ha \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 0.97 \times 1) + 100,000 \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 0.7 \times 1) = 45,026,000 \text{ tonnes C}.

In the last year of inventory time period (2010 in this example), there are: 300,000 ha of unmanaged native grassland; 300,000 ha of unimproved, moderately degraded grazing land; 200,000 ha of heavily degraded grassland; 100,000 ha of improved pasture receiving fertilizer; and 100,000 of highly improved pasture receiving fertiliser together with irrigation. Thus, total soil carbon stocks in the inventory year are: 300,000 ha \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 1 \times 1 \times 1) + 300,000 ha \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 0.97 \times 1) + 200,000 \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 0.7 \times 1) + 100,000 \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 1.17 \times 1) + 100,000 \times (47 \text{ tonnes C ha}^{-1} \times 1 \times 1.17 \times 1.11) = 45,959,890 \text{ tonnes C}.

The average annual stock change over the period for the entire area is: 45,959,890 - 45,026,000 = 933,890 \text{ tonnes/20 yr = 46,694.5 tonnes per year soil C stock increase. (Note: 20 years is the time dependence of the stock change factor, i.e., factor represents annual rate of change over 20 years).}
3.2 Accounting under KP

- **Activity-based approach:** assessing specific sector activities, no comprehensive coverage (≠ land-based approach of reporting under the Convention)

- 8 KP LULUCF Activities (see table)

- Reporting only obligatory for forestry activities (see table)

- Very few Parties report on other LULUC activities

<table>
<thead>
<tr>
<th>KP LULUCF Activities</th>
<th>1st Commitment Period</th>
<th>2nd Commitment Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afforestation (3.3)</td>
<td>Mandatory</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Reforestation (3.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deforestation (3.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Management (3.4)</td>
<td>Voluntary</td>
<td>Voluntary</td>
</tr>
<tr>
<td>Cropland Management (3.4)</td>
<td></td>
<td>(Mandatory if elected in 1st CP)</td>
</tr>
<tr>
<td>Grazing land Management (3.4)</td>
<td></td>
<td></td>
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<tr>
<td>Revegetation (3.4)</td>
<td></td>
<td></td>
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<tr>
<td>Wetland Drainage &amp; Rewetting (3.4)</td>
<td>Not specified</td>
<td></td>
</tr>
</tbody>
</table>

Source: Iversen, Lee and Rocha, 2014
4. Project-based approaches

Project based mechanism under UNFCCC: CDM and JI

- CDM limited to afforestation/reforestation: no methodologies for other LULUCF projects
- JI can include any LULUCF activity (only 3 registered)
  (methodologies available?)

Project based approaches in the voluntary carbon market

- Various methodologies for land use projects available
- E.g. Verified Carbon Standard (VCS) methodologies for sustainable agricultural land management, sustainable grassland management
## Summary of land use under UNFCCC

<table>
<thead>
<tr>
<th>Purpose</th>
<th>UNFCCC reporting (All Parties)</th>
<th>Kyoto Protocol 2nd commitment period (CP) QELRC (Annex I KP Parties)</th>
<th>Kyoto Protocol CDM (non-Annex I)</th>
<th>REDD+ (developing countries)</th>
<th>NAMAS (non-Annex I)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting only</td>
<td>Legally-binding economy wide targets; liabilities if commitment unmet</td>
<td>Incentives provided for non-Annex I</td>
<td>To contribute to mitigation action in the forest sector and to seek results-based finance</td>
<td>To enhance mitigation action</td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td>National</td>
<td>National</td>
<td>Project</td>
<td>National, or subnational as an interim step</td>
<td>Not specified</td>
</tr>
</tbody>
</table>
| Scope            | Comprehensive coverage of LULUCF:  
  - Forest land  
  - Cropland  
  - Grassland  
  - Wetlands  
  - Settlements  
  - Other land  
  Non CO₂ emissions from agricultural practices | Mandatory activities:  
  - LULUCF  
  - Afforestation  
  - Reforestation  
  - Deforestation  
  - Forest management  
  Comprehensive coverage of agricultural practices | Allowed activities:  
  - LULUCF  
  - Afforestation  
  - Reforestation  
  Non CO₂ emissions from agricultural practices | Activities involved:  
  - Deforestation  
  - Forest degradation  
  - Forest conservation  
  - Sustainable management of forests  
  - Enhancement of forest carbon stocks | Not specified: A wide range of activities in the land use sector have been submitted. |
5. Opportunities for potential UNCCD support to Parties

- Short “window of opportunity“ to establish concrete mitigation targets in the land use sector for the post 2020 climate regime

- Highlighting the benefits of ambitious land use INDCs in terms of mitigation potential and co-benefits

- Given the complexity of assessing LULUCF emissions, various Parties are likely to need technical support in developing INDCs as regards
  - Target setting at various scales
  - Defining appropriate baselines/references
  - Defining appropriate approaches for measuring, reporting and verifying (MRV)

- Given the very short timeframe, support to Parties would have to rely on readily available information and data
Information of key importance in developing land use INDCs is likely to include the following:

- **Methodologies** for assessing land use emissions and removals on various scales (mainly IPCC methodologies)

- **Mitigation potential analyses** for land use sector and specific countries and activities (if available)

- **National reports** (national communications, GHG inventories, biennial reports with information on mitigation actions)

- **Projects, actions and plans** (Nationally Appropriate Mitigation Actions, national strategies for land management and rehabilitation, national climate change plans, national economic development plans)

Integrating/combining data from various sources for the development of INDCs: e.g. assessing the mitigation potential of existing plans/policies for land rehabilitation using IPCC default stock change and emission factors
5. Challenges for potential UNCCD support to Parties

- Time constraints: INDCs will have to be submitted during the first quarter 2015
- Assessment of LULUCF emissions is in general particularly challenging due to various natural factors
- Consequently, the current role of land use under UNFCCC is very fragmented and heterogeneous -> no straight forward way to follow
- Limited data availability in many countries

“Drafting the elements comprising an INDC is a process that has to rely on in-country analysis like the development of GHG inventories, an understanding of mitigation potentials, GHG projections (e.g. baseline and policy scenarios), as well as an assessment of support needs. It is unlikely that any of these processes can be started and completed in time solely for the purpose of preparing an INDC.” (Ecofys 2014: 8)
References

Ecofys (2014a): Intended Nationally Determined Contributions (INDCs) under the UNFCCC. Discussion Paper.


NORDEN (2014): The land-use sector within the post 2020 climate regime.
