#### Understanding Land Use in the UNFCCC

Iversen P., Lee D., and Rocha M., (2014)

"Focus Session: Baselines and reference levels"

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# BASELINES AND REFERENCE LEVELS

#### USE OF BASELINES AND REFERENCE LEVELS

Baselines and reference levels are used for accounting purposes

- Baselines Clean Development Mechanism (CDM), Kyoto Protocol
- Baselines Joint Implementation (JI), Kyoto Protocol
- Forest Management Reference Levels Forest management, Kyoto Protocol
- Forest Reference Emission levels and/or Forest Reference Levels
   REDD+

### **BASELINES UNDER THE CDM**

Baselines – Afforestation and reforestation CDM

"The baseline for a proposed afforestation or reforestation project activity under the CDM is the scenario that reasonably represents the sum of the changes in carbon stocks in the carbon pools within the project boundary that would have occurred in the absence of the proposed project activity."

Any net removals beyond the baseline are considered additional and can be translated into CO<sub>2</sub> credits – in the case of A/R – temporary credits (ICERs or tCERs)

# Joint Implementation

#### **BASELINES UNDER JOINT IMPLEMENTATION**

Baselines – Joint Implementation (JI)

"The baseline for a JI project is the scenario that reasonably represents the anthropogenic emissions by sources or anthropogenic removals by sinks of greenhouse gases that would occur in the absence of the proposed project. A baseline shall cover emissions from all gases, sectors and source categories listed in Annex A, and anthropogenic removals by sinks, within the project boundary."

Any net removals beyond the baseline are considered additional and can be translated into  $CO_2$  credits in this case Emission Removal Units (ERUs)

#### Land Use, Land Use Change and Forestry

# LULUCF ACCOUNTING APPROACHES

Accounting approach	Description	Activity
Net-net accounting	Net emissions (or removals) in each year of the commitment period minus the net emissions in 1990 (i.e. the base year for most countries)	Cropland management, grazing land management, revegetation and wetland drainage and rewetting
Gross-net accounting	Net emissions (or removals) in each year of the commitment period without comparing it with 1990	Afforestation, reforestation and deforestation
Reference level	Net emissions (or removals) in each year of the commitment period minus the value of the reference level	Forest management

# LULUCF ACCOUNTING APPROACHES



## EXAMPLE OF LULUCF ACCOUNTING FOR THE FIRST COMMITMENT PERIOD

Activity	Base year (1990) (Gg CO <sub>2</sub> eq)	Net emissions / removals for 2008- 2012 (Gg CO <sub>2</sub> eq)	Accounted value (Gg CO2eq)	Accounting rule
Article 3.3				
Afforestation and reforestation		-184	-184	Gross-net
Deforestation		440	440	Gross-net
Sum			256	
Article 3.4				
Forest management		-20.252	-917	Gross-net with cap
Offsetting 3.3 debits			-256	Using removals from FM to offset net emissions from Article 3.3
Cropland management	24.223	15.974	-8.249	Net-net
Grazing land management	888	1.444	556	Net-net
Total		-2.578	-8.866	

### WHY USE DIFFERENT APPROACHES?

- I. Uncertainties over magnitude;
- 2. Risks of disturbances beyond control;
- 3. Possible significant contribution arising from pre-1990 (i.e. base year for most of the countries) activities and;
- 4. The difficulties of dealing with long cyclic rotations of trees within commitment periods of only 5 and 8 years.

Most of these characteristics are linked to forests and less to other land use

#### NATURAL EFFECTS CAN BE RELATIVELY LARGE (THE EFFECT OF WILDFIRES ON THE AUSTRALIAN NATIONAL INVENTORY)



### EXAMPLE OF THE EFFECT OF AGE CLASS NEW ZEALAND PRE-1990 FOREST



### ANNEX I REPORTING OF LULUCF UNDER THE CONVENTION



#### GROSS-NET WITH A CAP NO INCENTIVE TO DO BETTER



#### THE CAP AS PERCENTAGE OF TOTAL FM REMOVALS IN THE I<sup>ST</sup> COMMITMENT PERIOD



#### REFERENCE LEVEL AND A CAP OF 3,5 %



## FACTORS COUNTRIES COULD TAKE INTO ACCOUNT IN PROPOSING REFERENCE LEVELS

- a) Historical removals or emissions from forest management;
- b) Age-class structure;
- c) Forest management activities already undertaken;
- d) Projected forest management activities under business as usual;
- e) Continuity with the treatment of forest management in the first commitment period; and
- f) The need to exclude indirect effects.

#### ELEMENTS FOR FMRL CONSTRUCTION

- Pools and gases included
- Approaches, methods and models used
- Area under forest management
- Historical data from greenhouse gas inventory
- Forest characteristics and related management
- Historical and assumed harvesting rates
- Harvested wood products
- Natural disturbances
- Factoring out
- Domestic policies included up to 2009

## APPROACHES USED

- I. Projections using country-specific methodologies (17 Parties);
- 2. Projections using a common approach developed by the Joint Research Centre (JRC) of the European Commission (14 Parties);
- 3. Historical FMRL based on the single year 1990 (3 Parties);
- Average removals during the historical time series (1990–2009) (1 Party);
- Linear extrapolation of historical emissions data (1990–2008) of the forest land remaining forest land category used for reporting under the Convention (2 Parties);
- 6. Zero value, equivalent to gross—net accounting using a narrow approach (1 Party).

### EXAMPLE OF A COUNTRY SPECIFIC APPROACH USED

Forest area, age-class structure and carbon stocks allocated by species and age-class taken from the national forest inventory

A mathematic function for probabilities of rejuvenation of each management class based on forests census from 1990 and 2000

Assumes a constant distribution of species (no species change after rejuvenation)

Expected carbon stocks can then be calculated for each management class for each year 2013-2020 and annual net emissions and removals can be estimated based on the changes in carbon stocks

The forest management reference level is then the average of the eight years annual net emissions and removals

#### EXAMPLE OF A MODEL APPROACH USED

#### Forest area taken from national forest inventories

Main forest and forest management parameters (age structure, increment, historical harvest) were taken from national forest inventories or other country statistics

Future harvest demand under a business as usual (BAU) scenario was derived from key macroeconomic drivers (GDP, population), considering the policies and measures enacted by EU member states up to April 2009

The above input data (including the outputs from the GLOBIOM and PRIMES models), were elaborated by the two forest models (G4M and EFISCEN) to produce annual estimates of emissions and removals from FM until 2020

In order to ensure consistency between models. Results and historical data reported by the country, the emissions and removals estimated by the models for the entire time series (up to 2020) were calibrated. (i.e. adjusted) using historical data from the country for the period 2000-2008

### EU FOREST MANAGEMENT REFERENCE LEVEL (27 MEMBER STATES)



# TECHNICAL REVIEW (2/CMP.6)

 Guidelines for the submission and review of information on forest management reference levels/baselines

- Part I: Guidelines for submissions of information on forest management reference levels
- Part II: Guidelines for review of submissions of information on forest management reference levels

► 38 Parties submitted proposed reference levels

▶ 6 review teams organized by the UNFCCC Secretariat in May 2010

### **TECHNICAL REVIEW RESULTS**

- ▶ 21 Parties made changes to their reference levels as result of the review
- ► For 10 Parties the net removals increased
- For II Parties the net removals decreased
- ▶ Different reasons for Parties to revise their proposed reference level:
  - Inconsistency in area
  - Updates in age-class structure data
  - Updates of increment values
  - Corrected or updated harvest values
- The reviewers produced a review report for each Party and a synthesis report

## **TECHNICAL CORRECTIONS**

Consistency between the FMRL and the reporting for forest management is necessary to ensure that the two values are comparable.



The 2013 IPCC Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol provides guidance for detecting the need for technical corrections.

### **TECHNICAL CORRECTIONS**

► FMRLs are established by decision 2/CMP.7

A technical correction is a value of emissions and removals that should be added at the time of accounting to the original FMRL to ensure that the accounted emissions and removals do not reflect methodological inconsistencies

Many technical corrections can be expected since the accounting rules e.g. for the treatment of natural disturbances and harvested wood products were only agreed at CMP7 after Parties have submitted their proposed FMRLs



#### FOREST REFERENCE EMISSION LEVELS AND/OR FOREST REFERENCE LEVELS

- To assess performance and be expressed in tonnes of CO<sub>2eq</sub> per year
- Maintain consistency with national GHG inventories
- Take into account historical data, but may be adjusted for national circumstances
- Allow for a step-wise approach, i.e. countries may improve REL/RLs over time by incorporating better data, improved methodologies or additional pools
- Allow for the use of subnational forest REL/RLs as an interim measure

## STATE OF PLAY

Brazil submitted a proposed forests reference emissions level at SBSTA40 (June 2014) and the technical assessment is on-going and the assessment report to be expected to be completed by 25. November 2014

▶ More submissions are expected by 8th December 2014

### FOREST REFERENCE EMISSIONS LEVEL SUBMITTED BY BRAZIL

- Historic emissions over the period 1996-2005 based on a national monitoring system (PRODES). The system detects gross deforestation down to a minimum size of 6,25 ha equal to 250\*250 m.
- Sub-national (Amazon biome)
- ▶ 3 carbon pools: above ground biomass, below ground biomass and litter
- Assumes all carbon is lost
- Gross deforestation





### FOREST REFERENCE EMISSIONS LEVEL SUBMITTED BY BRAZIL

Allocation of deforestation to different forest types and knowledge on average carbon stocks for the different forest types increases the accuracy

Description (IBGE Vegetation Typologies)		
Aa	Aluvial Open Humid Forest	
Ab	Lowland Open Humid Forest	
As	Submontane Open Humid Forest	
Cb	Lowland Deciduos Seasonal Forest	
Cs	Submontane Deciduous Seasonal Forest	
Da	Alluvial Dense Humid Forest	
Db	Lowland Dense Humid Forest	
Dm	Montane Dense Humid Forest	
Ds	Submontane Dense Humid Forest	
Fa	Alluvial Semi deciduous Seasonal Forest	
Fb	Lowland Semi-deciduous Seasonal Forest	
Fm	Montane Semi-deciduous Seasonal Forest	
Fs	Submontane Semi deciduous Seasonal Forest	
La	Forested Campinarana	
Ld	Wooded Campinarana	
Pa	Vegetation with fluvial influence and/or lake	
Pf	Forest Vegetation Fluviomarine influenced	
Pm	Pioneer influenced Marine influenced	
Sa	Wooded Savannah	

Table 2: Forest typologies considered in the Amazonia biome.

	Forest Management Reference Level	Forest Reference Emission level/ Forest Reference Level
Objective	Accounting forest management under the Kyoto Protocol	Assess performance under REDD+
Units	Tonnes CO <sub>2eq</sub> per year	Tonnes CO <sub>2eq</sub> per year
Scale	National	National with subnational as an interim measure
Principles	<ul> <li>Information provided should be:</li> <li>Transparent, complete, consistent, comparable and accurate</li> <li>Allow a technical assessment of the data, methodologies and procedures used in the construction of FMRLs</li> <li>Improved models and data can be used during the accounting period but will need to be accompanied by a technical correction to be added to the accounting</li> </ul>	Information provided should be: • Transparent, complete, consistent and accurate • Allow a technical assessment of the data, methodologies and procedures used in the construction of REL/RLs Countries may use a step-wise approach to allow for improvements, e.g. incorporating better data, improved methodologies, or additional pools. REL/RLs should be updated periodically, taking into account new knowledge, new trends and any modification of scope and methodologies

	FMRL	REL/RL
GHG reporting	Consistent with general reporting principles of the Convention and IPCC guidelines.	Maintain consistency with GHG emissions and removals contained in national GHG inventories
Scope of activities	Forest management	Can include any or all of the 5 activities below; significant activities should not be excluded; must provide reasons for omissions. • Reducing emissions from deforestation • Reducing emissions from forest degradation • Conservation of forest carbon stocks • Sustainable management of forests • Enhancement of forest carbon stocks
Pools and gases	Pools can only be excluded if transparent and verifiable information can be provided that the particular pool is not a source; HVVP mandatory for projected FMRLs.	Information should be provided on pools and gases, and reasons for omitting any pool from the REL/RL, noting that significant pools should not be excluded.

#### **FMRL**

#### Information requested for submission to the UNFCCC

A description of approaches, methods and models, including assumptions, used in the construction of the FMRL, including how the elements below were taken into account: a) Removals or emissions from forest management as shown in greenhouse gas inventories and relevant historical data;

b) Age-class structure;

c) Forest management activities already undertaken;

d) Projected forest management activities under a 'business as usual' scenario;

e) Continuity with the treatment of forest management in the first commitment period;

f) The need to exclude removals from accounting in accordance with decision 16/ CMP.1, paragraph 1.

Points (c), (d) and (e) above applied where relevant.

Forest definition used.

Description of domestic policies adopted and implemented prior to December 2009, including how such policies are considered in the construction of the FMRL.

#### **REL/RL**

The information should allow a technical assessment of the data, methodologies and procedures used in the construction of a REL/RL and be guided by the most recent guidance from the IPCC as adopted or encouraged by the COP. This includes:

• Forest definition and explanation of why and how such a definition was chosen if different from that used in the national GHG inventory or reporting to other international organizations

• Data sets (including historical data) used

- Approaches, methods, models (if applicable, including assumptions used)
- Pools, gasses and activities included

• Details of national circumstances and if REL/RL was adjusted (from historical), details on how national circumstances were considered

• Information on the area included.

Descriptions of relevant policies and plans, and description of changes from previously submitted information.

#### **FMRL**

#### **REL/RL**

Objective of the technical assessment

To assess whether Parties have provided transparent, complete, consistent, comparable and accurate information on how the elements mentioned above were taken into account

 To ascertain whether construction of the FMRL is consistent with information and descriptions used by the Party • To provide, as appropriate, technical recommendations to the Annex I Party To support consideration by CMP.7of the FMRLs to be used during the second commitment period of the KP To assess whether Parties have provided transparent, complete, consistent, comparable and accurate methodological information to facilitate review of methodological consistency.

To assess the degree to which information provided by Parties is in accordance with the guidelines provided

• To offer a facilitative, non-intrusive, technical exchange of information on the construction of REL/RL

The technical assessment may be in the context of results-based payments and a technical analysis will further assess whether there are consistency between the results and the assessed REL/RL following decision 14/CP.19 on MRV.

#### **BASELINES AND REFERENCE LEVELS**

A lot of similarities between forest management reference levels for forest management under the Kyoto Protocol and forest reference emission levels and/or forest reference levels for REDD+ including on the construction and technical assessment/review of the proposed reference levels

## QUESTIONS

Please submit questions in writing using the IM function. Send messages to @All

A recording of today's webinar will be available at <u>http://ghginstitute.org</u> shortly. A link will also be emailed to registered participants.

The GHGMI webpage will contain an interactive comments section if you would like to continue the discussion or ask questions of the presenters.

For additional questions please email us directly:

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