Introduction

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Conférence internationale sur les changements d'occupation du sol et de biomasse forestière en Afrique centrale

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Des préoccupations qui ne sont pas nouvelles

Où sont les forêts, quelles superficies, Qu'y a-t-il dans les forêts ?

Environ un siècle de science occidentale, Plusieurs millénaires de savoirs traditionnels

- Usages surtout, peu de traces de géographie, peu d'indices sur les pratiques anciennes, peu d'harmonisation des connaissances. Le savoir oral se perd.

Nécessité d'organiser la collecte d'information.

- La période coloniale a beaucoup prospecté : bois, cires, peaux, viande, ivoire, caoutchouc…
- **2 valeurs seulement** traduites en mesures de conservation puis de gestion: bois et faune (Réserves forestières, réserves de faune), pour collecter l'information
- Selon les frontières : coloniales puis pays
- Objectif de **connaissance**, Quête de **ressources économiques**

Premières collectes de l'information forestière

La voie terrestre

Grands transects exploratoires : Echantillonnages, utilisation des statistiques

La voie aérienne

Photos à grande échelle, dès les années 50. Toujours mixte photo/terrain. L'usage des terres apparait dans la cartographie topo des pays

Puis le satellite : passage plus fréquent, nouvelles gammes d'onde, résolutions croissantes. Tension entre production ,capacités de traitement et stockage

Années 60-80 : Inventaires nationaux : méthodes systématiques

Années 80-2000 : Les outils de l'aménagement : l'inventaire, les normes : Stat, 95%

Après Rio 92 : Nouvelles demandes, mondialisation. Biens et Services des écosystèmes, Biodiversité, Dévt durable : environnement, social, économique : Nouvelles données nécessaires :

Les forêts ne sont pas que des arbres, mais aussi des construits sociaux

NB : La biomasse : paramètre de recherche / écosystèmes, mais pas encore d'enjeu social ou économique

Années 2000, années climat

Gaz à Effet de Serre-> le CO2 -> Déforestation

Le problème de l'état de l'art

« cf rapport Stern sur l'économie du changement climatique » 2006
« déforestation responsable de 20% des émissions de CO2 »
« Lutter contre la déforestation, moyen le moins coûteux et le plus simple de réduire les émissions de CO2 »
Aujourd'hui, 10% ? Lancerait-on la REDD avec les connaissances actuelles ?

Les données d'inventaires classiques ne suffisent pas

Besoin de mesures et de protocoles spécifiques

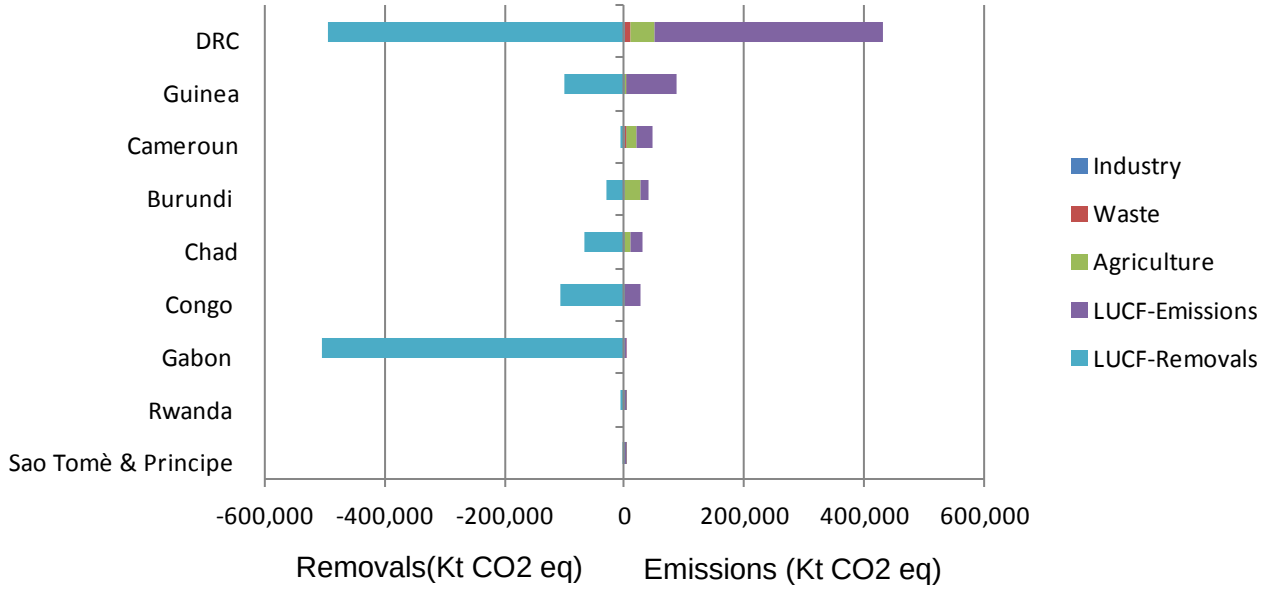
- **Echelle globale**, quelle contribution de l'Af centrale ?
- **Pays** : échelle mécanisme REDD, échelle de gouvernance. NAMA ? Plan climat
- **Local** : 3 territoires d'aménagement :
  - la **concession** : production de bois d'œuvre
  - **l'aire protégée**, : aménagement de la conservation
  - le **site REDD local volontaire** : aménagement multi-usage de la production de crédits carbone, pas de reconnaissance formelle, chevauche les 2 autres.
  - Quelle **intégration des communautés locales** ?

Role of Central Africa in global climate change

- Less than 4% of global CO2 emissions comes from Africa (Canadell et al 2009)
- LUCF sector contributes to 8% of global GHG emissions (Le Quéré et al. 2013)
- 17% of LUCF emissions comes from Africa (GCP, 2011)
- 1/3 of the tropical C sink results from the African tropical forests (Malhi, 2010)

Large source of uncertainties related to the combination of various sources of data and various methodologies, from bottom-up ecosystem inventories to land fluxes, biogeochemical models, and atmospheric inversions.

Emissions and removals as reported by the national communications



* No data available for Central African Republic

Status of national communications to the UNFCCC

Nat. Com.	Non-Annex I	CA Countries
1st	94	90
2nd	65	70
3d	3	0
4th	1	0
5th	1	0

https://unfccc.int/2860.php

Reporting GHG estimates under the UNFCCC

- Under the UNFCCC there are 2 channels for GHG data acquisition:

(1)GHG Inventory, annually submitted by Annex I Parties only (it is mandatory). A GHGI contains information on GHG emissions and removals.

>> subject to review & accounting procedure under KP

(2) National Communication, submitted by all Parties (however it is mandatory, every 4 years, for Annex I Parties only). >> subject to review

The review procedure:
Assists Annex I Parties in improving the quality
Ensures that the COP has adequate and reliable information

Future requirements under the UNFCCC (CP.16)

- Annex I Parties should submit a biennial report

The first biennial report due by 1 January 2014 and then every 2 yrs

>>subject to an International assessment and review process

- Non-Annex I Parties should submit a biennial update report

The first biennial update reports due by December 2014 &then every 2 yrs

>> subject to an international consultations and analysis

Home | CDM | JI | CC:iNet | TT:Clear

Your location: Home > National Reports

NEGOTIATIONS

Meetings

Documents & Decisions

Bodies

PROCESS

Essential Background

Kyo

Coo

Adaptation

National Reports

Reporting and review for Annex I Parties

National Communicatio (Annex I)

National Communicatio (Non-Annex I)

GHG Inventories (Annex

National Adaptation Programmes of Action

Accounting, Reporting & Review under the Kyoto Protocol

Initial Reports under the Kyoto Protocol

GHG Data

KEY DOCUMENTS

The Convention

Kyoto Protocol

National Reports

Content

Parties t

Confere

timetable for their submission are different for Annex I and non-Annex I Parties. This is in accordance with the principle of "common but differentiated responsibilities" enshrined in the Convention.

information on national circumstances, vulnerability assessment, financial resources and transfer of technology, and education, training and public awareness; but the ones from Annex I Parties additionally contain information on policies and measures.

secretariat.

Accurate, consistent and internationally comparable data on GHG emissions is essential for the international community to take the most appropriate action to mitigate climate change, and ultimately to achieve the objective of the Convention. Communicating relevant information on the most effective ways to reduce emissions and adapt to the adverse effects of climate change also contributes towards global sustainable development.

Latest National Communications

(UNFCCC).

more >>

COM/2 E

. Second national

nunication to the United

Nations Framework Convention on Climate Change.

more >>

Fifth National Communication

Read the latest

Fifth National

Data are published on the UNFCCC website; http://unfccc.int/national_reports/items/1408.php

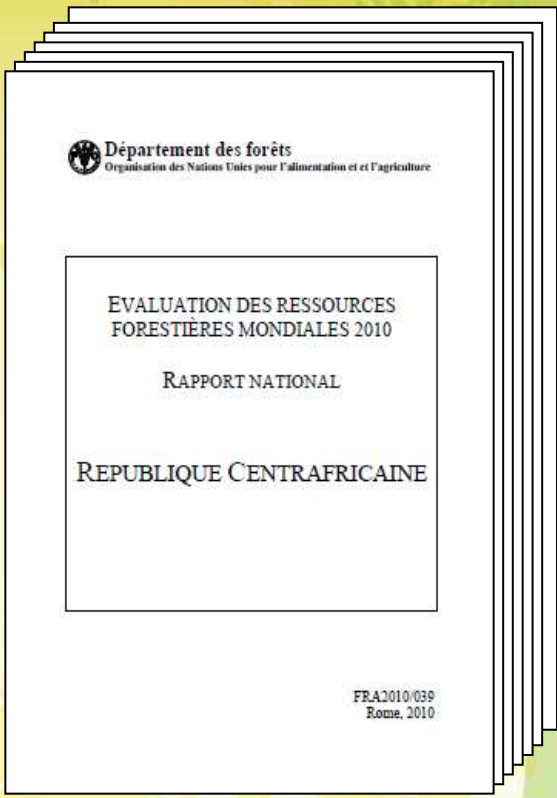
Data published are official data of the Party

Their consistency with other official statistics prepared by the Party under other national (e.g. statistical yearbook) and international initiative **(e.g. FRA)** has to be ensured.

Published data are used by the UNFCCC to assessing country progresses towards commitments and for assessing global trends of anthropogenic emissions and removals.

National Forest Resources Assessment in Central Africa

- Data at national level
- FRA 2010 dataset – data officially submitted by countries to FAO. Note that FRA data come from the countries, **they are not FAO data.**



Countries are requested to provide best possible estimates:

- NFI or RS data on forest area;
- NFI data on stocks per hectare when available;
- National data / equations on volume and biomass whenever possible;
- If not available, best possible volume estimate and application of national BCEF or as a last resort, default BCEF values from IPCC 2006.

The bottleneck is, and has always been, **the availability of robust country data**

Guidelines for country reporting available at:
http://www.fao.org/docrep/010/k1276e/k1276e00.htm

Forest estimates

Forestry

cirad

National Forest Inventory

- NFI Sao Tome & Principe 1990
- NFI Cameroon 2003-2004
- NFI Congo : under progress
- Pre-NFI DRC: under progress

Forest land area estimates

Countries	FRA (2005-2010)	FRA Years of estimates	Etat des forêts (2000-2005)
Burundi	-1.01	1977, 2001, 2005	-
Cameroon	-1.07	1975, 1999	-0.03
CAR	-0.13	1994, 1999	-0.06
Chad	-0.67	1988, 1999	-
Congo	-0.05	1980, 1999	-0.07
DRC	-0.20	1990, 2000, 2005	-0.22
Eq. Guinea	-0.71	1990, 1998	-
Gabon	0	1990	0
Rwanda	2.47	1960, 1970, 1980, 1990, 1996, 1999, 2001, 2005	-
Sao Tome & Principe	0	1990	-

Among the different sources of data for forest land assessment:

- Etat des forêts 2008: 2/10
- Support from FAO: 5/10
- Oldest source: 1960
- More recent: 2008

Afforestation/ reforestation

- 4/10 do not report information

Several countries do not have trend data & have assumed an annual deforestation rate – a couple of countries even assumed zero deforestation

Forest estimates

Volume, biomass and carbon stock calculation

Countries	Volume		Biomass					
	Total (million m3)	Years of estimates	C stock in biomass (million tonnes)	AGB	BGB	Litter	SOC	Source
Burundi	20	1994, 1997	17	D	D	-	-	IPCC 2006
Cameroon	6141	2004, 2005, 2	2696	Functions	D	D	D	FAO 2005/IP
CAR	3776	1990, 1996, 1997, 2008	2861	D	D	D	D	IPCC 2006
Chad	211	1989, 2003	635	D	D	D	D	IPCC 2006
Congo	4539	2004, 2009	3438	D	D	-	-	IPCC 2006
DRC	35473	1999	19639	D	D	D	-	IPCC 2006
Equatorial Guinea	268	1993, 1994	203	D	D	D	D	IPCC 2006
Gabon	4895	1999	2710	D	D	D	D	IPCC 2006
Rwanda	79	2006	39	BEF + WD	D	D	D	IPCC 2006
Sao Tome & Principe	5	1990	4	D	D	-	-	IPCC 2006

D means default, AGB: aboveground biomass, BGB: belowground biomass, Dead wood is not reported, carbon content is 0.47 (IPCC, 2006)

Almost all countries do not use country specific values, most estimates are old and focus on volume estimates – not biomass, no country specific BEF/BCEF

Forest estimates

Estimation of fires, timber extraction and non-timber forest products

Countries	Fires	Other perturbations	Timber extracted	NTFPS
Burundi	2001, 2006	-	2003-2004	-
Cameroon	2005	2005	2000, 2004, 2006	2007
CAR	-	-	1997-2007	-
Chad	1993, 1999	-	1981, 1988	2001, 2007
Congo	1990	-	1990, 2000, 2004 & 2009	1990, 2000, 2004 & 2009
DRC	-	-	1988-2007	-
Eq. Guinea	-	-	1992, 2008	2007, 2009
Gabon	-	-	1988-2007	-
Rwanda	2003	-	1988, 1997, 2000	1999, 2000, 2001
Sao Tome & Principe	-	-	2001	-

Most countries do not have data on forest fires, only one country posses data on other perturbations

Forest estimates

Conclusion

- Most countries assess forest land area change using linear extrapolation.
- For most countries, the latest forest land area estimation was made during1999/2000.
- Most countries completely lack growing stock data useful for national estimates.
- Most countries rely on default values and partial inventory data for their growing stock estimates.
- Biomass and carbon estimates are in most cases based on the growing stock figures.
- Only a one countries have used national biomass data.
- Only one country used biomass functions.
- Forest fires and other perturbations are not commonly considered.

Forest carbon stock & its changes

Country	Carbon in AGB (million t) FRA	Carbon in AGB (million t) Saatchi	Carbon in AGB (million t) Henry*
Burundi	19	70	64
Cameroon	2993	3748	3559
CAR	2898	2427	1512
Chad	677	436	50
Congo	3461	3218	3348
DRC	20036	17719	22056
Eq Guinea	217	383	384
Gabon	2710	3376	3426
Rwanda	18	70	72
Sao Tome & Principe	4	8	11

Saatchi S, Harris NL, et al (2011). Henry (2010). FAO (2010)

Accounting & reporting objectives of REDD+

- **Report** the **anthropogenic impact on carbon-stock changes in, and other emissions from, forest carbon pools**

- **Account for the change**, **in carbon-stock changes** and **other emissions**, associated with **mitigation actions**

- To ensure comparability among accounted quantities, we need **to calculate estimates** that are **systematically neither over nor under the true value** so far **as can be judged and** with an **associated uncertainty reduced** so far **as practicable**

- **There is not any reference to conservativeness in COP decision related to REDD+ activities**
- However, COP Decision taken in Warsaw on FRL ask for providing justification of why omitted pools and/or activities were deemed not significant; **which means that non-significant pools may be excluded from accounting**

REDD+ under the UNFCCC

Elements requested to be developed

The Cancun Agreements (Decision 1/CP.16)

"….requested developing country Parties aiming to undertake the REDD+ activities, […], to develop:

- *A national strategy or action plan*
- *Forest reference emission level and/or forest reference level*
- ***A robust and transparent national forest monitoring system for the monitoring and reporting REDD+ activities***
- *A system for providing information on how the safeguards are being addressed and respected"*

"…*establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of* ***national forest monitoring systems*** *that:*

- ***Use a combination of remote sensing and ground-based forest carbon inventory*** *approaches for estimating, as appropriate, anthropogenic forest-related greenhouse gas emissions by sources and removals by sinks, forest carbon stocks and forest area changes;*

According to Decision 4/CP15: to use the most recent **IPCC guidance and guidelines**, as adopted or encouraged by the COP.

Functions for the National Forest Monitoring System

Establish & maintain IA	Ensure	Designate	Make available	Assign responsi-bilities
Elaborate a QA/QC plan	Establish processes	Improve-ment plan	Analyze	Estimate in accordanc e with GL
Complete data collection	Assess quality	Report	Control	Review
Improve-ment based on review	Archive	Make accessible	Transpa-rency	Security

Toward sustainable forest monitoring systems

Forestry

cirad

Meteorology

Forestry

Disease (malaria)

POPULATION CENSUS

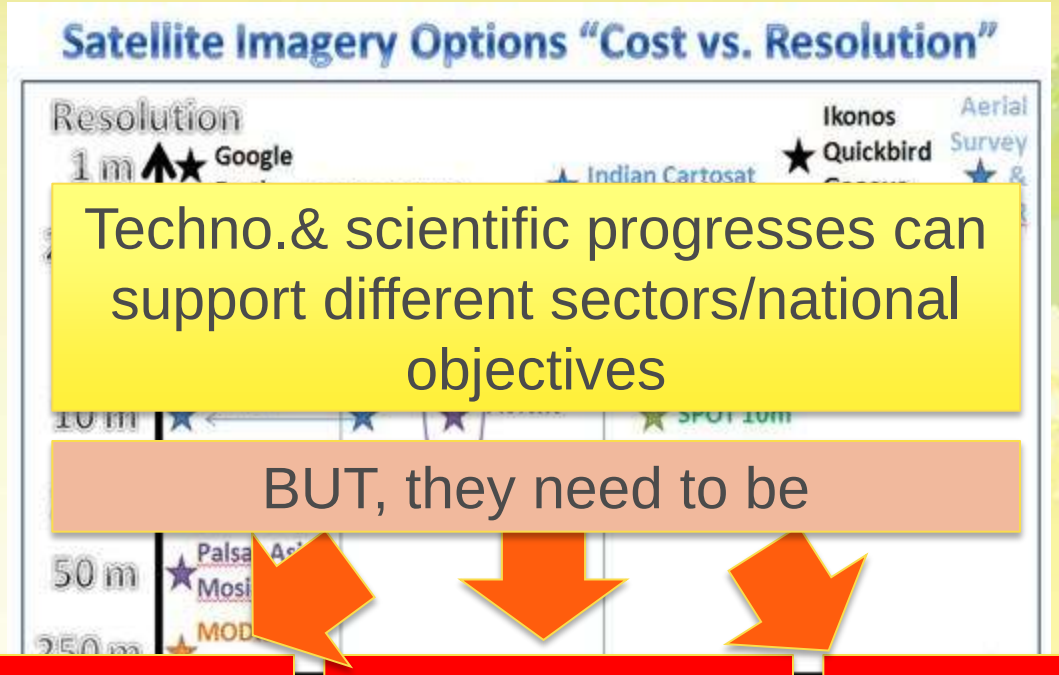
Biodiversity

HYDROPOWER

FLOOD RESPONSE

Urban & Landuse Planning

Border Mapping
National Defense



Techno.& scientific progresses can support different sectors/national objectives

BUT, they need to be

ADOPTABLE

ADAPTABLE

FEASIBLE

AND REQUIRE

AN ADEQUATE INSTITUTIONAL & LEGAL FRAMEWORK

Mesurer la forêt et la biomasse : quels besoins, pour qui ?

Impossible de tout mesurer

1) L'échantillonage et l'extrapolation restent [encore ?] obligatoires
2) Le changement d'échelle est difficile : arbre, parcelle, forêt, paysage, pays, région..

Meilleure synergie terrestre/aérien-satellite

-Inventaires forestiers, échantillonage des allométries…
Comment faire un bilan carbone d'écosytèmes complexes, évolutifs, en interaction nature x société
-Mesurer des stocks et des flux, avec une fenêtre étroite d'archives (30 ans)
-Précision, Répétabilité, Coût / Efficacité

Innovation : Recherche -> Prototypes -> Produits opérationnels -> Appropriation
Les décideurs, négociateurs ont besoin de données de référence
Af centrale : OFAC, cadre concerté, formel entre les Etats
EDF 2013 : près de 10 équipes sur la mesure des forêts
Harmoniser, Synergies, échanges, éviter les redondances
Trop de sources, déconnexion des besoins : obstacles à l'appropriation

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