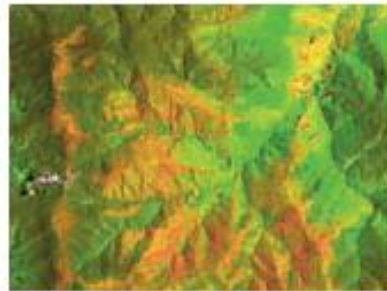


# SOURCEBOOK



Reducing Greenhouse Gas Emissions from Deforestation and  
Degradation in Developing Countries: A Sourcebook of Methods  
and Procedures for Monitoring, Measuring and Reporting



# GOFC-GOLD

Global Observation of Forest and Land Cover Dynamics



## REDD sourcebook : background and development process



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# What is GOFC-GOLD?

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- GOFC-GOLD is a coordinated international effort:
  - to ensure a continuous program of space-based and on-the-ground forest and land cover observations for global monitoring of terrestrial resources and the study of global change.
- A technical panel of the Global Terrestrial Observing System (GTOS)
- A network of participants implementing coordinated research, demonstration and operational projects
- A vision to share data, information and knowledge, leading to informed action and decision support
- GOFC-GOLD operates through:
  - Executive committee, Science and technical board
  - Implementation teams and 3 project offices (CA, US, Germany)
  - Dedicated working groups (i.e. on REDD, GEO etc.)
  - 6 Regional networks

# Reducing emissions from deforestation

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- 2005: Establishment of GOFC-GOLD REDD working group
- 3 GTOS submissions to UNFCCC/SBSTA (2006, 2007, 2008):
  - *Promote satellite monitoring as objective and efficient approach in developing countries*
  - *Forest changes can be monitored with confidence for assessing and comparing historical and future rates of deforestation*
  - *Consensus technical guidance are in development (REDD sourcebook)*



# Sourcebook rationale

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1. Consensus perspective from earth observation & carbon measurement and accounting experts:
  - 1. draft (Dec. 07): 14 authors from 11 organizations
  - GOFC-GOLD platform to formulate scientific and technical consensus
  - User-friendly synthesis of technical procedures
2. Bali status of negotiations and UNFCCC approved methodologies and definitions

# Sourcebook objectives

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1. to provide transparent methods that are designed to produce estimates of changes in forest area and carbon stocks from deforestation and degradation
  - in a format that is user-friendly
2. to complement the IPCC GPG-LULUCF (2003) and IPCC Guidelines-AFOLU (2006) by providing additional explanation, clarification and enhanced methodologies for obtaining and analyzing key data
3. to support REDD early actions and readiness mechanisms on national level

# Gross carbon emissions (concept)

Gross carbon  
emissions

Gross deforestation

Gross degradation

$$C_{gr\_em} = \left( \sum_{i=1}^m A_{loss(i)} \cdot C_{loss(i)} \right) + \left( \sum_{j=1}^n A_{dgr(j)} \cdot C_{dgr(j)} \right)$$

$A_{loss}$  = Area of deforestation (ha)

$C_{loss}$  = Carbon emission from deforestation (t/ha)

} for forest types  $i \dots m$

$A_{dgr}$  = Area affected by degradation (ha)

$C_{dgr}$  = Carbon emission from degradation (t/ha)

} for degrad. types  $j \dots n$

Area change is most dynamic: needs to be observed  
from satellite !

# Foundations of the sourcebook

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1. Historical reference can be done consistently from 1990s onwards with confidence:
  - As minimum use 1990/2000/2005 Landsat for historical reference
2. Global applicability; national conditions require use of different sensors, methods, and capacity building
3. Account for carbon emission in forest areas on a national basis:
  - Satellite data analysis to estimate forest area change
  - Data on carbon stocks (ground-based)
4. Measurement and monitoring system should be simple and provide conservative estimates



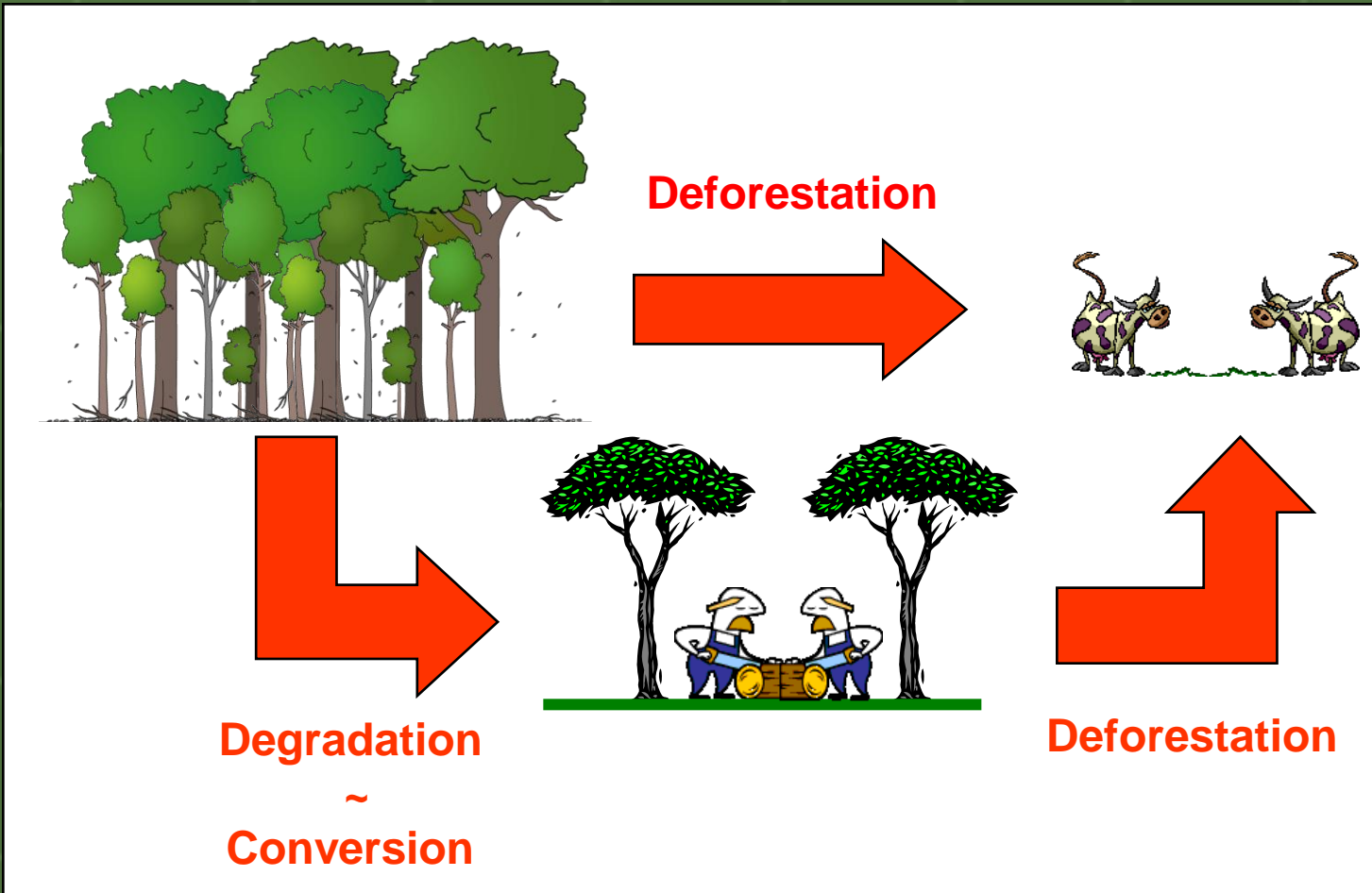
# Sourcebook status

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1. Current draft presented in Bali for open review:
  - [www.gofc-gold.uni-jena.de/redd](http://www.gofc-gold.uni-jena.de/redd) (Registration required)
  - Experts are invited to provide feedback
2. Starting point for discussing and defining an appropriate monitoring framework, and to support early actions
3. Revision is ongoing:
  - Address comments and feedback received
  - Add and update sections (national inventories, fire, evolving technologies, soil carbon, accuracy assessment)
4. Further methods and technical details may be specified and added with evolving negotiations and decisions
5. Next side event anticipated for June 2008 at SBSTA 28

# Process definition after Montreal COP11

**REDD:** to account for gross carbon emission reductions and non-CO2 emission reductions only in existing forest areas on a national basis.



# Sourcebook format

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## Table of Content (current)

### ***1 Purpose and Scope of the Sourcebook***

### ***2 Issues and Challenges***

### ***3 Guidance on Monitoring of Gross Changes in Forest Area***

- Monitoring of Gross Deforestation

- Monitoring of Forest Degradation

### ***4 Estimation of Carbon Stocks***

- Overview of carbon stocks, and issues related to C stocks

- Which Tier Should be Used?

- Stratification by Carbon Stocks

- Estimation of Carbon Stocks of Forests Undergoing Change

- Uncertainty

### ***5 Methods for estimating CO2 Emissions from Deforestation and Forest Degradation***

- Linkage to 2006 IPCC Guidelines

- Organization of this Chapter

- Fundamental Carbon Estimating Issues

- Estimation of Emissions from Deforestation and Forest Degradation

- Estimation of uncertainties

### ***6 Guidance on Reporting***

- Issues and challenges in reporting

- Overview of reporting principles and procedures

- What are the major challenges for developing countries?

- The conservativeness approach



**GOFCC-GOLD**

# Process definition after Montreal COP11

11. *Notes* the further consideration, under decision X/CP.13, of policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries;



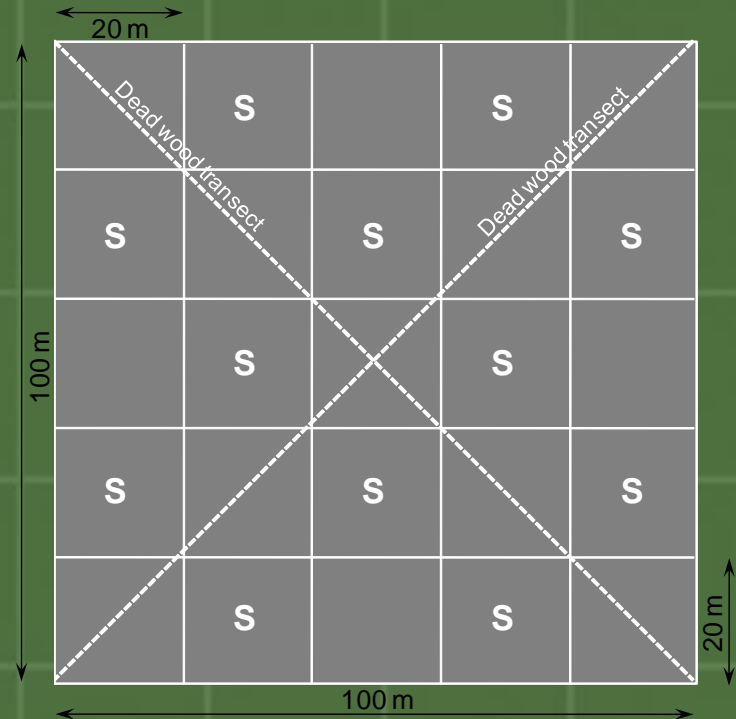
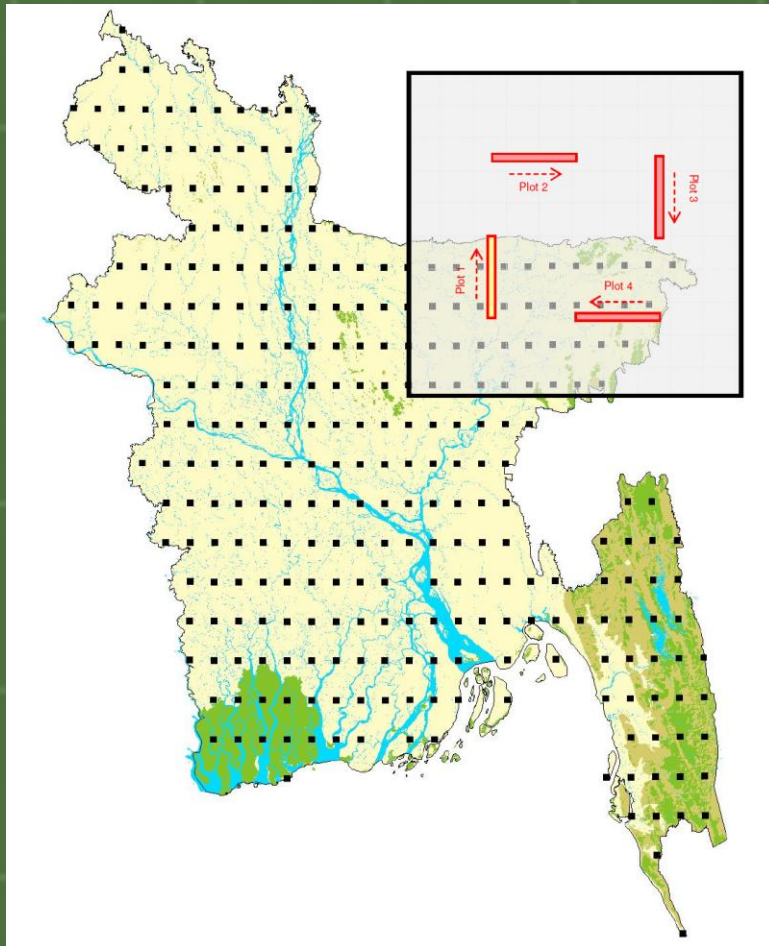
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## Steps forward:

- In the next years many capacity building activities will take place at global and country levels
- For the Sourcebook updates, particular attention will be put on tools to implement national level monitoring

# New chapters or appendixes:

- Carbon stocks inventories





# The sourcebook and the intergovernmental process

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- 28 countries did a reference to the Sourcebook in their March 2008 submission of views on outstanding methodological issues related to REDD
- For example (submission of Canada):  
*Canada recognizes the contribution of the REDD working group of "Global Observation of Forest and Land Cover Dynamics" (GOFC-GOLD), a technical panel of the Global Terrestrial Observing System (GTOS), in the on-going development of a Sourcebook of Methods and Procedures for Monitoring, Measurement and Reporting on REDD. A request from SBSTA to the IPCC for methodological guidance for REDD should include a recommendation that the IPCC consider the work carried out by GOFC-GOLD."*
- The IPCC Inventory team recognized the efforts done by the remote sensing scientific community to better understand the UNFCCC assessment and reporting requirements. A related background paper has been presented in the IPCC LULUCF workshop in May 2008.

# Next GOFC-GOLD symposium

3<sup>rd</sup> GOFC-GOLD Land Cover Symposium , 13-17. Oct. 2008, Jena, Germany

## Agenda overview

Day	Morning	Afternoon
Monday, 13 October	Workshop on Monitoring Tropical Deforestation and Degradation (REDD)	Workshop on Monitoring Boreal Forests
Tuesday, 14 October	GOFC-GOLD/CEOS Workshop on Land Cover Change Accuracy Assessment	GOFC-GOLD Strategic Meeting - Review
Wednesday, 15 October	Land Cover Symposium	
Thursday, 16 October	Land Cover Symposium - Break out group discussions	Land Cover Implementation Team Meeting (internal)      GOFC-GOLD Strategic Meeting - Conclusion
Friday, 17 October	LCCS and harmonization workshop & Regional Network Meeting	

More info: [www.gofc-gold.uni-jena.de/](http://www.gofc-gold.uni-jena.de/)

