



Not for timber alone - The Role of Forests in Climate Change

A comprehensive overview

Climate Investment Funds
First Design Meeting on the Forest Investment Program
Washington, DC. October 16-17, 2008

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Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Staatssekretariat für Wirtschaft SECO



Land and Forests (2007)

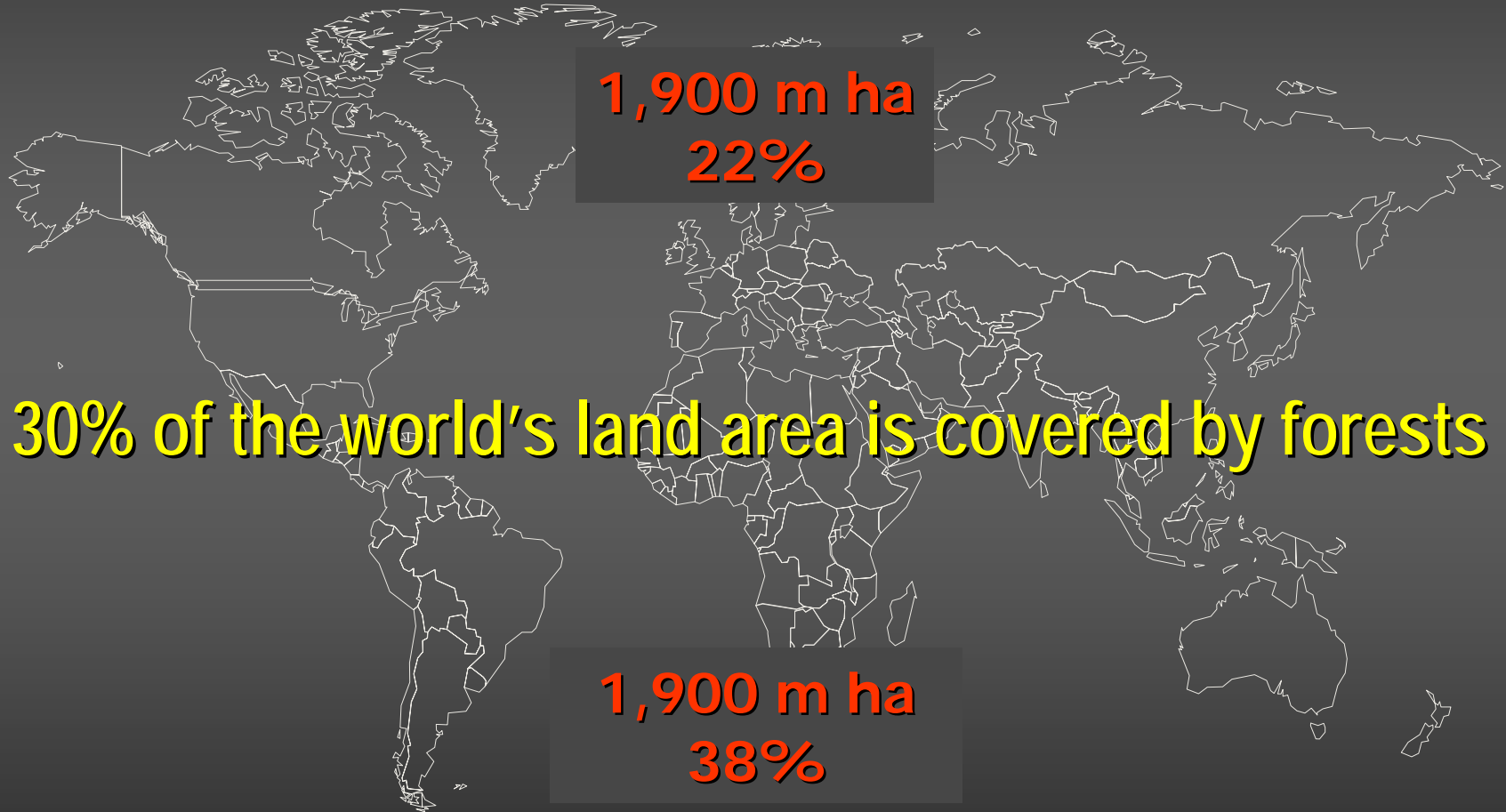
« North »: temperate and boreal

1,900 m ha
22%

30% of the world's land area is covered by forests

1,900 m ha
38%

« South »: tropical and subtropical



Forests in a land-use continuum

500 million people directly depend on forest resources for their livelihoods

50 million people (in particular indigenous communities) live within forest massifs

Forest can sequester carbon from the atmosphere helping to mitigate climate change



1.8 billion people (1.3 in the tropics) earn part of their subsistence from forests and trees

Forest plays an important role in reducing vulnerability of livelihoods

Up to 20% of the GHG come from deforestation and forest degradation in tropics/subtropics

Forests (biomass and soil) stock between 430-540 Pg of carbon. Maintaining these reservoirs is key

The central role of forests in climate change



Forests are vulnerable

Impacts on ecosystems, people and the wood chain



Forests emit GHG



Second most important source of GHG emissions

Forests can increase resilience of people and ecosystems (=adaptation),
fix and maintain carbon (= mitigation)



**Mitigation and adaptation options in the forest sector
need to be fully understood and used in the context of
promoting sustainable development**

Forests in Climate Change:

Forests can increase resilience, fix and maintain carbon

- ⇒ If average CO₂ concentration continues to increase to 550 ppm or higher, forests will become highly vulnerable → high risk that GHG sinks become sources of GHG emissions
 - Forests are a mitigation option now and over the next 30 to 40 years, a necessary transitional measure towards a low carbon economy
 - Need to increase resilience of forest trees and ecosystems at the same time as using forests as a mitigation option.
- ⇒ Nevertheless, presently, the potential of forests as a mitigation option is huge (REDD, Afforestation/Reforestation, Forest Restoration; SFM)
- ⇒ **How to deal with these new risks and potentials, considering the many governance issues prevailing in forests (rights, tenure, access, land use planning, benefit sharing, law enforcement...)?**

The role of SFM in climate change

Adaptation

Maintaining and increasing ecosystem resilience – reducing vulnerability

⇒ Forest ecosystems are affected by climate variability/change:

What are the direct and indirect impacts

- forest-dependent people?
- on the forestry production chain?
- at the landscape level?

⇒ How can forests and trees contribute to reduce vulnerability (of social systems and ecosystems)?



→ A forest management agenda that includes a CC adaptation analysis and measures can increase the value of forests

"Avoid the unmanageable and manage the unavoidable.." (Sigma Xi)

Mitigation Options in Forestry

(fix and maintain carbon in the vegetation and soils)

Mitigation options (general)	Forest mitigation options in UNFCCC/KP	Forest management options
Reduction of GHG emissions	Reducing emissions- from deforestation and forest degradation	Sustainable management of (existing) forests
		Committing forests for REDD
Carbon Sequestration	Afforestation (CDM)	Plantations, agroforestry
	Reforestation (CDM)	
	?	Forest restoration, committing forest for C enhancement
Carbon substitution	Bioenergy Substitution through wood products	NTFP management, Biofuel plantation, sustainable wood production

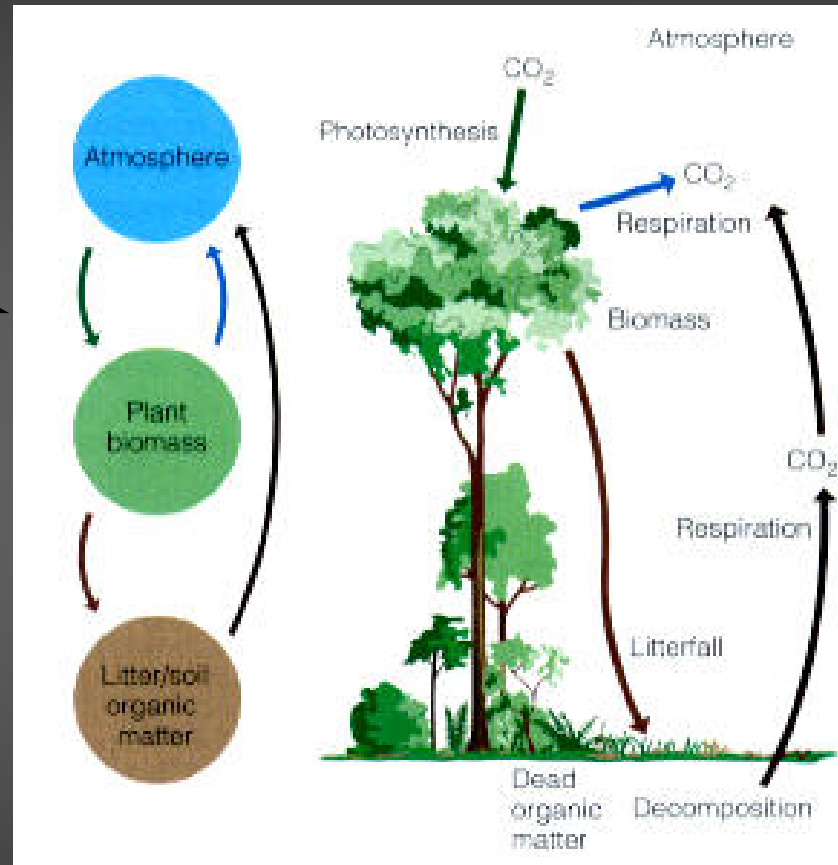
Carbon cycle in the forest

Source



Emissions:

- Deforestation
- Degradation
- Devegetation



Sink



Sequestration

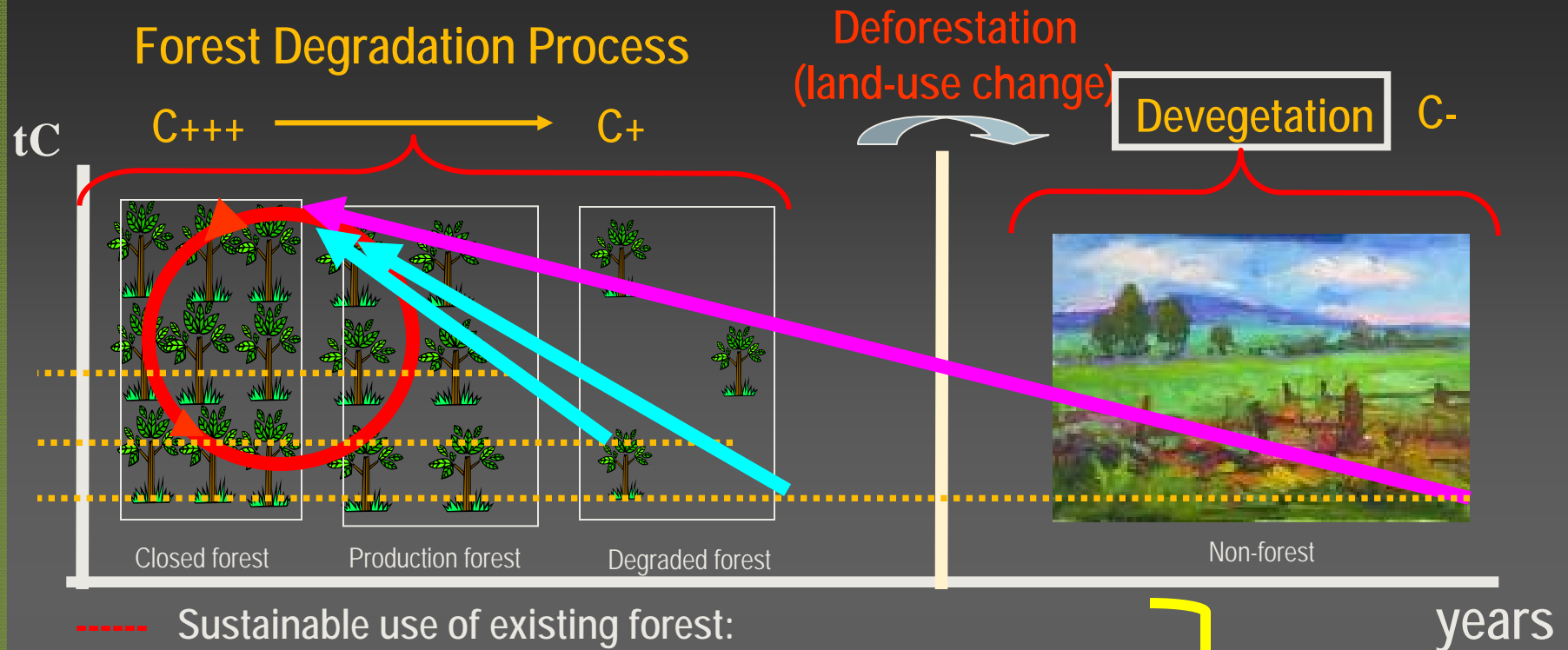
- Biomass (AGB + BGB)
- Litter
- Dead wood
- Soil



Substitution

- Bioenergy
- Substitution with wood products

Forest Degradation Process



----- Sustainable use of existing forest:

REDD → 3.76 GtCO₂e per year, about 77 GtCO₂e until 2030

Silvicultural Mgtm. → 6.6 GtCO₂e until 2030

----- Forest Restoration: Carbon sequestration

→ Not clearly considered as a mitigation option yet

→ estimated at 117 GtCO₂e up to 2030

----- Plantations & Agroforestry: Carbon sequestration

→ included in A/R CDM

→ min. 18.7 GtCO₂e up to 2030

Substitution: Potential in bioenergy is uncertain
Substitution through wood is not accountable yet

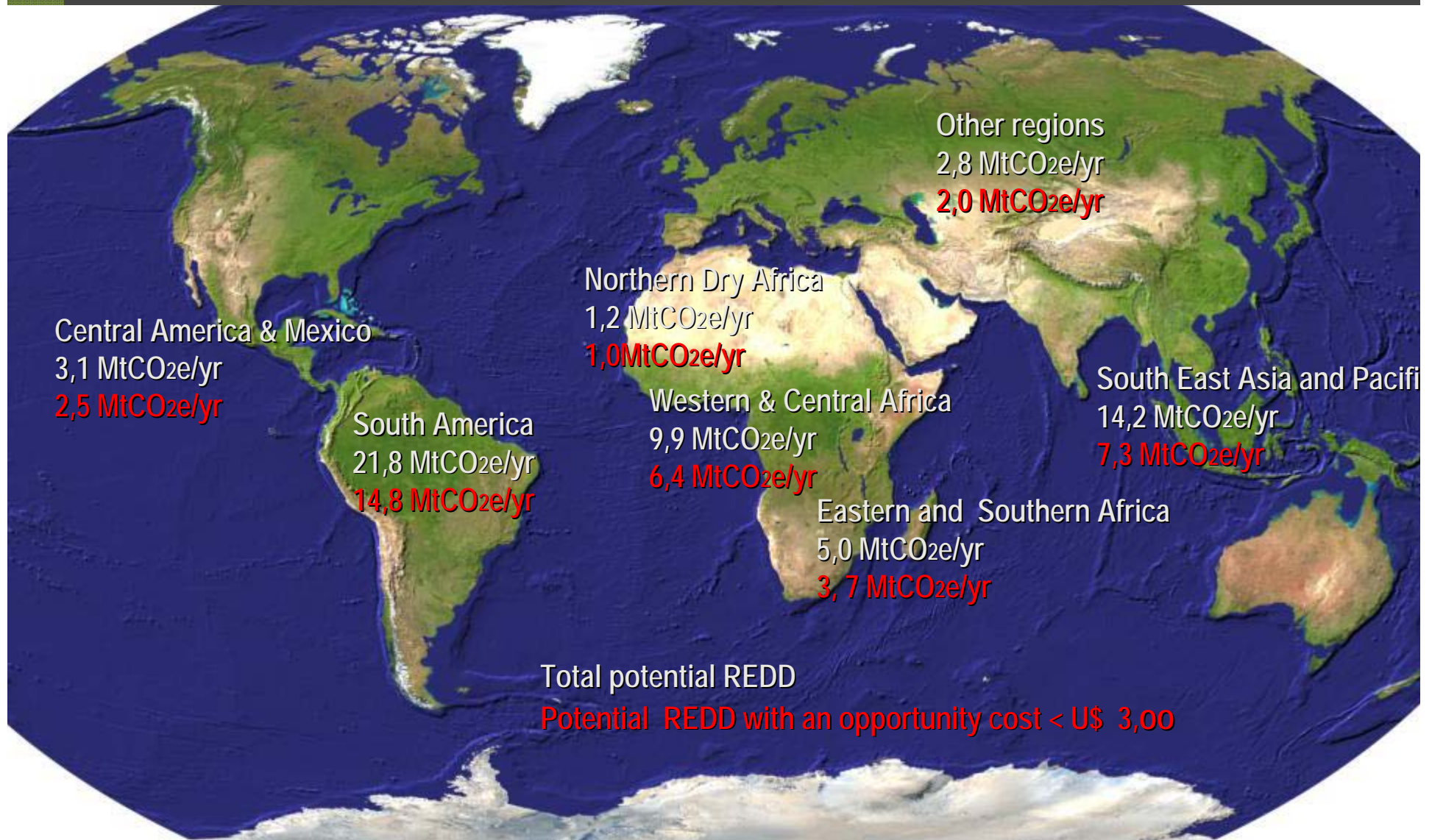
Mitigation
Options in
Non-Annex I
countries

(1) Emission Reduction: redd

- ⇒ Not all deforestation is undesirable. Deforestation is needed to feed people, to contribute to economic development (more actual than ever) However, deforestation should be discouraged when:
- it is not efficient from an economic viewpoint;
 - the land use it is connected to is unsustainable;
 - it is a threat to environmental stability; and
 - it leads to social inequities and conflicts.



Forest-based mitigation potential (REDD)



(2) Carbon sequestration: Planting trees and forests

⇒ Reforestation, Afforestation

- From non-forest to forests, e.g. according to CDM rules



⇒ Forest Restoration

- From degraded forests to fully carbon stocked forests

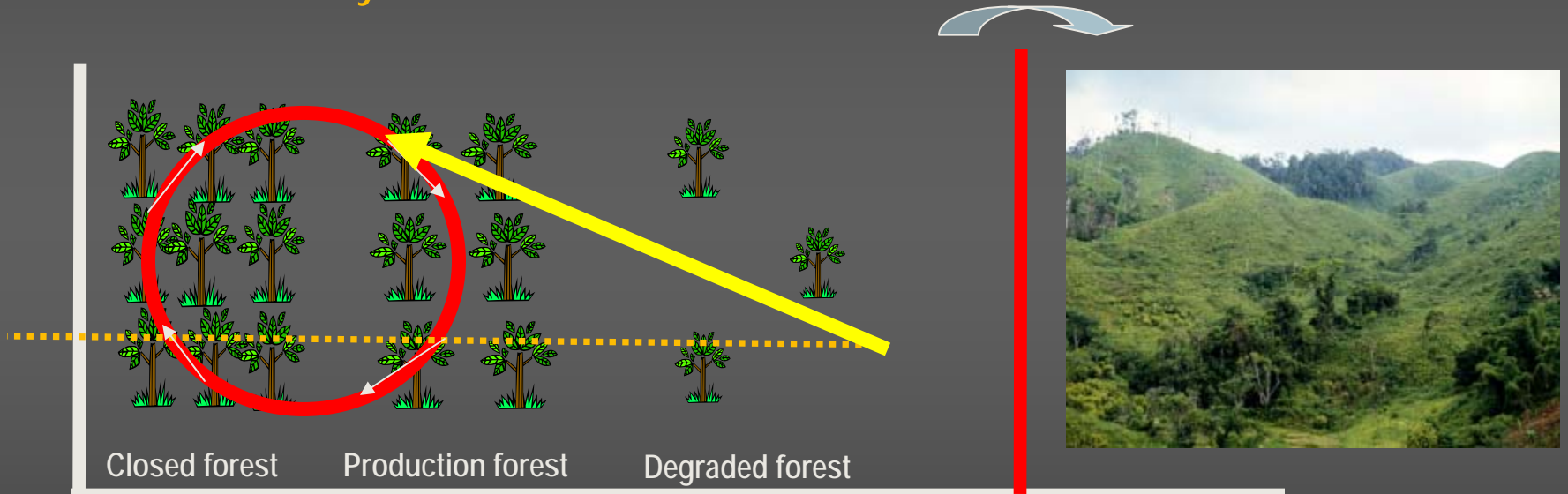


(3) Forest Restoration

Forest Degradation Process

Carbon	+++	—————→	+
Protective functions	+++	—————→	+
Biodiversity	+++	—————→	+

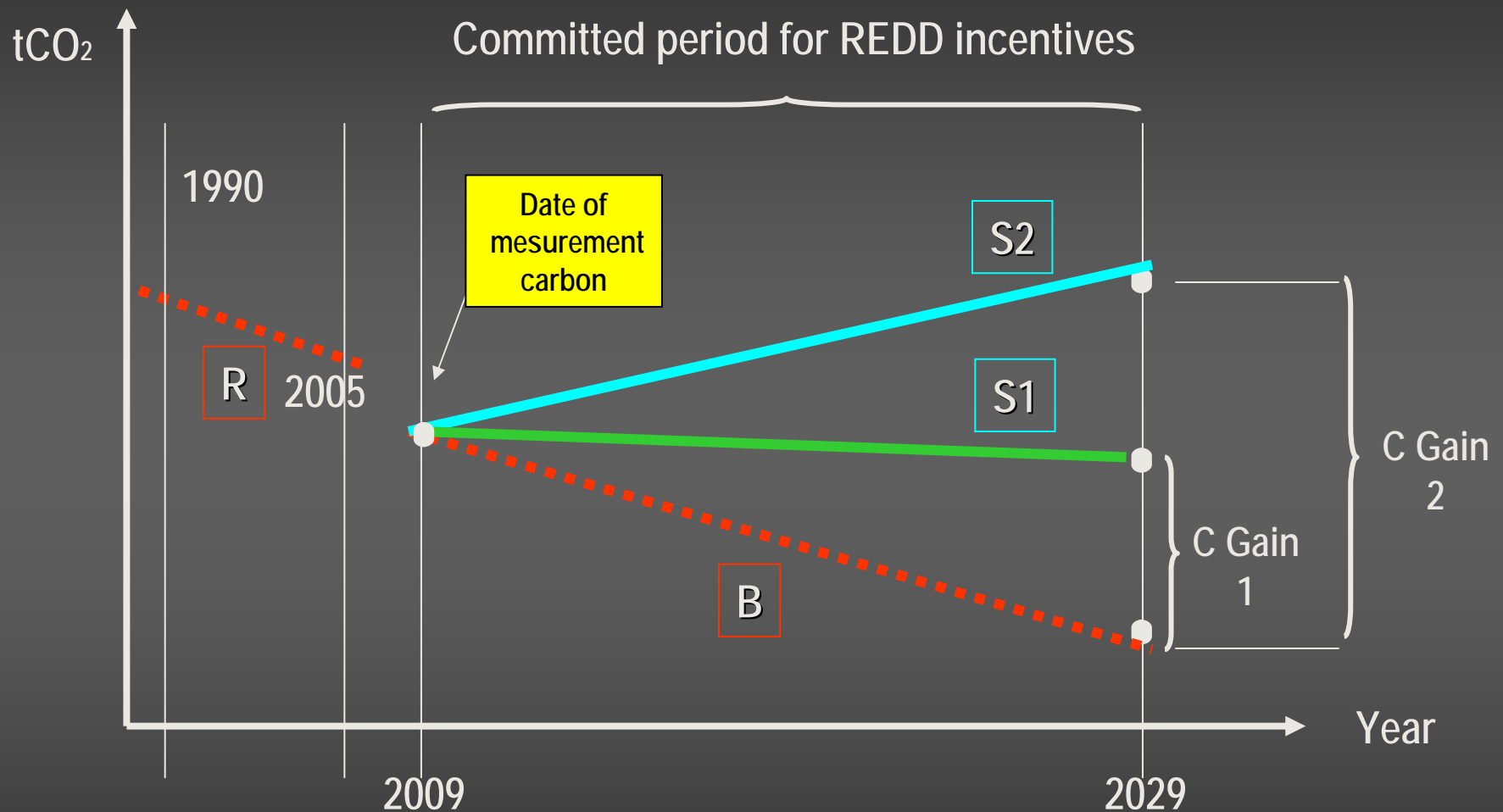
Deforestation
(land-use change)



Forest Restoration Process

○ Sustainable Forest Management

Forest-based mitigation options at landscape level: Combining reddy and carbon sequestration



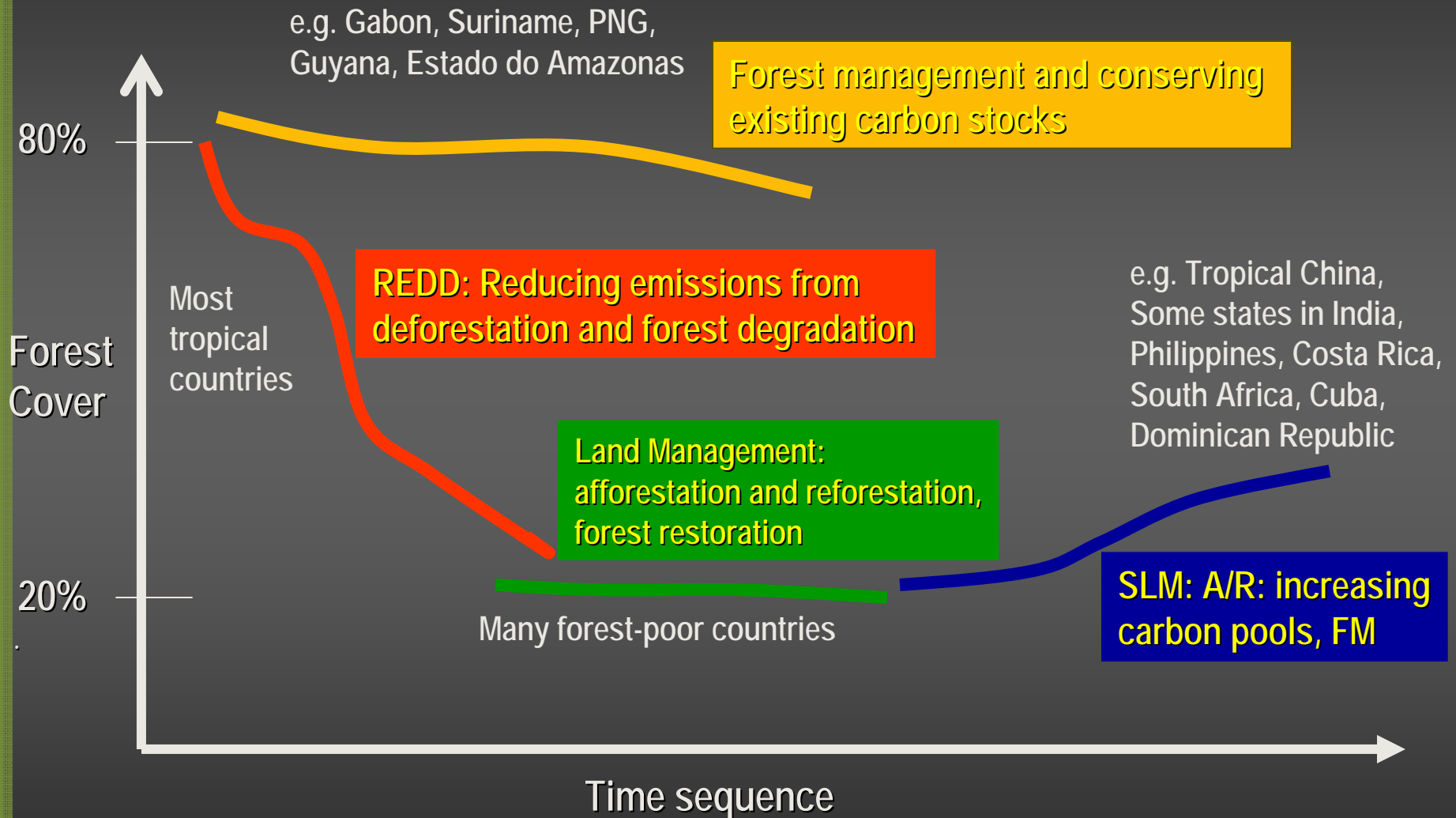
R: Setting a baseline of DD

B: Baseline DD without REDD

S1: Scenario 1: based on C potential and local stakeholders objectives: low priority in respect to committing forests: Forest conservation

S2: Same as S1, but high stakeholder priority in respect to committing forests: Forest restoration

Tropical countries' forest endowment: Distinct situations, different approaches needed



A variety of mitigation options exist in the developing countries;
Adaptation as an issue in all situations

What has already been agreed?

Agreements for the First Commitment Period of the Kyoto Protocol (2008–2012)

- ⇒ **Annex I (industrialized countries) → committed countries of the KP**
 - Forest management (Art. 3.4)
 - Afforestation, Reforestation and Avoided Deforestation (Art. 3.3)
 - Bioenergy
- ⇒ **Non-Annex I (developing countries)**
 - Using the CDM
 - Afforestation and reforestation (11 approved methodologies)
 - Bioenergy (1 approved methodology yet)
 - Piloting REDD → FCPF, UN-REDD, voluntary market

The use of wood products is not eligible at all for the first commitment period (neither Annex I, nor non-Annex I countries)

What is under negotiation – to be negotiated?

**Post 2012 Regime → to be agreed by COP 15 in
Copenhagen in end of 2009**

⇒ **Bali Action Plan and Forests (December 2007)**

- Which countries will agree to make commitments?
- Which forest mitigation options will be eligible in industrialized countries?
 - Role of harvested wood products
- Which forest mitigation options will be eligible in developing countries?
 - REDD and payment mechanisms
 - Simplifying the CDM (including A/R)
 - Role of other forestry activities such as SFM and forest restoration

Summary:

Forest-based Carbon (as Mitigation options)

Mitigation options in forestry:

- REDD
- Forest restoration
- A/R
- Forest management
- Biofuels
- Wood products



Open questions, e.g.:

- land tenure and ownership of carbon credits
- incentives: design, C allocation, distribution
- integral approach to SFM: TFP, NTFP, ES
- methods for C accounting
- methods for combining forest and energy projects

What
potential
for interested
forest
stakeholders?

Quantity-oriented carbon markets:

- regulatory (Kyoto) market (CERs)
- voluntary market (VERs)
- Market approach
- Fund approach

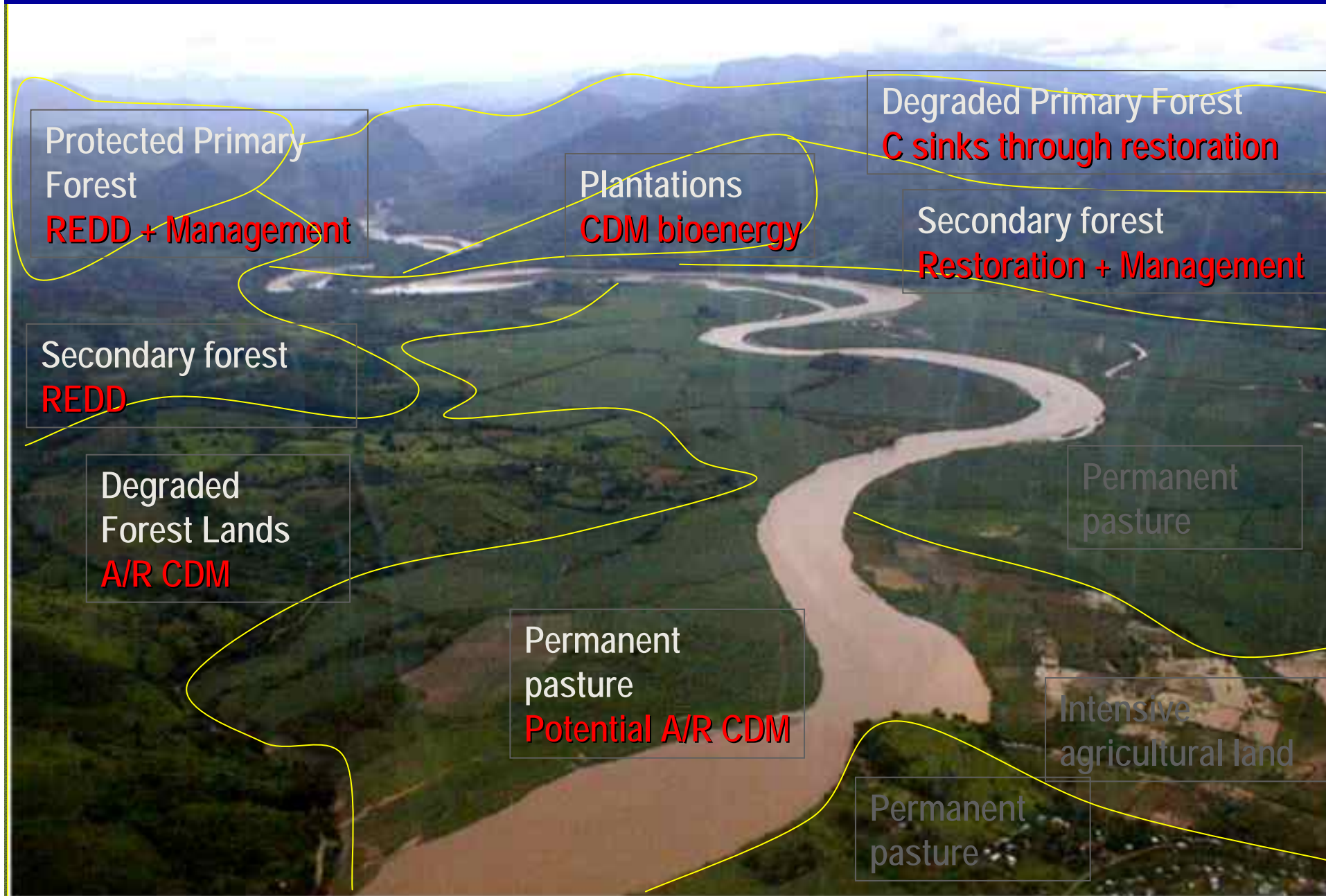
Capacity building:

- World Bank Carbon Finance Assist
- Forest Carbon Partnership Facility
- ITTO CDM Training Programme
- others...

Tools:

- For Regulatory market:
 - ENCOFOR tool
 - TARAM tool
- For Voluntary market
 - Voluntary Carbon Standards
 - Gold Standards
 - Methodologies (e.g . A.D.)

The new landscape paradigm...





„The trouble with our times is that the future is not what it used to be“
(Paul Valéry, cited by Thomas Friedman, 2008)

Land use context : Agriculture and forestry

What is there main role?

⇒ Agricultural land:

- Food security
- Production of Non-Food crops (e.g. biofuels)

Interdependence at
landscape level

⇒ Forests:

- Environmental services
- Trees as renewable material/energy source
- Living space of indigenous communities
- Illusion of buffer for development

in carbon terms:
both are source and sink

→ **Conversion** of forests to agricultural land = deforestation

Non sustainable forest use = **Degradation** of forests

Emissions of GHG (CO₂, CH₄, N₂O) : appr. 6 Gt C02e/y, about 20-25 % of global emissions

Reducing emissions from Deforestation and Forest Degradation: REDD

Maintaining carbon reservoirs: Forest Conservation and Sustainable Forest Management (SFM)