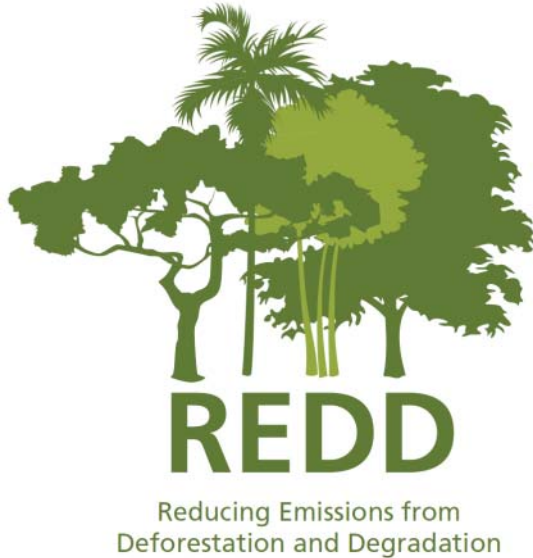


# COMIFAC Regional Workshop

## Monitoring Carbon Stocks and Fluxes in the Congo Basin

Brazzaville, 02 – 04 February 2010



## Overview of the GSE FM REDD Pilot Projects in Congo Region

Dr. Thomas Häusler, GAF AG, Dr. Sharon Gomez, GAF, Dr. Rene Siwe, GAF  
Dr. Joseph Amougou, Cameroon Climate Focal Point, MINEP

Consortium led by:



Project supported by:



Project Part of



# Presentation Outline

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- **Background to Development of GSE FM REDD Pilot Projects**
- **Overview of Framework for Implementation-main Tasks**
- **Current Status of GSE FM REDD in Cameroon**
- **New REDD Pilots in Rep of Congo and Gabon**

# Background: GSE FM REDD Development

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- **The Global Monitoring for Environmental and Security (GMES) is a joint venture between European Space Agency (ESA) and European Union (EU).**
- **Initiated in 2003, aims at providing a response to dynamic and growing global information needs.**
- **The GMES Service Element on Forest Monitoring (GSE FM), led by GAF-AG, Germany provides operational forest services for international environmental policy implementation.**
- **Eg. United Nations Framework Convention on Climate Change (UNFCCC).**

# GSE FM REDD Services

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- **The GSE FM services extended for development of REDD Pilot Projects in Cameroon and Bolivia in 2007.**
- **Strong stakeholder support for projects.**
- **The REDD Pilot Project in Cameroon being implemented between 2008-2010.**

# Region and Cameroon Stakeholders



**MINEP- Ministry of Environment and Nature Protection, UNFCCC National Focal Point, Chair of National REDD Steering Committee**



**MINFOF - Ministry of Forestry and Wildlife, Co-Chair of National REDD Steering Committee**



**COMIFAC - Commission of Central African Forests**

# Partners and Financiers



KfW provides funding for REDD Pilot in Cameroon



GTZ-COMIFAC programme supports REDD pilot in Cameroon



GAF AG is a globally active Consultancy Company in Germany in the field of development assistance, Earth Observation technology, spatial information systems. GAF AG provides forestry expertise, standards, technical design, dialogue with stakeholders, quality assurance, uncertainty assessment.



European Space Agency supported intitialisation of REDD Pilots



Joanneum Research – Austria. Supports the project with newest technology in satellite image processing

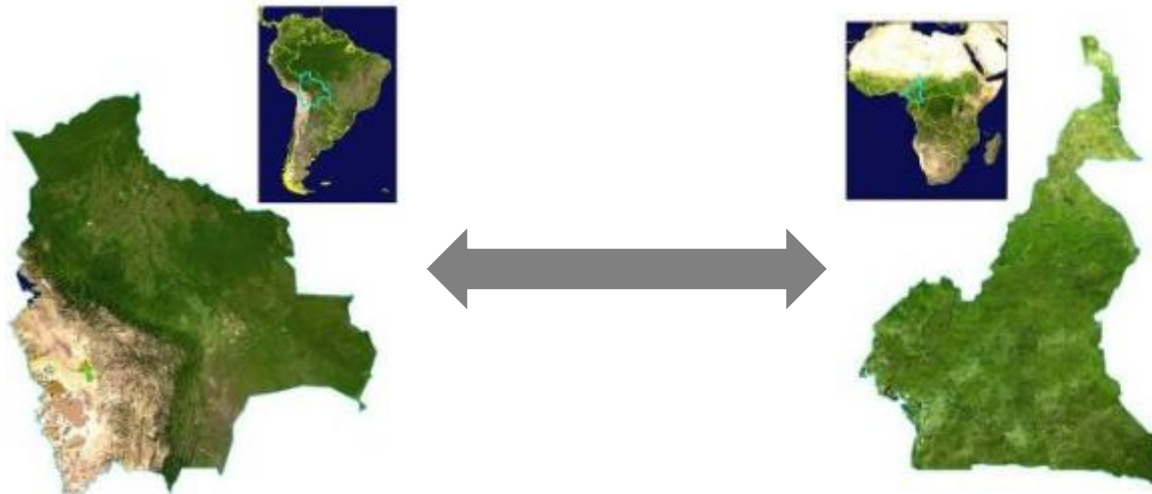


Fan Bolivia has experience from Noel Kempff Mercator Park Project and supports biomass measurements, landuse change scenarios and deforestation emissions projection

# Objectives of the REDD Pilot Projects



- Develop tools to account for national DD emissions
- Identify opportunities for national incentive schemes and strengthen dialogue between stakeholders
- Facilitate the regional and international exchange on learning experiences



# Tasks of the REDD Pilots

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## **Task 1:**

*Stakeholder Analysis and Implementation Framework*

## **Task 2:**

*Reference Scenarios/Estimating  
Deforestation/Degradation*

## **Task 3:**

*Emission Accounting and Scenario Analysis*

## **Task 4:**

*Capacity Building and Technology Transfer for REDD*

# REDD Services/Products

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- **Products of the services: deforestation and degradation products/maps based on high resolution satellite data.**
- **Production of the Forest/Non-Forest Maps conducted for 3 points in time - the years 2005/2009, 2000 and 1990.**
- **Deforestation Maps for the time periods between 1990-2000, 2000 – 2005 / 2009**
- **The land use change classes based on IPCC 2006: 5 classes: cropland, grassland, settlements, wetlands, other land use**

# REDD Service Standards

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- Provision of these services are based on the key factors presented in the Intergovernmental Panel on Climate Change (IPCC), Good Practice Guidance (GPG) of 2006.
- The user is thus guaranteed with a standardised service/product being produced and delivered as a unified approach to quality control is applied.

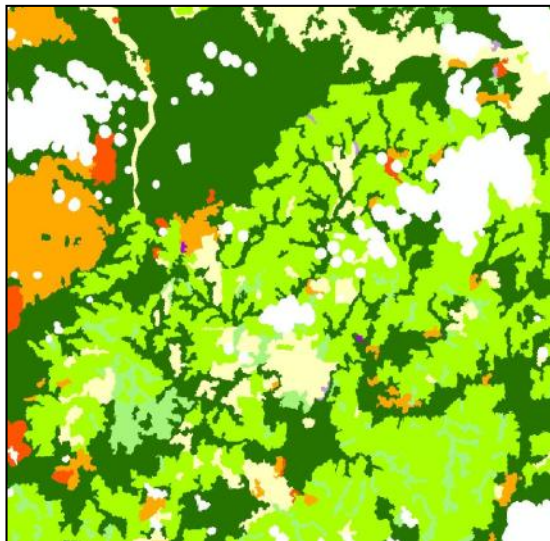
# Methods for Deforestation Mapping














Multi-temporal EO Data from various sources

Landsat-TM, DMC,...

## Forest and Landuse Change



### Legend

-  Not useable (clouds, missing data)
-  1990 non forest, 2000 non forest, 2005 forest
-  all non forest
-  1990 non forest, 2000 forest, 2005 non forest
-  1990 non forest, 2000 forest, 2005 forest
-  1990 forest, 2000 non forest, 2005 non forest
-  1990 forest, 2000 non forest, 2005 forest
-  1990 forest, 2000 forest, 2005 non forest
-  all forest
-  cameroon border
-  region borders

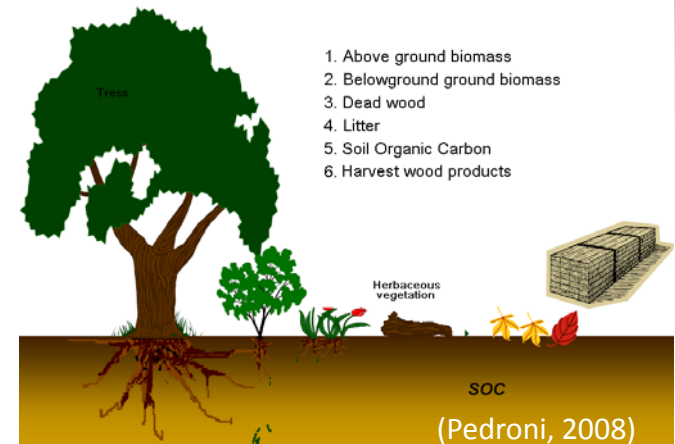
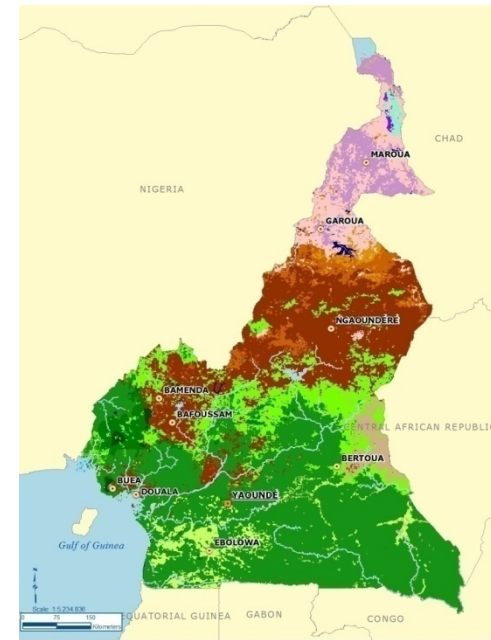
Mapping of  
Landuse and  
Forest Changes



Input for biomass  
counting and emmissions  
projection

# Biomass Inventory

- **Stratification:**
  - EO Forest, Non-Forest maps
  - Ecosystem Regions
  - Forest Management Systems
- **Selection of Carbon pools to be measured:**
  - Above-ground biomass
  - Below-ground biomass
  - Soil
  - Litter
  - Understory (herbaceous vegetation)
  - Harvested wood products

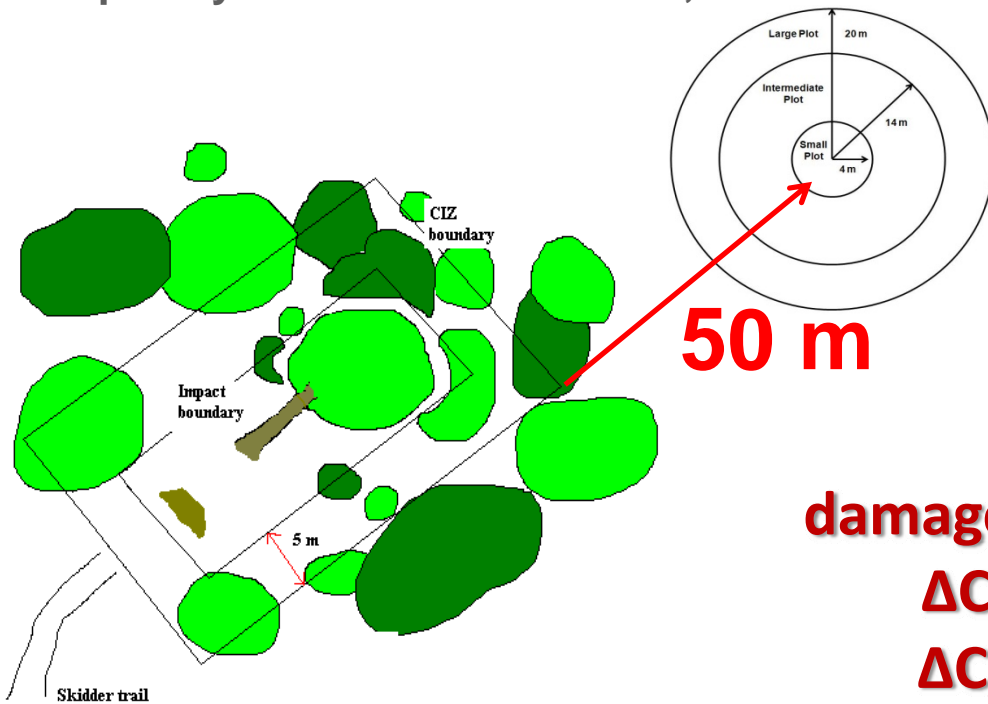


# Biomass Accounting Methods



## Permanent Plot Design

Developed by Winrock International, modified and implemented by FAN



### Circular Plots

intact carbon stock (5 pools)

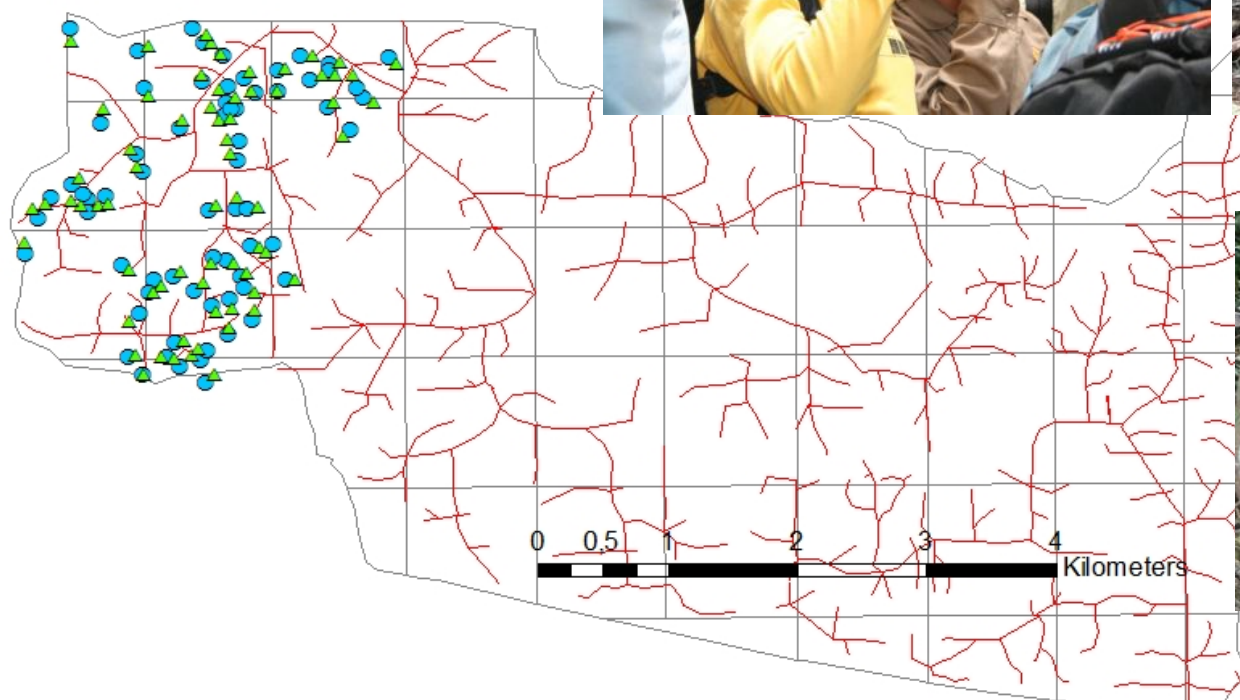
damage factor:

$\Delta C/\text{ha}$   $\Rightarrow$  Carbon stock in HWPs  
 $\Delta C/\text{m}^3$

## Carbon Impact Zone Plots



- ▲ CIZ Plots
- Paired Plots
- logging roads
- Timber Harvesting Area 2009



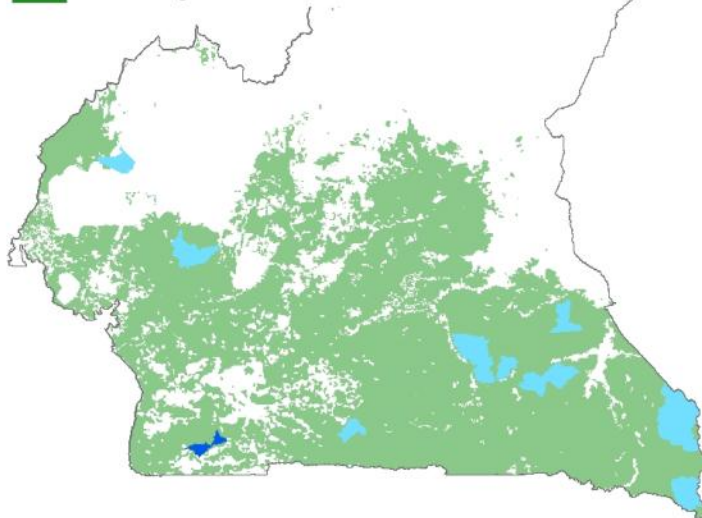
# Results



Carbon stock: Closed evergreen lowland forest [tC/ha]							
Wood	lying dead wood	Standing dead wood	Below Ground	Other vegetation	Litter	Soil	Total
211,42	17,97	12,51	42,28	2,64	2,55	41,04	<b>326,12</b>

Forest Management Unit (FMU)  
FSC certification

- FSC
- FSC pre-audit
- Closed evergreen lowland forest



Damage factor [tC / m <sup>3</sup> extracted]	
mean	2,07
min	0,22
max	8,93
StDev	1,34
No Plots	67,00
SE	0,16
95% CI	0,32



# Capacity Building

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- **Specific capacity building activities ensure that project results, methodologies and lessons learned are transferred to local counterparts**
- **South-south co-operation facilitates this process**

# Technology Transfer and Capacity Building



- **Technology Transfer between:**
  - Bolivia and Cameroon, South-South Co-operation: Emission accounting and Reference emission scenarios
  - European Partners and Cameroon: EO for deforestation/degradation mapping
- **Capacity Building via Workshops and on-the-job-training**
  - Biomass accounting workshop
  - Biomass inventory field training
  - Remote Sensing workshop
  - GIS training workshop
  - Field surveys

# GIS & RS Training – Yaoundé, Nov09



# Roll-out



Cameroon



gtz

Gabon

Republic of Congo

# New GSE FM REDD Services

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- **Based on Cameroon experience-roll out phase supported by ESA.**
- **Users in Rep of Congo and Gabon supported initiation of REDD Pilots in their countries.**

# Objectives

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## Overall Aim:

- Set up a pre-operational system for monitoring forest cover and forest changes within the REDD framework

## Three Main Tasks:

- Institutional Arrangements & Stakeholder analysis
- Deforestation and degradation mapping
- Capacity Building/Technology Transfer

# Priority User Organisations

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## Republic of Congo:

- Ministry of Sustainable Development, Forest Economy and Environment (UNFCCC Climate Change Focal Point)

## Gabon:

- Ministry of Environment, Rural Development, Nature Protection and Disaster Risk Management (UNFCCC Climate Change Focal Point)
- Ministry of Forest Economy, Water, Fishing, and Aquaculture

# Stakeholder Analysis/Institutional Arrangements

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- **Assess stakeholder needs: specific policy drivers, assess working practices, decision making cycles, & technical capacity for EO technologies**
- **Technical specifications for REDD services/products to be defined with the user**
- **Support national REDD Committees to steer the REDD activities**
- **Co-ordinate and develop synergies with donors and stakeholders involved in forest/climate projects to avoid duplication of efforts and sustainability of projects**

# Capacity Building

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## Activities to be undertaken:

- **An assessment of in-country capacity (human institutional and information capacities) for EO forest monitoring.**
- **Elaboration of capacity building strategy in collaboration with the UNFCCC focal point.**
- **Seminars & workshops to train national counterparts on the methods employed in the assessment of deforestation and degradation.**

# Envisaged Benefits

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- **The GSE FM REDD services will provide a frame for wall-to-wall national forest monitoring systems.**
- **The results will provide feasibility assessment of operational national level monitoring of deforestation/degradation**
- **GSE FM REDD services will provide countries with both the technical steps and empirical information to support their negotiations during the COPs.**