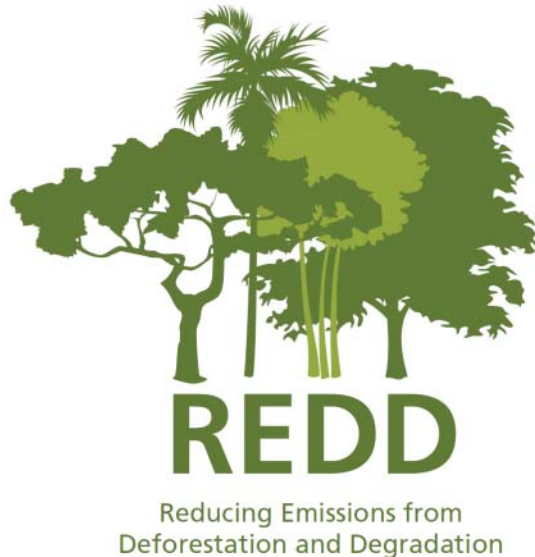
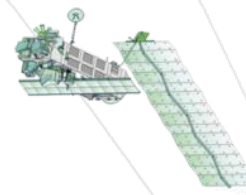


The Cameroon Pilot Project

COP Side Event,

Cancun 2nd December 2010



Forest Cover Change Mapping: Experiences from the REDD Cameroon Pilot Project (GAF AG)

Thomas Haeusler, Sharon Gomez, René Siwe, Gernot Ramminger

Consortium led by:



Project supported by:



Partner for the Future.
Worldwide.



Project Part of



Frame Conditions for REDD Services



National vs Sub-National Approach

Cameroon REDD Pilot conceptualised for a National Project, for practical/cost reasons some components implemented at sub-national

(This is in line with COP15 Decision-“ COP15-Copenhagen (2009)”To establish, according to national circumstances and capabilities, robust and transparent national forest monitoring systems and, if appropriate, sub-national systems as part of national monitoring systems”)

Frame Conditions for REDD Services



Using historical baseline

COMIFAC Countries in SBSTA Submission 2009 noted the need to use the historical baseline concept. This is in line with COP 15 Decision regarding the use of historic data for Reference Emission Levels.

GAF REDD Services use the IPCC GPG (2006) standards and guidelines

GOFC GOLD Sourcebook-leading experts in the IPCC and C Accounting developed recommended guidelines for the EO application in REDD

Partners and Financiers



KfW provided funding for REDD Pilot



GTZ-COMIFAC programme supports REDD pilot in Cameroon for the Region



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 initialisation of REDD Pilots



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

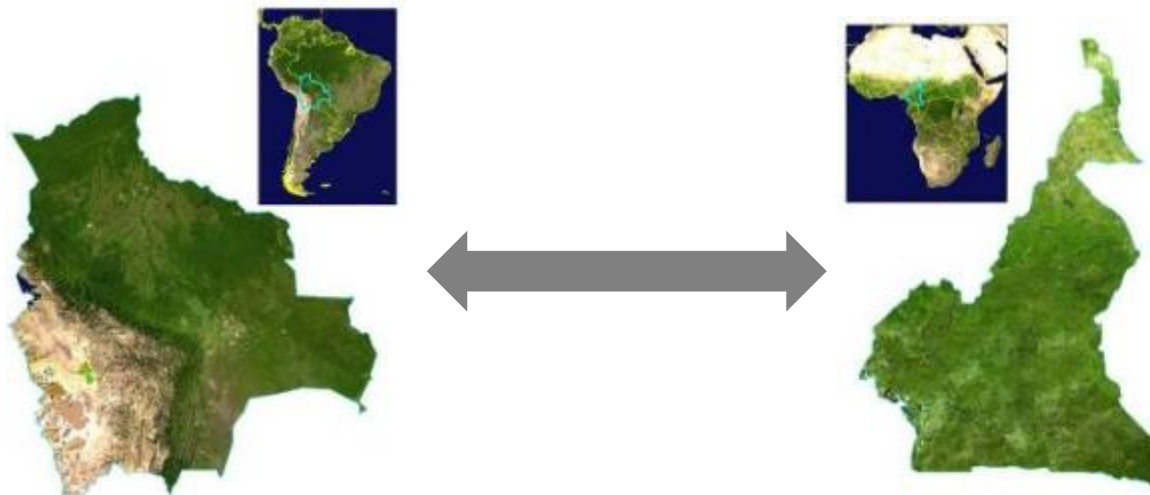


Fan Bolivia has experience from Noel Kempff Mercator Park Project and supports biomass measurements, landuse change scenarios and deforestation emissions projection

Scope of the REDD Pilot Project



- **Conceptualised 2007;**
- **Project Implementation 2008 - 2010**
- **Main focus:**
 - EO based forest cover/forest cover change mapping
 - Terrestrial Carbon Accounting
 - Capacity Building: South-South Cooperation

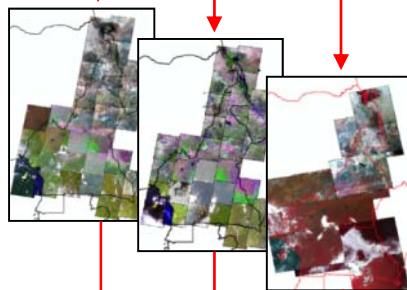


Monitoring Methodology for REDD



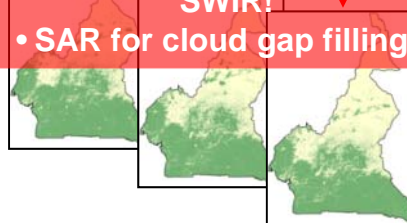
Multi-Sensor High Resolution EO Data

1990 2000 2005



Data Requirements:

- National coverage within one year
- Optical Sensors: 10 – 30 m resolution, SWIR!
- SAR for cloud gap filling!



Multi -Temporal Forest Classification

Activity Data – AD



Forest Inventory & Carbon Accounting



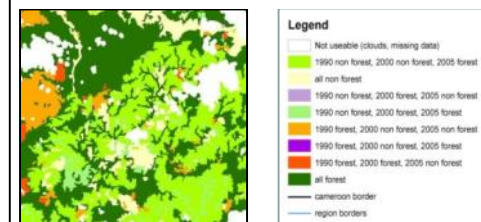
Allometric Functions for Biomass Expansion

Carbon Extension Factors (CEF)

Carbon Estimates per Sample Plot

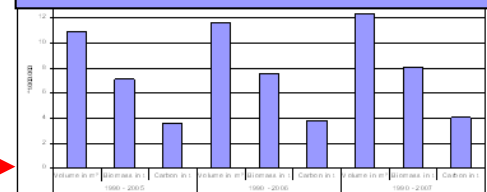
Combination of EO and In-Situ

Forest and Landuse Change



Activity Data x Emission Factors

Biomass and Carbon Stock Changes



Key Elements of the Deforestation Assessment Approach



- **Historical Mapping of Deforestation**
- **Wall-to-wall mapping**
- **5 hectares MMU**
- **30 m spatial resolution data**
- **FAO forest definition**
- **Multi-temporal segmentation approach**

Challenges for REDD: EO Application

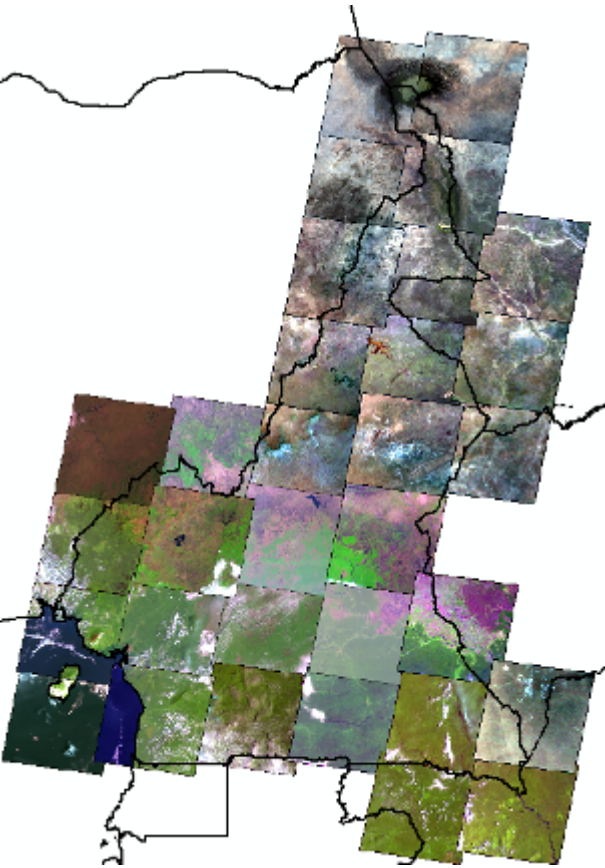


- National coverages, historic and current
- Accessibility / cost
- Trade offs between geometric resolution, thematic discrimination power, wide area footprint of satellite scenes
- Homogeneous acquisition dates
- Completeness/clouds

EO Data Coverage - Cameroon

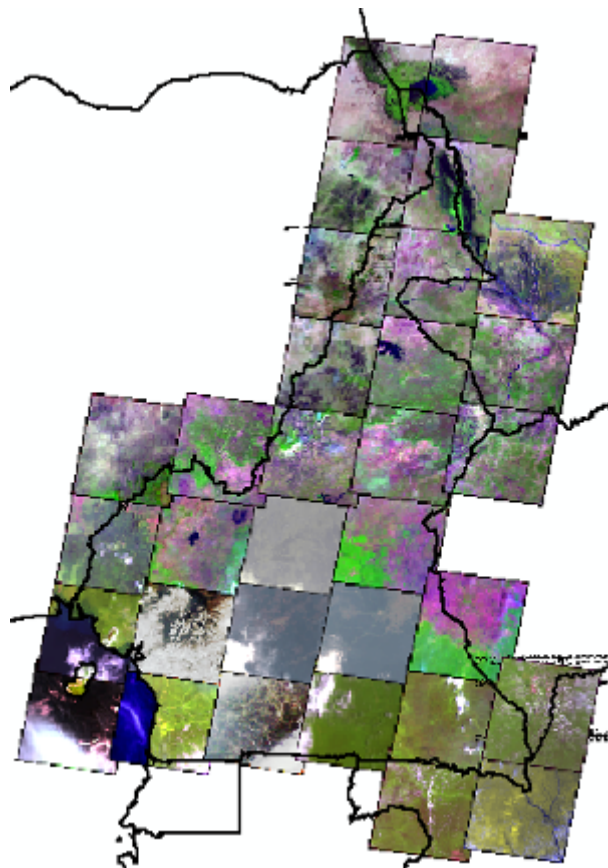


1990 Landsat data



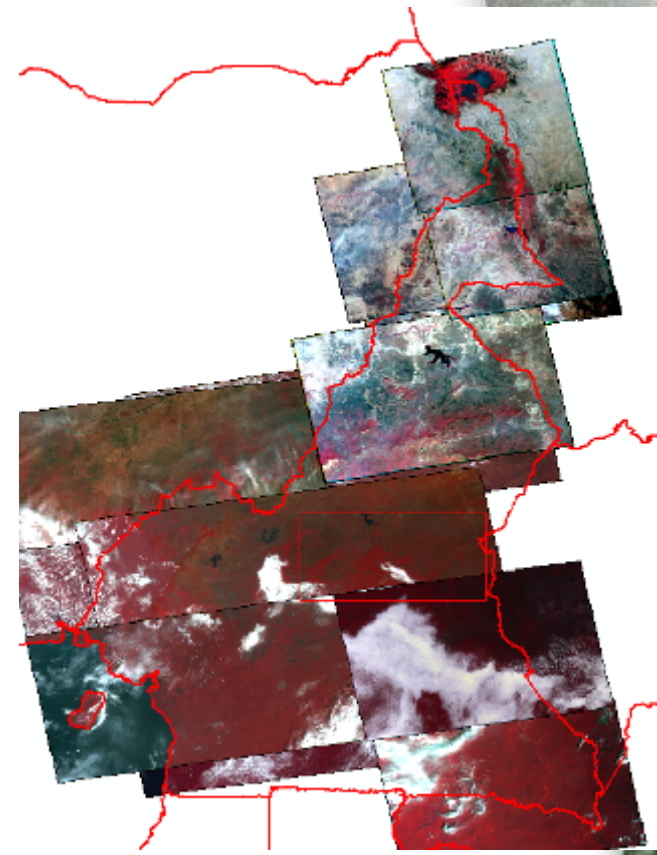
Clouded areas: 15 %

2000 Landsat data



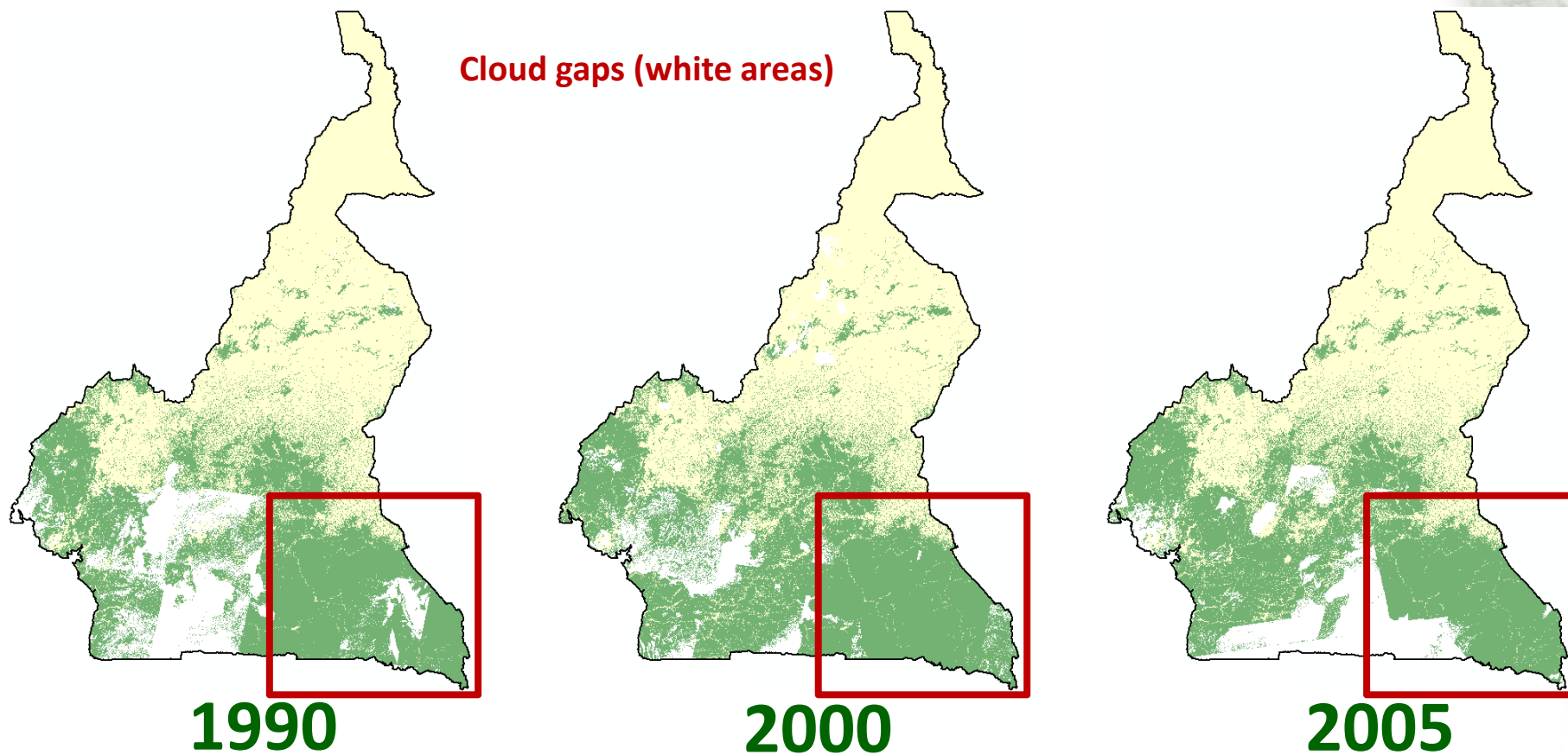
Clouded areas: 8 %

2005 DMC data



Clouded areas: 12 %

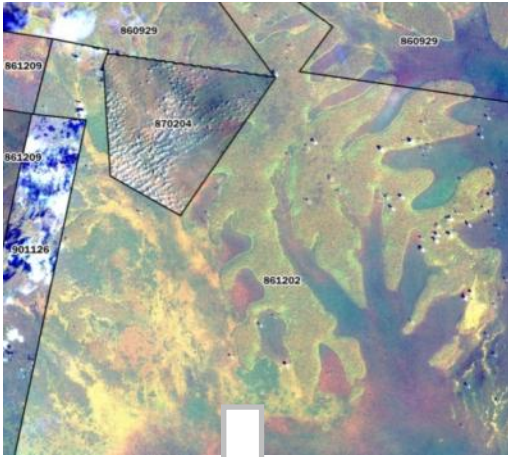
Forest Cover Maps



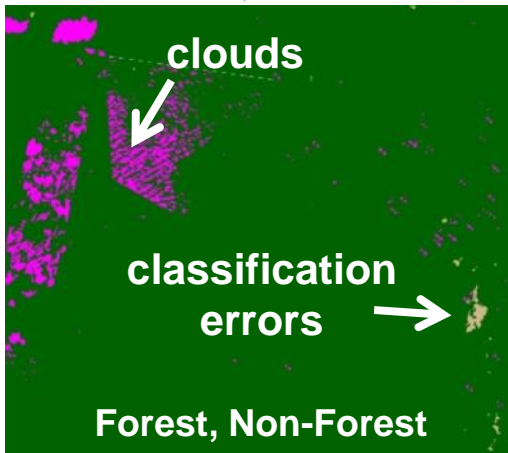
Improvement of Completeness and Accuracy



Landsat 1990 scene with cloud cover and haze



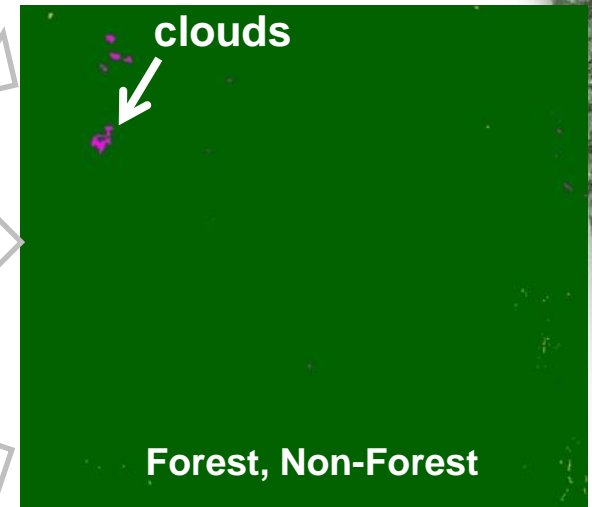
Segment based classification



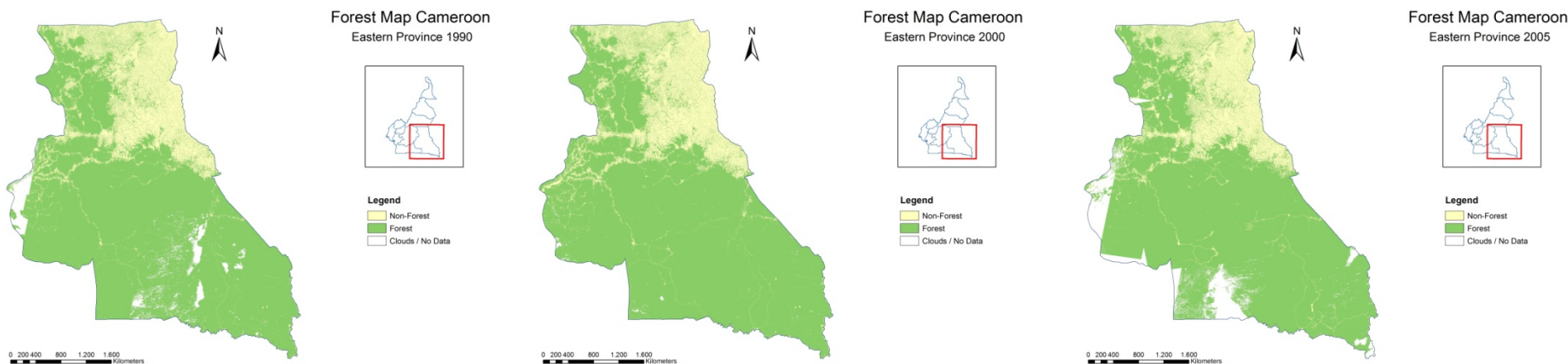
Manual improvement with additional data



Final forest area map with reduced Cloud cover



Forest Cover Maps – East Region



Change Statistics 1990 --> 2000

1990	2000	Area [km ²]	Area [%]	Change Type
Forest	Non-Forest	737	0.68	Deforestation
Non-Forest	Forest	164	0.15	Secondary Re-growth

Change Statistics 2000 --> 2005

2000	2005	Area [km ²]	Area [%]	Change Type
Forest	Non-Forest	280	0.28	Deforestation
Non-Forest	Forest	232	0.24	Secondary Re-growth

Technology Transfer / Capacity Building



- **Methodological developments are transferred to counterparts via Capacity Building**
- **Capacity Building includes:**
 - REDD awareness raising workshops
 - RS / GIS Training course – theory and practicals
 - Field surveys for ground truthing and verification

Carbon Accounting Activities in Cameroon(FAN)

15 min

Overall Achievements



- **Establishment of a framework for nation-wide wall-to-wall historical mapping using EO applications**
- **Development and implementation of a biomass accounting protocol – implemented at sub-national scale**
- **Assessment of logging impacts in different forest management systems**
- **Training of MINEP/MINFOF personnel on REDD MRV methods**
- **Effective transfer of methodology from Bolivia to Cameroon**

Recommendations



- Based on the achievements to date, a full national REDD Programme for **Activity Data/Emission Accounting** should be implemented
- Specific technical activities include:
 - Optimise cloud free mosaics of satellite data for the entire country to operationalise the use of EO for Forest Monitoring
 - Improve mapping scale to 1 ha Minimum Mapping Unit
 - Provision of National Deforestation statistics
- Elaborating a national concept for carbon accounting
- Implementation of a comprehensive National Capacity Building Programme – coordinated with Regional activities