Satellite Data and Monitoring Systems for REDD+

BMZ Bonn, 05 Oct. 2012

Working Group II

Costs of REDD+ Monitoring and Multiple Benefits

GAF Team:

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Objectives

- Present and discuss the fundamentals for Monitoring forests in the frame of REDD+ MRV systems using EO

- To have a better understanding of costs for monitoring basesd on shared global experiences

Outline of Presentation

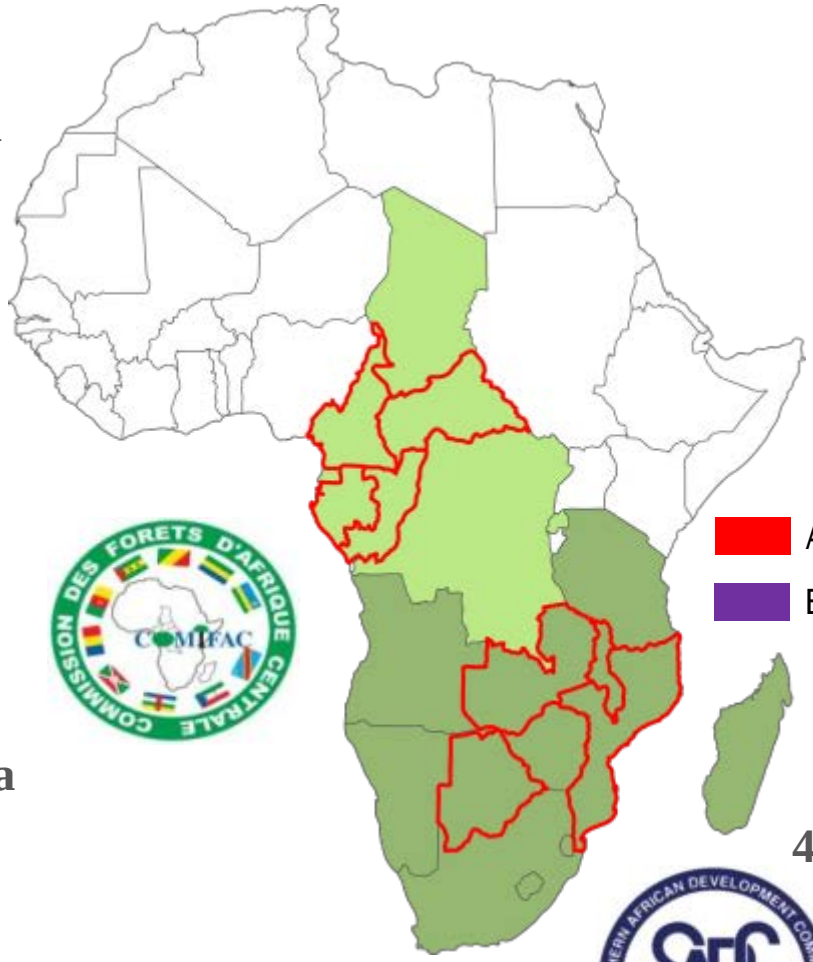
- Framework for monitoring from COPs and SBSTAs
- What are the elements to be monitored?
- What are the factors that affect the costs?
- Examples
- Potential for Multiple Benefits
- Guided questions for discussion

Experiences in SADC & COMIFAC Activity Data Mapping

1. REDD Pilot Cameroon

2. GSE REDD Extension in RoC and Gabon

3. R&D REDD for Africa Cameroon and CAR



4. REDD+ MRV for SADC

On behalf of
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
of the Federal Republic of Germany

Experiences in SADC & COMIFAC Emission Factor Assessment

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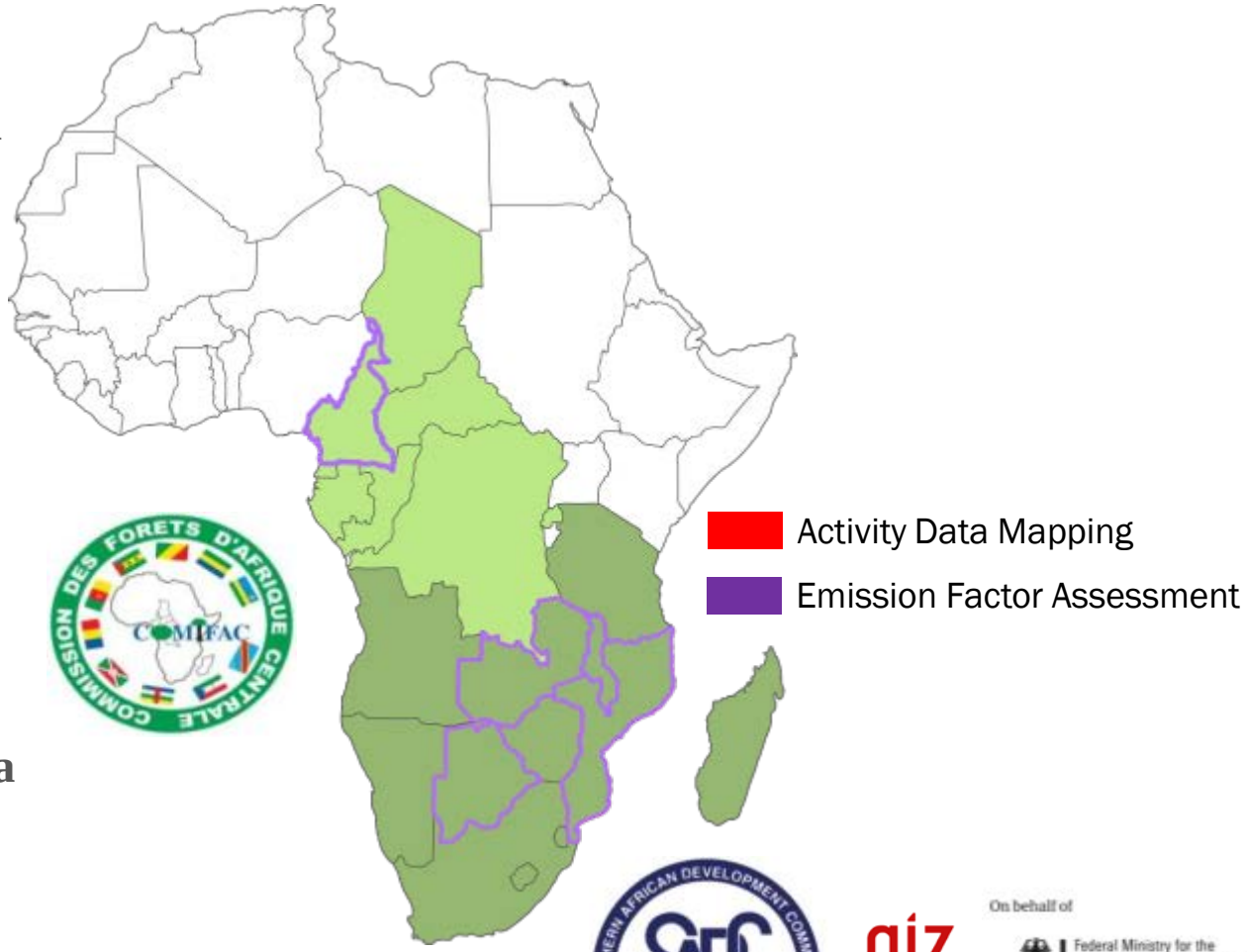

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Main Elements for Monitoring

- Drivers for DD
- Process for Monitoring:assessment of Activity Data (AD) and Emission Factors (EF) for 5 eligible activities:
  - Deforestation,
  - Degradation,
  - Sustainable Forest Management,
  - Conservation,
  - Enhancement of Carbon Stock
- Safeguards

Focus of the WS cost discusions

Cost relevant Elements for MRV

- Definition of forest, deforestation, degradation and adequate Minimum Mapping Unit (MMU)
- Determination of scale: national or sub-national
- Wall-to-wall or sampling based approaches

  (Advantages with change iwall-to-wall-only method which provides spatially explicit LU nformation)
- Definition of accuracy targets and QA/QC protocols
- Level of necessary Capacity improvement (institutional, personnel, infrastructure)

Factors for Costs: Relevant Concepts of the IPCC Methods

3 Approaches

- Approach 1; “only identifying the total area for each land category
- Approach 2: tracking of land-use changes between categories; and
- Approach 3: tracking land-use changes using **sampling** or **wall-to-wall** mapping techniques

Approach 3 is the only approach that tracks forest and other land conversions on an explicit spatial basis, including gross deforestation and gross change in other land cover classes (FCCC/TP/2009/1).

Potential Forest Definitions

The UNFCCC – via the Marrakesh Accords – adopted ranges for the the main forest definition critera

Key aspects	UNFCCC [1]	FAO [2]
Minimum area	0.05-1.0 ha	> 0.5 ha
Minimum crown cover	10-30 %	> 10 %
Minimum tree height at maturity in situ	2-5 m	5 m

1. Marrakesh Accords, 2001
2. FAO FRA 2005

Factors for Costs: Relevant Concepts of the IPCC Methods

Tiers

- Represents a level of methodological complexity
- 3 tiers are provided

higher tier

Tier 1 is the basic method,

Tier 2 intermediate,

Tier 3 most demanding in terms of complexity and data requirements.

(IPCC, 2006)

more accurate

Factors for Costs: Relevant Concepts of the IPCC Methods

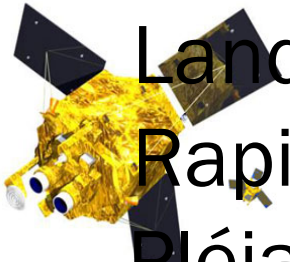
- Tier 2 accuracy is the minimum required for reliable estimates and is achievable at a cost-effective rate (use of default values for non-tree pools and newly collected forest biomass data).

Cost Factors for AD Mapping - Examples

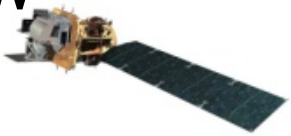
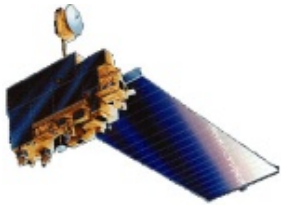
- EO data: spatial resolution, optical or SAR, archived or new acquisitions
- Processing Costs for DD Mapping: historic and current, Forest area change to IPCC Landuse classes
- Accuracy Assessment: VHR Data, Field campaigns, Processing

Major EO Data Systems

Optical:

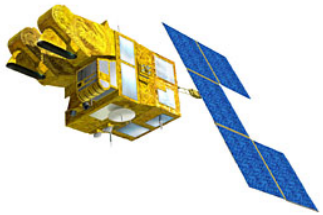



Landsat, Aster, DMC, ALOS, IRS, SPOT, RapidEye, Formosat, EROS, Kompsat, Pléiades,Ikonos, QuickBird, GeoEye, Worldview


SAR:

Envisat, Radarsat, Palsar, TerraSar-X, Cosmo-SkyMed

„Own Brands“: Cosmo SkyMed; IRS-Program

EO Data: Costs per km² vs. Resolution

According to current price lists, volume discounts not included, currency rates $/€ might change

0.5 -1.0 m Optical Sensors	
Archive	New Acquisition
5 € – 13 €	10 €– 30 €

1.0 m SAR	
Archive	New Acquisition
14.5 € – 50 €	15 € – 150 €

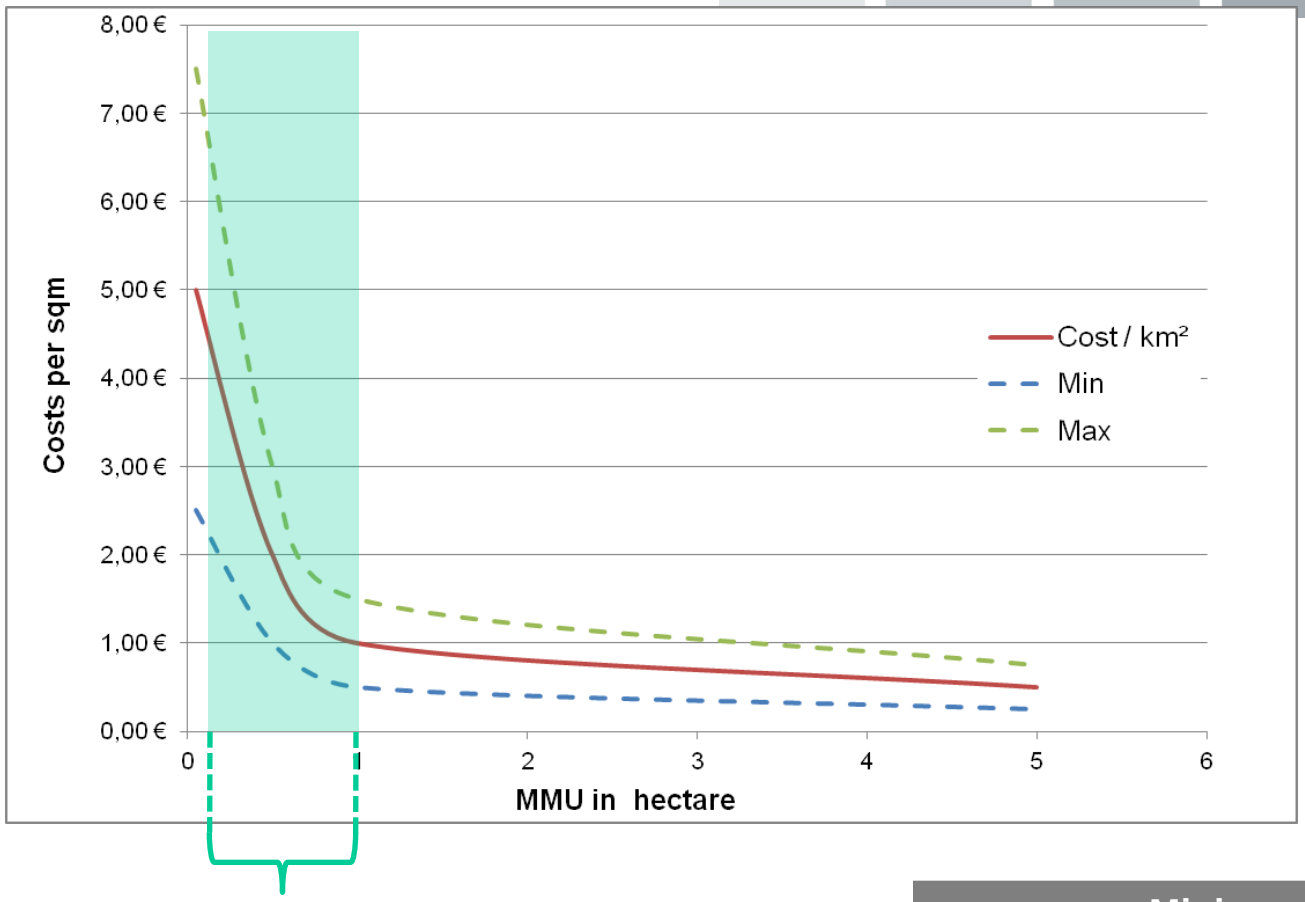
1.0 – 12 m Optical Sensors	
Archive	New Acquisition
0.1 € – 7.5 €	0.95 € - 15 €

3 – 10 m SAR	
Archive	New Acquisition
1 € – 1.75 €	1 € – 3,75 €

10 - 50 m Optical Sensors	
Archive	New Acquisition
0.01 € – 0.75 €	0.1 € - 2 €

10 – 30 m SAR	
Archive	New Acquisition
0.05 € – 0.25 €	0.1 € – 0,5 €

EO Mapping Costs Dependent on MMU



Range of Minimum Area for Forest Definition
(0.05 ha to 1.0 ha)

3 Epochs, Deforestation Mapping and Landuse change

EO Data costs not included

Minimum Mapping Area		
0.05 ha	0.50 ha	1,00 ha
Maximum EO Sensor Resolution		
< 7 m	< 22 m	< 30 m

Potential for Multiple Benefits

- SBSTA Session 29 , Dec. 2008: Methodological Gudiance on REDD + introduced co-benefits in the context of methodological developments.
- The Monitoring component of REDD+ can support reporting for UNCBD and UNCCD
- Costs for Monitoring-**economies of scope** taking into account Multiple Benefits
- Therefore value-adding to
  - biodiversity and ecosystem mapping;
  - optimising land management plans;
  - spatial data on drivers of DD.

Questions for Working Group II

- Experience from countries/projects with the cost elements (additional) for Forest Monitoring-not only with AD but also EF?
- What are the cost ranges/ indices for these elements? Examples?
  - Are there experiences with Tier 2 vs Tier 3 costs?
- In context of Phased approach for REDD, where do countries think the priorities should be in terms of investment on the development of the various components of Monitoring (AD, EF, Capacity Development)?
- How can REDD+ MRV support Multiple Benefits? Examples?