



Ministry of Lands, Environment and Rural Development - Mozambique

National Directorate of Forest

Department of Forest Inventory

National Forest Monitoring System in Mozambique

REDDCopernicus Stakeholder Workshop

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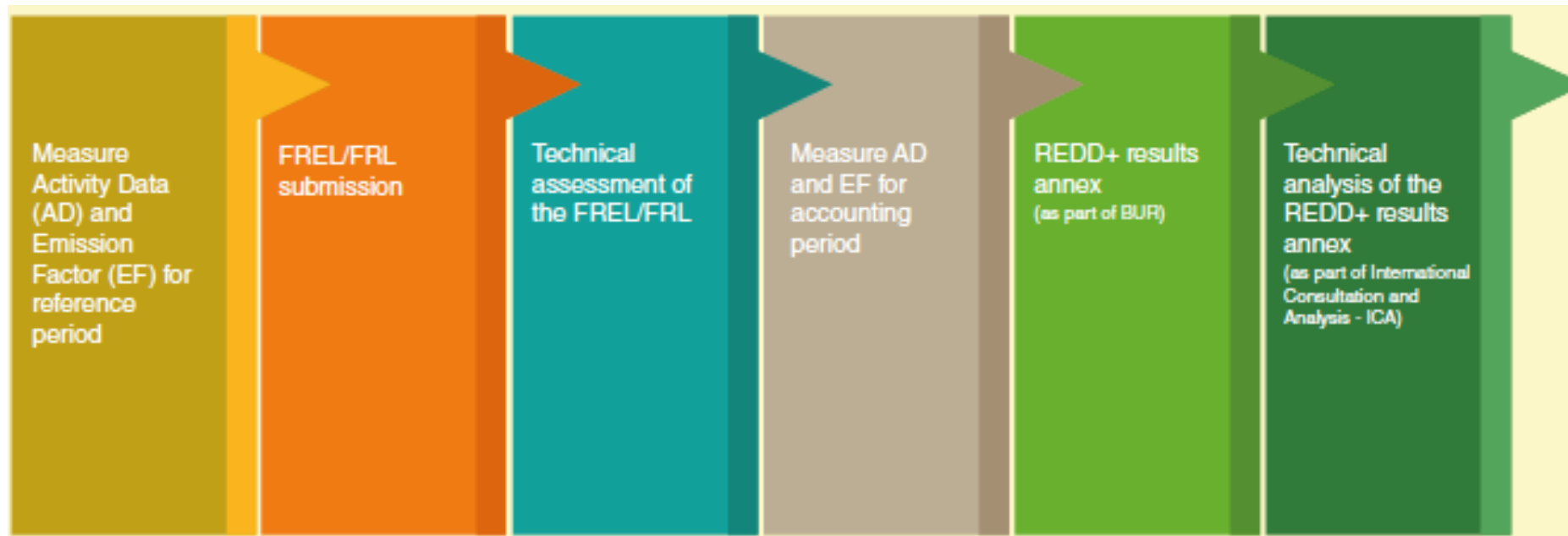
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Overview

- Mozambique, upon ratification of the convention of UNFCCC, has committed to undertaken actions to formulate and submit:
 - **every two years** thereafter the Biennial Update Report (BUR) in accordance with the guidelines contained in decision 2/CP.17 (decision 2/CP17 and annex II);
 - Submission FREL/FRLs voluntary;
 - **every four years** thereafter the National Communication and;
 - **Every 5 years** thereafter the Nationally Determined Contribution (NDC);
- This is to increase the transparency of mitigation actions and their effects as well as support needed and received

MRV for REDD+ (I)

- Forest Reference (Emission) Level (FREL/FRLs) based on methodological choices such as: **scale, scope, definitions, data selection and analysis, methods, approaches and tiers, construction approaches, reference periods**
- Submission FREL/FRLs voluntary
- No deadline set by UNFCCC rules
- National Forest Monitoring System (National Forest Inventory + satellite land-monitoring systems) as a base to provide data for GHGI, NDC, etc...
- **From REDD+ results to results-based payments ??????????**



Current stage

- National Forest Inventory (4th NFI);
- 4 National forest cover map;
- REDD+ National strategy developed
- Activity data processed (2017);
- National Forest Reference Emission Level (FREL);
- Safeguards
- National Communication which is in hold due to the time of submission;
- GHGi under preparation, which we are trying to match the consistency with our data;
- BUR under development;

- Mozambique is one of the **FCPF beneficiary country** for readiness Phase.
- **FIP** supports projects under supervision of **World Bank**. Pilot implementation projects of emission reduction which are taking place in **two provinces, particularly within and surrounding protected areas (districts) - Gilé Wildlife National Reserve and Querimbas National park**. So, the implementation of those projects are turned to **results-based-payment**.

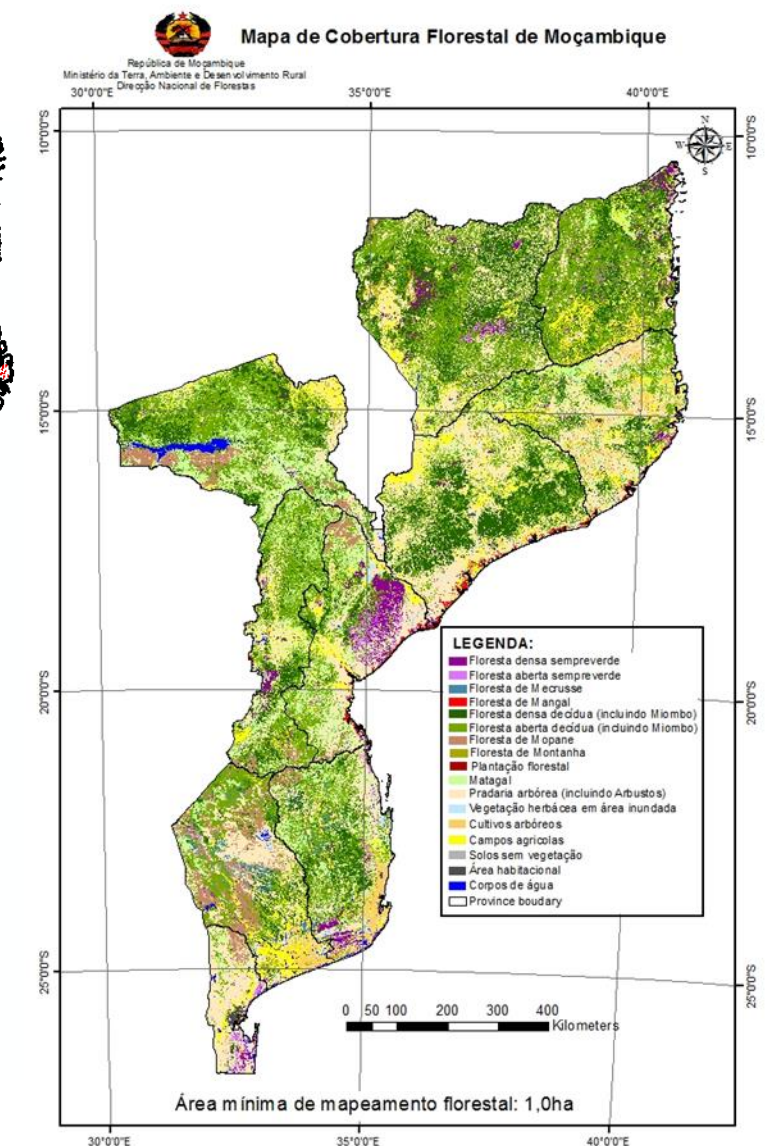
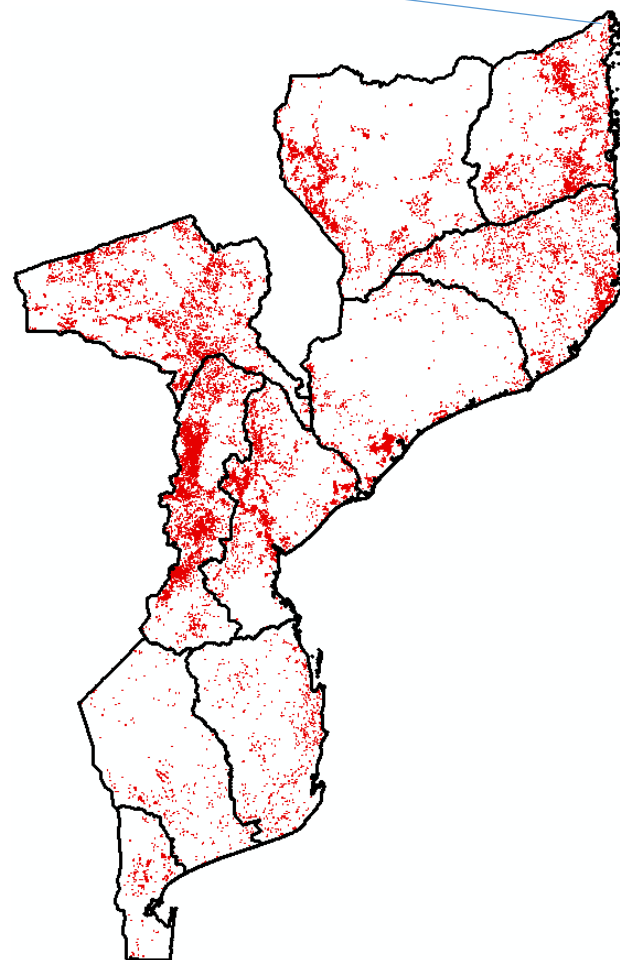
Current stage (II)

- Mozambique **Green house gas inventory report** is a key activity under the **Environmental Protection Agency** which **works closely with all relevant agencies** that contribute to emissions in the country to report on activities that lead to GHG emissions or reductions;
- The GHGI system plays an important role in **providing critical historical emission data for formulation of mitigation actions and policies** especially towards achieving stated objectives in the **Nationally Determined Contributions;**
- The **AFOLU** sector is led by the Ministry of Lands, Environment and Rural Development (MITADER) and Ministry of Agriculture and Food Security (MASA) Commission as well as other contributors from the Research and Academia;
- **The National Directorate of Forestry** is the main institution with the mandate to coordinate and approval of all activities in the forest sector including development of **National Platform to Monitor REDD+** as well establishment of **National Forest Monitoring System with support of JICA in the next 5yrs;**
- Implementation of REDD+ is assigned to **FNDS** under **MITADER** with the support of World Bank which is **implementing REDD+ in two projects** (Local MRV Unit);
- The government has been a key factor influencing the effectiveness of institutional arrangements and, in particular, the strength of the body's mandate and its ability to **conduct inter-ministerial coordination.**

Identification of deforestation areas using RADAR image analyses (ALOS)and evaluation of the ways of using this information

Results of forest loss (2008 - 2010)

Province	No. Of polygons of the forest loss	Area of deforestation (ha/year)
Cabo Delgado	12.600	19.267
Niassa	10.098	21.158
Nampula	10.571	14.250
Zambézia	4.425	21.037
Tete	17.345	24.765
Manica	22.667	37.354
Sofala	11.415	26.413
Inhambane	3.947	4.488
Gaza	1.748	2.852
Maputo	1.042	3.156
Total	95.858	174.740

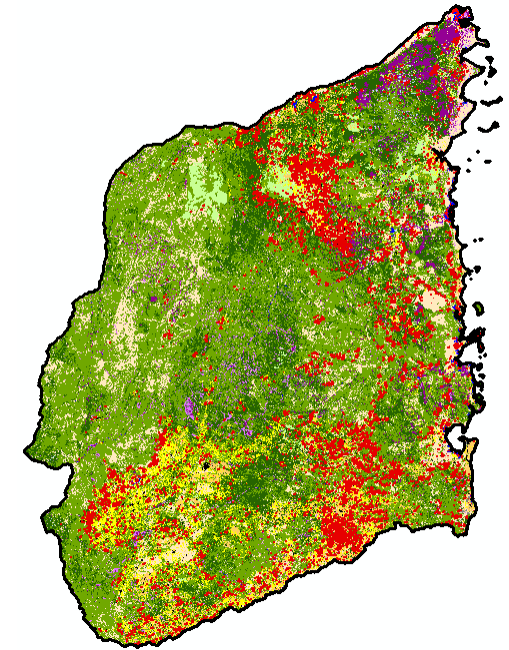


Reference base Map supported by JICA

Area size deforested by forest type (CD):

The majority of the areas are covered by shifting cultivation- overlaped to forest cover map of 2008.

Deforestat ed Area(ha)	(Semi- dense ever green	(Semi- Open ever green	Mangrove	(Semi- dense deciduous	(Semi- Open deciduous	Total (ha)
1 ~ 2	279	122		1.915	3.137	5.452
2 ~ 3	202	63		1.070	1.794	3.129
3 ~ 4	119	45		657	1.171	1.992
4 ~ 5	124	48	4	501	871	1.548
5 ~ 6	97	22		388	835	1.341
6 ~ 7	91	19		368	486	964
7 ~ 8	90	8		304	240	641
8 ~ 9	43			288	400	731
9 ~ 10	47			180	238	465
10 ~	696	73		2.204	3.348	6.321
Total	1.787	399	4	7.875	12.519	22.585
% da cobertura florestal	0,81%	0,26%	0,01%	0,49%	0,34%	0,39%



Forest Cover Map and
activity data 2008

✘From 2 Years 2008 -2010

Data needs and sources for the estimation of activity data (deforestation and degradation) and emission factors

Among many methods the two were selected and tested to estimate activity data for **deforestation**:

- Wall-to-Wall method using Radar data from ALOS; and
- Collect Earth using Google data engine.

The emission factors in REDD+ work of annual and total of the period emissions **2003 - 2013** for deforestation **AGB and BGB** are in the order of **46 213 014 tCO₂ Eq** and **508 343 155 tCO₂ Eq**, respectively; The emission did not include the forest plantation;

Estimation of **forest degradation** is not consolidated yet even though some different figures about deforestation in the country are being dished out.

Need of definition of threshold to estimate forest degradation.

Impact Tool and **Guidos** have been tested but not confronted with ground information (**data verification and validation**)

A new tool called **Biota** was **developed LTS consultancy assistance** to estimate deforestation, but it still premature to grab this tool to produce accurate data,

Between Wall-to-wall method and Collect Earth we found **wall-to-Wall** must more accurate compared to Collect Earth (has full of imprecision's needs personal with full ground knowledge).

Major challenges and constraints for EO-based activity data (deforestation and degradation mapping)

- Satellite data acquisition to produce systematically and consistent information.
- **High cost of Radar** data with high resolution;
- Definition of **reliable method and tools** of mapping Activity Data;
- Estimation of **forest degradation** of different source of emission such as forest degradation and forest fire;
- **Refine technics of the usage of Drone**, already started to access the areas at small scale in the country;
- **Internet connection, Hardware** (computers and storage devices of large amount of data)

- There are some gaps identified that needs urgently to be addressed which are:
 - Institutional **coordination**;
 - **Development of methodologies and guidelines** for monitoring GHG's;
 - Improvement of **methodologies to estimate carbon**;
 - Improvement of methodologies **for quality control** and **quality assurance**;
 - Inclusion of **additional carbon pools** in the estimation of carbon stocks

Interest in a Copernicus Forest Monitoring and REDD+ Service Component

- Accelerate the Production of systematic Forest cover map of the country including the changes;
- Help to establish stable production of burned estimated areas and maps;
- Help to find the implementation the mean term of Forest degradation maps;
- Improvement on the mapping information related to Deforestation;
- Building capacity of our national staff in the four components;
- Technical assistance in the above Items such as local component in agroforestry;

What capacity needs are required by the end users to successfully use EO based FM

- Technical staff capable and with a full domain in monitoring activity data;
- Provision of the data related to the specific country such as satellite data of high resolution, to full fill the gaps in terms of information;
- Strengthened our database of information system and technical staff capable to manage the data;

Potential products be useful if provided in the framework of a Copernicus Forest Monitoring and REDD+ Component

- Forest cover map,
- Burned estimated areas and maps;
- Forest degradation maps;
- Deforestation maps;
- Estimation of EF;

Preferences to access data and products from a Copernicus Forest Monitoring and REDD+ Service Component

- Access online-service where we can manipulate data and perform analysis;
- Nevertheless other means of access may be useful depending on the circumstances of our network environment.



Thank you