



Post-K&C – First Report

Deforestation and Forest Degradation Analysis to support NFMS in Mozambique (FLOMOZ-Project)

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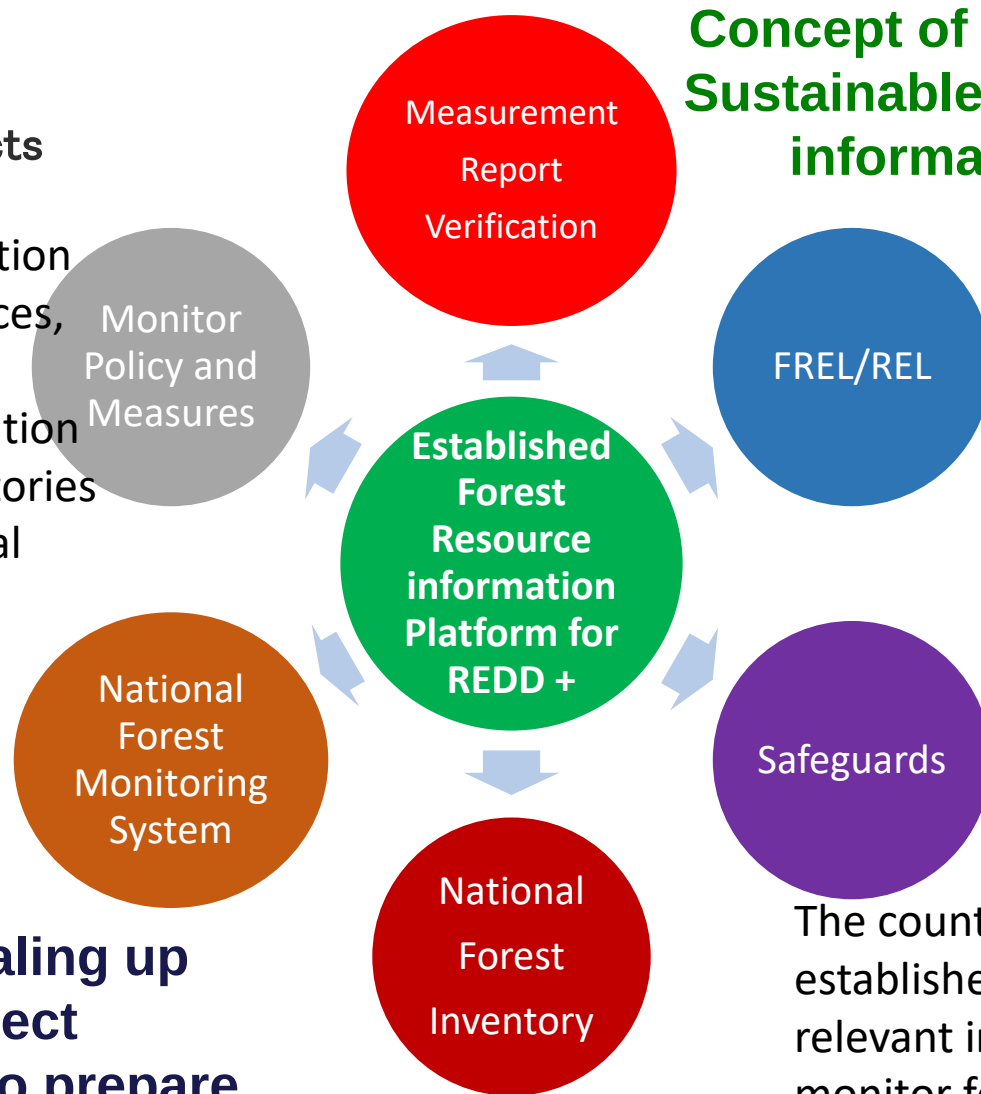
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Outlines

- Contextualization;
- Objectives
- Drivers of deforestation and forest degradation;
- Results and deliverables;
- Comparison of early warning data;
- National Forest Monitoring System Approach in pipeline;
- Techniques of forest monitoring
- Data and Challenges;

Forest management is a system of actions for supplying different products and services for society, associated to the preservation of additional forest resources, including wildlife, soil and water conservation, recreation etc. Forests are the repositories of aesthetic, ethical cultural and religious values.



Concept of establishment of Sustainable Forest Resource information Platform

Second phase for scaling up the first initiated project (supported by JICA to prepare a **NFMS)**

The country have developed, established, elaborated the relevant information system to monitor forest accordingly to the UNFCCC requirements

Project outline and objectives

□ Objectives

- ↓ Aggregate deforested areas detected by the existing (early) warning systems operated by each organization, and monitor the general condition of the forest.
- ↓ Utilize the monitoring of conservation committed area, the confirmation of concession, etc.

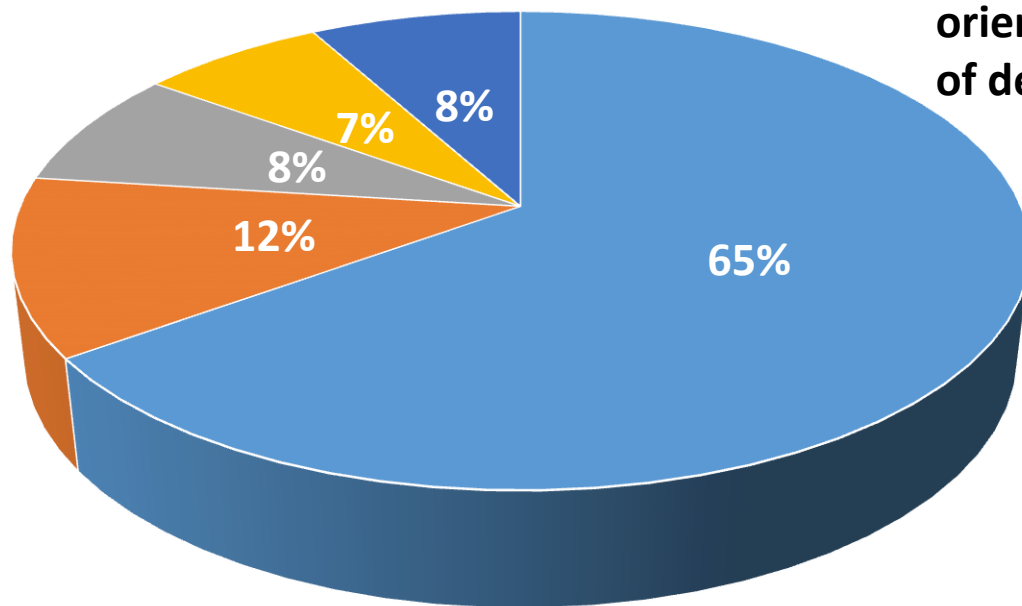
□ Existing early warning systems

- ↓ Global Forest Change by Hansen, Potapov, Moore, Hancher et al (Hansen Tree Loss)
- ↓ JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST)
- ↓ Global Land Analysis and Discovery by the University of Maryland (GLAD Alert)

Project area(s) – Niassa Province (with support of JICA) and the southern central area (Manica and Sofala province). Those areas are characterized by high forest coverage within protected areas and high demand of activity data due agricultural activities and charcoal production and forest concessions.

Drivers of deforestation and forest degradation

All of the those activity actions have to be **oriented** for its realization with **minimum impact of deforestation and forest degradation**;



- Expansion of agriculture- shifting cultivation
- Expansion of residential areas and infrastructure development
- Unssutainable timber explotation
- Firewood and charcoal production
- Others



Example of expansion of Agriculture due to shifting cultivation, residential and infrastructure development

Results and Deliverables

- ☐ Map of forest cover and forest cover change;
- ☐ Maps of disturbance based on driver of deforestation and forest degradation and estimate mapped areas with high accuracies and biomass and carbon stock assessment;
- ☐ Ground truth data validation data;
- ☐ Country report with systematic information;
- ☐ Consolidation on NFMS for the country

Comparison of the existing deforestation detecting systems

Item	Hansen Tree Loss	JJ-FAST	GLAD Alert
General descriptions (objectives)	To estimate tree loss and gain by time-series analysis and visualize the global forest extent and their changes.	To constantly monitor the conditions of decreasing tropical forests and detect the change areas.	To estimate and show areas with possible tree cover loss.
Satellite imageries	LANDSAT	ALOS-2/PALSAR-2/ScanSAR	LANDSAT 7 and 8
Target area	Whole world	Natural tropical forest areas (Artificial forest areas are excluded.)	All countries between the latitudes 30 degrees north and 30 degrees south
Observation frequency	Every year	Every 1.5 months (Quick look products: 3-4 days after the observation) (Quality checked products: 1-2 weeks after the observation)	16 days or more to detect confirmed loss (Depending on cloud conditions, observation intervals can be extended by several weeks or even several months.)
Spatial resolution	30m	50m -> 25m(under development)	30m
Observation period	2001 to 2018	2016 or later	2017 or later
Data format	Raster (Tiff)	Shape file and KML	Raster (Tiff)

ALOS Technical processes (Monitoring Function)

National Forest Monitoring System(NFMS)

once collaboration led by JAXA

Monitoring Function

State of forests and effect of PaM

Satellite based monitoring

Forest cover change, forest fire, etc.

Tools: JJ-FAST, GLAD, GFW, MODIS, etc.

Field based monitoring

Target: Deforestation, Forest restoration

Tools: Community monitoring, PSP, etc.

Activity based monitoring

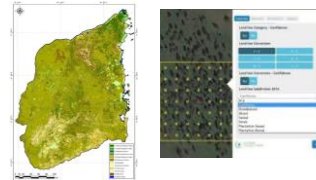
Target :Deforestation/degradation, logging

Tools: Concession, charcoal production, timber supply-chain, etc.

MRV Function

Satellite based
Collect Earth

Activity
Data



Measurement(M)

Field based
NFI

Emission
Factors



Reporting(R)

Verification(V)

Data management Function

MRV PF



Database

Web-portal

Selected data

FRIP



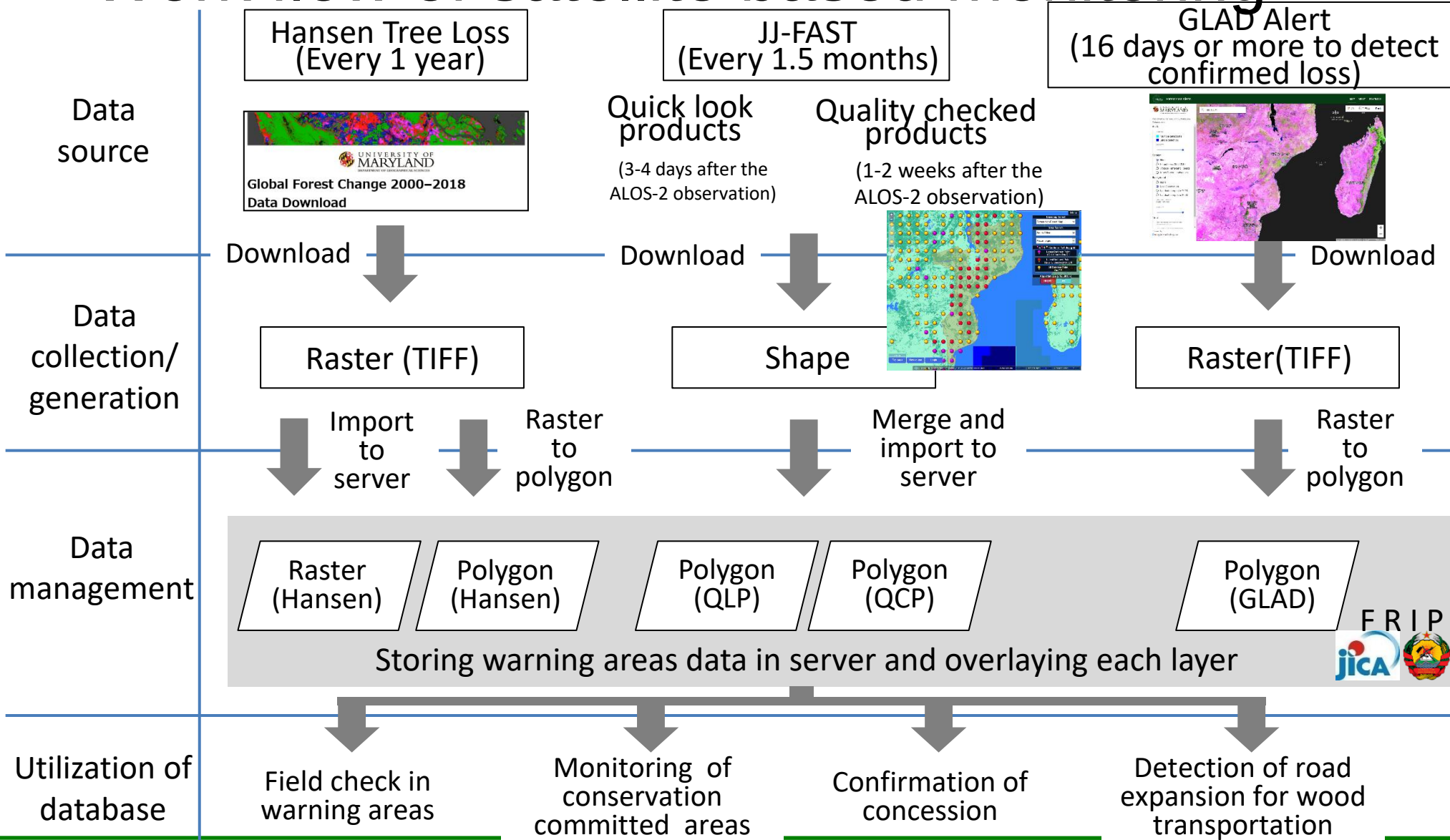
FNDS

SIS

REDD+ Safeguards

*The data and output of the measurements are also used for the design of policy and monitoring on SFM

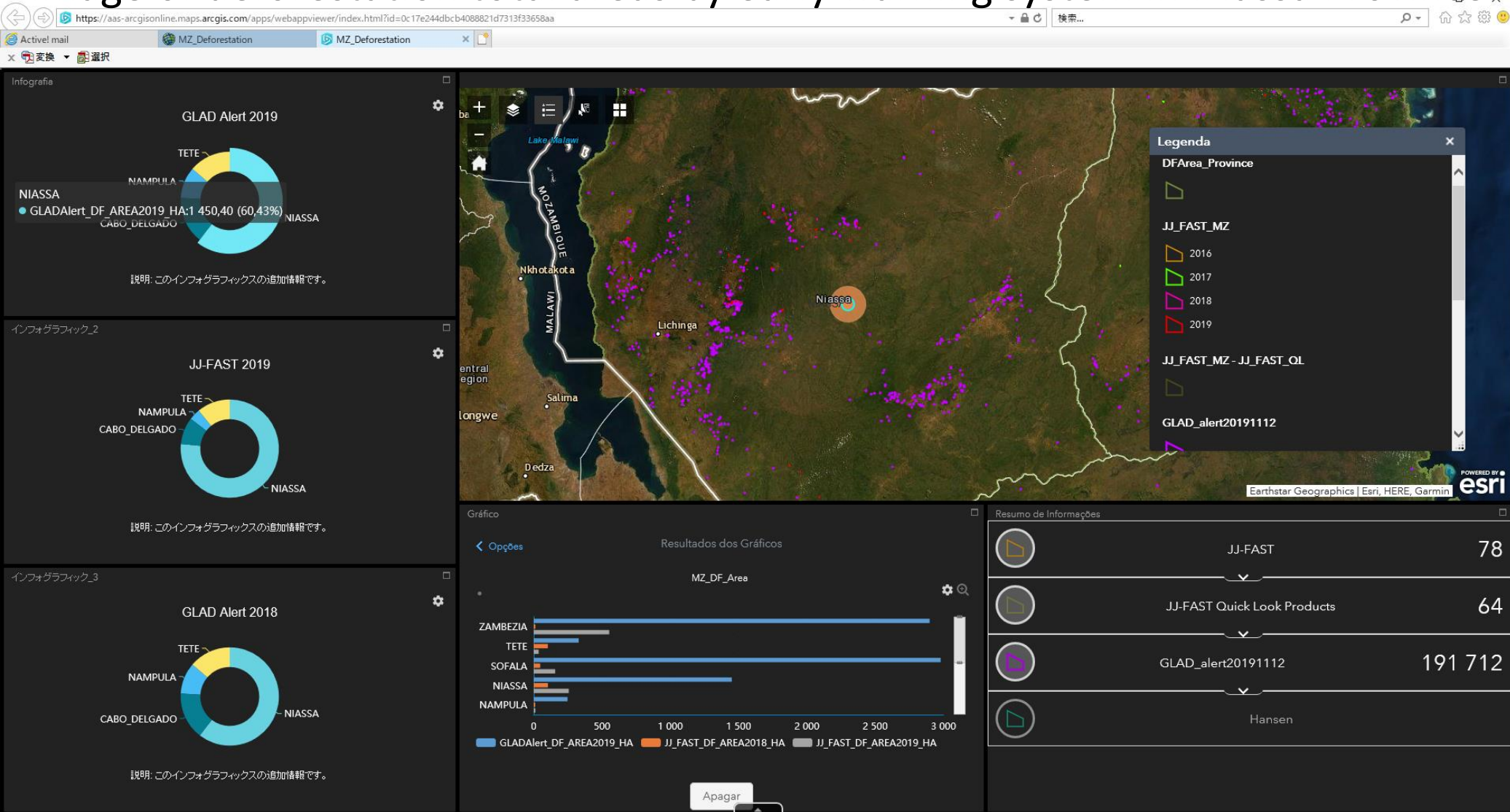
Work flow of satellite based monitoring



ALOS

K&C Initiative
An international science collaboration led by JAXA

Image of deforestation total areas by early warning system in Niassa Province

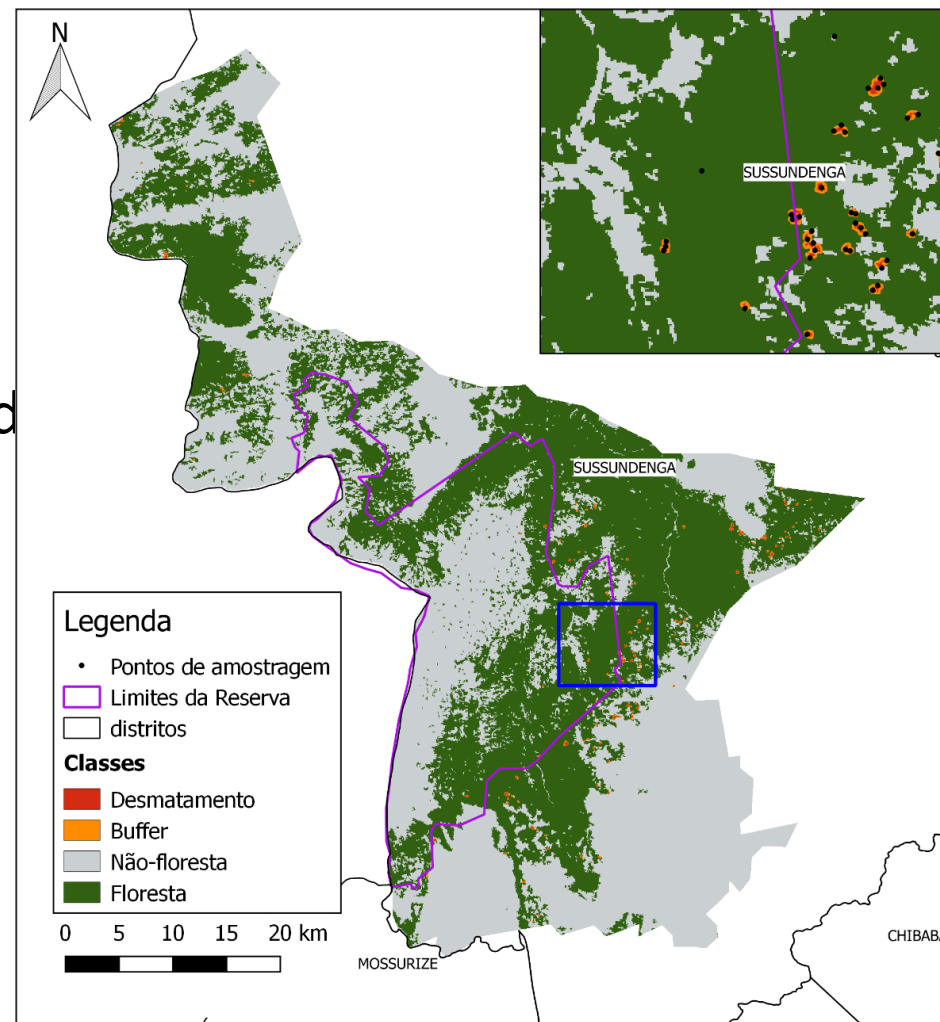


(b) Deforestation monitoring (implemented by FNDS)

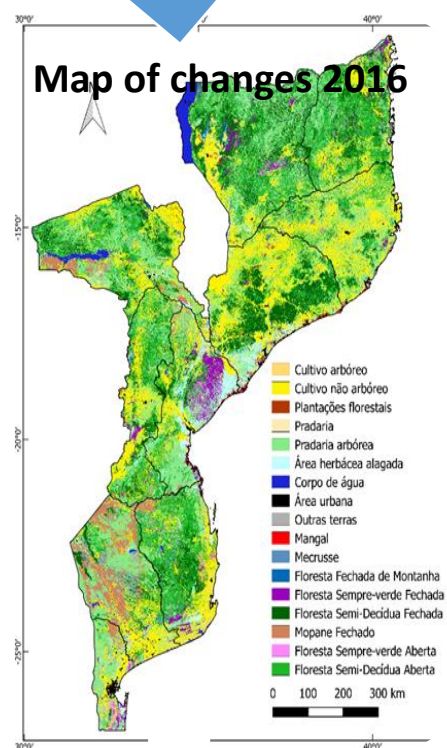
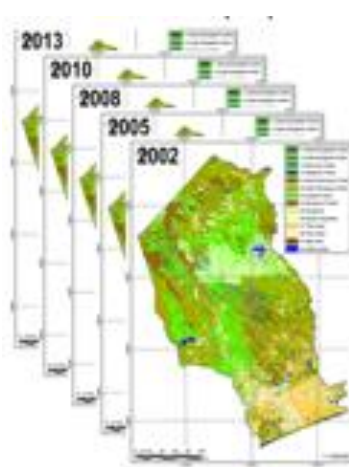
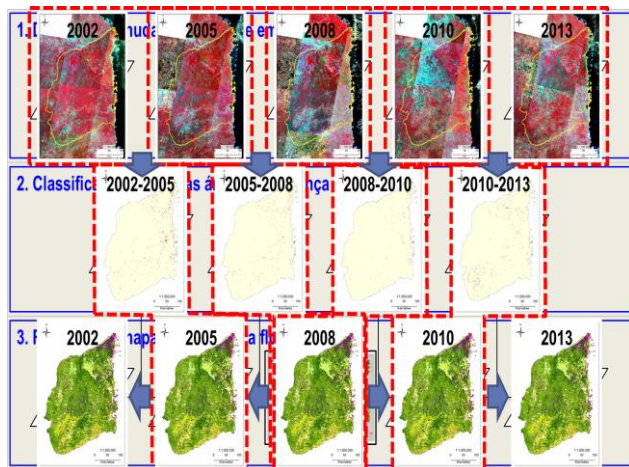
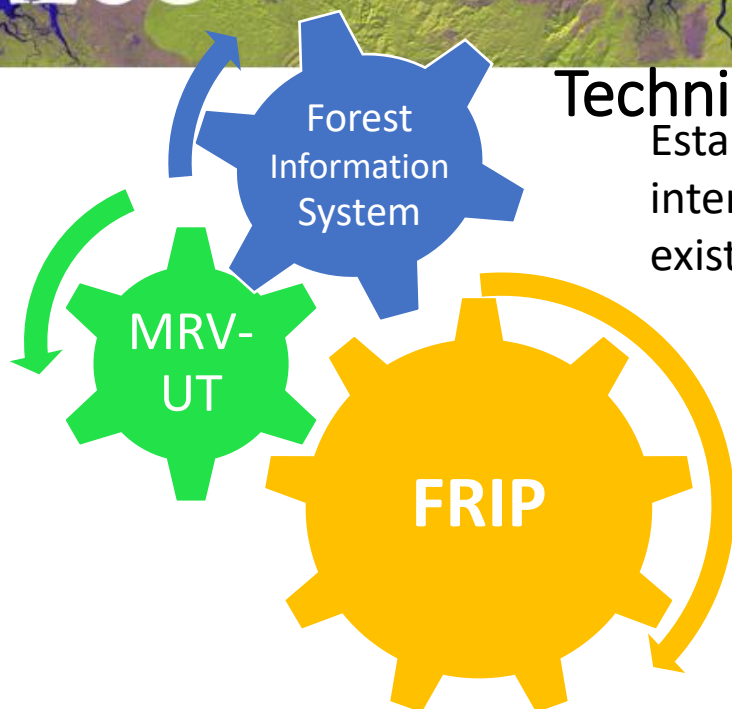
1. Produce annual deforestation map using NDVI Products from Sentinel-2 images
2. Collect reference data using Collect Earth (stratified sampling)
3. Estimate area of deforestation and emissions

Completed 2017 & 2018;

Zambesia, Cabo Delgado, Manica,
Sofala, Nampula

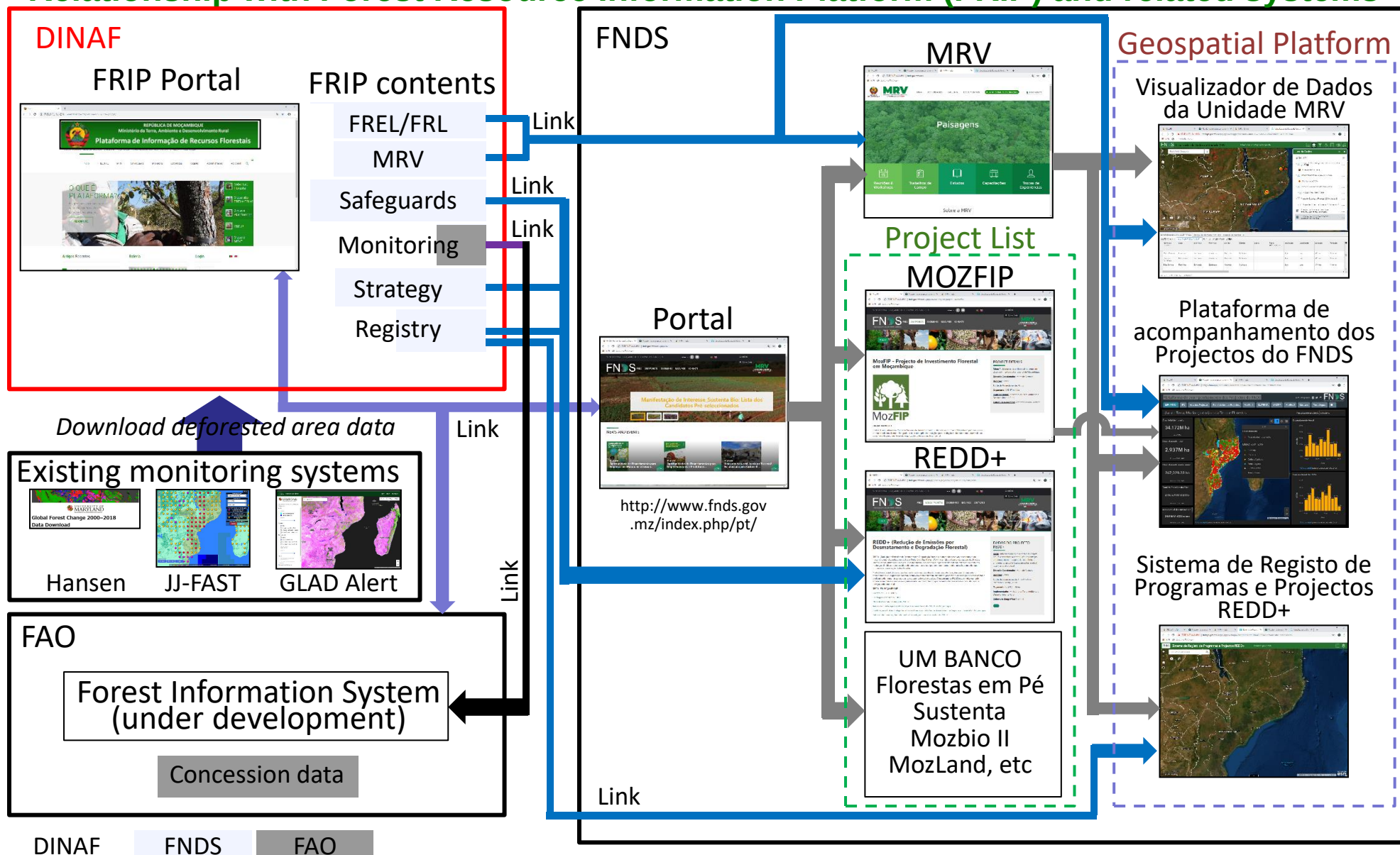


Techniques of forest monitoring

Establishment of
interoperability among
existing systems

Use of temporal satellite images (before and after as well as semi-real time information provided by JJ-Fast

Relationship with Forest Resource Information Platform (FRIP) and related systems



PALSAR/PALSAR-2 data access

We have a plan of requesting in the **next batch of April** ALOS-2 Path Image products as part of post-KC project, but we have limitation of doing additional processing in order to get the data in usable (radiometrically terrain corrected) format, which require software capacity;

The identified useful data up to now is the ALOS-2 mosaic data, ScanSAR data;

The output product will require large amount of data to complete for researching activity data and map accordingly in order to support decision makers of the country



“It always seems impossible until it's done.”
— *Nelson Mandela*

Thank you!

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