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## K&C Phase 4 – Status report

Establishment of Sustainable Forest Resource Information Platform for Monitoring REDD+ in the Republic of Mozambique

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LOS

#### **Project outline and objectives**

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The project is intended to contribute to Establishment of a REDD+ system in Mozambique (i) developing a forest resource information platform, (ii) developing an infrastructure for measurement, reporting, and verification (MRV) using that platform, (iii) forming Reference Emissions Levels or Reference Levels (REL/RL) for deforestation and forest degradation, and (iv) development data sets for estimation of forest biomass and carbon volumes. Also implementing regular and appropriate monitoring of forest resources after completion of the project;

The project has financial support of **JICA** and technical support of consultants teams of Japan namely **JOFCA** and **Kokusai Kogyo**;

Period of the project **5 years** (2013 - 2018).

#### **Deliverables**

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#### Planned output of the project:

- Database System functioning as the Forest Resources Information Platform is established – (e.g. registry projects for REDD+, Forest mapping, Forest concessions areas, safeguards, protected areas, etc.);
- Basis of MRV for the Forest Resources Information Platform is developed (e.g. Forest measurement, NFI, Fire monitoring, Forest map changes, etc.);
- RELs/RL for the Forest Resource Information Platform are created (e.g. allometric equations for selected species, Reference emission of the country, etc.);
- 4. Data set of biomass and carbon estimation (e. g. provision of regular data, etc.).

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## Supports of K&C thematic drivers

Carbon cycle science: accurate measurements, the effectiveness of mitigation or verification of emission reduction;

Climate Challenge: Identify places where deforestation occur due to many drivers including forest degradation when ever it is possible;

International Convention: Contribute for REDD+ implementation as well as INDCs of the country to UNFCCC;

Environmental Conservation: Restoration of national forest reserves, REDD+ implementation, Sustainable use of forest resources;

#### **General information:**

ALOS

### **Project area**

**Total area of the country** is **801 590 km<sup>2</sup>**. The climate is humid and tropical, the temperature vary from 13-24 ° C in July to 22-31 ° C in February, with two seasons cold and dry, hot and humid. Forest area is **41 million ha** (51%)

#### Target area of the project

**Cabo Delgado** Province with 7,789,700ha) (Northern part)

- Miombo forest

Gaza Province with 7,570,900ha (Southern part)

- Mopane forest

**Pilot Districts** 

Two districts from each of ten provinces were also selected as a pilot study area



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#### Points collected as some GT data

- To following maps shows the points where was used LANDSAT imagery (and AVNIR-2 partly referred) for developing the forest cover maps in the country:
- In Manica Province, the total 42 points were surveyed, and they included: (semi-)deciduous forests (13), miombo (8), (semi-)evergreen forests (including plantation (5)) (9), thickets (1), grasslands (5), and field crops (6).
- In this province, evergreen forests and <u>plantations</u> were found. At the same time, miombo were found in the southern part of the province. In the northern part of the province, on the other hand, **mopane forests mixed with semi-deciduous forests** were found.



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#### Points collected as some GT data (cont.)

In Tete Province, the total 56 points were surveyed, and they included: evergreen forests (2), (semi-)deciduous forests (18), miombo (14), mopane (5), thickets (1), grasslands (7), field crops (7), and built-up areas (2).

In this Province, mopane forests were found in the southern part of the province, while miombo were found in the northern part of the province. In northeastern part of the province, shifting cultivations were also widely found.



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#### Points collected as some GT data (cont.)

- In Niassa Province, the total 62 points were surveyed, and they included:
  evergreen forests (including plantation (5)) (8), (semi-)deciduous forests (17), miombo (22), thickets (1), grasslands (9), shrublands (3), and field crops (2).
- Most part of this province is located at high altitudes (around approximately 1,000m) and in cool environment. In this region, plantations (e.g. pines) were often found.



#### **Results and significant findings thus far**

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**Output 1:** Database System functioning as the Forest Resources Information Platform is already established;

**Output 2:** Basis of MRV for the Forest Resources Information Platform are under development already concluded the mapping of the two provinces using ALOS data;

**Output 3:** RELs/RL for the Forest Resource Information Platform are under development;

**Output 3:** Data set of biomass and carbon estimation is on going almost concluded one province (Gaza)



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### **Project milestones & Data sharing**

#### Until March 2018 (the end of Phase 4)

- 1. Development of an effective comprehensive forest resource information platform taking into consideration promotion of REDD+ and sustainable forest management;
- 2. Development of system for sustainable management of the forest resource information platform;
- 3. Ensuring consistency with the REDD+ R-PP;
- 4. Implementation comprehensive prior field survey for design of activities such as image analysis and inventories;
- 5. Development of Useful and consistent Forest Base maps;
- 6. REL/RL design taking national circumstances into consideration;
- 7. Selection of appropriate pilot districts;
- 8. Development of appropriate forest inventory survey methods;
- 9. Confirming consistency with international frameworks on REDD+ and counterparts development policies;
- 10.Capacity development for sustainable forest resource information platform management
- **11.Sharing with JAXA on our ground truth data and our results**.

#### **Other anticipated results**

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□ In a view of activities scheduled the forest cover maps using <u>Japanese Grant Aid</u> **4 provinces** are expected to be completed by **February 2017**. Other **2 provinces** will be completed in **October 2017**;

□ And the rest of maps will be delivered by **February 2018**;

#### **Satellite data source**:

Landsat imagery covering the entire country;
 Sentinel 1?;

# Main drivers of deforestation which brings a quick forest cover Changes (losses)

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- □ Commercial agriculture;
- □ Shifting cultivation;
- □ Charcoal production and fire wood;
- □ Urban expansion;
- □ Mining;

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Livestock;

#### **Utilization of ALOS 2 in relation to KC#4**

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✓to utilize the PALSAR-2 mosaic dataset to obtain a grasp of the current status of forest distribution in order to contribute to REDD+ activities in Mozambique taking into account to the major forest cover change.



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: Pilot districts

**Obtained ALOS-2 imagery in FY2014** 

### Utilization of ALOS 2 in relation to KC#4 (cont.)

#### Identification of the changes mainly deforested areas

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Mosaic IMG-HV-ALOS\_2014 and 2015

IMG-HV\_ALOS\_2014

**1. Ancuabe** district (**Cabo Delgado** Province) by visual interpretation

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# Deforestation : 05/Out/2014 — 26/July/2015

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Area	Num. of deforestation	Total Area (ha) 2014	Ave. Area (ha) 2015
0.0 – 0.5 ha	44	15.18	0.38
0.5 -1.0 ha	77	57.88	0.75
1.0 -2.0 ha	61	88.49	1.45
2.0 – 5.0 ha	30	86.19	2.87
5.0 – 10.0 ha	10	61.00	6.10
10.0 - 20.0 ha	2	24.28	12.24
20.0 – 50.0 ha	0	0.00	0.00
Total	224	333.02	23.79

ALOS-2 image : 26/07/2015

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### Some examples of activities that contribute for deforestation





# Findings

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#### We confirmed that fallen trees that remain in the area influence the image analysis

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### **Forest inventory survey**

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Within support of JICA project, DINAF have been conducting ground truth Forest inventory survey in Gaza Province using the data generated from the forest-cover maps as part of results of Radar imagery data provided by JAXA in KC#3 to the Forest sector;



# **Future activities**

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	2016	2017	2018
1. Development of Database System of Forest Resources Information Platform			
2. Development of the Basis of MRV for the Forest Resources Information			
<b>3.</b> Development of RELs/RL for the Forest Resource			
<b>4.</b> Data set of biomass and carbon estimation			

