



## Working session II

**Dar es Salaam and Morogoro, Tanzania, 13-29 May 2013**

Held as part of the project:

*Support Tanzania in the development of multiple benefits maps to inform REDD+ safeguards policies*

### Report from working session

**Objectives of the project *Support Tanzania in the development of multiple benefits maps to inform REDD+ safeguards policies*, executed by UNEP-WCMC in collaboration with TFS, FAO and UNDP:**

1. Contribute to, and support the development of enhanced national scale spatial datasets, statistics and maps on biodiversity and ecosystem services for Tanzania for the purpose of informing REDD+ policies and measures, notably land use planning and prioritization of REDD+ intervention zones. The themes referred to in the Cancun environmental safeguards, including natural forest and priority areas for multiple benefits (carbon, biodiversity, other ecosystem services) will be mapped, building on and using the NAFORMA plot data alongside other relevant national scale spatial datasets.
2. Build capacity within Tanzania on spatial analysis of datasets of relevance to multiple benefits and environmental safeguards for REDD+ and on approaches to developing information systems for safeguards.

**Objectives of the working session:**

1. Finalize a second set maps defined as outputs in the project, in addition to what was produced in working session 1.
2. Present the outcomes to a larger stakeholder group to disseminate the work and get feedback before finalizing the outputs.

#### **Introduction**

Seven people participated in this working session, nominated for participation by Tanzania Forest Service. This included all participants of working session one, except one person. The workshop lasted twelve working days, 13-29 May 2013. The two first days were spent in DSM, on consultations with senior staff in TFS and meeting with relevant NGOs. The group work started on 15 May. Eight days of the training session were spent in Morogoro, at Sokoine University of Agriculture (SUA), and three days in DSM, at the offices of the Tanzania Forest Service.

#### **Mode of work**

The working session was conducted with the following main elements:

- **Presentations** on new tasks;

- **Group discussions** on how to address particular questions, and what the best way of creating and presenting certain maps might be;
- **Work in pairs or teams of three, sometimes individually, on a particular task.** In contrast to the first working session, where most activities were carried out following a tutorial, the second working session were largely structured around independent work, with guidance from the facilitators.

In the second working session the participants were familiar with the GIS software and the training format could move from working from tutorials to less structured problem solving activities. Working session 2 relied more heavily on group discussions on how to best process and improve available data, and how to present the maps. This was followed by group work to undertake different specific tasks identified from the discussions. Tasks were assumed by smaller teams or 1-3 people, and carried out to completion by these teams. A few exercises that had specific elements of interest to the entire group were done jointly.

The different tasks, while using similar GIS tools, were associated with different issues for which solutions had to be found. The groups worked together with facilitators who circulated among groups to develop approaches for solving the problems that arose.

This collaborative mode of working was intended to lead to greater learning, and enhance the quality of the outputs, by ensuring that the competence of the group was fully utilized. The participants of the working session also drew on their networks to collect data for the mapping work.

As in working session 1, all work was conducted in open source GIS software (QGIS, SAGA and GRASS), in the Xubuntu (Linux) operative system installed on a live USB, which also held installations of all software with necessary extensions. The participants kept their USB at the end of the working session. The FAO-FIN programme was of great assistance in preparing these USBs. This setup ensured that each participant worked in identical OS, and valuable time did not have to be spent on configuring different computers. Most participants worked on their own laptops, and the machines were generally strong enough to process the data as required.

### **Activities and outputs**

For further information on the details of the below activities, please refer to the project methodological brief and final report.

- **Creating new vector data**
  - Wildlife corridors
- **Processing tabular data for joining to spatial polygons**
  - Population density
  - Population change
- **Comparing, error checking and editing vector data**
  - Management units (forest reserves and other protected areas, protection and production status)
  - Road networks

- **Digitization of map images**
  - Bee reserves (each individual digitized one map)
- **Forest inventory data processing**
  - NTFP maps from NAFORMA inventory
  - Charcoal production impact map
- **Cleaning of tabular data to process for mapping**
  - Catchment forests
  - Threats to biodiversity and non-species biological values at the ecoregion level
- **Overlays of different datasets, and clipping to represent selected areas**
  - Potential zones for implementation of REDD+ activities
- **Production of final map layouts**

### **GIS analyses and skills covered in the working session**

In this working session, participants built on the knowledge that was gained in the first working session. Processes included creating and editing vector data; digitizing map images; joining datasets with different configurations; formatting and cleaning raw data in different ways to make it ready for GIS analysis; creating map layouts in QGIS; and developing methodologies for comparing two datasets, error checking and recording decisions taken in the data. Further technical detail is provided in the methodological brief, which is part of the project deliverables.

### **Map products produced**

- Wildlife corridor map
- Management units (forest reserves and other protected areas; protection and production status)
- Population density
- Population change
- Observed charcoal impacts from the NAFORMA inventory, mapped with the road network
- NTFP maps from the NAFORMA survey
- Digitized bee reserve maps
- Potential zones for implementation of REDD+ activities
  - Maintain forest and avoid timber extraction
  - Sustainable management of forests
  - Rehabilitation of forests
  - Establishment of plantations

### **Presentation of outputs**

On 28 May, around 15 organizations were invited to Africa Hotel in Dar es Salaam for a presentation of the outputs from the two working sessions, and discussions on how the outputs could be improved for the final report. Four people from TFS, the REDD+ Task Force, UNEP and UNDP attended and discussed the results. Recommendations were discussed the next day, in the final day of the working session, and decisions were made on how to address remaining issues.

## Annex I – Workshop agenda and topics covered

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Mon 13	Presentation senior management TFS and others	
Tue 14	Meeting TCFG – travel to Morogoro	
Wed 15	<ul style="list-style-type: none"> <li>• Cleaning and creating data – forest reserves and wildlife corridors</li> </ul>	
Thu 16	<ul style="list-style-type: none"> <li>• Digitization of bee reserves</li> <li>• Mapping management units and population census.</li> <li>• Tutorial on digitization</li> </ul>	
Fri 17	<ul style="list-style-type: none"> <li>• Management units, population census and wildlife corridors</li> </ul>	
Mon 20	<ul style="list-style-type: none"> <li>• NTFP mapping from NAFORMA data</li> </ul>	
Tue 21	<ul style="list-style-type: none"> <li>• Management units, population census and wildlife corridors</li> </ul>	
Wed 22	<ul style="list-style-type: none"> <li>• Cleaning forest reserve data</li> <li>• Maps at ecoregion level</li> </ul>	
Thu 23	<ul style="list-style-type: none"> <li>• Discussion on how to map potential zones for implementation of different REDD+ activities</li> <li>• Continuation of ongoing tasks</li> </ul>	
Fri 24	<ul style="list-style-type: none"> <li>• Final population map in layout, overlay with natural forest</li> <li>• Road and charcoal maps</li> <li>• Ecoregion level maps</li> <li>• Catchment forest lists</li> <li>• Final checking of forest reserves against WDPA</li> <li>• Finalize NTFP maps</li> <li>• Produce final layouts in QGIS which were used as templates for the rest of the maps</li> <li>• Potential zones maps including overlaying natural forest and carbon</li> </ul>	
Mon 27	<ul style="list-style-type: none"> <li>• Finalizing maps, e.g. on wildlife corridors, potential zones maps including overlaying natural forest and carbon, charcoal impacts</li> </ul>	
Tue 28	<ul style="list-style-type: none"> <li>• Presentation and discussion of maps at Africa Hotel with invited stakeholders</li> <li>• Discussions about data management and access.</li> </ul>	
Wed 29	<ul style="list-style-type: none"> <li>• Presentation to group on data management</li> <li>• Presentation to group on Waterworld</li> <li>• Discussion of maps, statistics and content for drafting the final report</li> <li>• Ensuring that TFS computers and laptop had working copies of QGIS and SAGA in Windows and that UNEP-WCMC had a copy of each participant’s USB sticks to enable compilation of a final distribution of data after the working session.</li> <li>• Ensure that each participant had an updated copy of the data, final maps, training materials and presentations.</li> <li>• Installed antivirus software on all laptops that didn’t have antivirus software installed.</li> <li>• Provide a folder of additional useful resources relating to QGIS and creation of live USBs.</li> </ul>	

## Annex II – Participant list

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	Name	Affiliation	Email
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### **Annex III – A selection of datasets pursued**

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The below datasets were pursued for the purpose of the project, but were not included in the final set of maps for different reasons, including because data was not made available; because there was not enough time to clean or process the data for mapping or for obtaining permissions to use it; or because there was a decision to use other data instead.

- Key Biodiversity Areas
- Endemic species lists – mammal list updated, other taxa still needs processing
- Invasive species – list of invasive plants received
- Overgrazing – got unpublished dataset on cattle densities from FAO
- Fire danger index and intensity
- Land use management plans (letter to the LUPC), Almas following up in person
- Geology
- Village forest reserve information – location of data and discussions about processes for storing and management of such data
- Boundaries for the 2012 wards
- JFM boundaries
- Village map
- Timber records
- Official data of Tanzanian wildlife corridors
- Wild animal census data
- Soil carbon
- Land-cover change
- Catchment forests
- WWF data on coastal forest reserves (email to WWF)
- Spoke to beekeeping expert at SUA – tried to see what information we could get hold of in terms of beekeeping locations and other relevant data
- Bee reserves
- Threats to biodiversity and non-species biological values at the ecoregion level