



Multiple benefits maps to inform REDD+ planning and safeguards policies **in Tanzania**

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Collaboration



Purpose: inform REDD+ policies and measures, particularly land use planning and prioritization of REDD+ intervention zones.

- The mapping work was funded by Tanzania's UN-REDD National Programme along with additional UN-REDD funding
- Participation by the Tanzania Forest Service, Sokoine University of Agriculture, Forestry Training Institute
- Technical support by UNEP-WCMC and FAO



Mapping work sessions



Aims:

1. **Develop improved national scale spatial datasets and maps**
2. **Build spatial analysis capacity within Tanzania**

5 week working sessions:

- Learning to use open source GIS software
- Deciding on what maps to make
- Locating and processing data
- Training on relevant analyses and procedures for creating the maps





Learning open source GIS software



- **Some of the topics covered:**
 - Principles of data management and copyright
 - Vector data in QGIS
 - Map layouts and templates in QGIS
 - Understanding map projections and how they work in QGIS
 - Introduction to raster data in QGIS, GRASS and SAGA



Data sources

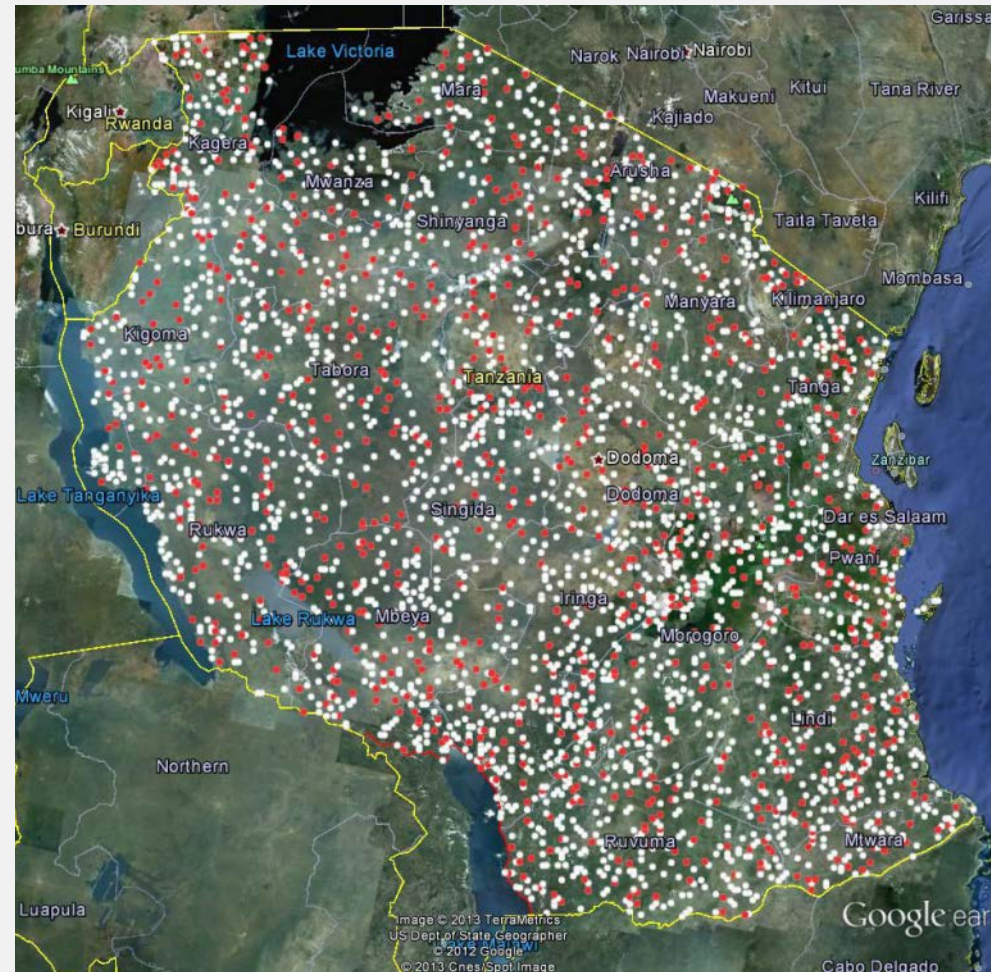


NAFORMA –

Tanzania's forest inventory



- **Biophysical survey:**
32 660 ground plots
organized in 3 419
clusters
- Over 240 000 trees
measured
- **Socioeconomic:**
3 500 household and
1 100 key informant
interviewed
- 200 parameters
measured





Examples of other data sources used



- National data, including:
 - National Bureau of Statistics – population census data
 - Tanzania Wildlife Research Institute – wildlife corridors
- International data, including:
 - IUCN Red List of Threatened Species – species range data, and status of threatened species
 - MODIS – remote sensing data of forest fires



RESULTS

Covered already today: biomass
carbon and natural forest

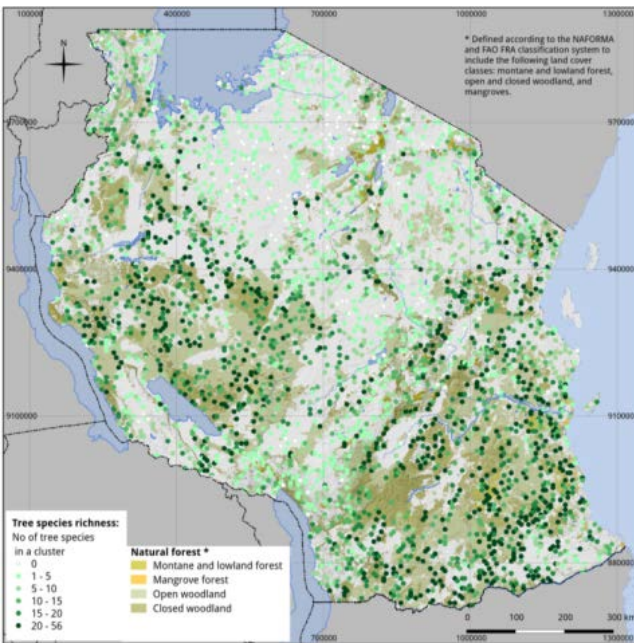
So we continue with...



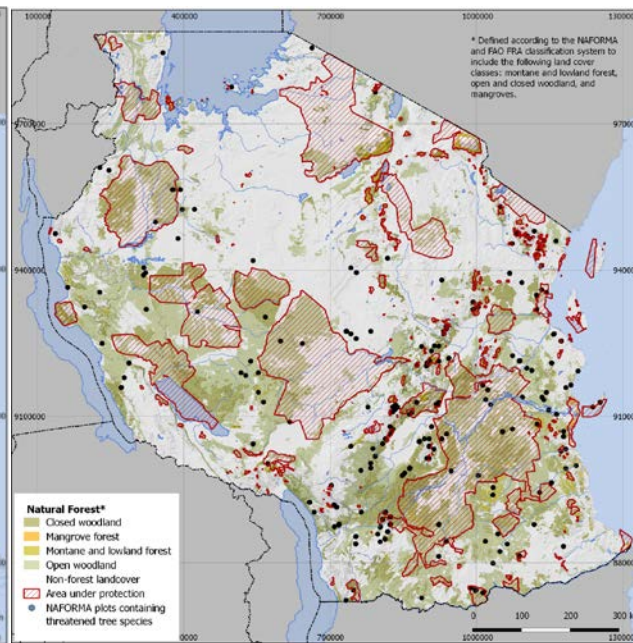
Biodiversity

Using NAFORMA to map tree species

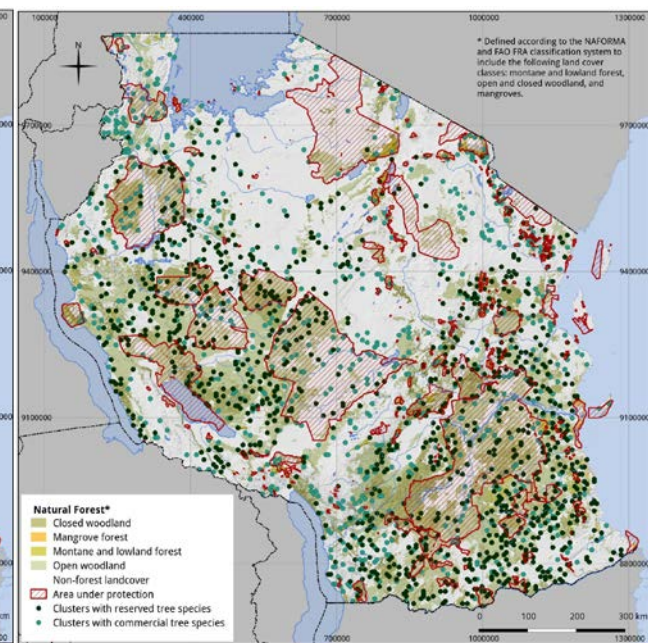
Tree species richness



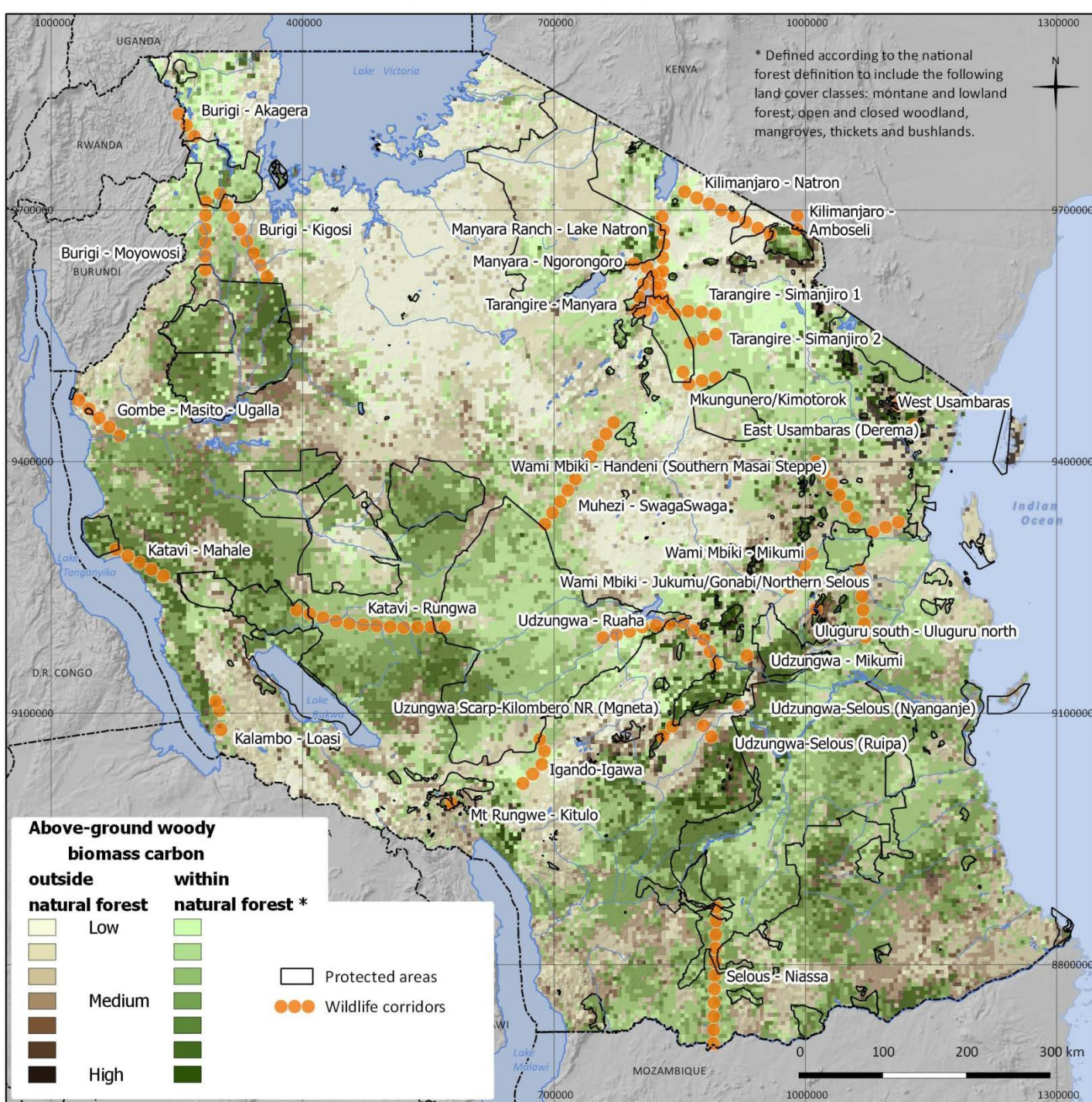
Threatened trees



Reserved and commercial species

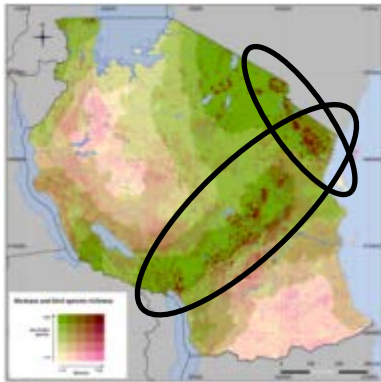


Where are major wildlife corridors located and how do they correspond with natural forest, carbon stocks and protected areas?

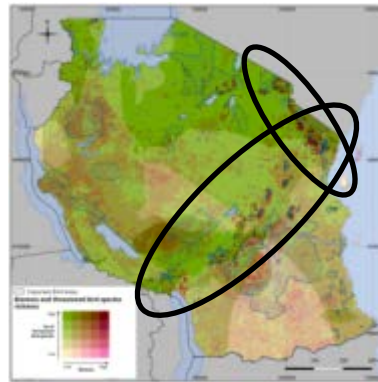


Map sources:
Biomass: NAFORMA woody biomass only. 5km preliminary dataset base on field data only.
Natural forest: NAFORMA landuse landcover map 2010.
Wildlife corridors based on information provided at tzwildlifecorridors.org
Protected Areas and Forest Reserves: TFS and WDPA 2013.

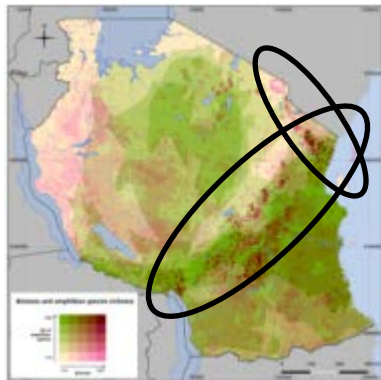
BIOMASS AND BIODIVERSITY



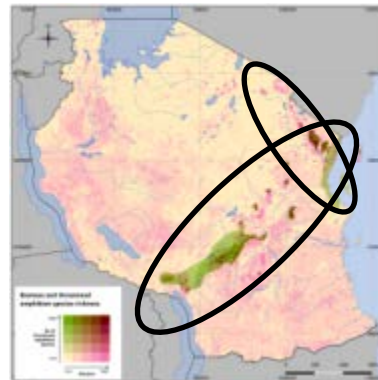
Birds



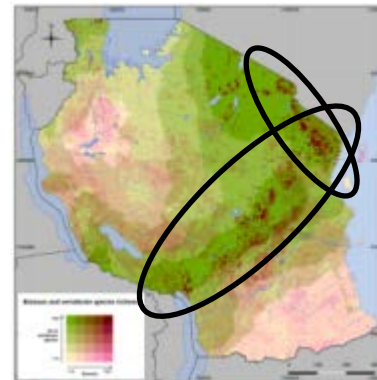
Threatened birds & IBAs



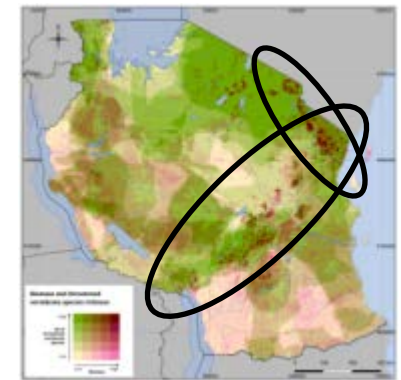
Amphibians



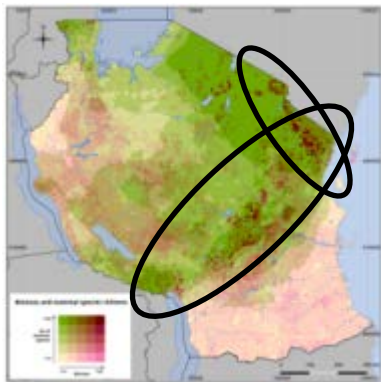
Threatened amphibians



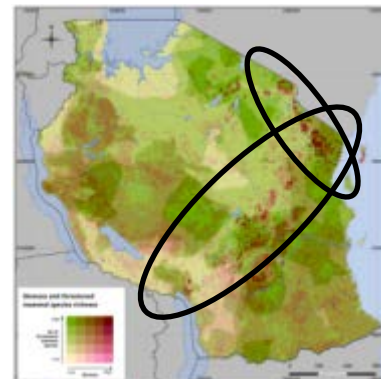
Vertebrate species



Threatened vertebrate species



Mammals



Threatened mammals

Map sources:

Biomass: NAFORMA woody biomass only. 5km preliminary dataset base on field data only.

Threatened vertebrates: IUCN 2013. The IUCN Red List of Threatened Species. Version 2012.2.

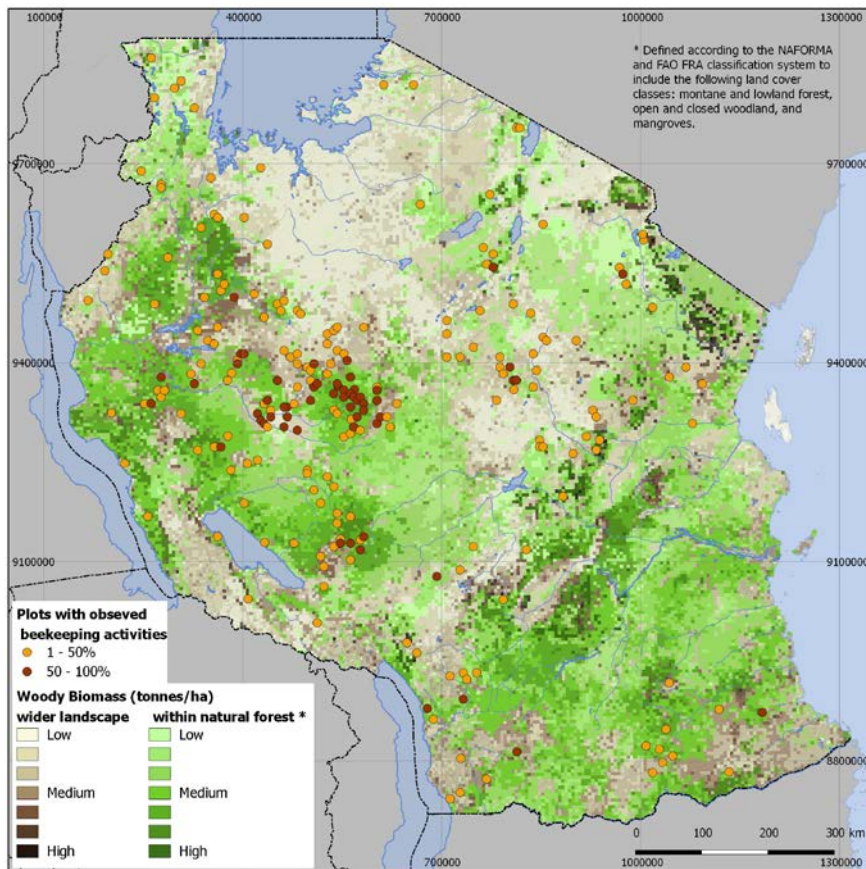
<<http://www.iucnredlist.org>>. Downloaded March 2013. Spatial data from IUCN, 2013. Important Bird Areas, BirdLife International, 2013



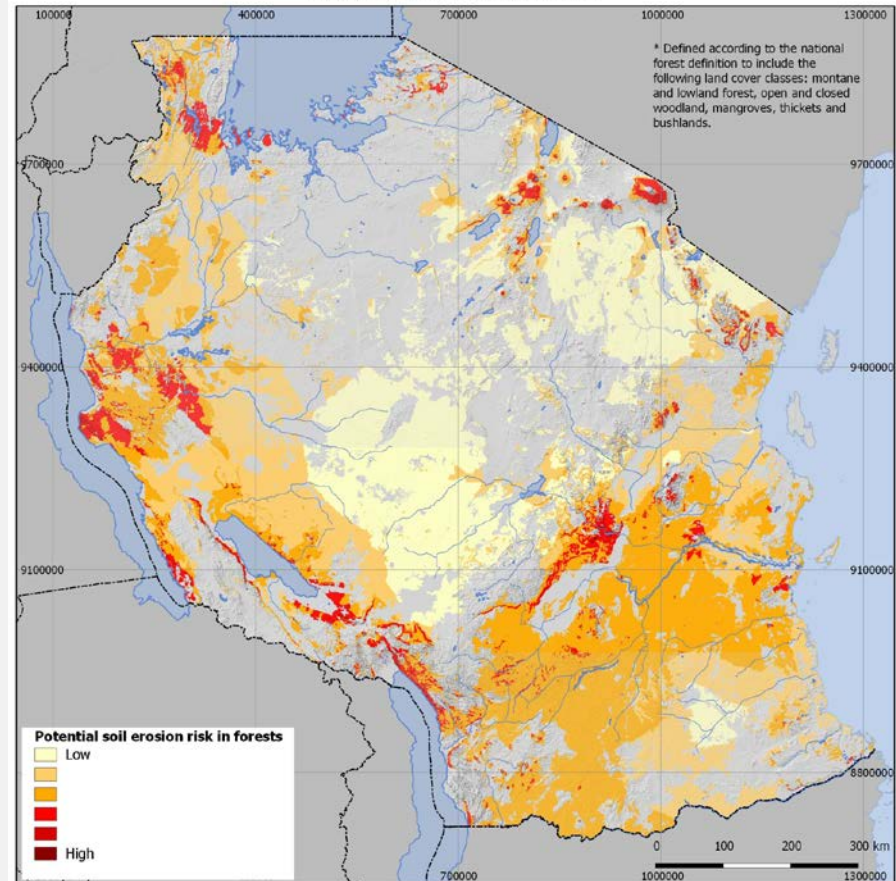
Ecosystem services



Distribution of NTFPs using NAFORMA data

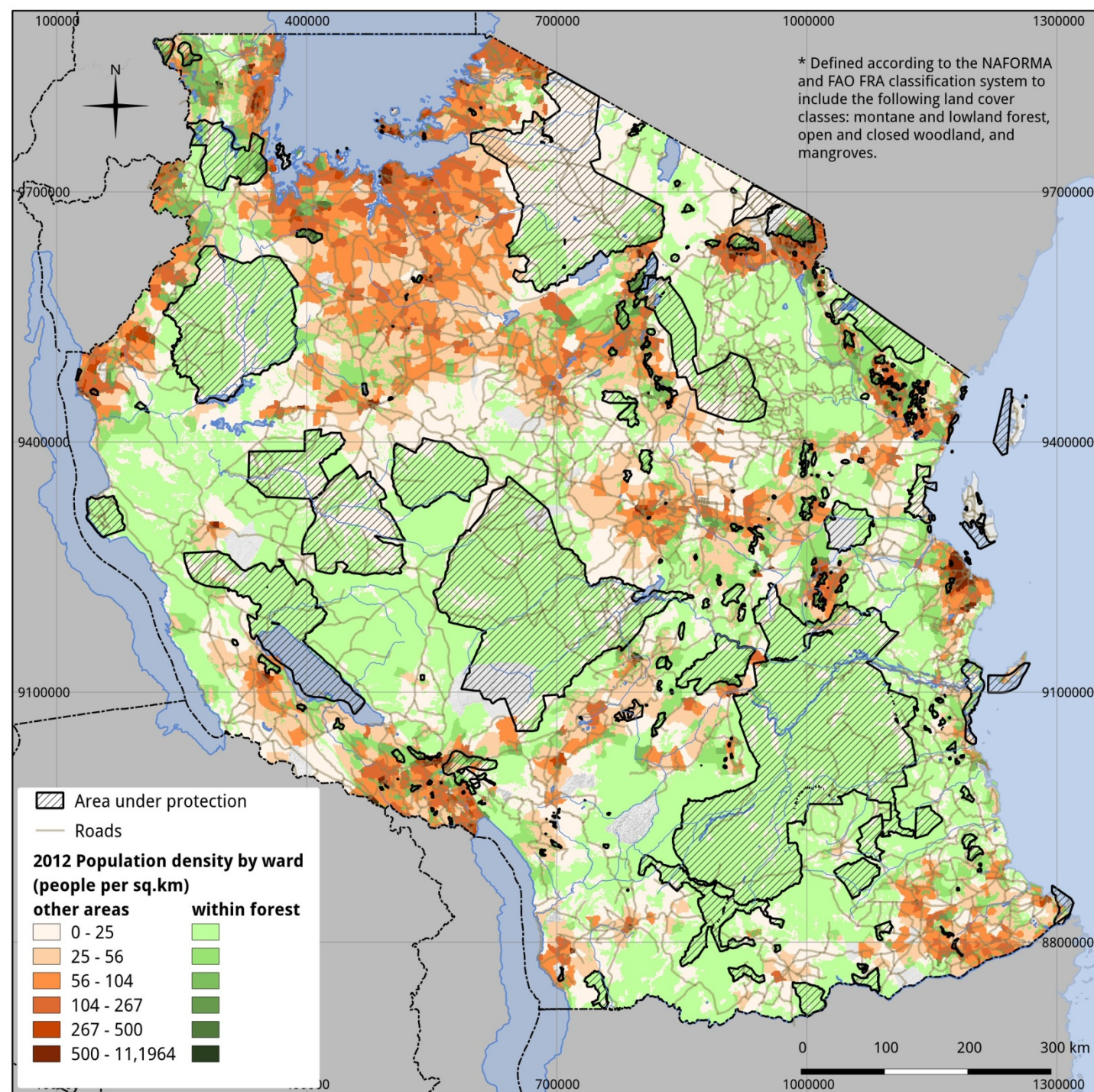


Location of forests important for limiting soil erosion





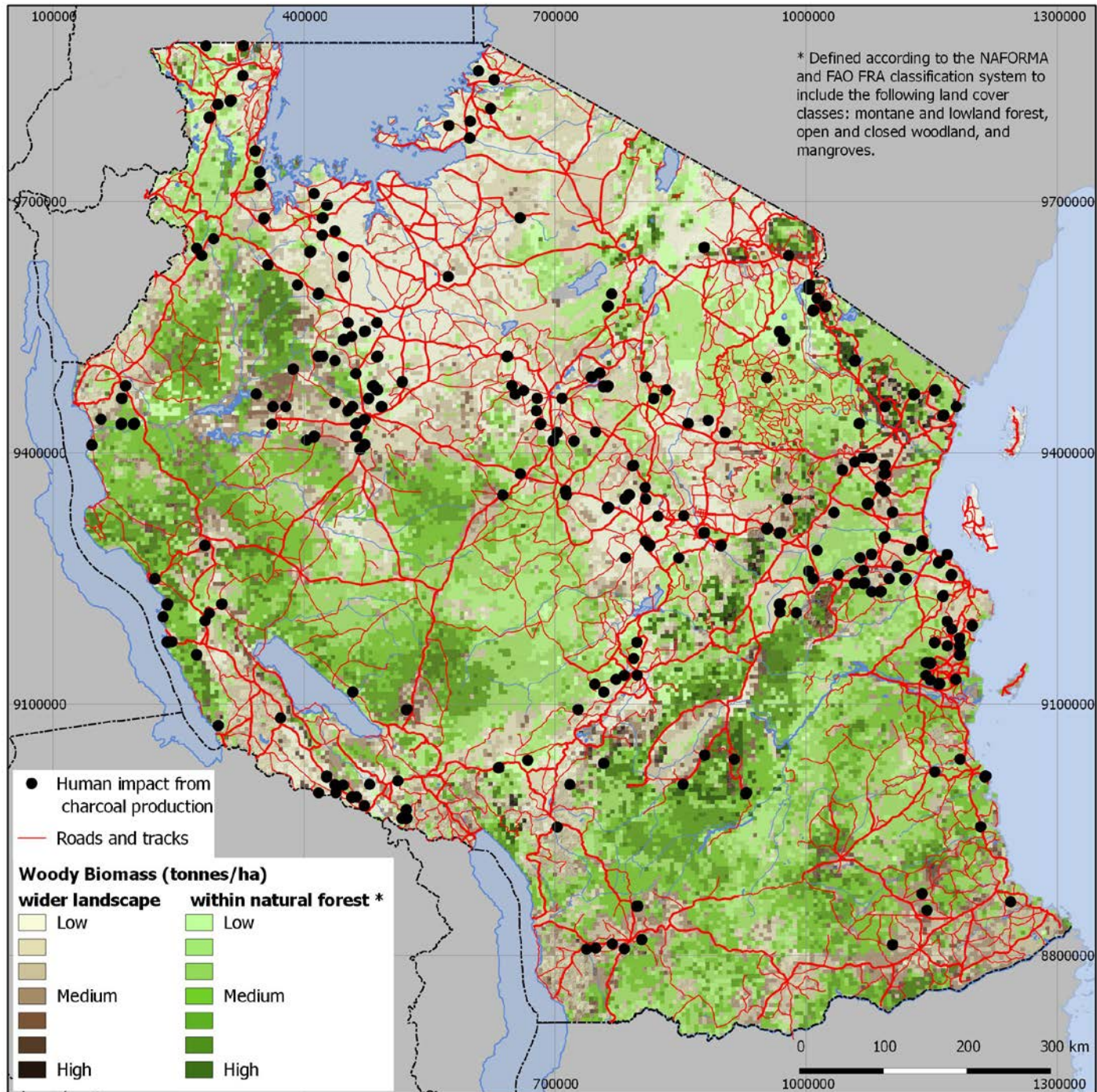
Pressures on biodiversity, carbon and other ecosystem services



Where is population density high inside and outside forest land?

What is the correlation with the road network and protected areas?

Map sources:
 Natural forest: NAFORMA landuse landcover map 2010.
 Population density: Census 2012 linked to 2002 ward boundaries.
 Roads: TFS
 Protected Areas and Forest Reserves: TFS and WDP A 2013.



Where has impact on plots from charcoal production been observed by NAFORMA?

How is it correlated to the road network?

Map sources:

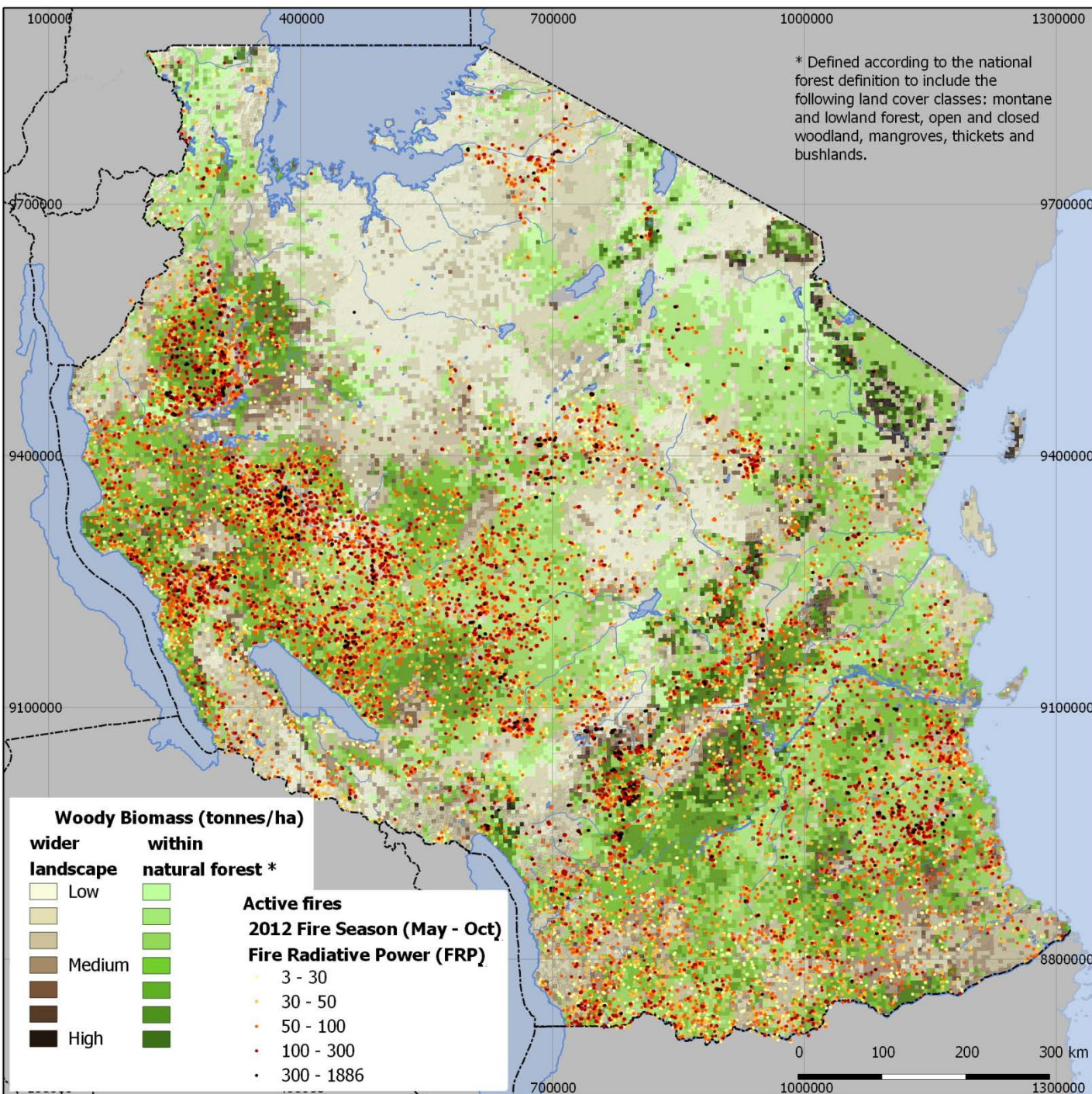
Natural forest: NAFORMA landuse landcover map 2010.

Biomass: NAFORMA woody biomass only. 5km preliminary dataset base on field data only.

Human Impact, NAFORMA 2013.

Roads: TFS

Which natural forests are particularly exposed to fire?





Asante sana!

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Tanzania Forest Service

Ministry of Natural Resources and Tourism