Baseline management effectiveness in the CEPF Eastern Afromontane Hotspot Region

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This report

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Contents

Summary

The aim of this project was to:

Provide a baseline of Protected Area Management Effectiveness (using the METT tool) and forest cover to measure future changes following CEPF investment. This has been done by a team from UNEP-WCMC and University of Copenhagen who did the following work:

1)   Gather and input METT assessments into a database and analyse them in terms of reserve effectiveness.
2)   Spatially depict sites that are KBAs, Protected Areas, have METT scores, where CEPF is working, and where the forest loss is known.

The results are presented in simple form to allow CEPF to return to the sites in some years and measure changes that have occurred over time. In addition to the report the main outputs are an Excel file of METT data for PA and KBA sites and a GIS project of the spatial data and analysis

Summary results

CEPF has identified 310 KBAs in the Eastern Afromontane region and is working in 49 priority KBA sites on the ground.

Of the 310 KBAs, 142 are Protected Areas and 97 have METT assessments available.

The largest number of METT assessments have been completed in Tanzania (95 sites), with the fewest in Malawi (one site), Rwanda (two sites) and Burundi (two sites). Not all of these are protected areas contained within the World Database on Protected Areas (WDPA), for example some of the Tanzanian sites are Village Land Forest Reserves and not found in the WDPA.

Of the available METT assessments, only eight were collected by CEPF, the rest were obtained from UNEP-WCMC's Global Database on Protected Areas Management Effectiveness and were collected by various agencies (primarily funded by the GEF).

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The average METT scores for protected areas in the region was 49.79, with scores higher in countries such as Kenya (81.35, n=3 sites), Rwanda (61.41, n=2 sites) and Zimbabwe (60.66, n=3 sites). The lowest average METT score was recorded for Burundi (36.11, n=2 sites).

Where METT scores have been repeated there is a tendency for scores to increase, mainly where these have been associated with a GEF-funded project.

Because so few METT assessments have been completed for CEPF funded sites, it is not possible to make clear statements on the baseline effectiveness of the protected areas in the CEPF Eastern Afromontane hotspot. There are also no trends available in METT scores in CEPF funded sites.

A visual comparison of protected areas and forest loss 2000—2012 suggests that protected areas are broadly helping reduce forest loss. However, more detailed analysis of effectiveness of protected areas at reducing forest loss, and the incremental value of the CEPF investment, has not been possible using the available data and funding.

Summary recommendations

In order to better assess the changes due to their investment, CEPF needs to consider the following:

1) Request all CEPF grantees working in Protected Areas to complete a METT form at the start and end of project investment to determine changes in management effectiveness.
2) Assist grantees to conduct simple data collection (for example using the IBA monitoring tool) to measure changes in conservation state, pressure and responses at their sites.
3) Conduct further analysis of the CEPF effectiveness baseline when a larger data sample from CEPF funded sites is available.
4) Analyse data on changes in habitat and species trends to sites where CEPF is investing and not-investing, and conduct further analysis, to provide further guidance to the CEPF Eastern Afromontane RIT on the outcomes of their investment.

1. Introduction

The Critical Ecosystem Partnership Fund (CEPF) brings together a consortium of several organizations who have invested in conserving the world's most biologically diverse areas, or 'hot spots', notably through the involvement of civil society (NGOs, CSOs, Universities and other research bodies). It has for some years been investing in conservation activities that aim to improve the Eastern Afromontane biodiversity hotspot, in terms of protecting both species, sites and habitats.

The Eastern Afromontane hotspot covers 1,017,806 km^2 and stretches from Saudi Arabia and Yemen in the North, through parts of Eritrea, Ethiopia, South Sudan, The Democratic Republic of Congo, Uganda, Kenya, Rwanda, Burundi, Tanzania, Zambia and Malawi, to Zimbabwe and Mozambique in the south (CEPF, 2012).

The Eastern Afromontane biodiversity hotspot is composed of a number of scattered mountain ranges, which are biogeographically similar (CEPF, 2014). These include the Eastern Arc Mountains, the Southern Rift, the Albertine Rift, the Ethiopian Highlands, and isolated mountain patches in Arabia in the north and Zimbabwe and Mozambique further south (CEPF, 2012).

Within the hotspot, CEPF has identified 310 Key Biodiversity Areas (KBAs) as priorities for investment: 261 terrestrial and 49 freshwater (CEPF, 2012). Key Biodiversity Areas (KBAs) are sites that meet defined criteria of importance for species (CEPF, 2012, Knights *et al.,* 2007, Langhammer *et al.,* 2007). Whilst many of the KBAs in the Eastern Afromontane fall within already Protected Areas (PAs), i.e. those found in the World Database on Protected Areas (WDPA) produced by UNEP and IUCN, the CEPF profile document states that "almost 40 percent of the total KBA are situated outside of PAs and thus without protection" (CEPF, 2012). Our calculations using the 2014 version of the WDPA suggest that this is actually around 55% of the KBAs that are unprotected, if the WDPA has accurately captured all protected areas within the hotspot profile region.

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Monitoring Protected Area effectiveness

Protected Areas (PAs) have long been regarded as an important conservation tool (Geldmann *et al.,* 2013) and cover 15.6% of the planet's land surface (Juffe-Bignoli *et al.*, 2014). However, there is a growing concern that many PAs around the world are not achieving their objectives. In response to this concern, the Convention on Biological Diversity (CBD) has made the systematic measurement of the management effectiveness of the global PA network part of the Targets agreed at the CBD COP 10 meeting in Japan and it is embedded as one element of Aichi Target 11, which is to be achieved by 2020.

A number of different tools have been developed to systematically assess PA management effectiveness. The most widely used is the World Wildlife Fund/World Bank 'Management Effectiveness Tracking Tool' (METT) which was built upon the WCPA (World Commission on Protected Areas) framework for assessment of Protected Areas (Hockings *et al.*, 2006). Operational in 2003, the METT is now applied as a mandatory reporting mechanism for all Protected Area projects funded by the Global Environment Facility, and the World Bank, and is additionally used by other international agencies to track PA management, for example WWF, IUCN, CEPF and CI. The tool has also been used by national agencies, although they have often adopted it to their own interests. Besides METT, a large number of other management effectiveness assessment systems have been used globally and these are reviewed in Leverington *et al.* (2010).

In addition to the quality of management, changes in conservation outcomes are also important to measure within conservation programmes. In this hotspot most of the area is mountainous and supports tropical forest, areas of montane grassland and drier woodlands. There are also considerable areas of farmland and some plantations. One of the measurable conservation outcomes that can serve as a baseline is forest cover where time series are readily available.

Here we establish a baseline of effectiveness of management within the Eastern Afromontane hotspot protected areas, using results from the METT tool, in particular within sites that are receiving support from CEPF. We also outline the forest cover status of these areas and the changes that have occurred over the past 10 years using a globally standardized dataset (Hansen *et al.*, 2013; updated in 2014). The overall aim is to establish a baseline against which future changes, e.g. due to CEPF investment, might be measured.

2. Methodology

Study Area

The study area covers the entire Eastern Afromontane hotspot region (Figure 1). It covers both the Eastern Arc Mountains (which received past CEPF support) and the remaining mountain ranges (which are receiving investment from CEPF at the present time).
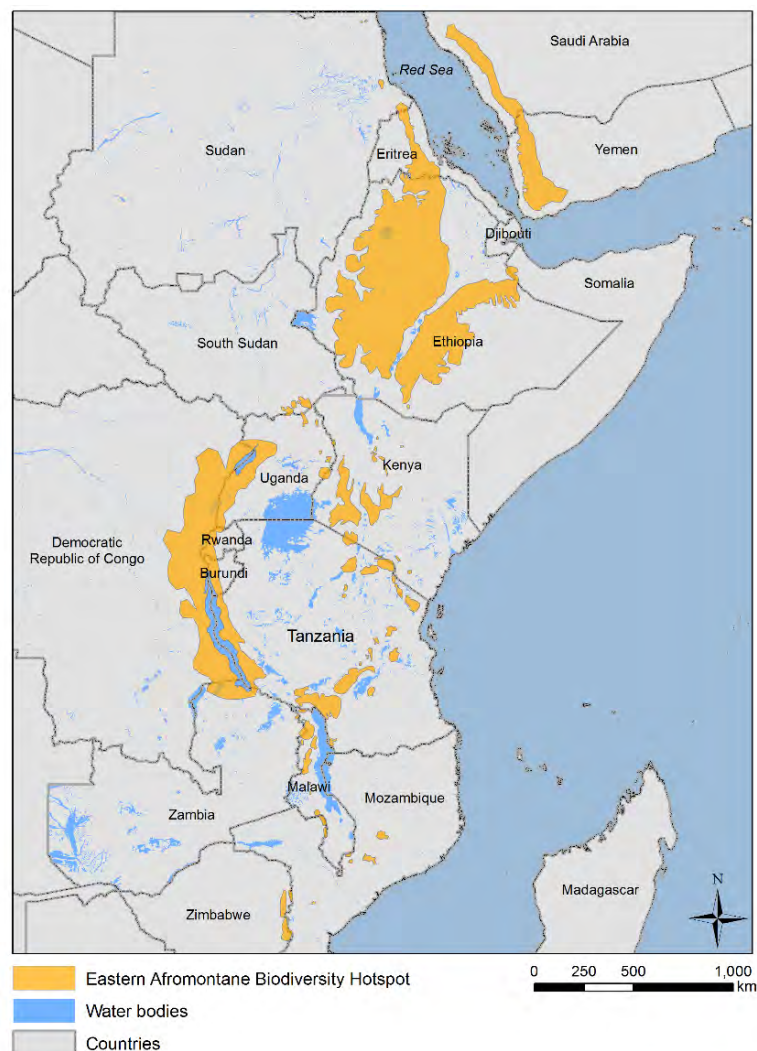
Figure 1: Location map of the Eastern Afromontane hotspot region in Africa

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Scope of Work

The work undertaken was as follows:

1) Produce maps of the Eastern Afromontane region showing:
   a. The extent of the CEPF investment region and the KBA and Protected Areas within the region.
   b. The location of all Protected Areas with METT assessments (based on the database developed under 2).
   c. The location of all KBA sites where CEPF is investing in improved conservation.
   d. The forest change across the region from 2000–2012 (updated to 2013 where possible).
2) Complete database of METT data for the Eastern Afromontane region which allows for the following analyses:
   a. Analysis of METT data within the different countries in the region.
   b. Analysis of the number, distribution and linkage to KBA sites for all METT data from protected areas across the Eastern Afromontane region. This provides a baseline assessment of METT scores in CEPF investment sites. If possible, analysis of METT scores in CEPF investment sites compared with sites where CEPF has not been investing.

Description of databases used for analysis

World Database on Protected Areas (WDPA)

The WDPA is the most comprehensive global dataset on terrestrial and marine protected areas, and is a joint product of the International Union for Nature Conservation (IUCN) and United Nations Environment Programme (UNEP), managed by the UNEP World Conservation Monitoring Centre (UNEP-WCMC). For the purposes of this analysis, the January 2015 version of the WDPA was used for analysis, which comprises over 210,000 Protected Areas globally, with several hundred in the eastern African region (Figure 2).

Figure 2: Protected Areas in eastern Africa which includes the Eastern Afromontane region

Global METT data

METT data come from the Global Database of Protected Area Management Effectiveness (GD-PAME) that is maintained at UNEP-WCMC. The GD-PAME database is an MS Office Access database that contains the results of METT assessments from Protected Areas

around the world, as well as results from other protected area management effectiveness tools (such as RAPPAM).

The METT database currently contains over 4,500 assessments globally with 135 assessments in the Eastern Afromontane region, although 5 of these contain no data and one more is mostly incomplete, giving a total sample of 129 assessments (Appendix 1). METT assessments are, where possible, linked to the WDPA polygons through the use of the WPDA Identification (WDPA ID) code (Figure 3).

Calculation of METT scores for each Protected Area

The METT tool (last updated in 2007) consists of three datasheets. The first contains information on PA context (such as PA legislation, ownership and governance), PA management inputs (such as PA budget and staff numbers), and PA objectives and management activities. The second datasheet focuses on PA threats. The third datasheet comprises a series of 30 questions scored between 0 and 3 (4 ranks) and covers various elements of site management (Hockings *et al.,* 2006; Belokurov *et al.*, 2009; Coad *et al.,* 2013).

In this report we only use the METT data derived from the 30 ranked questions. The overall METT score for each assessment is calculated by summing the score data (0–3 ranking) for each of the 30 questions in the METT assessment tool. This is then used to provide a percentage score for each assessment, by diving the total score achieved by the total potential score that could have been attained (some assessments leave questions unanswered, because they are not relevant to the site in question, and therefore the overall potential score that can be achieved can vary among sites). The calculated percentage score is herein referred to as the 'METT score'. Where multiple assessments were available for a site, we took the most recent assessment to calculate the site METT score.
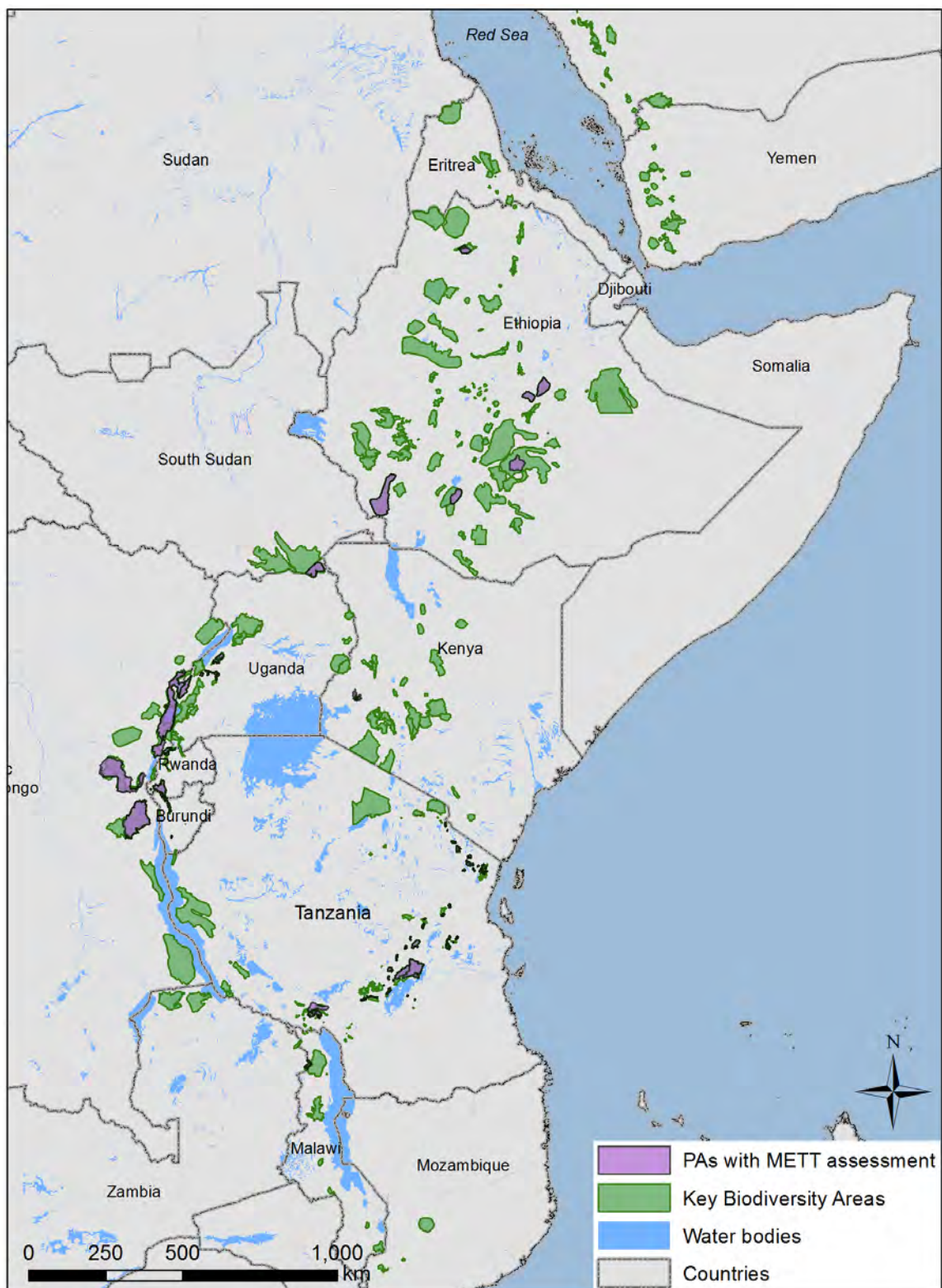
Figure 3: KBA sites that are Protected Areas and have METT data in the Eastern Afromontane hotspot

Key Biodiversity Areas (KBA)

KBAs bring together Important Bird Areas (IBAs), Alliance for Zero Extinction (AZE) sites and important sites for other taxa that are not captured in IBA and AZE sites. We obtained the KBA data layer for this region as a GIS file from BirdLife International, who developed the original KBA layer for CEPF. There are 310 KBAs in the region (Figure 4).
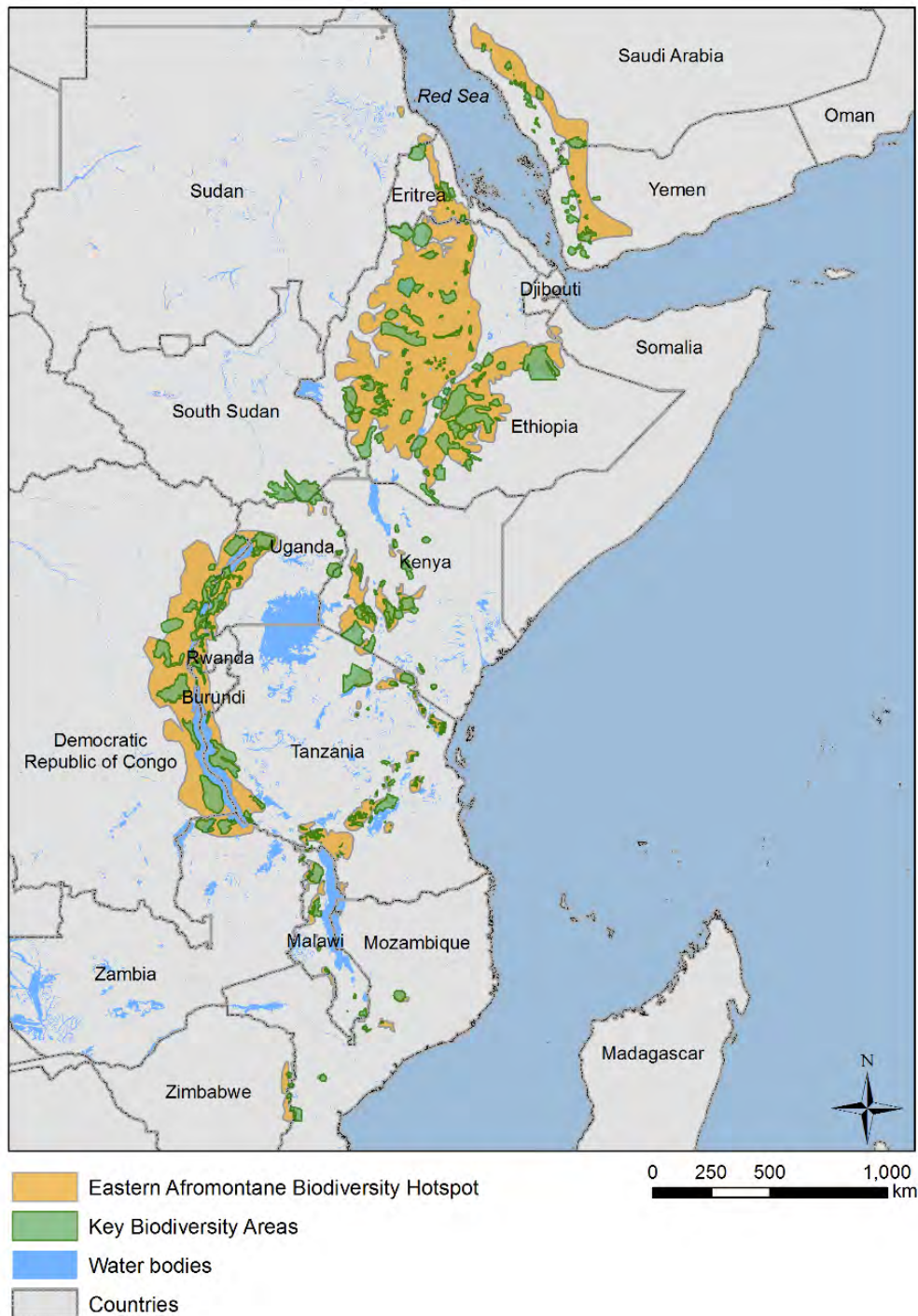

Figure 4: Location of KBA sites in the Eastern Afromontane hotspot

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CEPF intervention sites

Based off a list developed by the CEPF Eastern Afromontane Regional Implementation Team (RIT), we have maped the spatial distribution of all sites in the hotspot that have recieved CEPF investment in the period 2013–2015. This list comprises 49 KBAs and includes the sites that fall under the CEPF consolidation funds provided to the Eastern Arc and Coastal Forests portion of the hotspot (Figure 5).

Forest cover change dataset

We based our analysis on the Hansen *et al.* (2013) forest change dataset, which looked at the changes in forest cover over time in this region (2000–2012) (Figure 11). Since the publication of this dataset it has been updated to forest cover change to 2013 and various errors have been fixed, and this is the dataset we have used here.
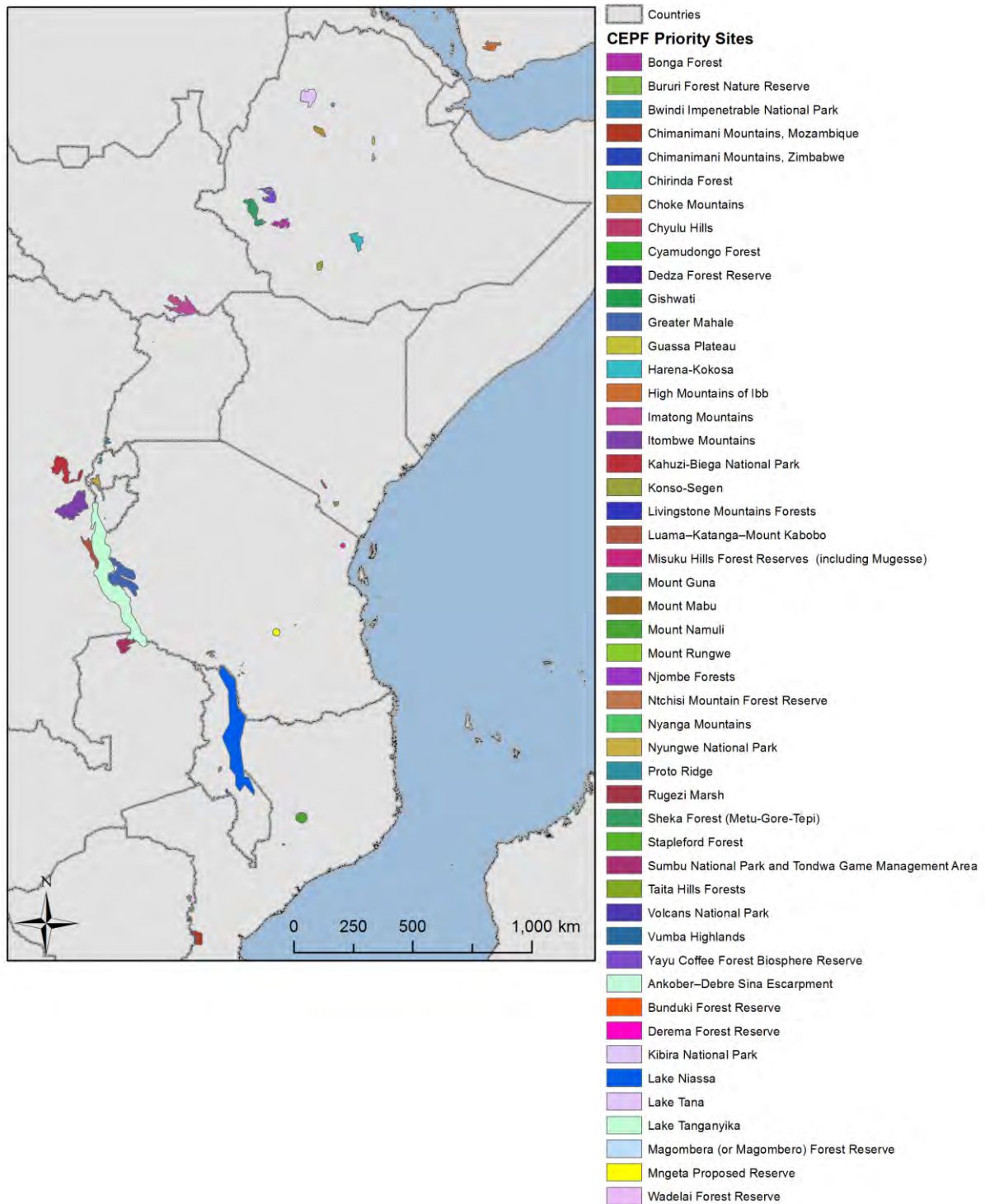
Figure 5: All CEPF intervention sites (KBAs) in the Eastern Afromontane hotspot

3. Results

We present basic analyses that serve as baselines against which trends in the Eastern Afromontane hotspot, and the KBA sites with CEPF investment might be measured.

Analysis of METT data from the Eastern Afromontane region

Baseline METT data

From those 310 KBAs in the Eastern Afromontane region, 142 were linked to protected areas in the WDPA database. From these we were able to extract a total of 135 assessments from the METT database, covering 97 of the 310 KBAs recognized in the hotspot profile. From these, 129 assessments had at least 50% of the questions answered, and 127 assessments had all 30 METT questions answered.

Countries

The 127 METT assessments that were complete, were from 9 countries, out of the total of 17 countries in the Eastern Afromontane hotspot area. Seventy-one of the sites with METT data were from Tanzania (TZA), which represents almost three quarters of the available data (see Figure 6). Tanzania has received GEF, WWF and CEPF investments in recent years, where METT is a mandatory part of the project reporting.
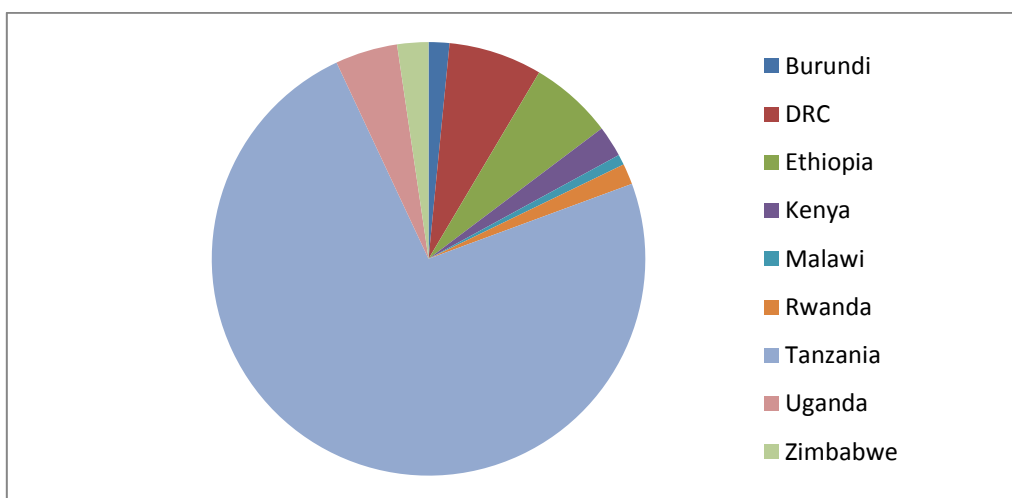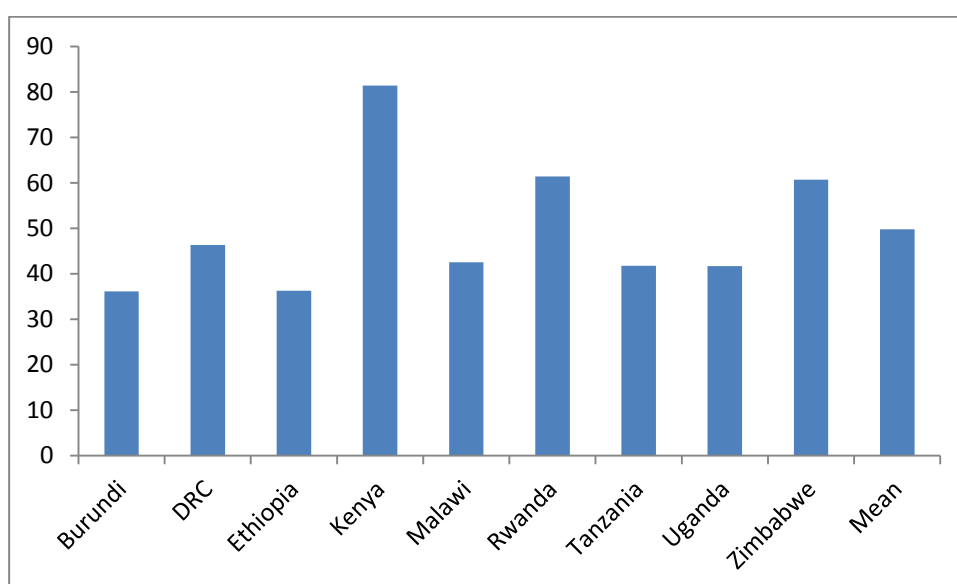

Figure 6: Number of sites with METT assessments within the Eastern Afromontane hotspot

Across the different countries in the hotspot, the mean METT score varies considerably (Table 1, Figure 7). This may be due to the kinds of reserves that have been sampled. For example, in Kenya the sites assessed using the METT tool are mainly fairly well-resourced National Parks, whereas in Tanzania they are mainly Forest Reserves, which have minimal budgets.

Table 1. Summary of the METT data available from the Eastern Afromontane region

| Country	Number of METT assessments (n=129)	Average. METT Score	Number of METT assessments with complete data (n=127)	Average. METT Score for assessments with complete data
Burundi	2	36.1	2	36.1
DRC	9	36.0	7	46.3
Ethiopia	8	36.2	8	36.2
Kenya	3	81.3	3	81.3
Malawi	1	42.5	1	42.5
Rwanda	2	61.4	2	61.4
Tanzania	95	41.7	95	41.7
Uganda	6	41.6	6	41.6
Zimbabwe	3	60.6	3	60.6
Mean	129	48.6	127	49.7

Figure 7: Mean METT Scores per country (n = 127 sites)

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Although 40% of the area of the Eastern Afromontane hotspot is found in Ethiopia, we were only able to locate seven METT assessments from that country, which does not give a good assessment of effectiveness of the management in this country. The next largest area of the hotspot (25%) is found in Tanzania, which contains the majority of METT assessments, and does give a reasonable reflection of the protected area management effectiveness within this country.

Changes in METT scores over time

To further illustrate trends we analysed the Tanzanian mean METT scores over time as there was the largest number of repeat assessments, suggesting a slight decline (Figure 8). However, this may be because the types of sites differ over time, with a general change from using METT in National Parks in the earlier years, to an increasing emphasis on assessing Forest Reserves and community managed forest areas in later years. It is already known that National Parks in Tanzania have generally higher scores than other Protected Area categories, in particular Forest Reserves which are generally poorly managed(Knights *et al.,* 2014).
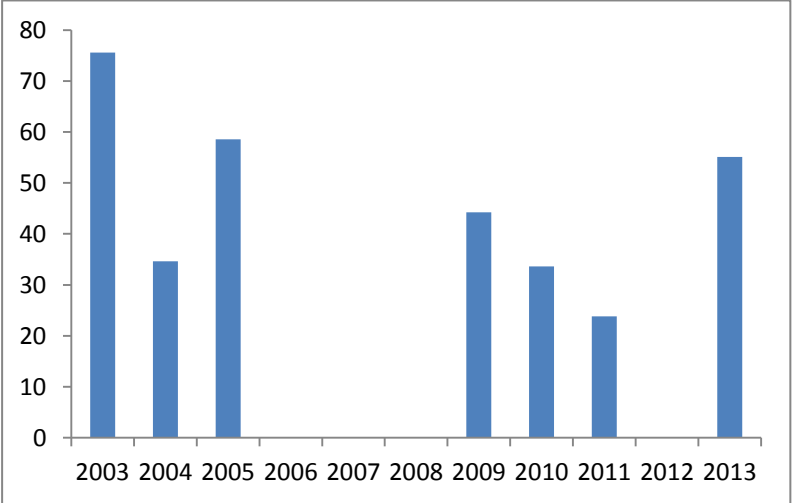
Figure 8. *Mean METT scores in assessed Protected Areas in Tanzania over time (2003-2013). We have no assessments from 2006, 2007 and 2012.*

From the 97 sites with METT assessments, 26 had several assessments available. Of these, 21 were found in Tanzania (but one was for the same site in the same year – Mufindi scarp),1 in Ethiopia, 2 from DR Congo, 1 from Kenya and 1 from Uganda. From these assessments we calculated the mean METT score in the first, second and third assessment

(Figure 9). This shows how METT assessment scores tend to increase over time, but that in sites with 3 assessments the second is generally lower than the last.
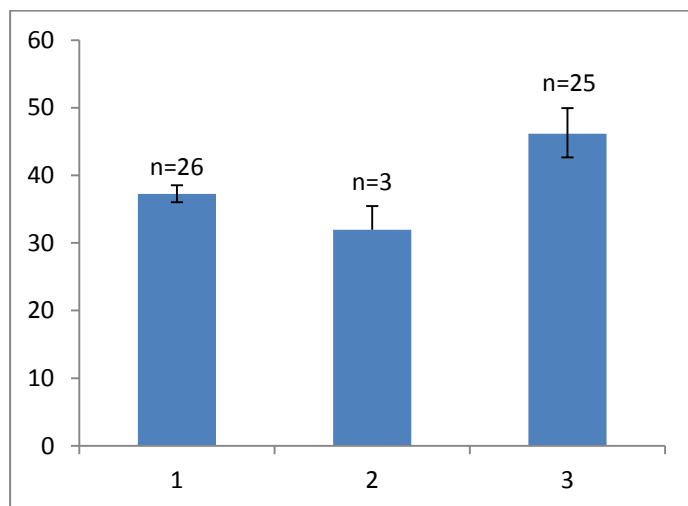

Figure 9. *Mean METT scores per assessment for those sites with more than one repeat application (n=26).*

To assess changes in individual sites, we calculated the difference between start and end assessments (Figure 10). This was only done for Tanzania as there are many sites with repeat assessments in that country. This analysis shows that there are increases in METT scores in 14 of the 20 assessments.

METT Assessed sites where CEPF is working

For the KBA sites where CEPF is working only 8 have METT assessments. These are two in Burundi, two in Rwanda, one in the Democratic Republic of Congo and three in Zimbabwe. This was too small a number to perform any analysis, but the data are available in Annex 1.
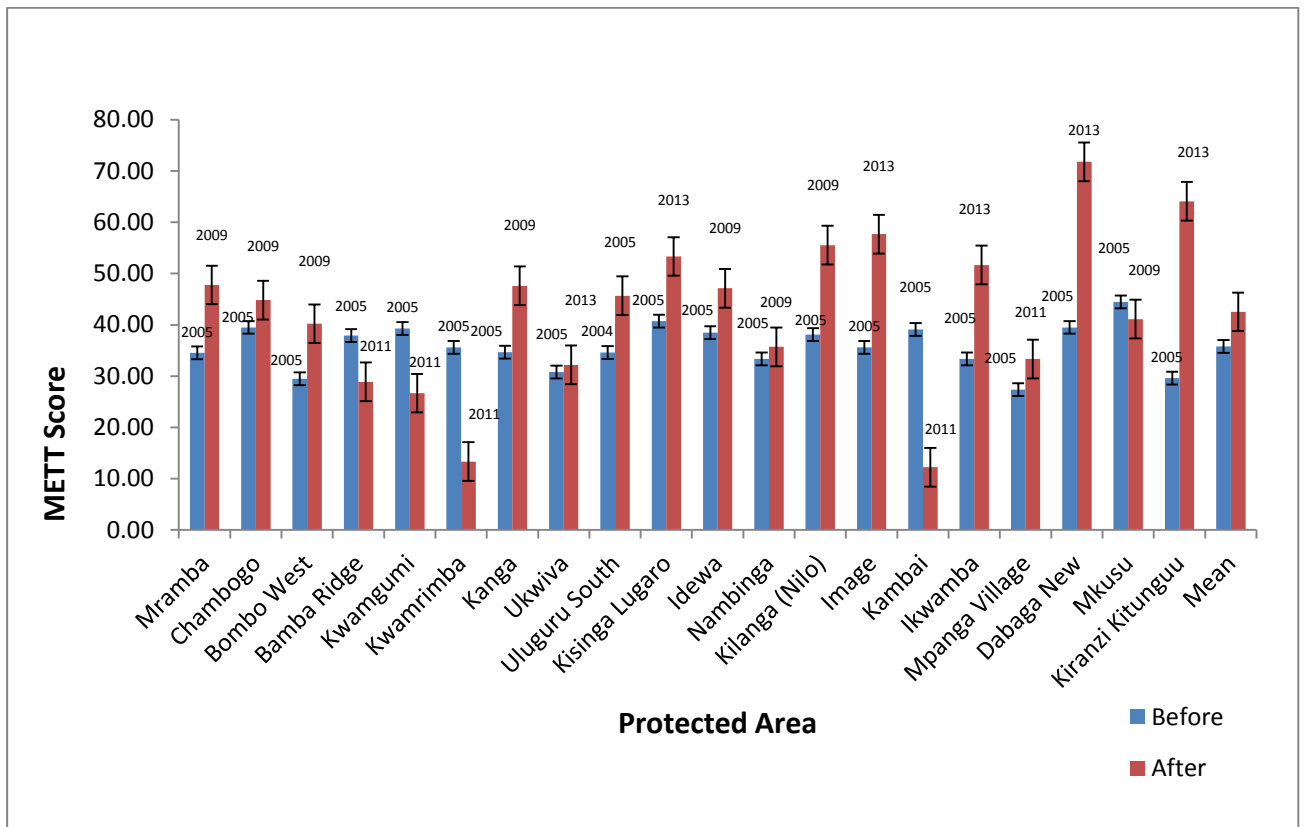
Figure 10. Mean METT scores with standard error for 20 Tanzanian KBAs with two assessments (2005 baseline to 2009, 2011 or 2013 as the end point) (we omit Mufindi Scarp that had two assessments in 2005). The blue bar represents the first assessment, and red bar represents the last assessment. The mean (last columns) show the amount of change from first to last assessment across all sites

Forest change analysis

We have generated a baseline of forest status and changes in the Eastern Afromontane region (Figure 11). This is available at 30m resolution and to show the potential for assessing change in CEPF funded sites we show the detail for the Eastern Arc region and one of the regions within that where CEPF has been investing (Figure 11).

Figure 11a: Forest cover map in the southern portion of the Eastern Afromontane region
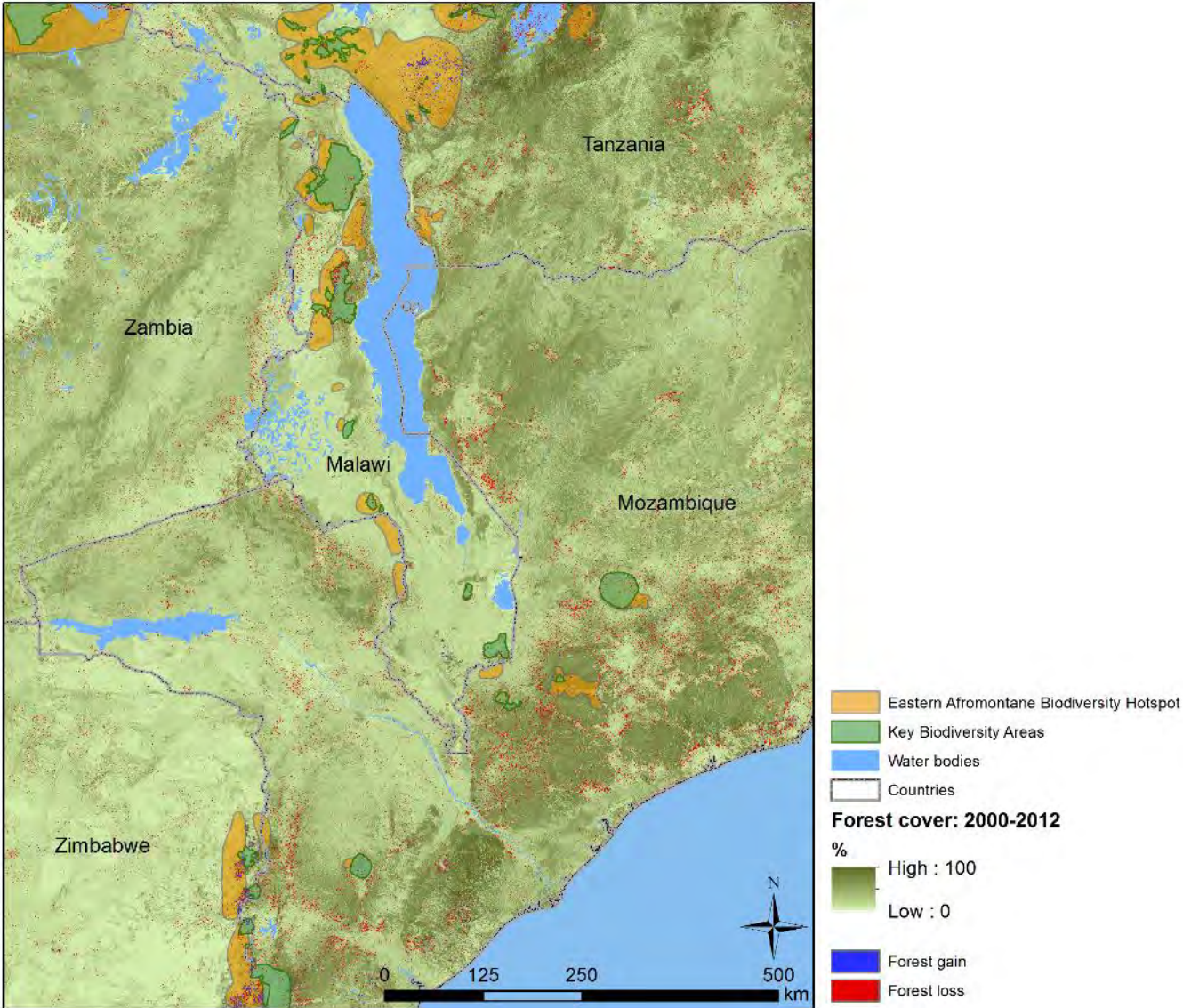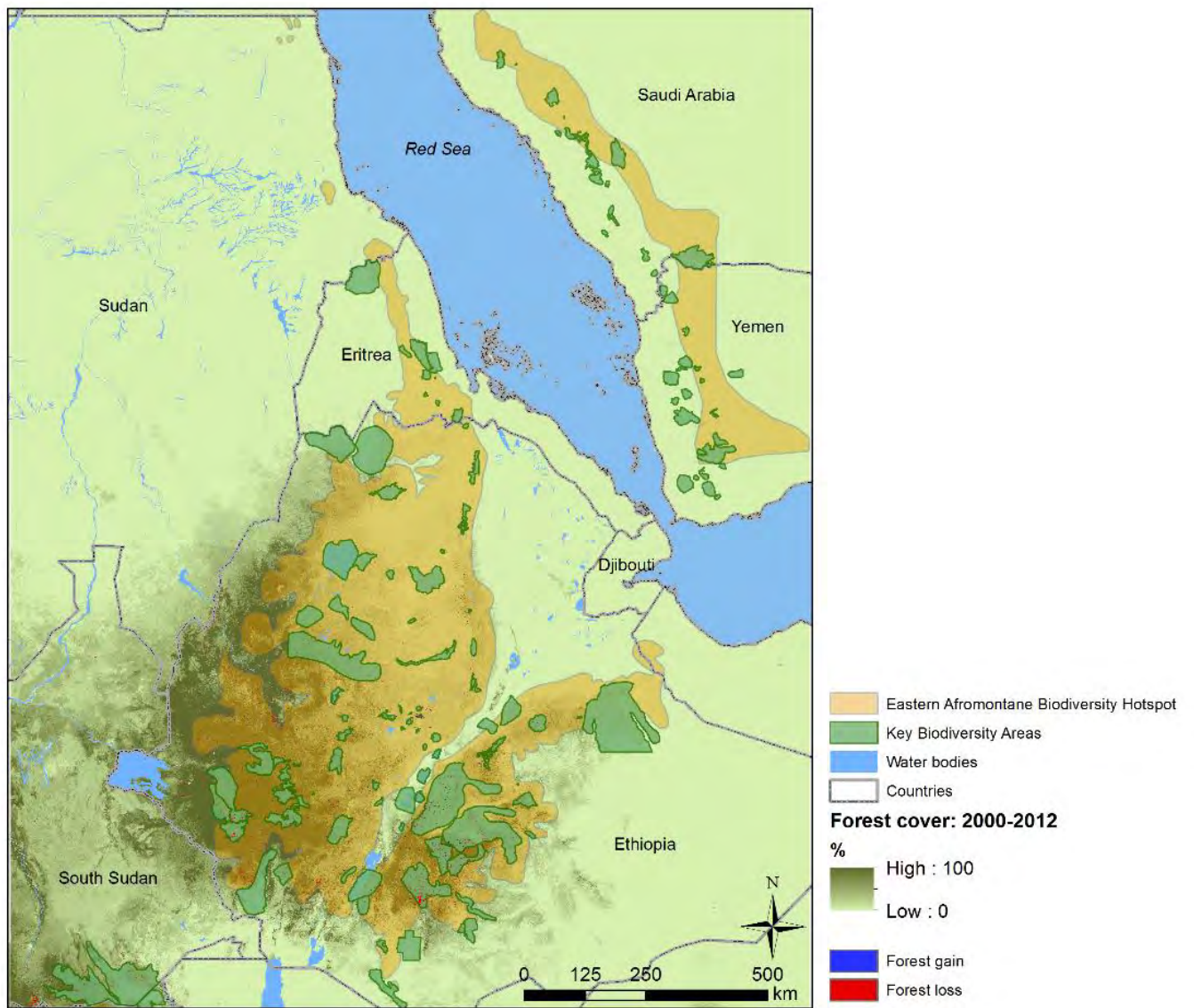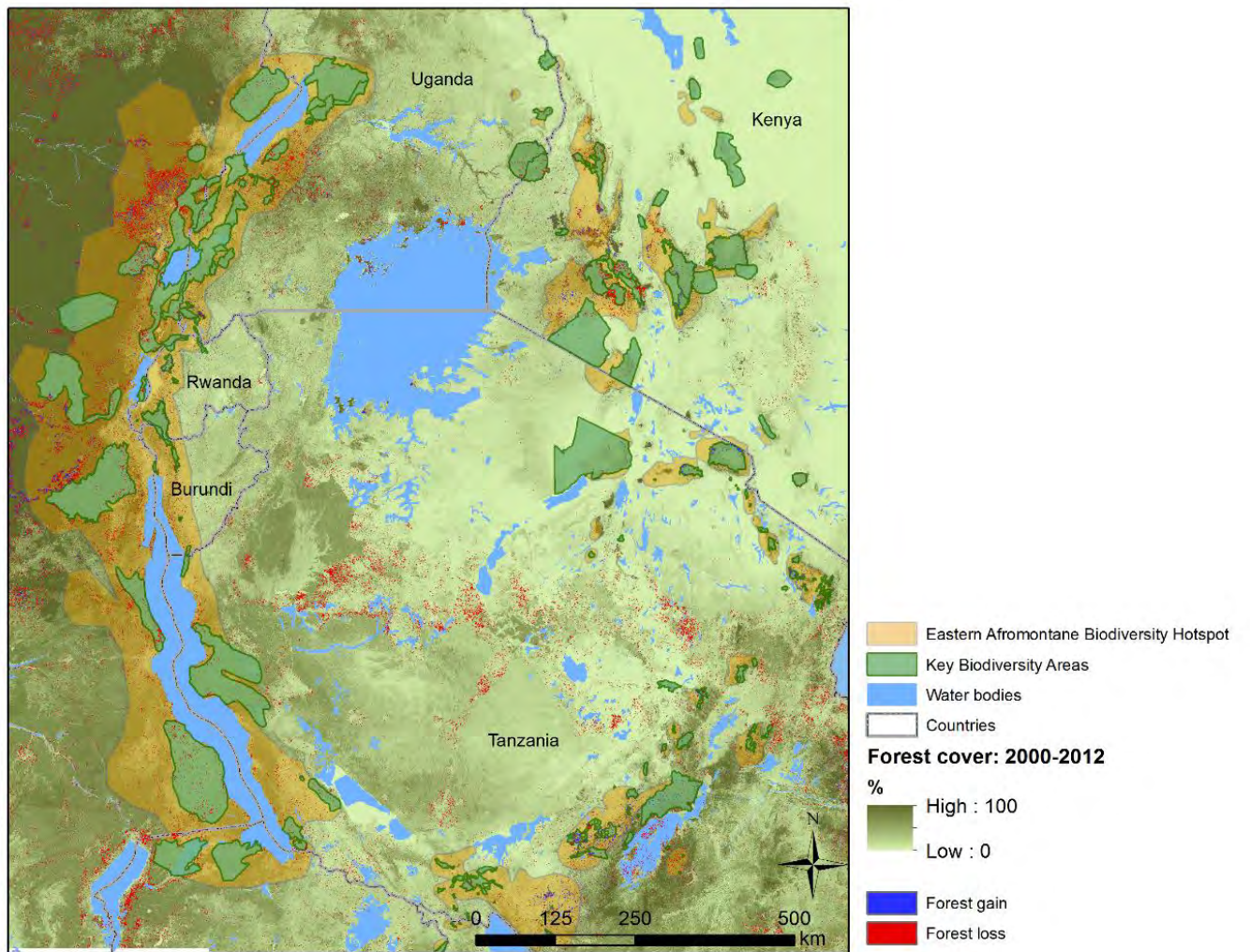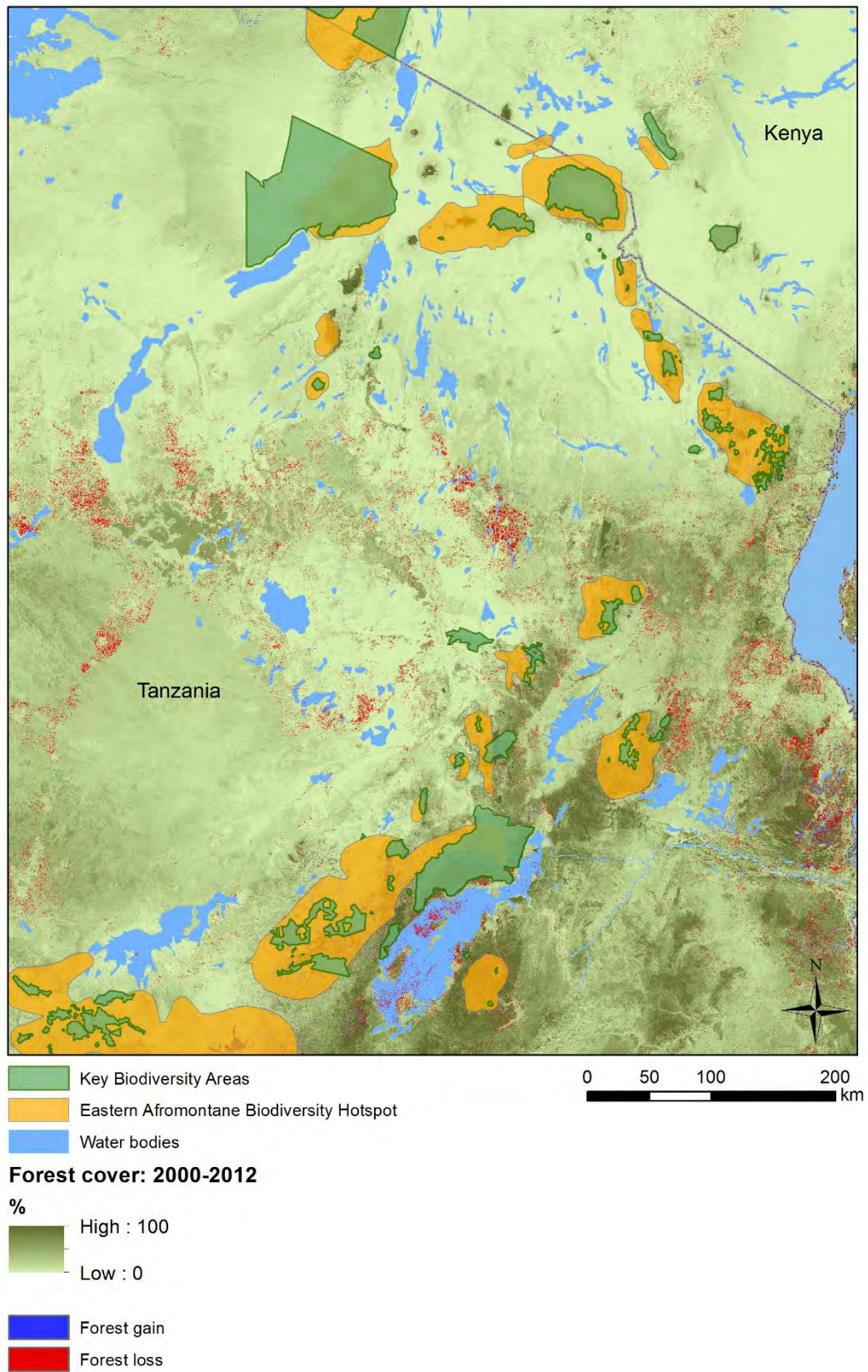
Figure 11b: Forest cover map in the northern portion of the Eastern Afromontane region

Figure 11c: Forest cover map in central portion of the Eastern Afromontane region

Figure11d: Focus of forest change in the Eastern Arc region in Tanzania

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4. Discussion

The Eastern Afromontane region contains a large number of countries, protected areas, and KBA sites. Our compilation of data on METT from a global database and from CEFF field assessments shows that only a selection of these sites have adequate baseline data on management effectiveness.

Due to this, it has only been possible to evaluate baseline KBA effectiveness, and trends in effectiveness in Tanzania. Because Tanzania only contains 25% of the area of the hotspot no general conclusions can be reached on the management of the KBAs in the entire hotspot.

It would be ideal to have several assessments of each KBA to evaluate the situation in any specific KBA, but these data are not available for most countries. Indeed, for a number of the countries there are no METT assessments at all.

Recommendations

These preliminary analyses and overview show that the METT tool has been widely applied in the Eastern Afromontane hotspot and has good potential to allow CEPF to track its progress in terms of improving Protected Area management quality. However, some further effort will be required to ensure that the impacts of CEPF investment can be measured.

We have the following recommendations:

a) CEPF should complete METT assessments for all KBA sites where it is working. These do not need to be Protected Areas as gathering data from non-protected sites might also be useful. This will form a baseline against which future changes can be measured.
b) CEPF should ensure that these METT data are entered into the GD-PAME database maintained by UNEP-WCMC. This would allow future analysis to be facilitated.

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c) CEPF should support some further analysis to assess how the results of scores derived from the METT tool can be linked to conservation outcomes, such as species trends, habitat trends and socio-economic outcomes.

d) Ideally – further analysis should be undertaken using the results of the various CEPF tracking tools, and IBA monitoring tools where available.

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ANNEX 1: METT DATA FROM ALL SITES IN THE EASTERN AFROMONTANE HOTSPOT (ELECTRONIC FILE)