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CEPF Small Grants programme - Maputaland-Pondoland-Albany Biodiversity Hotspot

PROJECT FINAL REPORT

31 July 2013

Project Title: Strengthening biodiversity management in southern Mozambique by building the capacity of individuals and institutions in the field of spatial biodiversity planning.

Summary: This document is the final project report for this project. Below we summarise the project activities and outcomes in relation to the projects three outputs. A budget summary is provided detailing the expenditure to date, and highlighting a budget short fall (due to exchange rate fluctuations) of R9100, which requires additional funding. At the end of this report we discuss options for further CEPF project work that: a) builds on the momentum created with this project; b) addresses clear data and capacity gaps in relation to achieving Strategic Direction 4.1; and c) which can capitalise on existing opportunities within a 6-12 month implementation time framework.

Table of Contents

Introduction

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Project Purpose

Capacity of CEPF MPAH grantees in Mozambique with respect to understanding the principles and potential applications of systematic conservation planning is increased.

Project Output 1

A two-day short course entitled "An introduction to spatial biodiversity planning for biodiversity managers" is conducted in Maputo in partnership with the Eduardo Mondlane University or an appropriate civil society partner.

Output Indicators:

1.1   A memorandum of understanding is signed between ECOSOL and a relevant in-country partner to jointly co-host a two-day introductory course to spatial biodiversity planning.

ECOSOL GIS partnered with the Department of Forestry Engineering at the Eduardo Mondlane University in Maputo to co-host the course. The course material compliments the conservation biology masters program run by the department. Dr Valerio Macandza, the head of department and Masters program director, facilitated the course organisational logistics at the university.

No formal MOU was signed between ECOSOL and the department.

1.2   A two-day course is advertised to the target audience via appropriate media. The target audience includes: all CEPF grantees in Mozambique; university students; biodiversity managers from state institutions; and, independent environmental practitioners.

See Appendix 1 for a copy of the email advert for the course.

1.3   A two-day course is conducted in Maputo that is attended by at least 20 members of the target audience.

A two-day course was conducted in Maputo as the Eduardo Mondlane University on 5-6 June 2013. The course was attended by 26 Mozambican nationals with the following affinities (see Appendix 2 for copy of course register):
- Ministry of Tourism: 2
- Mozambique Institute for Agrarian Studies (IIAM): 1
- Eduardo Mondlane University staff: 4
- Eduardo Mondlane University students: 15
- NGO's: 4

Day one of the course covered key concepts and applied examples of spatial biodiversity planning. The course speakers on the first day comprised:
- Dr Philip Desmet (ECOSOL) – overview of concepts and applied examples of spatial biodiversity planning
- Dr Bruno Nhancale (Consulfor/UEM) – an applied local example of spatial biodiversity planning: presentation of the Maputaland conservation assessment that Bruno was involved with as part of his PhD studies.
- Hermenegildo Matimele (National Herbarium - IIAM) – introduction to the national herbarium and how spatial biodiversity data on plants is created.

Day two of the course, lead by Andrew Skowno, was devoted to group-based practical exercises in spatial biodiversity planning.

Copies of the course lecture notes are included in Appendix 3.

Figure 1. The 2013 Introduction to Spatial Biodiversity Planning Course participants.

Project Output 2

A spatial data needs assessment is conducted with all CEPF grantees and recommendations are made with respect to priorities for spatial data acquisition.

Output Indicators:

2.1   Meetings are held with eight CEPF Mozambique grantees

Objectives of the meeting are:
• *Understand the nature of their work for the CEPF specifically and in the hotspot generally;*
• *Discuss the potential role that spatial data and GIS can play in achieving their CEPF conservation goals;*
• *Develop an understanding of the organisational spatial data needs to better fulfil their CEPF mandate;*
• *Determine data gaps by comparing organisational needs against data availability.*

Eight CEPF MPAH Mozambique grantees and three other organisations were contacted as part of this study (Table 1). The outcomes of our discussions with these organisations are summarised in the following section.

Due to limitations in terms of time spent in Maputo we were not able to meet with the following key biodiversity data/spatial GIS data role players. These individuals/organisations should be involved in any further CEPF project work that builds on this project:

- Dr Salomão Bandeira/ Department of Biological Sciences/EMU Herbarium
- CENACARTA (www.cenacarta.com): The National Remote Sensing and Cartography Centre.
- GIS division at IIAMs responsible for land-cover and land-facet mapping.

Table 1. A summary of the organisations and people contacted as part of the spatial data needs assessment.

Organisation Name	Name of Persons Contacted	Organisation Type	Email	Meet
LUPA	Luis Denis & Geraldo Palelane	Rural development NGO	☑	
CESVI	Paolo Felice & Isabel Tete	NGO development NGO	☑	☑
Consulfor, Lda – Consultoria Ambiental	Bruno Nhancale	Biodiversity conservation NGO	☑	☑
Centro Terra Viva (CTV)	Cristina Louro	Biodiversity conservation NGO	☑	☑
VIDA – Voluntariado Internacional para o Desenvolvimento Africano	Patricia Maridalho & Filipa Zacarias	Rural development NGO	☑	
Avitourism at Birdlife South Africa	Martin Taylor	Bird conservation & Ecotourism development NGO	☑	
African Safari Lodge Foundation	Steve Collins	Safari lodge development	☑	☑
Kawuka DJA	Camilo Nhancale	Rural development NGO	☑	☑
LMA Herbarium (IIAM)	Hermenegildo Matimele	National Herbarium	☑	☑
Instituto de Investigação Agrária de Moçambique (IIAM)	Dr. Tereza Alves & Camila de Sousa	Government institution: biodiversity research	☑	
Department of Forestry Engineering, Faculty of Agriculture, Eduardo Mondlane University	Valerio Macandza & Faruk Mamugy	University: teaching and research	☑	☑

2.2   A short report "An assessment of the spatial data status and requirements of CEPF grantees working in the Mozambican part of the MPAH" is completed.

Based on the discussions with the role players listed above a number of observations regarding the use of GIS software; spatial biodiversity planning and biodiversity data in the execution of CEPF objectives are made. These observations provide understanding of the implementation environment and thematic context for developing further CEPF projects aimed at addressing Strategic Direction 4.1 (*Expand and strengthen civil society by supporting training and further educational opportunities for the staff of civil society organizations in Mozambique and Swaziland*). Options for further project work that build on the current momentum within CEPF MPAH Mozambique are discussed in Section "Next Steps: Future Projects" below.

Our observations can be summarised as follows:

1. **There exist very low levels of GIS capacity in government and NGO sectors.**
   a.   Whilst all interviewed had knowledge of GIS, with the exception of the Department of Forestry Engineering at the EMU, no organisation has any in-house GIS capacity or use GIS to help achieve their mandates.

b. Organisations such as CTV are actively collecting spatial biodiversity data but due to the absence of in-house GIS capacity this data is handed over to a third-party for capture and analysis. Subsequent disputes over data ownership discount any value that the data may hold for informing or improving effectiveness of conservation activities.

c. The singular absence of GIS capacity within the conservation/rural-development sectors operating in the region is clearly expressed in the paucity of good maps depicting the social and environmental landscapes. A persistent theme throughout the CEPF MPAH project in Mozambique is absence of just one good map depicting the implementation landscape. Good spatial data does exists such as topographical maps from CENACARTA or the spatial products from the DICE project, however, no organisations have the capacity to access, visualise, and analyse this data to create better maps that can inform and aid implementation.

d. All parties interviewed acknowledged that GIS; spatial analysis, and; better spatial data such as land-cover, vegetation and species distribution could positively contribute to their organisations operations.

2. **Implementation is conducted within a biodiversity information and spatial planning vacuum.**

   a. None of the organisations interviewed use fine-scale spatial biodiversity data or outputs from spatial biodiversity plans to guide their project activities.

   b. The Futi Corridor is the only "spatial plan" around which conservation action in the region is focussed. Whilst this corridor may be good for elephant there is little quantitative understanding of other priority species or areas in the region.

   c. The Maputaland conservation assessment conducted by DICE in the early 2000's is the only readily available spatial biodiversity data and spatial biodiversity plan for the region. This project and the resulting plan was ground breaking for the region representing the application of state of the art spatial planning concepts and tools to a cross-border ecosystem. Two observations we have made regarding this work are:

      i. For the Maputaland area the assessment is based entirely on expert derived species-level biodiversity data. No data was accessed, for example, from the national herbarium or any other biodiversity distribution dataset. As these datasets did not exist and still do not exist, expert-derived data represents the best available data. Given that this assessment was one of the primary informants for the CEPF profile for this region it is perhaps necessary to verify the findings based on actual biodiversity data. In the context of point 3 below it is important that ultimately biodiversity plans be informed by actual biodiversity data.

      ii. The spatial outcomes of the DICE assessment have not been taken up in any map/spatial-planning product that we have come across for the region. For example, the Matutuine land-use plan being prepared now by Jose Forjaz Architects does not appear to make any reference to the DICE work. As this plan is in development there is an opportunity for CEPF to better integrate biodiversity planning into land-use planning.

3. **Demand for spatial data and spatial biodiversity planning is acknowledged.**
   a. The Mozambique economy is growing at close to 8% per annum. Large-scale mining, infrastructure and agriculture projects are transforming the rural landscape and the rate of this change looks set to increase in the short term. In the Maputaland region projects such as the highway linking Ponto D'Oro to Maputo and the Deep-water port project in Lake Piti pose very real threats to biodiversity in the region. As a proactive response to the changing landscape it is imperative that:
      i. Biodiversity conservation objectives be mainstreamed into government rural-development and planning processes such as the Matutuine District Land-use Plan, and;
      ii. Biodiversity conservation spatial plans and implementation priorities be informed by actual biodiversity data not just expert opinion.
   b. The Matutuine Land-Use Plan and nascent conservation planning being conducted at the EMU are quantitative indications that spatial landscape planning is happening in country in response to increasing and conflicting land-use pressures on the landscape. Therefore, there is scope within government and civil society for increased awareness and application of spatial biodiversity planning.

Project Output 3

CEPF grantees from Mozambique are exposed to the South African biodiversity planning community of practice.

Output Indicators:

> **3.1   Three Mozambican CEPF grantees or students who participated in the two-day conservation planning course attend the 2013 South African Biodiversity Planning Forum.**

Two Mozambican nationals attended the Biodiversity Planning Forum held at the Golden Gate National Park from 7-10 May 2013. The attendees were Faruk Mamugy from the Department of Forestry Engineering and Nuria Hilario from the Department of Biological Sciences at the Eduardo Mondlane University.
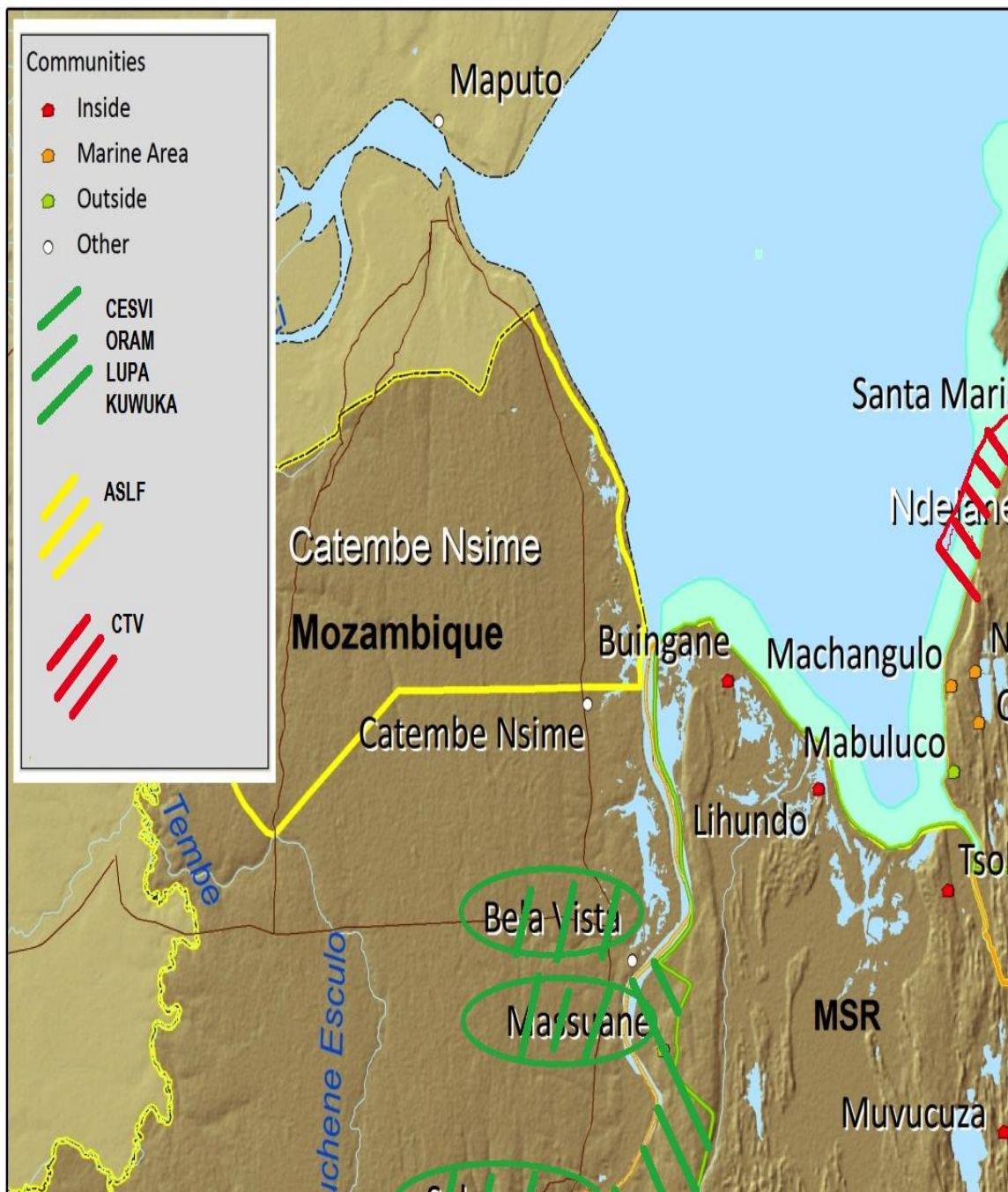
Figure 2. A map prepared by CESVI indicating where different CEPF recipients are working in the Maputaland region.
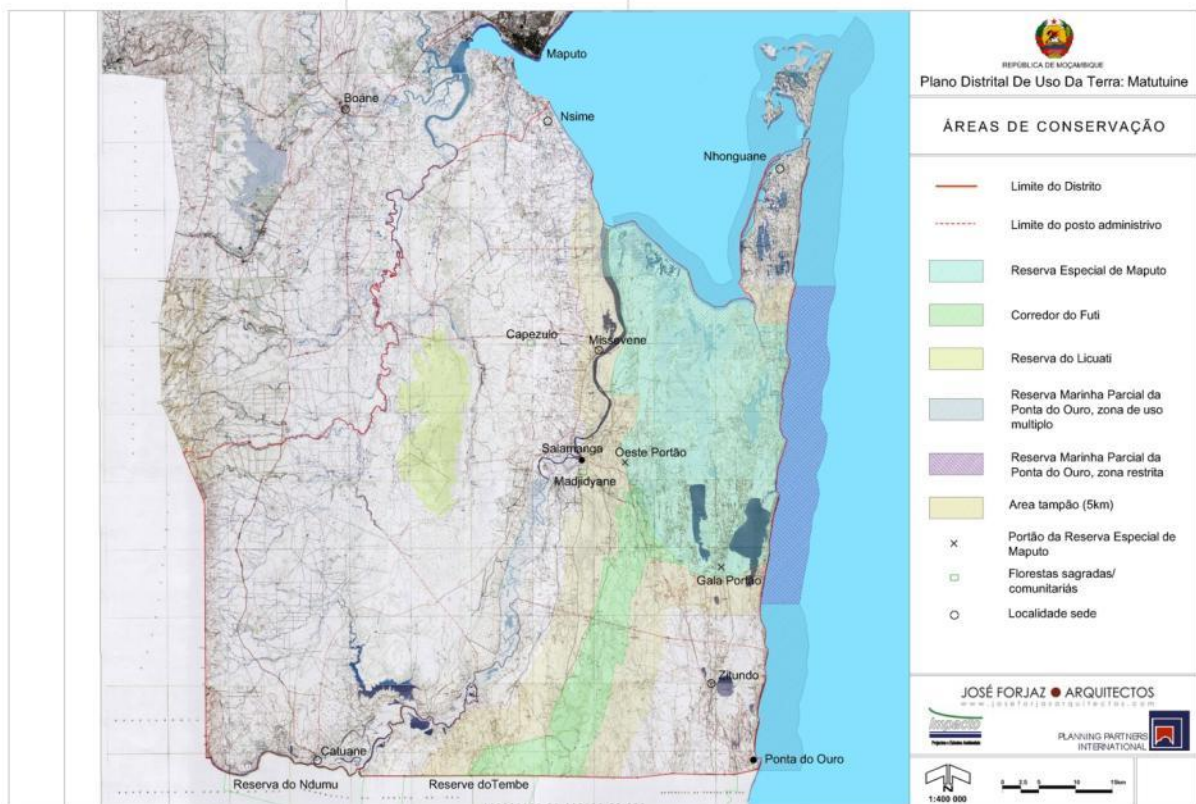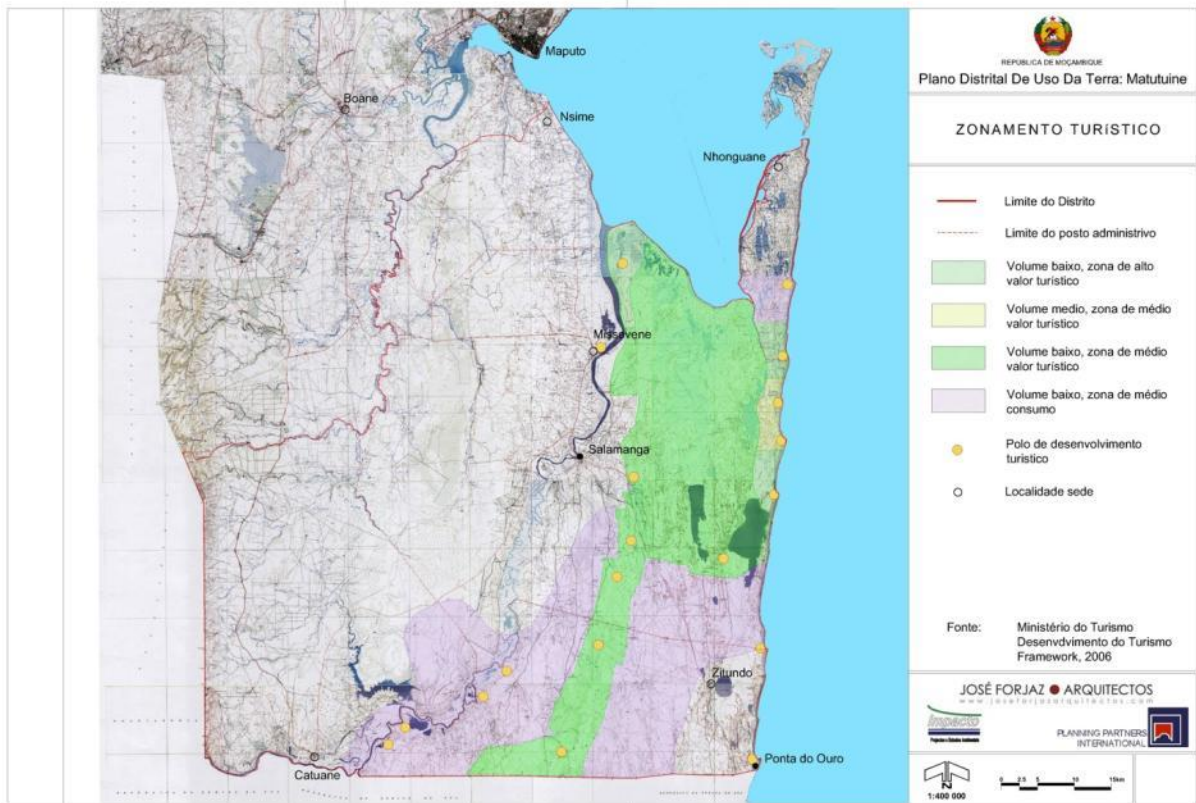
Figure 3. Examples of maps prepared by the Maputo-based consultant responsible for developing the land-use plan for the Matutuine District. Note that the spatial outcomes of the DICE conservation assessment has not made it into statutory planning products.

Budget Summary

Budget summary October 2012 to June 2013				
Allocation		Budget	Expenditure	Balance
Professional Services	R	94 000	R 97 001.03	R -4 891.03
Meetings and Events	R	16 000	R 24 800.97	R -8 800.97
Travel	R	34 600	R 20 161.00	R 14 892.00
Accommodation and Subsistence	R	16 500	R 19 137.00	R -1 200.00
Total	R	161 100	R 161 100.00	R -

Note: The approved budget on EOI was R161 100.00 but due to exchange rate fluctuations WCT allocated total of R152 000.00 to the project (see payment schedule below). As a result there is currently a shortfall of R9 100.00 for the project. It is hoped that Wildlands Conservation Trust can source this amount from CEPF MPAH programme funds.

Payment Schedule		
Phase	Amount	Status
Initiation	R76 000.00	Paid 3/10/2012
Mid-term	R68 400.00	Paid 5/07/2013
Final Report	R7 600.00	Not yet submitted
Subtotal	R152 000.00	
Shortfall	R9 100.00	Additional funding required
Total	R161 000.00	

Next Steps: Future Projects

A Conceptual Framework for Strategic Direction 4.1

"Expand and strengthen civil society by supporting training and further educational opportunities for the staff of civil society organizations in Mozambique and Swaziland."

ECOSOL proposes a biodiversity conservation conceptual framework in which to develop further project concepts that address Strategic Direction 4.1. This conceptual framework provides an understanding of how different project components aimed at capacity building ultimately lead to improved biodiversity conservation outcomes.

The "***Biodiversity Information Value-Chain***" is an important operational framework underpinning the success of all conservation outcomes. The biodiversity information value-chain is the flow of biodiversity information from field observation, data capture, analysis, interpretation, and ultimately leading to conservation action such as new policy or management activities. The success of conservation actions depends on good data and good interpretation of this data. This framework is implicit in all conservation action generally. Making the framework explicit on the other hand, by understanding

the flow and interconnectedness of information, and the role different individuals or agencies/organisations play in this process significantly improves flow of the value-chain and also the likelihood that conservation outcomes will lead to true conservation benefits.

Building the biodiversity information value chain in country is an important lesson that we can draw from the South African experience of mainstreaming biodiversity into the national agenda. We see examples of a dysfunctional value-chain in the Maputaland context, for example, there are two herbaria in Maputo but this basic biodiversity information is not accessible to conservation assessments; There is a conservation assessment conducted but this information is not included in the land-use plans; organisations are collecting data basic biodiversity data but have not the capacity to analyse it.

Different organizations or agencies work with information at different points in the value-chain but the success of their activities are fundamentally dependent on information derived elsewhere in the value-chain. By building capacity of individuals and organisations within specific thematic areas within a context of the biodiversity information value-chain conceptual framework we can build a greater awareness and understanding of the importance of information and the interconnectedness of organisations. Ultimately improving the dynamic of the biodiversity information value chain in country will promote mainstreaming of biodiversity conservation and lead to improved conservation outcomes.

Thematic Areas for Capacity Building

Based on the outcomes of this project there are three thematic areas where ECOSOL GIS in partnership with the current Mozambique CEPF partners; other key in-country role players (e.g. national herbarium/IIAM and EMU); and, other CEPF partners (e.g. SANBI) can contribute to Strategic Direction 4.1:

1. Build GIS literacy and spatial biodiversity planning capacity.
2. Leave a data legacy by collating existing datasets; gathering a limited number of new spatial datasets; and, placing these in the public domain.
3. Better integrate existing spatial planning and data into organisational operations; the public domain; and, government planning processes ("One Good Map").

Within the scope of these three thematic areas we suggest projects all attempt to:
1. Building on existing initiatives;
2. Unlock available new opportunities;
3. Foster cross-border relationships; and,
4. Can be completed within a 6-12 month time framework.

Project Concepts

1. GIS literacy
1.1 CVT in partnership with UEM (host) and ECOSOL participate in 2-3 week Practical GIS for Conservation Practitioners course.
1.2 CTV continues current sea turtle activities but through activity 2 they are in a position to capture and analyse the data in-house
1.3 LUPO/ORAN/KAWUKA participate in a 1 week short course on GIS for NRM that looks at collecting and analysing spatial data in the NRM and rural development context.
2. Data Legacy
2.1 LUPO/ORAN/KAWUKA assisted by Bruno Nhancale/Consulfor map some of the natural resources within communities. Communities in the Maputaland area utilize several non-timber/wildlife products with established local, national and export markets such as Lala Palms (leaves and wine), indigenous oils (marula and mahogany trees), reeds (mats and baskets),...
2.2 UEM produce a land-cover and land-cover change assessment for the project area in collaboration with GeoTerraImage in South Africa. GTI are the primary producer of land-cover data in South Africa. From our experience in biodiversity planning, land-cover is the single most important information layer in the planning process. This will be of value to biodiversity planning regionally, PA management, NRM through LUPO etc.
2.3 Collaborate with an existing vegetation mapping project in the project area being conducted by the herbarium at UEM (not the national herbarium).
2.4 The national herbarium at IIAM is able to employ several student technicians to capture existing herbarium information into the BRAAMs database. In collaboration with SANBI this data is assessed in terns of threatened species status. A list of the species of conservation concern for Maputaland is produced.
3. "One Good Map"
3.1 ECOSOL, African Safari Lodge Foundation and Birdlife define and map landscape/biodiversity/tourism assets in the Maputaland landscape. A detailed tourism map for Maputaland is developed that unlocks rural development and biodiversity opportunities.
3.2 ECOSOL, KUWUKA and Consulfor lead a collaborative spatial biodiversity planning process involving all project partners to develop the "one good map" that uses the data collected as part of the second-phase of CEPF and which will serve as the biodiversity sectors (and maybe rural development sectors) input into the District Land Use Plan currently being developed by a consultant (FORJAZ) for the Matutuine District.
3.3 ECOSOL and KUWUKA work with FORJAZ consultants to integrate the DICE spatial planning products into the Matutuine land-use plan.
3.4 All available biodiversity and related spatial data is collated and made publicly available via a web-based server which could be SANBI via BGIS or other open access web-data server.

Not all of these activities need be funded through the ECOSOL project. They could be included with in expanded project proposals that the individual partners submit to CEPF.

There are many potential MSc projects here. Depending on the time framework for the project it would be very good to incorporate as many as possible into project activities.

There are also some opportunities for collaboration with other large regional projects. The RESLIM project is a USAid project starting up in the Limpopo basin (northern CEPF project area) with a strong biodiversity and rural development focus.

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EcoSol GIS
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