



**Intergovernmental Authority on Development (IGAD) Biodiversity Management  
Programme (BMP) In the Horn of Africa**

**Project Title: Tana-Kipini Laga Badana Bush Bushle Land and Seascapes**



**Biodiversity and Invasive species assessment information  
dissemination workshop Report**

**Report compiled by;**

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## List of Abbreviation

ASDSP	African Sector Development Support Programme
BMP	Biodiversity Management Programme
CBSDP	Cross Border Dialogue Platform
CSA	Conservation Solution Africa
EAI	Environmental Impact Analysis
EU	European Union
ICRAF	World Agroforestry Centre
IGAD	Intergovernmental Authority on Development
IUCN	International Union for Conservation of Nature & Natural
KFS	Kenya Forest Services
KWS	Kenya Wildlife Service
LFI	Log Frame Indicator
LUP	Land Use Planning
NGO	Non- Governmental Organization
NRT	Northern Rangeland Trust

## **Acknowledgment**

The workshop organizing committee would like to express their sincere appreciation to all those who contributed in one way or the other to the success of the event. Specifically the team will like to thank the delegation from IGAD, Somalia and Kenya who made time out of their busy schedules to attend the meeting. We also express our acknowledgement to the effort put by the consultants, research fellow and ICRAF staffs who were commissioned to conduct land and sea scape biodiversity assessment in Kenya and Somalia cross border area. We also thank the Lamu palace hotel for their hospitality and ICRAF administrative unit for their support in handling logistics. Thank you all.

## **Executive Summary**

The Biodiversity management program with financial support from European Union through Intergovernmental Authority on Development has five main thematic focuses on; cross border exchange, land Use Planning; community conservation; biodiversity value chains and agroforestry interventions. One of the main reasons to promote land use planning is to ensure that biodiversity is conserved by mainstreaming biodiversity information into the existing land use plan in Kenya and Somalia cross border area. It is from this background that ICRAF, one of the implementing partners of the IGAD BMP, commissioned various consultants, research fellow and staff based on their specialty to undertake different biodiversity assessment both on land and sea scape to synthesis existing and possibly new information of the existing biodiversity in the Kenya-Somalia cross border area.

After completion of the assessment, ICRAF in discussion with project stakeholders organized a two day workshop to allow the assessments lead persons present their findings to stakeholder for review and validation of the report's findings. Reports will then be submitted to relevant authorities with policies formulation mandate and land use planning to mainstream the information into the spatial plans and other institutional plans. The workshop had different sessions focusing on presentations of the findings, panel discussion and group discussion to validate and endorse the reports.

The stakeholders appreciated the quality of the reports which they termed as job well done. They also provided recommendations to the reviewers to improve the quality of the reports. Apart from recommendation to the authors, the stakeholders proposed recommendations at the community, nation and international level which could be synthesized into actionable recommendations. Some of the key recommendations to ICRAF-IGAD BMP were to;

- 1) Develop synthesized short reports targeting policy makers at all levels of the government
- 2) Develop national biodiversity databases to inform the general planning. This will include mapping biodiversity hotspots at national level that can be used to inform regional planning
- 3) Community sensitization and awareness creation on biodiversity use and conservation
- 4) Communication of the findings by;
  - Developing audience specific communication materials to reach different level of stakeholders
  - Open sharing of biodiversity assessment- both negative and positive
  - Share information with other institutional bodies, promote networking among different national institutions
  - Use sustainable repositories for data storage and management for regional database set up by IGAD
  - ICRAF to publish the reports to make them accessible to the public
- 5) Land use planning should be adopted by national governments and respected, The role of NGOs, CSO, CBO and communities as watchdogs should be promoted
- 6) Strengthening the capacity of institution governing the biodiversity management and seek way to address implementation weaknesses
- 7) Highlight social-economic value of biodiversity in order to attract support
- 8) Government to promote Public-Private Partnership on biodiversity resources development. Communities should be encouraged to be responsible and proactive, not expect everything from the government
- 9) Create institutional linkages for observatory and monitoring of climate change
- 10) Government should adopt regional policies to allow integration into national policy and legislation

#### 11) Resource mobilization

State and non-state actor should collaborate/ cooperate in resourcing biodiversity oriented actions arising from these studies

#### 12) Create legislation on invasive species introduction and promotion of native species,

This requires promoting partnership among government and research institutions to enhance biodiversity protection and monitoring.

The workshop achieved its objectives as the reports were endorsed by all the stakeholder and finding communicated to relevant stakeholders.



## 1.0 Introduction and Background information

The Biodiversity Management Programme (BMP) is an initiative funded by European Commission (EC) through Intergovernmental Authority on Development (IGAD). It aims to contribute to poverty reduction by improving the social and economic wellbeing of the populations in IGAD region, through a better regional integration in the environmental sector. Its purpose is the conservation and sustainable management of the ecosystems in the IGAD region, in order to contribute to lasting ecosystem goods and services. ICRAF is one of the BMP implementing partners and is managing one of the three projects in the Horn of Africa to develop collaborative management in three cross-boundaries land and seascapes between Kenya-Somalia, Djibouti-Ethiopia and Ethiopia-South Sudan. ICRAF is managing a 4 years Tana-Kipini-Laga Badana Bush Bushle Land and Seascape (North East Kenya and South East Somalia) project which commenced in November, 2013 and aims to contribute to poverty reduction by improving social and economic wellbeing of the populations in the IGAD region through better regional integration in environmental sector.

ICRAF commissioned four consultants to conduct Biodiversity and invasive species assessments in Kenya and Somalia. The description of these assessments is provided in Table 1 below. The aim of the biodiversity assessments was to compile and synthesize the existing and where possible new information on the terrestrial and marine biodiversity land and seascapes in the IGAD BMP demonstration sites. The studies produced reports and a database on terrestrial and marine biodiversity of the project intervention sites. The main purpose of these two deliverables is to; [1] provide stakeholders in the cross border area (Kenya and Somalia) with information on the biodiversity and the benefits derived from these, [2] to raise stakeholder's understanding of pending threats and to appreciate biodiversity related opportunities and recommend possible action based on the assessment results. The biodiversity assessment information is also important for mainstreaming in cross border (Kenya-Somalia governments) and other relevant institutional biodiversity conservation and management plans, for example, the Lamu County Land use spatial planning. The aim of the invasive species assessment was to review problematic and invasive species in the Witu-Kenya project pilot areas. This assessment resulted in a report identifying problematic invasive species and their status and describing their environmental and social impact on the livelihoods of people in the study/project area. The assessment also reviewed options to manage these invasive species. The IGAD BMP supported Linda Mbeyu, a Masters Student to conduct a study on *"Community perspectives on threats and opportunities for benefits that people derive from the biodiversity of the coastal forests in Lamu County, Kenya"*. The

objective of this study was to establish from Witu and Awer locations how communities benefit from biodiversity and highlight perceived threats on biodiversity. In addition ICRAF analyzed the trends, drivers of change and possible solutions to address deforestation and loss of forest habitat in the Kenya - Somalia cross border area with the objective to ensure biodiversity loss and its drivers are better understood at the demonstration site. The latter is managed through targeted interventions supported by BMP and its Implementing Partners (IPs) and the proposed solutions to reverse the negative trend of forest loss communicated to relevant decision makers to influence decisions on land use and forest conservation.

**Table 1: Summary of Baseline Assessments**

Sno.	Responsible	LF Activity	Activity Description
1.	Dr. Arne Witt (CABI)	1.1.2	Review status of Invasive species (assessment)-Witu-Kenya
2.	Mr Kennedy Osuka (CORDIO)	2.1.2	Seascape assessment and information-Marine biodiversity assessment- Kenya;
3.	Dr. Mordecai Ogada (CSA)	2.1.1.	Biodiversity assessment; Landscape assessment and information-Witu Kenya
4.	Dr. Osman Gedow (SWNHS)	2.1.1	Biodiversity assessment; terrestrial and marine landscapes assessment and information; Somalia
5.	Grace Koech (ICRAF)	1.4	Habitat change and drivers of change analysis: Rate of loss and degradation of natural habitats in Kenya –Somalia cross border area
6.	Linda Mbeyu (Research fellow)	2.1	Ecosystem services: community perspectives for the benefits that the community derive from Biodiversity in Lamu County

CABI - Commonwealth Agricultural Bureaux International; CORDIO - Coastal Oceans Research Development Indian Ocean; CSA - Conservation Solutions Africa; LF - Log frame; SWNHS - Somali Wildlife and Natural History Society; ICRAF - World Agroforestry Centre.

Therefore, ICRAF organized stakeholder's workshop from 11-12 July, 2016 in Lamu County to present and disseminate the reports and discuss with the relevant stakeholders the importance of mainstreaming the information to government land use and natural resources conservation plans.

## **2.0 Day 1, 11<sup>th</sup> July, 2016:**

### **2.1 Climate setting**

Mr. Nyongesa welcomed the participants and thanked them for purposing to attend the workshop on biodiversity and invasive species information dissemination and requested them to introduce themselves (Annex 1). He noted that the workshop is timely as the Lamu County is preparing the Lamu county spatial plan and it will be useful to have information on the area biodiversity for mainstreamed into the spatial plan. As for Somalia, Mr. Nyongesa informed members that through the Biodiversity Management Program (BMP), ICRAF commissioned a consultant to develop the vision of Somalia stakeholders to reestablish the national park. He noted that the biodiversity information of the Laga Badana protected area will inform the national park managers on the wealth of the park in terms of biodiversity to support the need to re-establish the national park.

Mr. Nyongesa then outlined the objectives of the workshop which were;

1. To disseminate to key stakeholders the findings of the biodiversity and invasive species assessments;
2. To engage stakeholders on the application of the biodiversity information in spatial planning, research and development of the cross border area.
3. To deliberate on the policy implications of the findings and recommendations of the studies and hand over these assessment reports to relevant cross border authorities
4. To discuss with Somali and Kenyan stakeholders on the cross border dialogue platform as a means for continued cooperation in cross border conservation of biodiversity.

Mr. Nyongesa then invited Mr. Njoroge Chege, KFS to chair the first session.

### **2.2 Opening remarks chaired by Mr. Njoroge Chege**

Mr. Chege thanked the participants for attending the workshop. He welcomed the persons to give the opening remarks;

**Dr. Jonathan Muriuki, Country Representative, World Agroforestry Centre, Nairobi**

Dr. Muriuki extended his salutations to the County Commissioner Lamu – Mr. Joseph Kanyiri, Honorable Minister for Environment, Energy and Minerals in the Jubaland Government – Mr. Mohammed Yusuf Omar, Dr. Dealkew Berhe – The IGAD MBP Programme Manager, Mr. Nelson Manyeki – ministry of Environment and Natural Resources – Also IGAD BMP National Focal Point (NFP) Steering Committee Members.



**Figure 1;** Dr. Jonathan Muriuki, standing, giving his opening remarks, photo credit Maimbo Malesu

In his remarks, Dr. Muriuki noted that human population and lifestyles are changing, climate is also changing. The government policy is sometimes not informed by science due to lack of data but policy can't wait because Pressure on biodiversity is increasing. He noted that lifestyle and climate changes present new challenges e.g. zoonotic diseases, nutrition and drug resistance. Untapped genetic potential still holds the key to finding solutions to these challenges. Conservation is necessary however, with increased human population, there are scarce resources both on land and sea scape to promote conservation hence the BMP program is very vital. The assessment reports offer a key background on implementation strategies that partners and governments can embark on. He called upon all the

stakeholders to critique these reports well to ensure that the following day, the participants come up with succinct recommendations that work at sub-national, national and regional levels.

**Dr. Mohamed Ali Mohamed, National focal person, Federal government, Ministry of Forest, Livestock and Range**

Dr. Mohamed Ali Mohamed thanked the organizing committee for inviting the federal government to attend the workshop; he sent apologies from Mr. Hashi who was not able to attend the workshop. He noted that the federal government under the Ministry of Forest, Livestock and Range is willing to work with Jubaland state to ensure actualization of activities in the Jubaland region. He thanked ICRAF for facilitating Dr. Osman Gedow who assessed the biodiversity of the proposed national park in the project site.



**Figure 2:** Dr. Mohamed Ali Mohamed reading presenting his speech to the workshop participants' photo credit, Maimbo Malesu

**Hon. Mohamed Yusuf Omar (Minister; Ministry of Environment, Energy and Minerals, Jubbaland Somalia)**

Hon. Mohamed Yusuf Omar thanked participants and the organizing team; he said he was happy to meet all the project stakeholders including the donors. He acknowledged that Badhadhe and Bush Bush have high biodiversity, which need to be conserved. He appreciated the presence of various stakeholders as this will strengthen the cross border collaboration.



**Figure 3:** Hon. Mohamed Yusuf Omar, delivering his remarks during the opening session, Photo credit Maimbo Malesu

**Mr. Nelson Manyeki, National Focal point, Kenya**

Mr. Manyeki informed participants that he is impressed by the good work that ICRAF and its stakeholders is doing in the Kenya-Somalia cross border area. He noted that he is keen to know the existing biodiversity information in the cross border area to support policy making. He said the biodiversity assessment was a well thought activity as the policy makers will be able to generate data based policies not assumption based policies.





**Figure 4:** Mr. Nelson Manyeki giving the opening remarks, Photo Credit, Maimbo Malesu

**Dr. Debalkew Berhe, Manager IGAD BMP**

Dr. Berhe informed participants that IGAD BMP is interested in ecosystem and water quality, management and use of invasive species and the role of biodiversity in the social and environmental dimensions. He noted that IGAD is developing a regional strategy for invasive species. He also mentioned that IGAD is working with EU to explore the possibility for no cost extension and a second phase for the project as biodiversity project need more than four years for it to be completely functional. He emphasized that it is important for ICRAF to expedite the implementation of the activities in Somalia which were proposed during the second cross border meeting on 18-19<sup>th</sup> April, 2016. He said that Dr. Serge will visit the field to follow up on the activities going on at the demonstration sites.



**Figure 5:** Dr. Debalkew Berhe addressing the workshop participants during the opening remarks, Photo by Maimbo Malesu

**Micah Githuka, Administrative Officer, County Executive Commission (CEC) for Lands**

Mr. Micah Githuka said he was representing the CEC for lands, Hon. Samia Bwana. In his remarks, Mr. Githuka welcomed participants to Lamu County of festivals. He acknowledged that the workshop is timely as it will inform land use planning and policy making on forest bill. He further said that Lamu County has a number of upcoming projects e.g. LAPSSET and coal plant and the documented biodiversity information will inform the implementation of such projects.





**Figure 6:** Mr. Micah Githuka, addressing participants, photo by Maimbo Malesu

**Key note speech: Mr. Nelson Manyeki, National Focal point, Kenya**

Mr.

Manyeki

<https://www.dropbox.com/s/2hlhg3g0j47r2hh/Lamu%20Invasive%20Species%20%20Presentation.ppt?dl=0> mentioned that;

- Biological Resources feed and clothe us and provide housing, medicines and spiritual nourishment.
- The natural ecosystems of forests, savannah pastures and rangelands, deserts, tundra's, rivers, lakes, seas and oceans contain most of the earth's biodiversity.
- Gene banks, botanical gardens, zoos and other germplasms repositions make small but significant contribution to biodiversity.
- Current decline of biodiversity is a result of human activities.

**Potential threats of invasive species**

- Invasive species can disrupt community and ecosystem processes.
- With no natural predators could wipe out local species by

- Out-competing them for food, preying them or altering their habitat.
- Alter evolutionary trajectories and reduce the respective biodiversity.
- Pose potential threat to human health and welfare due to aggressive and harmful nature.

#### **Pathways for Introduction of invasive species**

- Deliberate introduction associated with trade in species
- Accidental introduction, associated with different modes of transportation and shipping, and with trade in commodities

#### **Aichi Biodiversity Target on Invasive species**

Under the Aichi Biodiversity Target of invasive species, countries required to:-

- Identify invasive alien species
- Identify their introduction pathways.
- Prioritize management, control and eradication efforts of those species and pathways which will have the greatest impact and resource effective to address
- Prevent the introduction alien species which is more cost effective than eradicating.
- Conduct a risk analysis prior to introduction as well as enhancing border controls and quarantine.
- Early warning mechanisms, rapid response measures and management plans.
- Use of physical, chemical or biological means to manage, control or eradication of alien invasive species.

**Mainstreaming biodiversity and invasive species information to Government /stakeholders plans can be achieved by;**

- Regularly collating, evaluating and exchanging information on the conservation of biological diversity and sustainable use of biological resources.

- Developing methodologies with a view to undertaking systematic sampling and evaluation of the components of biodiversity by means of studies.
- Carrying out surveys on the status of ecosystem to establish baseline information in biological and genetic resources
- Identifying and evaluating the potential economic and social implications and benefits of conservation and sustainable use species
- Undertaking and updating, analyzing and interpreting of data derived from identification
- Collecting, assessing and making available relevant and reliable information in timely manner and form suitable for decision making.
- Establishing institutions and regulatory frameworks that will be responsible for management of components biological resources



**Figure 7:** Mr. Nelson Manyeki delivering a keynote speech on biodiversity and invasive species, photo by Maimbo Malesu

**Mr. Joseph Kanyiri, County Commissioner Lamu-Kenya**

Mr. Kanyiri expressed his gratitude to the workshop organizing committee for selecting Lamu as the venue for the meeting following his proposal during the cross border meeting in April 18-19, 2016. He mentioned that invasive species are here with us, “you find them by the road side” e.g. *Mathenge spp.*, which has effect both on the environment and social-economic status of people. He noted that the biodiversity management program effort to assess the current status of biodiversity and invasive species will inform the policy makers and land use planners on the best approaches to manage and utilize biodiversity and invasive species.

He emphasized that insecurity cannot prevent project implementation, he informed the participants that the county commissioner’s office hold frequent peace talk with its cross border counter parts to promote cross border peace. In this regard, the county commissioner informed the participants that there is need to contact the security forces when involved in implementation of the activities on the ground to continuously update the staff on the security situation. He assured the project staff and other stakeholder of their security while in Lamu. Following this remarks the county commissioner declared the workshop officially open.



**Figure 8:** Mr. Joseph Kanyiri, giving the opening remarks, photo credit, Maimbo Malesu

### 3.1 Presentations chaired by Dr. Delbekew Berhe

#### 3.1.1. Assessment of the biodiversity in the proposed Laga Badana National Park

**Location of Laga Badana-Bush Bushle National Park: Dr. Osman Gedow Amir**

ICRAF contracted Dr. Osman Gedow to conduct biodiversity assessment of the Laga Badana project site. Dr. Gedow started his

presentation <https://www.dropbox.com/s/oie22bmtgio8lct/OSMAN%20GEDOW%20PPT%20ON%2011%20JULY%202016.ppt?dl=0> by outlining the objectives of the assessment which were;

- To compile and synthesize information on terrestrial and marine biodiversity for the Somalia part of the cross border area
- To analyse the use of biodiversity, threats and opportunities for biodiversity conservation;
- To develop electronic data format for users involved in spatial planning and biodiversity conservation and management.

To extract information on the region biodiversity, the consultant reviewed existing literatures of flora and fauna of Laga Badana National Park (NP), conducted internet search in gathering recent information of flora and fauna of the Laga Badana-Bush Bushle and Organized stakeholder interviews to ascertain presence of larger mammals in the NP.

The findings are summarized in table 2 below.

**Table 2:** Biodiversity of Laga Badana protected area

S/N	Taxonomic group	No species	Endemic species		IUCN red list species	
			No	%	No	%
1	Flora	916	32	3.5	?	
2	Birds	293	1	0.4	7	2.4
3	Mammals	100	2	2.2	10	10
4	Amphibians & reptiles	93	3	3.3	8	8.6
5	Fresh water fish	37	5	13.5	?	
6	Marine fish	?			?	
7	Molluscs	1			1	

**The main threats to biodiversity of Laga Badana area are;**

- Lack of security and law enforcement
- Hunting and poaching of remnant wildlife
- Charcoal production in the National Park
- Illegal, unregulated and unreported overfishing in Marine area
- Uncontrolled harvesting of mangroves and coastal mining
- Egg harvesting of sea turtles and breeding birds
- Invasive alien species

#### Opportunities for biodiversity in Laga Badana area

- IGAD-Vision and Roadmap for the re-establishment of National Park
- Non-destructive harvest of forest (biodiversity based value chains)
- Bio-prospecting (Ethno-botany)
- Eco-tourism
- Research facilities
- Recreation of Somali communities returning from Diaspora



**Figure 9:** Dr. Osman Gedow presenting the [Assessment report of the biodiversity in terrestrial and marine landscapes of the proposed Lag Badana National Park](#), photo by Maimbo Malesu

The main invasive species found in Laga Badana protected area include; *Prosopis Julifora*, **Congress weeds** *Parthenium hysterphorus* and **Common Cocklerbur** (*Xanthium strumarium*)





**Figure 10:** *Prosopis Juliflora*, Large and rapid reproductive invasive species, photo by Osman Gedow



**Figure 11:** Congress weeds *Parthenium hysterphorus*, photo by Osman Gedow



**Figure 12:** Common Cocklerbur (*Xanthium strumarium*) Photo by Osman Gedow



### Recommendation Based on biodiversity assessment in Laga Badana area

- Support the vision and roadmap for the Laga Badana National Park
- Develop an enabling policy, legislation and institutional arrangements
- Establish a marine National Park in southern Somalia.
- Undertake ground survey and specimen collection for detailed study of biological diversity of Laga Badana National Park.
- Develop natural resource management plan of Southern Somalia

**Table 3:** Plenary based on Dr. Gedow presentation

Question/comments	Responses
How did you verify the existence of larger wild animals?	I conducted telephone interview with the local communities due to security reasons I could not do one on one interviews
What causes disappearance of cheetah?	The cheetah is disappearing due to pet trade. The cubs are exported for cash

### 3.1.2. An Ecosystem Service Perspective on Benefits That People Derive From Biodiversity of Coastal Forests in Lamu County, Kenya: Linda Mbeyu:

Linda defined biodiversity as a general term that includes all natural aspects, the variety of life on earth that includes land, lakes, rivers and forests; the wildlife and landscapes and the beautiful and bountiful marine areas <https://www.dropbox.com/s/gbyw7ie7qdvinh/Benefitsof%20BD-L.%20Mbeyu.ppt?dl=0>. Biodiversity offers multiple opportunities for development and improving the welfare of human beings. It is the basis on which essential environmental services upon which life on earth depends. Ecosystem is a biological community that lives within an area combined with the physical and chemical factors of non-living things. Ecosystem services are the contributions, both goods and services that they make to the well-being of people and categorized into four; provisioning, regulating, supporting and cultural services. Interplay between ecosystems and biodiversity is that ecosystem provide goods and services that human beings rely upon while biodiversity provides an environment for these ecosystems to thrive.

The study was carried out in Lamu County and covered Awer-, Mpeketoni - and Witu - areas. A total of 116 respondents (Awer, 30, Mpeketoni 50 and Witu 36) were purposively selected. Awer area is located between Lamu and the Somali border and consists of three National Reserves; Boni, Dadori and Kiunga

Marine National Reserve. Within 5 km from the boundaries of these protected areas are the Awer community known as hunters and gatherers but have now most of them have now started farming activities.

Witu is situated on the southern part of Lamu County. The Giriama community found live in the buffer zone of the Witu Forest Reserve in village Maisha Masha where they emigrated mainly from Kilifi County. Mpeketoni is centrally located of the two places, 35km from Witu and 187km to Kiunga and is inhabited by the Kikuyu without forest cover in their direct vicinity and is predominantly an agricultural area.

Three objectives guided the study:

- To establish from the community how they benefit from biodiversity
- Identify from the communities opportunities of biodiversity to their livelihoods

Establish the communities' perspective on the threats to the benefits that they derive from biodiversityThe Study focused on two ecosystem services; provisioning and cultural services.Provisioning services were categorized into four aspects; construction material, food, energy and medicine. Cultural services focused on the role of trees in rites of passage, religion and spirituality, aesthetics and recreation. Data was generated through household questionnaires based on two assumptions;

- That communities living in the forest vicinity would benefit greatly from its resources
- That since the community benefit from biodiversity, they would consider forest degradation and deforestation a threat to them

Data revealed a remarkable congruence of the three communities in relying on foods from farmland for their livelihoods. Overall, the results provide evidence that the community living closest to nature (Awer) rely to a greater extent on medicine that they collect from natural biodiversity than the two other communities. Biodiversity supports the provisioning of a number of cultural services, including religion, rites of passage, community recreation and tourism. FGDs with women in Witu and Mpeketoni revealed that circumcision which was done at home is nowadays done in hospitals. Biodiversity and trees play an important role in communities by providing shelter and bringing people together for meetings and social relations development. This was the case for the FGDs that were conducted. Study therefore reveals that the cultural role of trees has changed with time in terms of rites of passage and religion but that they are still used for community building and identity

Overall results have revealed that these communities depend both on their farm and on nature to derive their material. For instance, they rely on the farm to obtain most of their food save for the Awer who harvest honey, game meat, fresh water fish and wild fruits from nature. Of the three communities, the Awer depend more on deriving products from nature; they derive their medicine, cooking energy and some of their foods from nature. As such, the assumption that communities living in the vicinity of the forest benefit from it is applicable for medicine and cooking energy. Owing to the fact that these communities do benefit greatly from their farms, much of their focus is farm related threats and opportunities.

### **Threats to biodiversity in Lamu County**

Survey started with the assumption that native communities living close to forests do rely significantly on ecosystem services from these forests and would therefore consider deforestation and forest degradation a threat to their livelihoods

The threats were categorized under food, construction material, energy and medicine. In relation to food, many of the threats mentioned in the study were crops and livestock related e.g. pest infestation, lack of food for livestock and unpredictable rainfall. A major threat for Witu residents was infestation of *Typha Latifolia*. Threats to food from nature were linked to KWS restriction, wild animals and insecurity limiting access. Threats to medicine had majorly associated with KFS restriction, wild animals and unavailability of some tree species owing to their overutilization. Construction material and energy threats include permits that are cost prohibitive, wild animals and high transportation costs due to poor road infrastructure

Land tenure security emerged as a major issue in all the three places as the respondents reported not holding titles. The study revealed that 93% of the population in Awer, 66% in Mpeketoni and 91.7% in Witu do not possess land titles. Lack of land title deeds means that the residents live in perpetual uncertainty thus a challenge for the residents to make any long term on-farm land use plans they reside in for biodiversity conservation. In line with this was land related conflicts. In Witu land conflict is between the pastoralists and the farmers resulting in in-fighting between these communities. In her presentation, Linda referred to Elijah Kipterop quote,

*“Lamu is a county that has problems with land; if you solve land issue you will solve 70% of the issues in Lamu”.* Opportunities

- **Land tenure security**-address this by issuance of title deeds for legal ownership and property rights. **Infrastructure development**-food is enough for own consumption and for sale but roads are not in place especially in Awer. Erecting electric fences to curb wild animals like baboons from destroying crops
- **Working with authorities**-KFS and KWS to agree what extent communities can extract forest material and community help protect animals
- **Linkage to markets**-honey in Awer, mangoes in Mpeketoni and green grams in Witu are examples of products that can be sold
- **Women involvement**-more and active involvement of the women in decision making around agricultural practices and conservation

Development value chains of ecosystem based goods and services- for livelihoods-biodiversity conservation

### **Recommendations**

- Policy and decision makers to formulate policies and decision which can allow communities continue harvesting medicine and wood fuel in a sustainable manner
- Policy and decision makers to focus on Participatory Forest Management to allow communities to work with forest stakeholders to ensure forest protection and conservation
- Need to promote biodiversity based value chains
- There is need for appropriate extension service for sustainable agriculture enterprise development



**Figure13:** Mrs. Linda Mbeyu during her presentation, photo by Maimbo Malesu

**Table 4:** Plenary based on Linda’s presentation

Question	Responses
What informed the idea that Awer derive it product from the forest? could it be because of affordability	The finding were based on empirical data
If the communities rely on nature why do they feel constrained when requested to protect forest?	Communities need to be capacity build on natural resource conservation and management
Could some responses be limited by the fact that you are a lady in a Muslim community?	I may not be able to confirm this
Does community collect wood from their farm or the forest?	They collect some from the farm although some are involved in illegal logging

### **3.1.3. Biodiversity assessment of Witu forest terrestrial landscape in Lamu County, Kenya: Dr. Mordecai Ogada**

Dr. Mordecai informed participants that he conducted biodiversity assessment on Witu terrestrials landscape with assumption that;

<https://www.dropbox.com/s/xdqddgjhmty4iri/Biodiversity%20assessment.pptx?dl=0>

1. Assessment will guide biodiversity Conservation/ Management purposes across the landscape.
2. State Regulatory Agencies will be Key partners in mainstreaming biodiversity information into on-going and future county plans.
3. Communities will be Key partners in the biodiversity Conservation & Management initiatives

Dr. Mordecai noted that the site has several endemic species;

- Mammals Include; Sokoke dog mongoose, Tana mangabey, Golden-rumped elephant shrew.
- Birds Include; Clarke's weaver, Sokoke scops owl ,Pemba sunbird ,Fischer's tauraco, and the Tana River cisticola

#### **Key Challenges in the area are;**

##### **Difficult access**

1. Poor or Absent road network
2. Seasonal/ Tidal flooding
3. Low Capacity in terms of Personnel and Equipment

##### **LAPSSET**

1. Easy Illegal Extractions
  2. Higher demand for Ecosystem products
  3. Increased extraction efficiency
  4. Damage to habitats by infrastructure/ traffic
- Unstainable resource extraction
  - Slash & burn agriculture



**Figure 14:** Dr. Mordecai during his presentation, photo by Maimbo Malesu

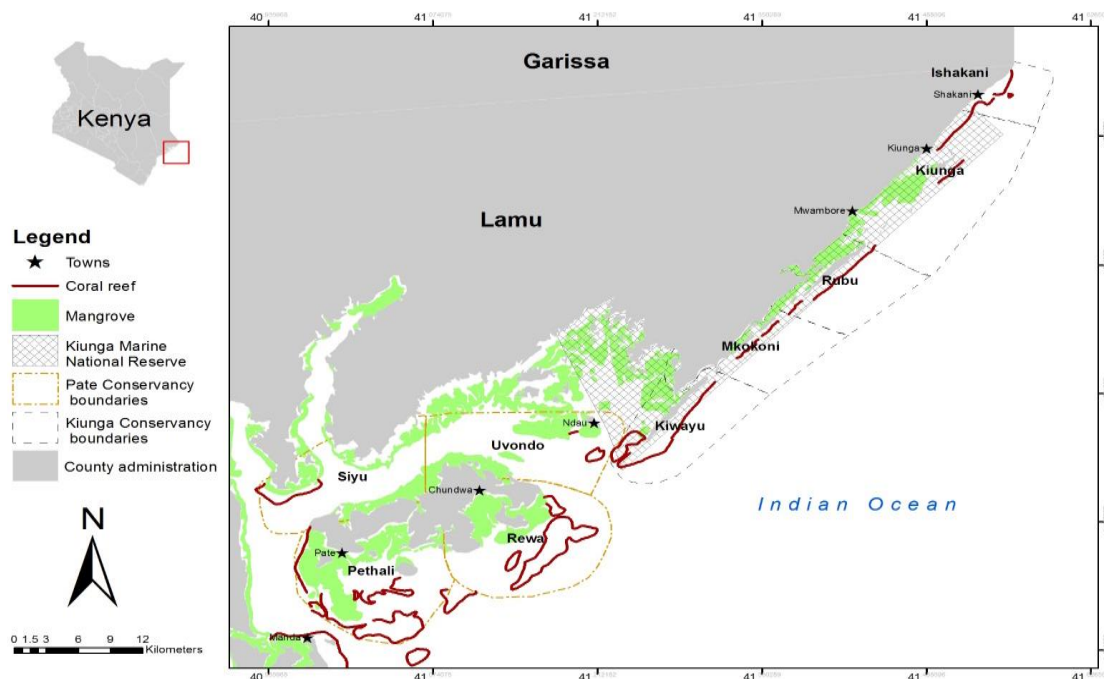
#### **3.1.4. Marine habitats of the Lamu-Kiunga coast: An assessment of biodiversity value, threats and opportunities: Mr. Kennedy Osuka:**

<https://www.dropbox.com/s/f8gufhiwly8gzaz/CORDIO%20ICRAF%20Biodiversity%20assessment%20of%20marine%20habitats%20of%20Kiunga-Lamu%20seascape-Osuka-11Jul.16.pptx?dl=0>

Objectives of the assessment;

- To determine the current status of the marine biodiversity in Lamu-Kiunga seascape
  - assess the near-shore coastal marine environment
  - its current and potential use and benefits of ecosystem services to people, and
  - the drivers and pressures of change in the seascape,
  - opportunities for improved management

For example, Figure 15 shows site where biodiversity information was extracted.



**Figure 15:** Lamu-Kiunga seascape, source CORDIO east Africa.

#### Unique coastal and marine fauna and flora

- Extensive **mangrove** ecosystems in E. Africa
- Well-developed **dunes** and **beaches** (>100kms)
- **Coral reef** ecosystems dissipating into **algal dominated** rocky reefs in Somalia



**Figure 16:** Seascape biological diversity, source CORDIO east Africa

Ecosystem services (ES); Coastal and marine ecosystems provide;

Provisioning Ecosystem services (ES)

- Fisheries supports 3,100 fishers



- About 1,960 fishing gears operate along the Tana-Pate coastline Lobster, shrimps and finfish main fishery
- Lamu touristic destination

#### Cultural Ecosystem services (ES)

- Lamu island designated a UNESCO Cultural World Heritage Site in 2001
- Rich historical and cultural significance in the Swahili and Islamic cultures
- Adjacent areas of Pate and Kizingitini proposed as a buffer zone

#### Biodiversity of shallow marine habitats include;

- Unique corals species in the seascape include e.g. *Porites nodifera*, *P. columnaris*, and *Coscinaraea* species
- Globally rare coral genera of; *Siderastrea*, *Horastrea*, *Caulastrea*, and *Moseleya*
- The rare and endemic corals comprise *Horastrea indica* and *Siderastrea savignyana* *Goniopora*, and the red sea angel fish *Apothemichthys xanthotis*
- Coral reef fish; A total of 189 species of reef fish were observed during the Pate to Kiunga 2015 survey
- Mangroves
  - The Lamu-Kiunga seascape hosts 60 % of Kenya's mangroves
  - The current mangrove cover within Pate and Kiunga is estimated at 11,277 ha, which represents 22.6% cover loss over the 19 years

#### Marine related birds

- Lamu archipelago also acts as key nesting grounds for 10,000 breeding pairs of roseate terns (*Sterna dougallii*).
- Other birds include
  - white-cheeked tern (*Sterna represa*),
  - bridled tern (*Sterna anaethetus*),
  - white pelicans (*Pelecanus onocrotalus*), and
  - African spoonbill (*Platalea alba*)

#### Sharks and rays

- Six shark species and nine ray species
- Sharks are targeted for shark fins and liver oil.

### **Threats to marine biodiversity**

- Resource over-exploitation
- Illegal and destructive gears
- Pollution
- Insecurity

### **Recommendations**

Instigate full enforcement of existing regulations and policies so that marine biodiversity is managed properly.

- Introduce marine spatial planning (MSP) approaches in Lamu County planning that includes resilience based management of corals reefs
- Conduct research on seagrass beds urgently and ensure this habitat is considered in zoning of community and government MPAs
- Conduct research on shark and ray species diversity and population status
- Introduce new fisheries legislation that addresses other destructive gears such as small mesh sizes of gill nets which capture juvenile fishes
- Increase government support to artisanal fishing communities to mitigate negative impacts from the development of the Lamu Port. Compensation due to foreseen loss of customary fishing grounds
- Ensure VMS (vessel monitoring systems) are in place – Seychelles' collaboration



**Figure 17:** Kennedy osuka during his presentation, photo by Maimbo Malesu

### **3.1.5. Trends, drivers of change and possible solutions to address deforestation and loss of forest habitat in Kenya Somalia cross border area: Grace Koech**

<https://www.dropbox.com/s/3tz59e8fdwvr64t/habitat%20analysis.pptx?dl=0>

The coastal forests hot spot is considered to be threatened, however there is little up to date information on the status of these forests, their rates of deforestation and degradation, underlying drivers of change and opportunities presented by restoration of degraded forest lands. The EU/IGAD funded BMP, supported a study describing the loss of tree cover, the associated drivers of change and recommend possible solutions to reverse the trend

## **Data sources for analysis of the status of forest habitat**

### **Historic vegetation maps**

- ❖ vegetation map of Lamu District (1985)
- ❖ vegetation map of the Boni and Doodori National Reserves
- ❖ vegetation map of the proposed Laga Badana National Park

### **Mapping tree cover and tree cover loss**

ICRAF geoscience lab downloaded the data from the Global Forest Watch site to produce maps on tree cover in the year 2000.

### **Drivers of change**

The Drivers, Pressures, State, Impact and Response (DPSIR) approach (EEA, 2007) was used to analyze how the various drivers of change affect the biodiversity

### **Possible solutions and opportunities for mitigation and restoration**

ICRAF organized Focused Group Discussions (FGDs) and key informant interviews to collect the primary sources of information.

## **Results**

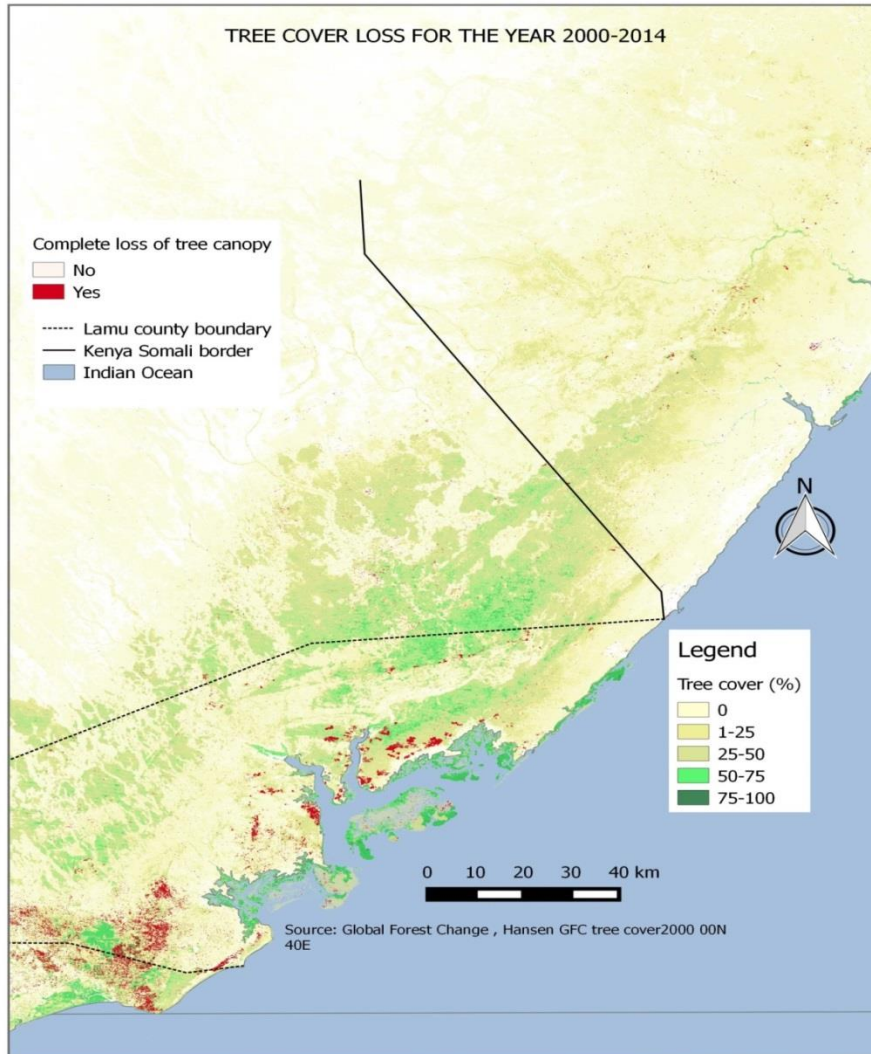
The vegetation classes in the cross border area range from Forests (mangroves), woodlands shrub lands to grasslands.

Abel (1976) considered that;

- ❖ The woody species in the shrub lands that dominate the area had been promoted by the past grazing of livestock.
- ❖ The vegetation closer to water points consisted of annual grasses such as *Chloris* and *Dactyloctenium*.
- ❖ The grasslands at the south-west part of the park were in fine condition, due to underutilize by livestock because of heavy infestation with tsetse.

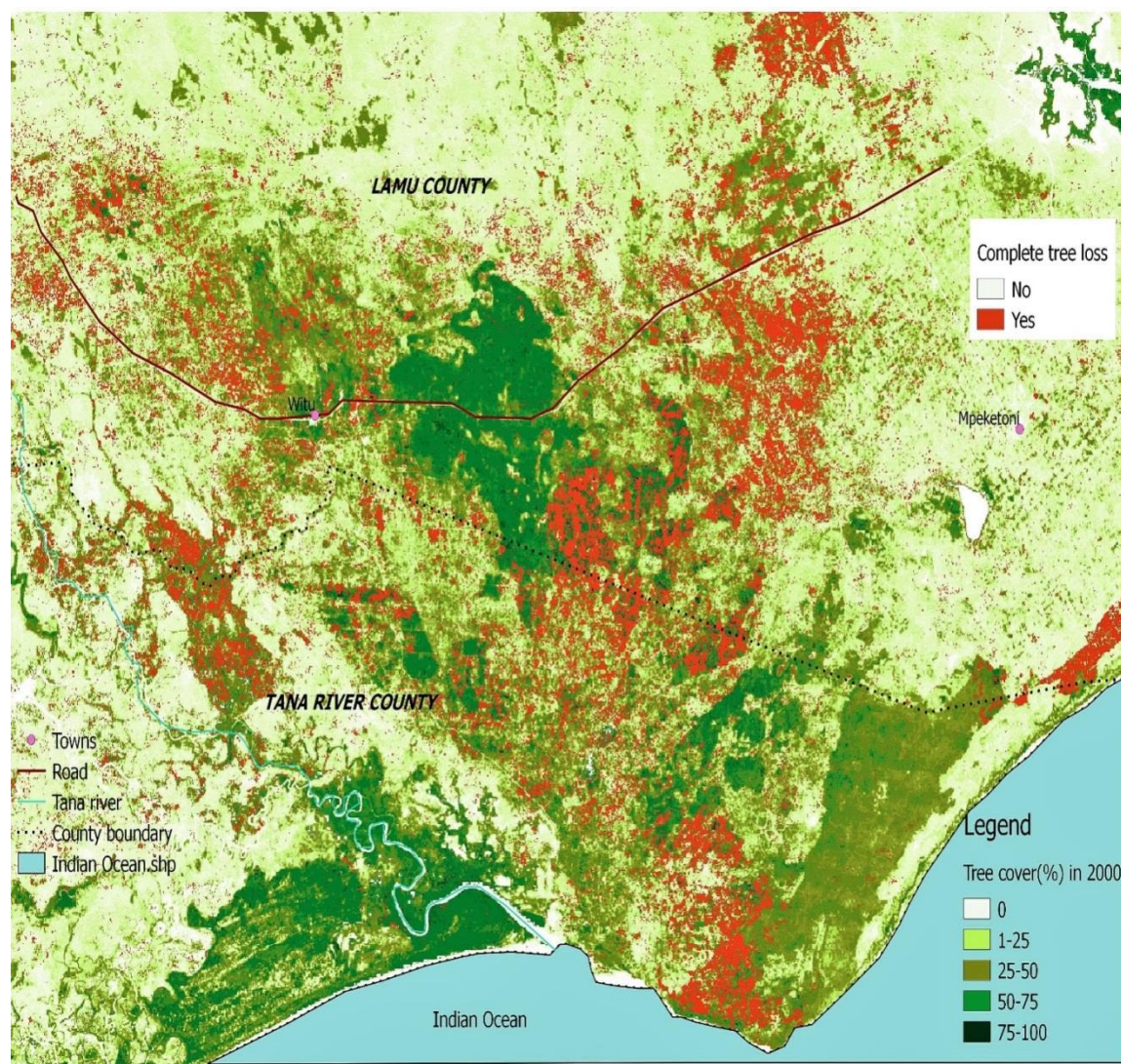
### **Status of forest covers in cross border area**

- ❖ Evidence from Global Forest Watch reveals that there is no evidence for widespread deforestation in Lag Badana
- ❖ deforested lands are located in the North of Lamu County



**Figure 18:** Status of forest cover in the cross border area from 2000-2014, source ICRAF GIS, 2016





**Figure 19:** Forest cover loss in Kenya side of the cross border area, Source ICRAF GIS

**Table 5:** Drivers of change in the cross border area

Driver	Pressure	State	Impact
Population growth Immigration Poor soil fertility Poverty Few income options Demand for charcoal Tenure insecurity Support of livestock	Excessive demand cropland for slash and burn agriculture Use of fire for crops and livestock (tsetse) Fuelwood for charcoal Competition livestock – wildlife Human wildlife conflict	Reduced lowland tropical forest area Increased pyrogenic savannah Degraded drylands forests Reduced wildlife Increased cropland	Biodiversity loss and reduced benefits from biodiversity Increased but unsustainable benefits from crop and livestock based agriculture Difficulty to comply to international agreements (e.g. CBD)

**Table 6:** Threats and possible solutions to address deforestation for various categories of land

Land categories	Threats	Proposed solution	Actors
High biodiversity forest inside protected area	<ol style="list-style-type: none"> <li>1. Encroachment,</li> <li>2. logging,</li> <li>3. charcoal production,</li> <li>4. Collection of NTFPs etc.</li> </ol>	<p>KFS, KWS and County government to collaborate in conserving forest.</p> <p>The rangers should be supported with equipment to improve their efficiency in addressing security issues</p> <p>Encourage local communities to plant trees on farm to allow them collect NTFPs from their farms, Increase community awareness on benefits of forest and its conservation. rehabilitation and restoration of degraded lands, support the local communities with seedlings and rainwater harvesting materials to help them store water for watering trees during dry seasons</p>	<p>KFS, KWS, County government,</p> <p>NGOs, charcoal producers, Local community,</p> <p>Rangers and People carrying out Illegal activities</p>
High biodiversity forest outside protected areas	<p>Competing claims for land for cultivation, grazing and infrastructure development</p> <p>crops, lack of responsibility due to land tenure issues, tragedy of the commons and mega projects e.g. the LAPSET corridor</p>	<p>Promoting Participatory Forest Management, Encourage community based forest conservation</p> <p>Provision of title deeds,</p> <p>Proper environment impact analysis prior to execution of mega projects such as the LAPSET corridor</p>	<p>County government,</p> <p>local community,</p> <p>KFS, KWS and NGO's</p>

Degraded and plantation forest inside protected areas	Invasive species, lost opportunity for contributing high biodiversity forest	Forest restoration and promote regeneration and re-establishment of native species Control and possible elimination of invasive species	KFS, KWS, IGAD BMP supporting
Degraded and plantation forest outside protected areas	Increased Competing land activities	Range land Management Controlled grazing Signing of MoU between farmers and pastoralists to reduce degradation	KFS, KWS, County government, NGOs, Farmers and Pastoralists
Agricultural lands	Destruction of tree cover in croplands and grazing lands causing a footprint for tree resources in areas outside these lands	Agroforestry interventions in croplands and grazing lands to ensure that these areas can supply tree resources and thus reduce demand for tree resources from adjacent lands	KFS, supported by the IGAD BMP project

### Results based on Focused Group Discussion and Key Informants Interview

- ❖ Deforestation and forest degradation is happening both in protected areas and non-protected areas.
- ❖ Despite regions sharing the same direct drivers of deforestation and forest degradation, the underlying ones tended to differ from zone to zone.
- ❖ Indigenous forests managed by KFS and KWS have been degraded by logging of valuable timber trees resulting in reduced carbon stocks and degraded biodiversity values.
- ❖ Forests on community trust lands under the control of local authorities continue to be degraded and destroyed through over-exploitation for timber, poles, charcoal and fuel wood, and through unregulated grazing and clearance for agriculture.
- ❖ The respondents listed forest products dealers, local community, immigrants, smokers and charcoal burners as the main persons involved in forest degradation and deforestation
- ❖ infra-structure in transport (roads, railway, and sea and airports), public utilities (water, sanitation) and the planned transport corridor to Southern Sudan (LAPSSET) is expected to have its greatest effects on forest cover loss

### Conservation measures



- ❖ The respondents mentioned that they are aware that the government through KFS and KWS, NGOs such as save Lamu and Lamu Conservation Trust is interested in conserving forest.
- ❖ They supported this initiatives as they will not like to see “Sahara desert” in their area. They noted that even they play a role in conservation of their forest resources as they inform the conservation unit of an element of forest degradation and deforestation.
- ❖ They called upon the conservation agencies to improve their efficiency in responding to forest degradation and deforestation as there are situations when dealers harvesting timbers and poles from the forest are reported and no one take immediate action which demoralize the community. The community highlighted that their role in conservation is to;
  - Practicing reforestation
  - Join in seedling raising and group farming
  - Plant trees on their farms

#### **Role of government in conservation**

- penalize those found misusing natural resources
- Tree planting, Reforestation
- Educating farmers on prevailing laws governing forests and other natural resources
- Training the community on the importance of natural resources
- Advocate for proper use of natural resources, avoid overexploitation of natural resources

#### **Solution to reverse the trend of forest covers loss**

The respondents proposed the following as the key actions to reverse the negative trend of forest cover loss and restore degraded lands;

- ❖ Formation of community forestry associations and encouraging their participation in forest management and protection
- ❖ KFS and KWS to partner with private companies, to regenerate, manage and sustainably utilize forest resources.
- ❖ County government to collaborate with KFS to implement charcoal rules to regulate the charcoal industry.

- ❖ Kenya Forest Service to increase its efforts in the regeneration or re-planting of areas which have been degraded.
- ❖ Government to issue title deeds
- ❖ KWS,KFS and NGOs to collaborate in conservation making sure that the local community is engaged in the process
- ❖ Define boundaries between human and wildlife and among villages
- ❖ New entrants into the area to be allocated new land away from the forest
- ❖ Through signing MOUs between farmers and herdsmen to prevent encroachment to the forest
- ❖ Designate different land for the grazing community

#### **Threats faced by forest stakeholders in implementation of conservation**

- Average population density and growth rates are significantly greater in areas with high biodiversity than in the other habitable parts
- Some of the greatest drivers of change are from outside the forest sector hence difficult to manage
- The identification of underlying causes is one thing, estimating their likely effects is yet another challenge for which there is no standard approach.
- The drivers of deforestation and forest degradation tend to vary in type and magnitude from one forest area to another within a given country or even within a county.
- High Illiteracy level among the community members, they lack sufficient knowledge to allow them conserve resources
- Wildfires which are unpredictable hence difficult to manage
- Insecurity in the forested area making it difficult for the scouts and forest managers to access the forest to monitor logging and charcoal burning

#### **Opportunities presented by restoration of degraded lands**

- Reduced human wildlife conflict
- Increased agricultural yield due to increased fertility and nutrient cycling
- Restoration of catchment areas hence water availability
- Regeneration of indigenous species which could have been endangered
- Increase supply of fresh air
- Tourist attraction sites once security is addressed

## Conclusion

- ❖ Increase in population results in, encroachment, increased demand for more timber and non-timber products, land for cultivation hence deforestation and forest degradation.
- ❖ Farming based population density increases in and adjacent to forested areas and population growth and deforestation are correlated. As local people and young migrant families arrive at the forest frontier, they clear land to provide more area for subsistence farming.
- ❖ The influence of infrastructure development on forest cover losses is not well documented but the current national REDD+ process has drawn attention to it. The LAPSET Project starting from Lamu Port should therefore be under close scrutiny.
- ❖ Charcoal production and firewood harvesting is not sustainable and even though the drivers were identified.
- ❖ The supply of wood and charcoal energy to urban households is rapidly growing. It is critical that the supply of energy is officially recognized as an important contribution of the forest sector to Kenya's economy.

## Recommendations

- Afforestation and restoration of degraded forests to restore degraded lands
- Promote on-farm tree plantations where large scale afforestation is not possible
- Local Natural Resource institutions should be supported with Institutional capacity building on deforestation and loss of forest habitat
- Strengthening Community Forestry Associations (CFAs) and NGOs to participate in Forest Management



**Figure 20:** Grace Koech during her presentation, photo by Maimbo Malesu

### 3.2 Panel Discussion on relevance of biodiversity and invasive species information to Government plans; stakeholder perspective

**Host:** Mr. Maimbo Malesu; BMP Project Investigator, ICRAF

**Panelist:**

1. Mohamed Yusuf Omar; Minister; Ministry of Environment, Energy and Minerals
2. Dr. Osman Gedow; SWNHS -Consultant- Somalia
3. Beth Mwaringa; ASDSP - **Ministry of Agriculture (MoA)** Lamu
4. Patricia Maina; Forester Boni forest, KFS
5. Dr. Debalkew Berhe, Manager, IGAD BMP
6. Ann Komen; WWF, Coast region-Kenya
7. Mr. Nelson Maina; National Focal Point, Kenya



**Figure 21:** Panelist during the panel discussion, photo by Maimbo Malesu, ICRAF

Mr. Maimbo hosted panelist during the discussion on the relevance of biodiversity information to government plans. He directed specific question to each person to give their perspective on the

relevance of the biodiversity and invasive species information to government plans and other institutional plans.

The first question was directed to Mrs. Patricia Maina, forester, KFS

**Q1. How relevant is the disseminated biodiversity and invasive species information to Kenya Forest Service**

**Response from Patricia;**

- The information will be instrumental in planning on use and management of natural resources
- The information will help KFS identify existing gaps and engage with stakeholders to create synergy in filling the existing gaps without duplication of activities
- With the information on the status of the coastal forest, KFS could use the information to influence policy on forest bill and sustainable charcoal policy

**Q2. Which particular planning process are you referring to?**

- **Response** Development plans
- Community sensitization strategies
- IGAD BMP supporting toward Lamu spatial plan which KFS is a collaborator

**Question to Ann Komen (WWF);**

**Q1. How relevant are the report presented on biodiversity assessment?**

- **Response** The report are done by young scientist who have potential to influence biodiversity use and management, with capacity they have developed under the auspices of IGAD BMP
- Initially very little information existed on biodiversity, without information it is difficult to address needs, with the assessment report we now have information hence easy to address the needs
- WWF work to influence policy, this however requires good will from the government, assessments done by ICRAF showcase the information generated on biodiversity to promote synergy with other institutions working on biodiversity.
- ecosystem approach should be recommended for all biodiversity project
- Networking is key to success in biodiversity use and management



**Question to Beth Mwaringa (ASDSP, Ministry of Agriculture (MoA);**

**Q1. How relevant are the report presented on biodiversity assessment to the ministry of Agriculture?**

- **Response** The reports are very relevant for example MoA has tried to intervene on reducing encroachment to forest by promoting biodiversity based value chains to improve the livelihoods of communities living in the close vicinity of the forest and availability of biodiversity information will strengthen efforts to these interventions
- The ministry is also promoting movement towards sustainable charcoal production by asking the communities to burn charcoal in groups and promoting plantation of woodlots for charcoal production on farms.

**Question to Dr. Dalbekew Berhe, IGAD);**

**Q1. How far is the BMP project in Tana Kipini Laga Badana Bush Bushle towards achieving the vision of IGAD?**

- **Response** IGAD compliment member state goals by promoting policy harmonization, capacity development on cross border issues, presentations are very relevant towards promoting this objective.
- The assessment reports compliment IGAD mandate as it adopted a cross border approach, the experience of Tana Kipini Laga Badana Bush Bushle project site could be replicated in the other project site
- The regional policy on biodiversity could borrow some information from the biodiversity assessment reports.
- IGAD is supporting national museums of Kenya to develop a repository for biodiversity information; the reports could also be made accessible through this platform.

Mr. Maimbo went further and directed some questions to the audience

**Question to Dr. Serge;**

**Q1. IGAD; How will you describe institutions with regards to biodiversity?**

- **Response** Globally, conservation institutions are generally weak and inadequately resourced

- I support networking when it comes to implementation of biodiversity project
- Landscape approach should be the way to go, bring together all the stakeholder both government and non-governmental, at all level both international, national and local level
- Land use planning should be adopted and respected, the plan in some cases exist but not respected

**Question to Mr. Mohamed Baddi, Community representative;**

**Q1. What is your take on land tenure issue in Lamu?**

**Response**

- Tenure issues are dynamic, land use planning is coming at the 11<sup>th</sup> hour and more shift in land use is expected with the coming up of mega project such as LAPSSET and the coal plant
- There is need to support the county government with spatial plan, glad IGAD BMP is involved in the process this will be a savior to Lamu county

**Question to Jonathan Muriuki, Kenya Country Representative;**

**Q1. Can agroforestry sustain energy production?**

- **Response** Agroforestry can sustain energy production through organizing farmers into groups to plant woodlots on farms, burn charcoal as a group to minimize wastage
- Lamu still has land; steps taken from now will determine whether we will succeed in sustainable charcoal production

## 4.0 Day 2, 12<sup>th</sup> July, 2016:

### 4.1 Group Discussion

Dr. Muriuki chaired this session. He requested members to split into different groups in three categories; community level, national level and international level. The groups were to deliberate mainstreaming of biodiversity information into government and other institutional plans. The findings of community and international level are summarized in the tables below;

**Table 7:** Recommendations from international working groups

STUDY	RECOMMENDATIONS	ACTIONS	ACTORS
SOMALIA	a) Policy, legislation and institutional arrangements	a) Engage government through international conventions b) Domesticating the IGAD biodiversity policy at federal and state level, and local level. c) Develop a protocol to implement regional policy on biodiversity	a) The Nairobi convention secretariat Contact Point: Mr. Dixon Waruinge b) Ministries of Environment (Kenya and Somalia) Contact Point: Mr. Manyeki
	a) Establish Marine National Park in S. Somalia Revive Laga-badana National Park	a) Develop a common cross-border management strategy b) Capacity building, infrastructure development	a) Kenya Wildlife Service & Somalia equivalent b) Somalia Government
	a) Ground survey and specimen collection for study of biodiversity	??	a) South Juba government Ministry of Natural Resources
	a) Natural resource management plan for S. Somalia	a) National Natural Resource Management plan should be drawn. b) Resourcing the planning process	a) Somali Government b) IGAD and other regional agencies
KIUNGA-LAMU SEASCAPE	More research on marine migratory species	Data collection on turtles dolphins, whales, sharks and rays)	NGOs, CORDIO, KEMFRI, Somalia Ministry of Fisheries, State dept. of Fisheries, SWNHS (Somalia Wildlife and Natural History Society)
	Integrated coastal zone management planning (involving community participation)	Integration of marine spatial planning into the county planning process. Development	Lamu County Government, Lamu County Natural Resource Network**, Jubaland

		of Jubaland spatial plan.	State government, Somalia federal government
	Mangrove forests management plans.	a) Support implementation of the management plan	a) KFS (Kenya) Somalia Ministry of Livestock and Forests
<b>STUDY</b>	<b>RECOMMENDATIONS</b>	<b>ACTIONS</b>	<b>ACTORS</b>
	Regional Shipping Monitoring System to cover Illegal fishing, Pollution from shipping and Invasive species from ballast water in ships	Vessel Monitoring System (VMS) Resource the Marine Research Institute (Somalia)	IGAD, and National Governments,
	Environmental Awareness and Education.	Integration of IGAD Environment Education in Training (EET) program into National Curricula	Respective Ministries of Education
KENYA BIODIVERSITY ASSESSMENT	CBNRM across the region	Formation of Community resource users' associations in the region	State agencies in the respective countries
	Upscale Agroforestry across the region	Implementation of Agroforestry programs with applicable species	ICRAF
	Resourcing State Agencies	More resources for KWS, KFS. Establishment of state Agency for wildlife in Jubaland	Respective Governments
TREE COVER ANALYSIS	Strengthening Interstate Agency for Conservation	Formation of a Regional strategy and policy for forestry	IGAD Secretariat
	Improve compliance with conservation regulations/law	a) Strengthen local Civil Society Organizations b) Give conservation concessions	a) Large NGOs, Advocacy groups b) NEMA, Ministry of environment

NOTE: Lamu County Natural resource Network- Membership includes: WWF, Save Lamu, NRT, CORDIO, LAMCOT (Lamu Conservation Trust) Lamu CWCC, Conservancies, BMUs, and others



**Figure 22:**International working group deliberating on recommendations based on the biodiversity assessment report, photo by Maimbo Malesu



**Figure 23:** Community level working group deliberating on recommendations based on the biodiversity assessment report, photo by Maimbo Malesu



**Table 8:** Recommendation at the community level

<b>Ecosystem service perspective on benefits that people derive from biodiversity in the Coastal forests of Lamu County, Kenya</b>		
	<b>Issue</b>	<b>Action</b>
1.	Forest management authorities consider developing more Participatory Management Approach for coastal forests	The local authority (County government, KFS, KWS and NGOs) to capacitate the community to understand the benefits of the forest and therefore how to protect the forest. They could be taught on fund raising, administration-roles and responsibilities of different offices in the CFA e.g chairman's role
2.	Policy and decision makers to formulate policies and decision which can allow communities continue harvesting medicine and wood fuel in a sustainable manner	Policy is already in place, what is lacking is capacity building of the community which could be through sensitization
3.	Need to promote biodiversity based value chain	Community to lobby county govt in consultation with CFAs, KFS, KWS
4.	Desire for appropriate agricultural extension services	Capacity building of community to ask and access extension services County government to avail extension services NGOs interested in agriculture to support extension service delivery
5.	Land conflict in the area needs to be addressed	Capacity build communities to create liaison committees with appropriate offices and institutions to address these issues Community based conflict management approach Make agreements on land use to manage potential conflicts
<b>Tree cover loss analysis</b>		
1.	New entrants into the area to be allocated new land away from the forest	Lobby against deforestation and illegal land allocation
2.	Sign MoU between County and land owners to prevent encroachment to the forest	Ongoing as now county government is providing cards for land grazers for identity
3.	Designate different land for grazing community	Community can advocate to designate land for different uses
4.	KFS and KWS to partner with companies to regenerate, manage and sustainably utilize forest resources	Community to lobby these institutions
5.	Policies that halt encroachment, development of infrastructure and bushfires	Community to seek to participate in the formulation of policies Advocate for companies to participate in reforestation as they are involved in extraction of wood fuel
<b>Biodiversity of marine habitats of Kiunga-Lamu seascape</b>		
1.	Overfishing due to destructive beach seines	Capacity build community (BMUs) to discharge their mandate particularly on the policy on fishing methods, gears and catch composition
2.	Marine spatial planning	Lobby and participate in marine spatial planning
3.	Vessel Monitoring Systems	Lobby government to establish vessel monitoring systems
<b>Kenya biodiversity assessment</b>		
1.	Upscaled and improved bee keeping	Provide community with knowledge on modern sustainable bee keeping methods Provide relevant support for provision of modern hives, equipments etc
2.	Establishment of Protected Area	Lobby for establishment of these areas inclusive of the community participation to sustainable benefit for ecosystem services
3.	Heritage education	Lobby for community to be involved in the research processes

## **4.2 Closing Remarks**

### **Dr. Kennedy Ondimu, IGAD BMP National Focal point Kenya**

Dr. Ondimu thanked ICRAF for the good job. He also thanked the organizations commissioned to conduct the biodiversity assessment with high quality output. He noted the need to synthesize the report to audience specific material which can be used to inform policy and provide reference to other organizations and institutions working on biodiversity. He thanked IGAD for the continued support it has offered since the project inception. He emphasized the need for a second phase to improve activity implementation on the ground.

### **Dr. Dalbekwe Berhe, IGAD BMP Manager**

Dr. Berhe informed ICRAF that there is need to upscale effort on the Somalia side as this will be a measure for whether or not to support the second phase. This is also because IGAD does not fund national project but transboundary hence it is not wise to focus only on Kenya. He also emphasized the need for policy engagement with governments as government establishment are sustainable unlike the NGOs hence the need to align the project activities with the government policies.

### **Dr. Mohamed Ali Mohamed, National Focal point Somalia**

Dr. Mohamed Ali Mohamed appreciated the workshop organizers for the useful workshop. He wished that Somalia will have an opportunity to enhance activity implementation within the remaining project life.

### **Dr. Jonathan Muriuki, Kenya Country Representative, ICRAF**

Dr. Muriuki appreciated the presenters for the good job; he emphasized the need for capacity building and awareness creation on the value of biodiversity. He appreciated the partnership between ICRAF and its stakeholders in implementation of the project activities. He noted that ICRAF will publish the reports and produce additional materials such as policy documents.

### **Dr. Serge Darroze, Team leader NIRAS**

Thanked presenters for the high quality reports, he emphasized the need to produce audience specific material to influence land use planning and policy making.

### **Mr. Joseph Kanyiri, Lamu County commissioner**

The county commissioner thanked delegation from Djibouti, Somalia and Kenya for their active participation during the workshop. He thanked those involved in planning and actualization of the

workshop. He emphasized the need to lobby for resources to allow replication of the current activities and experience sharing. The county commissioner officially closed the meeting.

## Annex 1: Workshop Program

TIME	ACTIVITY/AFFILIATIONS	RESPONSIBLE
	<b>Day One: Monday July 11, 2016</b>	
08.00-08.20am	Registration	Grace Koech
08.20-08.35am	Climate setting	Nyongesa
08.35-10.00am	<b>Opening Session: Chair – Njoroge Chege</b>	
	ICRAF – Welcome remarks	Dr. Jonathan Muriuki
	Focal Point: Central Government: Ministry of Forest, Livestock and Range	Dr. Mohamed Ali Mohamed
	National Focal Points Kenya	Mr. Nelson Manyeki
	Minister- Ministry of Environment, Energy and Minerals-Jubbaland	Hon. Mohamed Yusuf Omar
	Keynote: Biodiversity and Invasive species Assessment: Mainstreaming information to Governments/stakeholders plans	Mr. Nelson Manyeki
	IGAD Technical Assistance Team Leader (NIRAS)	Dr. Serge Darroze
	County Executive Commissioners-Lands/Forestry	Micah Githuka (Administrator)
	County Commissioner Lamu	Mr. Joseph Kanyiri
10.00am-10.30 am	Tea Break and Group photo	All
10.30-0100pm	Presentation chaired by Dr. Berhe	
	Biodiversity Assessment: Terrestrial Landscape/Marine seascape-Laga Badan-Somalia	Dr. Osman Amir Gedow
	Plenary discussion on Dr. Gedow's presentation	Dr. Berhe
	Ecosystem Services: Community perspectives on benefits of Biodiversity in Lamu County	Linda Mbeyu
	Plenary discussion on Linda's presentation	Dr. Berhe
	Biodiversity Assessment. Terrestrial Landscape-Witu-Kenya	Dr. Mordecai Ogada
	Plenary discussion on Mordecai's presentation	Dr. Berhe
	Biodiversity Assessment: Marine Seascape-Laga-Pate-Kiunga-Lamu County-Kenya	Mr. Kennedy Osuka
	Plenary discussion on Osuka presentation	Malesu Maimbo
01.00-02.00pm	Health Break	All
02.00- 02.30pm	Habitat Analysis	Grace Koech
03.00-04.20pm	<b>Panel discussion: Relevance of Biodiversity and Invasive species to Government Plans. The stakeholders perspectives</b> <b>Host: Maimbo Malesu</b>	
	Forester, KFS	Patricia Maina
	ASDSP	Beth Mwaringa
	Jubaland state	Dr. Mohamed Yusuf Omar
	Ministry of Environment, Water and Natural Resources	Nelson Manyeki
	World Wide Fund for Nature-WWF	Ann Komen
04.20-04.45pm	Tea Break and Departure	All
	<b>Day Two: Tuesday, July 12, 2016</b>	
09.00-10.00am	Group discussion on Mainstreaming Biodiversity/Invasive species information to government/institutional plans	Lamu County government (Minister: Land; Forest, Wildlife and natural resources); Somali government (Federal and regional government); NKK, KWS, KFS,MOA WWF and ICRAF
10.00-10.30am	Tea Break	All
10.30-11.30	Presentation of the group work: How are stakeholders going to use the assessment information? Discuss information use and procedure for mainstreaming into cross border plans ( <i>implementation framework</i> )	Malesu
12.00-12.30pm	Brief Closing remarks	
	National Focal Point-Kenya	Dr. Kennedy Ondimu
	IGAD	Dr. Berhe
	ICRAF	Dr. Jonathan Muriuki
	County Commissioner- Lamu	Mr. Joseph Kanyiri
12.30-01.30pm	Health Break	All
02.00pm	Departure	All

## Annex 2: List of participants

Sno	Participants	Affiliation	Contacts
	<b>SOMALIA</b>		
1.	Mohamed Yusuf Omar	Minister; Ministry of Environment, Energy and Minerals	<a href="mailto:dalacada18@hotmail.com">dalacada18@hotmail.com</a>
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	<b>KENYA</b>		
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22.	Dr. Kennedy Ondimu	Technical Committee –National Environment Management Authority(NEMA)- IGAD BMP -NFP -Technical Advisory committee member	<a href="mailto:Kondimu@nema.go.ke">Kondimu@nema.go.ke</a>
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