Applying Payment for Ecosystem Services and Climate Compatible Development in the Western Indian Ocean Region

Report of the Capacity Building Training Workshop
25 – 30 November 2013
Kaskazi Beach Hotel, Diani, Kenya

Kenya Marine and Fisheries Research Institute

Kenya Marine and Fisheries Research Institute (KMFRI) is a State Corporation in the Ministry of Fisheries Development of the Government of Kenya. It is mandated to conduct aquatic research covering all the Kenyan waters and the corresponding riparian areas including the Kenyan's EEZ in the Indian Ocean waters. Its mission is to contribute to the management and sustainable exploitation of aquatic resources and thus alleviate poverty, enhance employment creation and food security through multidisciplinary and collaborative research in both marine and fresh-water aquatic systems. http://www.kmfri.co.ke

East African Forum for Payment for Ecosystem Services

The East African Forum for Payment for Ecosystem Services (EAFPES) a regional network that promote PES principles in the region. Its goal is to ensure good communication on the science and practice of payments for ecosystem services and to help build PES capacity in East Africa. Although there are existing PES networks in the region, there is none with a coastal focus. EAFPES therefore seeks to complement current PES activities by stimulating project development in coastal areas. Specifically, EAFPES aims to: (i) collate and disseminate knowledge pertaining to coastal PES, (ii) connect stakeholders and the research community and inform the general public, (iii) provide practical information for emerging PES schemes, including tools and experiences, as well as information on funding opportunities. http://www.eafpes.org

*i*COAST Project

This is a project funded by Department for International Development (DFiD) through Climate and Development Knowledge Network (CDKN) that brings together a number of UK universities together with Sri Lankan and Kenyan institutions in the field of: coastal and marine ecosystems, climate change and sustainable development. The project seeks to better understand how coastal ecosystems, such as mangroves, could support climate compatible development (CCD) through applying the right policy and regulatory framework. In Kenya, the project is hosted at the Kenya Marine and Fisheries Research Institute. The main activities are: identifying the possible mechanisms to modify and develop policy and regulatory instruments to allow for management of the deep sediment carbon; identifying the best policy and regulatory mechanisms to allow for CCD including mitigation and adaptation.

Institute of Marine Sciences

The Institute of Marine Sciences (IMS) is one of the academic and research units of the University of Dar es Salaam mandated with training, research and community service through provision of outreach activities and consultancy services in aspects of marine science and technology. The Institute is strategically based on Zanzibar Island that provides it with suitable coastal and marine environments to discharge its duties. In line with the nation’s development (economic and social change, growth and prosperity) mission, one of the Institute’s key strategic training and research themes is on applying science for poverty alleviation, and sustainable coastal and marine resources management. As part of delivering on this duty theme, the Institute endeavors to support rational assessment and characterization of the coastal and marine ecosystems and the goods and services that they provide to improve livelihoods of dependent communities. http://www.ims.udsm.ac.tz

This report was prepared for the Western Indian Ocean Marine Science Association (WIOMSA)

This report was prepared by Dr. Mwita Mangora, Ms. Caroline Wanjiru and Mr. Hassan Abdirazak on behalf of the Kenya Marine and Fisheries Research Institute (KMFRI), East African Forum for Payment for Ecosystem (EAFPES) and the Institute of Marine Sciences as the principal workshop organizers.

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Acronyms

CCD	Climate Compatible Development
CDKN	Climate and Development Knowledge Network
CFA	Community Forest Association
DFID	Department for International Development
EAFPES	East Africa Payment for Ecosystem for Services
EMCA	Environmental Management Coordination Act
ESPA	Ecosystem Services for Poverty Alleviation
IMS	Institute of Marine Sciences
IPCC	Intergovernmental Panel on Climate Change
KFS	Kenya Forest Service
KISCOL	Kwale International Sugar Company Limited
KMFRI	Kenya Marine and Fisheries Research Institute
MASMA	Marine Science for Management
PES	Payment for Ecosystem Services
WIO	Western Indian Ocean
WIOMSA	Western Indian Ocean Marine Science Association

Acknowledgements

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Summary

The East African Forum for Payment for Ecosystem Services (EAFPES) in partnership with Kenya Marine and Fisheries Research Institute (KMFRI) and the Institute of Marine Sciences (IMS) of the University of Dar es Salaam with generous financial support from WIOMSA organized a training workshop that aimed at building capacity of coastal and marine resources managers, policy makers, practitioners and conservationists and community group leaders from four major countries of the West Indian Ocean (WIO) (Kenya, Tanzania, Mozambique and Madagascar) on the concepts and practices of Payments for Ecosystem Services (PES) and Climate Compatible Development (CCD). The training was held in Kenya from 25th – 30th November 2013 at Kaskazi Beach Hotel – Diani with a field visit to Gazi Bay mangrove forest where there is a pilot PES (carbon credit) scheme, the MikokoPamoja Project. Twenty nine participants attended.

The main objective of the workshop was to build capacity in the WIO region in PES that integrates concerns of climate change. Three main thematic areas were addressed: Vulnerability, resilience and adaptation; Payment for ecosystem services; and Governance for the future. Key topics that were covered during the workshop included:

(i) Concepts, definitions, and values of coastal and marine ecosystems
(ii) Society and climate change impacts, adaption and mitigation
(iii) Theory and practice of stakeholders' engagement in natural resources management
(iv) Theory of valuation of natural capital
(v) Theory and practice of PES with case study comparative local examples of MikokoPamoja Project and Lake Naivasha Basin project and Sasumua Watershed scheme in Kenya
(vi) Identifying drivers and developing scenarios for CCD
(vii) Elements of policy and governance relevant to PES and CCD

A detailed workshop training manual was given to participants to help them follow with ease the lecture presentations and also for use future reference. At the end of the workshop participants were asked to provide their evaluation on relevance and delivery of the workshop. Responses which are included in this report indicated that participants were satisfied and felt they were fortunate to get the opportunity to attend the workshop. They strongly recommended that because PES and CCD concepts and practices are emerging in the WIO region and there is still a huge gap on knowledge and skills. Future efforts should be directed towards having similar workshops annually and rotating around the WIO countries.

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BACKGROUND

Introduction and Rationale

Natural ecosystems services are fundamental to human well-being. Valuable ecosystem functions and characteristics, such as provision of clean air, pure water, rich soils, and healthy biological activity are embedded in virtually every product that human beings utilize or consume. Unfortunately, the roles and contributions of these natural processes and functions in supporting livelihoods are often neglected and unvalued. This is largely associated with the fact that natural ecosystems provide a host of benefits that never enter the market place despite their huge direct benefits to people. For example, key coastal and marine ecosystems like mangroves, seagrass beds and coral reefs play the important interdependent roles of protecting shorelines from erosion, providing habitat for fish and other wildlife and mitigating climate change effects through carbon sequestration. These services are often neglected in policy decisions since they are difficult to quantify in the economic market systems.

Despite the many ecosystem services provided by coastal and marine ecosystems and their potential to be recruited in payment for ecosystem services (PES) schemes in the WIO region, there lacks the necessary knowledge and skills to transform this potential into practical and tangible benefits for the local people involved in conservation and ensuring their sustainability. There is a scarcity of PES experts and practitioners in the WIO region with the necessary skills to explore and identify potential sites and design PES initiatives that suit those sites and meet the needs of local communities. . Emerging market-based conservation tools like PES aim to reward and motivate people to conserve the ecosystems. Basically, PES is an arrangement involving contractual agreements that provide financial incentives to individuals or communities for conservation and restoration that ensure sustainable supply of the ecosystem services. With the pressures of climate change, the concept of climate compatible development (CCD) (Fig. 1) is growing in importance. Both the concept and practice of CCD means development that minimizes the harm caused by climate impacts, while maximizing the many human development opportunities presented by a low emission, more resilient, future. In context, CCD addresses those contextual challenges that policy makers face in making choices about which activities to prioritize to ensure

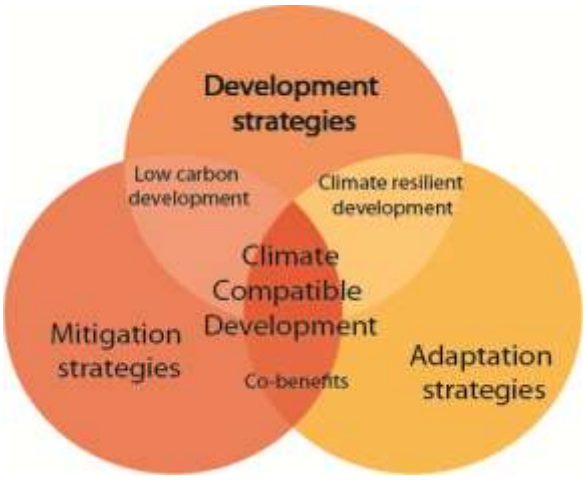

Fig. 1. The concept of Climate Compatible Development and its relationship with associated ideas. (Reproduced from Mitchell and Maxwell (2008)

that the impacts of climate change are kept at the minimum and seek 'triple win' strategies that result in low emissions, build resilience and promote development simultaneously. Simply, CCD promotes mainstreaming climate change into policy options to reduce the need for choices. PES is one of the mechanisms that can be used to achieve CCD.

The WIO countries are already suffering the impacts of climate change, and in most states it is affecting the structure and function of coastal areas. Although governments in the WIO region have shown commitment towards implementing sustainable development in the coastal areas, lack of skilled personnel coupled with material resource constraints are still major challenges. Realizing this deficiency, the East African Forum for Payment for Ecosystem Services (EAFPES) in partnership with Kenya Marine and Fisheries Research Institute (KMFRI) and the Institute of Marine Sciences (IMS) of the University of Dar es Salaam organized a training workshop that aimed to build capacity of coastal and marine resources managers, policy makers, practitioners and conservationists and community group leaders from four major countries of the WIO (Kenya, Tanzania, Mozambique and Madagascar) on the concepts and practices of PES and CCD. The training was held in Kenya from 25th – 30th November 2013 at Kaskazi Beach Hotel – Diani with a field visit to Gazi Bay mangrove forest where there is a pilot PES (carbon credit) scheme, the Mikoko Pamoja Project. Twenty nine participants attended (Appendix 1).

Objectives

The main objective of the workshop was to build capacity in the WIO region in Payments for ecosystem services that integrates concerns of climate change.

Through the training workshop and a field visit, three main thematic areas were addressed:

1) Vulnerability, resilience and adaptation;
2) Payment for ecosystem services;
3) Governance for the future.

This training workshop focused on enhancing understanding of the theories and practices of PES and CCD through lectures, discussions, and a field visit to a demonstration project. Participants were also each given an opportunity to present and share experiences, highlight opportunities and challenges from their respective countries and the work they do in relation to climate change adaptation initiatives (Appendix 2).

Key topics that were covered during the workshop included:

(i) Concepts, definitions, and values of coastal and marine ecosystems
(ii) Society and climate change impacts, adaption and mitigation
(iii) Theory and practice of stakeholders' engagement in natural resources management
(iv) Theory of valuation of natural capital

(v) Theory and practice of PES with case study comparative local examples of Mikoko Pamoja Project, Lake Naivasha Basin project and Sasumua Watershed scheme in Kenya
(vi) Identifying drivers and developing scenario for CCD
(vii) Elements of policy and governance relevant to PES and CCD

The six days of the workshop were organized into 10 sessions as presented in the workshop programme (Appendix 3). The daily proceedings of the sessions are briefly presented in the following sections. A separate detailed workshop training manual (which is part of this report) was given to participants to help them follow with easy the lecture presentations and also use for future reference. After the workshop, this training manual was revised and refined incorporating emerged issues, comments and lessons learnt through the workshop. It is intended that avenues will be sought to publish this manual as a regional guide to PES and CCD practices in the WIO region.

DAY 1 Monday 25th November 2013

Workshop Opening Ceremony

Ms. Caroline Wanjiru took the opportunity to welcome the participants and introduced them to the workshop programme. She then welcomed participants for self-introductions, after which she proceeded to welcome the workshop host, the KMFRI Centre Director, Mr. Patrick Gwada who also took that opportunity to welcome all the participants to the workshop and especially the international participants to Kenya. He further introduced and welcomed the Deputy Director of KMFRI, Dr. Renison Ruwa to give an opening address.

Dr. Ruwa as well started by welcoming the participants, and urged the international participants to enjoy Kenyan hospitality. He also noted that he was going to present the opening speech (Appendix 4) on behalf of the Director of KMFRI who was supposed to officially open the workshop but due to other engagements in other equally important national responsibilities he was not able to attend.

In his speech, Dr. Ruwa noted that the workshop was scheduled at the best time where efforts are being directed towards salvaging the threatened natural capital in both land and sea. He emphasized that today a lot is being witnessed, loss of habitats, collapsing fisheries, pollution, and increased frequencies of extreme events; such as droughts, floods, and typhoons. He argued that unless we act urgently, humanity is threatening its own survival. He further noted that the situation is complicated by the fact that humans are dependent on ecosystems, which do not fit in conventional markets and whose economic values differ widely depending on methods, value

systems and scales of analysis. In the real world, ecosystems are threatened by both natural and anthropogenic pressures. He went on to suggest that Africa and WIO region should embrace climate change adaptation and mitigation strategies in National development blueprints.

He particularly praised KMFRI for spearheading research focusing on marine and coastal ecosystems and their potential to contribute to climate compatible development. He specially pointed out that KMFRI and partners are involved in research, design, and development of a community based mangrove carbon project in the region, the Mikoko Pamoja project, an innovative project that is open for use as a case study for other similar facilities in other areas in the world.

He finally thanked the participants for devoting their time to attend the training workshop. He also commended the supporting institutions- WIOMSA, ESPA and CDKN of UK, and the principle workshop organizers and facilitators – Prof. Mark Huxham, Dr. James Kairo, Ms Caroline Wanjiru and Dr. Mwita Mngora for their commitment in prospering regional efforts to sustaining coastal and marine ecosystems for the better of dependent communities.
After the speech, he declared the workshop open.

Aims and expectations

Following the official opening of the workshop, participants were introduced to the aims of the workshop by Ms. Caroline and then Dr. Mangora guided them through an exercise of expressing their expectations from the workshop. Each participant noted down his/her expiation(s) on a provided piece of paper and these were placed on a wall for reference as the workshop proceeded and during final evaluation.

Analysis of these expectations revealed two major categories of expectations:

1. Gain knowledge and skills for designing and applying PES and CCD
2. Networking with peers in PES and CCD in the region for a sharing experiences, expertise, skills and knowledge and resource for a common goal.

Coastal and marine ecosystems: concepts, definitions and values.

Dr.Mwita Mangora

Dr. Mangora introduced the concepts, definitions and values of the coastal areas and zones as the interface between land and sea, its biological interactions, and human activities with functional ecosystems (wetlands, estuaries/deltas, mangroves, seagrasses, coral reefs). Dr. Mangora conceptualized threats to coastal and marine ecosystems through the phenomenon of coastal squeeze driven by two forces of advancing seas (climate stressors) and human activities (non-climate stressors).

- *Natural phenomena:* Climate change and associated natural disasters like inundation, saltwater/freshwater intrusions, and erosion as a result of sea-level rise and flooding.
- *Anthropogenic:* Population increase and resultant over-exploitation of the coastal marine resources, development pressure, pollution, and excess nutrient enrichment.

Discussion scenario of shift in mangrove fisheries was used to demonstrate how sea level rise will affect mangrove fisheries.

Issues raised and responses

Q1. Are there examples of areas in the East Africa region where retreats of ecosystems were allowed in order to adapt to the changing climate?

Response: *There are no practical examples [*of managed retreat] *in the East African region so far. However, there are prospective challenges to allowing retreats of ecosystems such as mangroves because these would essentially need for compensation for evictions of people from their settlements which have existed largely due to poor law enforcement that result in encroachment of mangrove ecosystems. An example of the Rufiji Delta evictions was cited, a government attempt which resulted in huge political contention between government agents and local communities who have to have resided in the delta since colonial times. The government and conservation agencies are concerned with the rapid loss of mangrove cover in the delta due to rice farming and therefore increasing the vulnerability to climate change threats. The local communities on the other hand are concerned about their livelihood prospects which principally rely on rice farming.*

Q2. Is there a common stand in the definition of the term coastal area?

Response: *At the present there is no common definition in the region. Although the Nairobi Convention has put a framework definition of the coastal area/zone, different countries still follow their own perspective in defining the coastal area in terms of extent and inclusion. This is a challenge when we consider cross border initiative for coastal and marine based PES and CCD schemes.*

Understanding Climate Change and Society: impacts, adaptation and mitigation

Dr. Bernard Kirui

Dr. Kirui presented the concept and definition of climate change and clarified on the common misconceptions that often shadow the discussions on climate change and its impacts. He described various evidences of climate change and the different ways that they are interpreted. He defined climate change as a significant and lasting change in distribution of weather patterns which are attributed to both anthropogenic and natural factors.

Primary causes of climate change are:

- Natural-Global warming as a result of life processes, solar output, orbital variation, volcanism etc.
- Human induced through fossil fuel combustion and vegetation clearance.

Evidence of climate change is provided through:

- Observations of loss of glaciers and declining of arctic sea ice
- Changes in phonological traits of sensitive plant life forms e.g. early flowering than normal
- Pollen analysis
- Change in precipitation patterns
- Dendroclimatology
- Change in animal migration patterns.

Examples of effects of climate change as related to human societies

- Diminishing resources (water, land, agriculture, livestock, fisheries) escalates resource use conflicts
- Prevalent health risks - increase and decrease of environmental stresses related diseases e.g. malaria, meningitis
- Sea level rise implicated in destroying of coastal cities and ecosystems; disrupting tourism through loss in biodiversity.

To conclude, Dr. Kirui emphasized that climate change is real and that human activities are among the drivers and everyone has a role to play to tackle this problem. He went on to suggest that adoption and implementation of CCD mechanisms is a matter of urgency.

Issues raised and responses

Q1. Crocodiles are being found in the oceans, could it be an effect to climate change?

Answer: *That was observed in Mozambique as an effect of long rains which are among the effects of climate change. After a short discussion on the question, it was agreed that this calls for further research to determine whether crocodiles are adapting to salt water and the the implications of crocodile populations in estuarine ecosystems.*

Q2. How much of more green areas do we need to arrest climate change?

Answer: *it is not a matter of how much green areas are needed, rather evidence suggest that stopping current deforestation and curbing the release of GHGs can both help to counteract the effects of climate change.*

Opinion: *People look at effects that worry human beings. So, a recommendation was given on the need to consider any positive effects of climate change as well as addressing the negative effects.*

Reactions from participants: *Participants noted that there are efforts in the Western Indian Ocean region to address climate change. Country level interventions to ensure plans are introduced to mitigate climate change were mentioned in generalized context. For example, efforts are put in place in Kenya to cascade climate change issues at county levels, while in Tanzania strategies are put in place to handle climate change mitigation issues by mainstreaming in policies, and in Mozambique efforts are in place.*

Group work and discussion

After the two lectures, four groups were formed and each group was given a question/scenario for discussion and reporting back in the plenary the key messages/ideas of relevance to the question/scenario. These are summarized below:

Group 1:

Question: Avoiding mangrove habitat loss is more beneficial than restoring degraded areas – consider the scenario of shifting fisheries.

Response: *The group outlined the ecological importance of mangroves to fish production as breeding, nursery and feeding ground for various fish species. They also mentioned the environmental, economic and cultural impacts of mangrove ecosystems, deterioration of water quality and quantity, low fish yield and hence more effort needed with sophisticated gears and also loss of cultural sites. The group emphasized the need to conserve mangroves in order to retain their specific roles/functions delivered by specific species citing the fact that restoration may not/will not bring back to the original status. Nonetheless, ecosystem services are not static but rather dynamic and thus restoration enhances nature to function under the new restored conditions.*

Group 2:

Question: Covering the opportunity costs of foregone alternative uses of coastal zones/areas (e.g. aquaculture, real estate development) needs strong economic incentives to counteract conversion. How is this feasible in developing states?

Response: *Emphasis was not only directed to the idea of communities owning the process(es), but also communities recognizing their problems and seeking a way to solving these problems under prevailing conditions and available resources. In their discussion the group suggested that local communities get involved in development projects from the beginning, give them concessions and use their indigenous knowledge in development. The group also suggested empowerment of local communities through skills development as an alternative to total dependence on natural resources, enhance resource ownership and sports development for the youth.*

Group 3:

Question: How do we use PES schemes in mitigating climate change effects?

Response: *The group first defined mitigation as: actions that reduce greenhouse gas emissions or protect carbon sinks. The group suggested institutional reform in order to undertake mitigation measures. They emphasized that PES should not only focus on selling and buying carbon but should also focus on biodiversity and eco-tourism activities that enhance avoided degradation. They also outlined other alternatives like the use of fuel efficient stoves, alternative income generation instead of reliance on wood biomass.*

Group 4:

Question: How can we effectively mainstream climate change issues into our policies?

Response: *Emphasis was put on promoting dialogues between scientists and decision makers (politicians). The group suggested the use of economic incentives and 'polluter pays' principle. They suggested that we should take advantage of opportunities provided by climate change. These include green technologies and environmental conservation. They suggested harmonization of different policies – nationally and regionally and avail policy briefs and information on conservation to policy makers. The group also noted that language of communication between policy makers and scientists should be understandable.*

DAY 2 – Tuesday 26th November 2013

Climate Compatible development (CCD)

Prof. Mark Huxham

Prof. Huxham introduced a CCD visioning exercise and formed four groups for discussions. Focus was on three focal sectors (coastal forestry, tourism and fisheries). The groups were tasked to identify likely Climate Change impacts, drivers and the descriptors for the sectors over the next twenty years, and where relevant to add quantified estimates of the degrees of change. Key drivers were identified by collating responses from all the groups (Box 1)

Box 1. Key drivers/descriptions for developing a 20 year projected CCD scenario.

- Population growth – increased by 2.5 to 3% per annum
- Poverty – reduced poverty index from 55 to 35%
- Industrialisation – increased by 5 to 10%
- Policy enforcement – reduced by 1 to 2%
- Governance – increased by 3 to 5.5%
- Urbanisation – increased by 6 to 10%
- Temperature (and related effects) – increased by 0.5 to 1˚C
- Biodiversity (including fish and forest species diversity) – reduced by 10 to 15%
- Security – reduced by 2 to 5%

These key drivers were then ranked in the order of the most important to the least against the level of perceived uncertainties. Groups further discussed the ranking by describing how the drivers are anticipated to increase or decrease and possible reasons. The Figure below presents the ranking of the identified drivers in terms of both importance and level of uncertainty that they would pose.

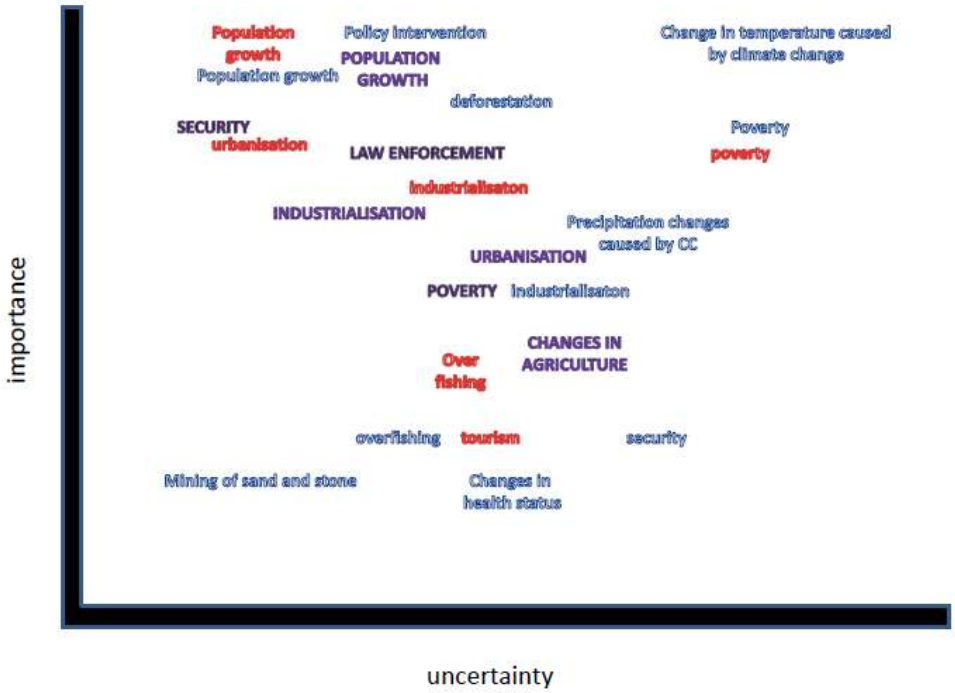

Fig 2.Ranking of the identified key drivers for a CCD scenario development. Different colours represent the opinions of the four different groups

Based on the submissions from the groups, Prof. Huxham provided a comparative guide for business as usual (BAU) and CCD scenarios and requested the groups to go back and develop an intervention scenario for CCD, elaborate the mechanism to achieve the proposed intervention, and stipulate the losers and beneficiaries among all stakeholders. The groups presented their discussions and highlighted the differences between BAU and CCD scenarios. From the presentations and discussions, an example of a CCD scenario using Kwale County as a case study was developed (Box 2).

Forestry and climate change -adaptations and mitigations

Dr. Bernard Kirui

Dr. Kirui made a presentation on the context of climate change and how it relates to land use and forestry practices. He illustrated various approaches for mitigation and adaptation to the effects of climate change through carbon projects in land use and forestry. He described the barriers for carbon projects in the African context referring to uncertain land tenure and carbon rights, high

transaction costs, weak governance, legislative and regulatory environment etc. Dr. Kirui further noted that there is large potential of turning these barriers into opportunities for building capacity to develop, support and implement carbon projects.

*Box 2. CCD summary scenario (**bold** is text from key drivers).*

*By 2033 government agencies dealing with environmental protection and development, including KFS, KWS and NEMA, have achieved harmonious and well integrated working practices to help achieve **policy implementation** and enforcement. This has led to rigorous application of current progressive laws and has encouraged the growth of new community based groups, including CFAs, CBOs and BMUs, as well as the strengthening of current ones. Hence community control of resources is normal, especially in forestry and fisheries, and this has helped address **poverty** and promote greater equality**.** The growth of community organisation helps improve transparency and governance at a local level, with technology assisting; CBOs have their own websites and use social media to communicate with members and their communities. **Security** is improved in smaller communities because of this whilst at a county level the government invests in policing so that despite increased **population** (at 2.8% per year, resulting in 73% more people) security is no worse than at present.*

*Artisanal fishing begins to suffer from the effects of climate change, with temperature sensitive species declining. The worst effects are avoided through restoration and protection of key habitats, including mangroves and coral reefs, and the establishment of new marine managed areas. BMUs become more effective in **enforcing** appropriate fishing methods and avoiding **overfishing**. The value of the catch increases because of better processing – including new storage and freezing facilities - and marketing, along with increased demand due to population growth. Government invests in off-shore **industrialised** fishing, creating new employment opportunities and displacing the current foreign-owned craft. Aquaculture production in the region doubles.*

*The current **deforestation** of mangrove woods is halted and total area increases from 7828 ha to 8376 ha because of the restoration of degraded areas, driven by the increase in CFAs and local control. Demand for wood products increases due to **urbanisation** and population growth. It is not proportionate to the increase in people since more people are living in towns, there is increased access to electricity and large expansion of **industrial** mining has led to increased wealth and reduction in reliance on firewood. Hence the 20% increase in demand for wood products is met through new woodlots and agroforestry, as well as the establishment of sustainable harvesting in some mangrove forests. The quality and therefore value of the harvested mangrove wood increases through proper husbandry, with 20% of poles in forests category 1. All new destructive industries, especially mines, are required in their EIAs to offset their biodiversity impacts including their impacts on mangroves.*

Payment for Ecosystem Services: theory and practice

Ms. Caroline Wanjiru

Ms. Wanjiru defined what are the ecosystem services as the benefits that humans derive from ecosystem functioning. Ecosystem services are categorized into four types:

- *Provisioning services* - food, water supply,
- *Regulating services* – climate change mitigation, flood control
- *Cultural services* – landscape beauty, spiritual welfare
- *Supporting services* – fisheries support, pollination

Ms.Wanjiru further explored why ecosystems are mismanaged and therefore the need for payment for ecosystems services as a voluntary transaction whereby: a well-defined environmental service (or land-use likely to secure that service) is bought by a (minimum of one) service buyer from one or more service providers, if and only if the service provider(s) secures service provision (conditionality). She elaborated that buyers of ecosystem services can be actual users or acting on behalf of the users e.g. government, NGOs etc. She outlined important steps of designing a successful PES schemes:

Step 1 Identifying possible ecosystem service and potential buyers

- Defining, measuring and assessing the ecosystem services in a particular area.
- Determining their marketable value.

Step 2 Assessing institutional and technical capacities

- assessing legal, policy and land ownership context
- examining existing rules for PES markets and deals
- surveying available PES support services and organizations

Step 3 Structuring agreements

- Designing management and business plan to provide the ecosystem service that is the focus of the PES deal

Step 4 Implementing PES Agreements

- finalizing the PES management plan
- verifying PES service delivery and benefits
- monitoring and evaluating the deal

However, she also highlighted that there are challenges that PES schemes often come across with. These include:

- Institutional framework and governance
- High transaction costs
- Security of tenure

- Technical capacity and knowledge

Issues raised and responses

Q1. What are the land tenure issues on Mikoko Pamoja?

Response: *Mikoko pamoja project is under government land and for the community to be allowed to use it, they had to join a community forest association and register as a user group. They had to clearly spell out their activities and after that, the CFA has user rights signed by the Kenya Forest Service (KFS) whereby the user groups through the CFA can make use of the forest under certain conditions*.

Q4. How is Mikoko Pamoja handling the issues of leakage?

Response: *To handle leakage, Mikoko Pamoja project has established two woodlots of fast growing Casurina trees in Gazi and Makongeni primary school which will be used as a source of wood and firewood for the community and thus reduce the demand of mangrove poles.*

Valuation of natural capital

Mr. Jacob Ochiewo

Mr. Ochiewo presented on the valuation of ecosystem services. Some concepts pertaining to ecosystems were defined for instance biodiversity and extent of ecosystems. He elaborated the fact that the state of art regarding ecosystems valuation has been there but not as profound as it is today. This is due to the important services that ecosystems give (provisioning, regulating, cultural and supporting services). The use of goods and services provided by ecosystems provide benefits that can be converted in economic and monetary terms.

He explained that the value of ecosystems is expressed in three ways: The ecological (health of the system), cultural (importance people give to ecosystems) and economic (the use values and non-use values). Use values encompass direct consumptive values like timber, while non-consumptive values are those that offer recreation and leisure. For non-use values, importance is attributed to an aspect of the environment mainly the existence value e.g. an oasis in a desert. The sum of the total use and non-use values makes the Total Economic Value (TEV). TEV can be determined by the market prices, and other indirect methods like the damage cost methods, hedonic pricing method, travel cost methods, contingent valuation and benefits transfer method. He concluded the talk by giving an example of carbon financing in forestry.

Issues raised and responses

Q1. The production function of valuation is considered under what method of economic valuation?

Response: *It is under the price market approach which deals with how you look at total revenue and cost and attribute it to the productivity of the ecosystem depending on the changes in productivity of the ecosystems.*

Q2. Are there conflicts in economic valuation?

Response: *Conflicts anticipated are how some economic values can be arrived at e.g. occurrence of oil spills and the economic valuation that can be attributed to the damage caused to the ecosystem.*

Q3. If valuation is done how long will the report reflect the value of the ecosystem, are they static?

Response: *It is subjective since in a dynamic system changes do occur, also within the economic set up changes do occur in pricing. Hence the reports do become invalid however evaluators do take in consideration the nominal values to be safe since it is very expensive to keep carrying out economic valuation exercises.*

Q4. How does one arrive at a value for watersheds since there are no metric units?

Response: *One needs an expert to define the units appropriately and also to do proper estimations which can be later converted to monetary terms.*

Q5. Is it possible to consider value of ecosystem service to economic development of a country?

Answer: *Yes it is considered to have the holistic picture of the natural resources accounting of what our countries have.*

Stakeholder engagement in natural resource management

Mr. Jacob Ochiewo

Mr. Ochiewo started by giving a broad definition of stakeholders as individuals or groups who can affect or would be affected by management actions. Stakeholders are categorized as either primary or secondary because some stakeholders are more affected than others or have stronger or weaker stakes in the outcomes of management actions. Institutional actors are also a separate category of stakeholders *who are formally responsible for management actions*. Hence, a distinction has to be made between those stakeholders that have a formal/mandated responsibility as a management authority and those stakeholders who are affected by / can affect the outcome of management initiatives but may not have any formal management role.

He also defined stakeholder engagement as the process by which an organisation involves people who may be affected by the decisions it makes or can influence the implementation of its decisions. He further highlighted the rationale of stakeholder engagement in the management of natural resources, that:

- It makes stakeholders feel increasing commitment to and ownership of processes and outcomes.
- It makes stakeholders increasingly recognize that they are involved and they need to ensure their interests are taken into account.

He also outlined steps involved in community engagement as:

1. Clearly state the desired outcomes i.e. the overall aims of the stakeholder engagement process e.g. identification of potential issues, conflicts and benefits.
2. Clearly design the scoping process
3. Writing a detailed engagement plan to provide the planning framework for the engagement process.
4. Design an engagement process that should put in place a review process during engagement to provide information to those involved in the engagement process so that they can judge whether or not the process is likely to be, or has been, a success.
5. Final evaluation should be carried out to assess whether the engagement process met its desired outcomes and originally agreed purpose, whether it met the explicit and implicit demands of the participants, and whether it met the required standards in participatory working.

Principles of community engagement were also described:

1. Clarity about purpose or goals of engagement effort and the population of communities to be engaged
2. Have complete knowledge about the community in terms of its economic condition, political structures norms and values, demographic trends history and experiences with engagement efforts.
3. Partnering with the community
4. All aspects of community engagement must recognize and respect community diversity
5. Identify and mobilize the community
6. Let the community take control
7. Community collaboration requires long term commitment by implement

Issues raised and responses

Q1. How can we get genuine stakeholders from the community? Does it add value to do a stakeholder engagement every time we are doing a project or can we use a previous stakeholder analysis for their engagement?

Response: *information from a previous engagement provides knowledge on what has been done previously in stakeholders' identification and scope but one should do a stakeholder engagement for each project.*

Q2. Have you met difficult communities to engage?

Response: *At the beginning you have to first understand the social and cultural setup of the community and avoid elite capture, this makes stakeholder engagement easy and fruitful.*

DAY 4 – Thursday 28th November 2013

Governance and policy relevant to PES

Mr. Philip Walubengo

Mr. Walubengo discussed in general the definitions of policy and governance and their relevance, applicability and support in PES schemes, drawing empirical examples from the water sector in Kenya and Tanzania. PES schemes in Lake Naivasha basin in Kenya and Uluguru Mountains water catchment in Tanzania were used as illustration case studies of PES mechanism. In both areas upstream farmers are receiving payments for applying good farming practices in their farm lands.

The impact of devolution of governance on PES mechanisms was also discussed in the Kenyan context. This has emerged after the establishment of county governments with local boundaries, some counties which get water sourced from others counties are being asked to pay for the service. PES schemes could provide opportunities for such payments and hence avoid conflict among county governments. An example of the potential conflict between Kwale and Mombasa counties was pointed out.

Issues raised and responses

Q1. What are the implications of poverty and taxing to the practice of PES?

Response: *Poverty has a direct effect on the practice(s) of PES because of the high dependence of poor people on natural resources. Nonetheless, PES mechanism is often wrongly understood as a form of environmental tax which is not the case. This arises from the fact that the concept is new in the region.*

Q2. How can the current policies contribute to the resolution of water related conflicts between Kwale and Mombasa counties and the application of PES?

Response: *PES mechanism has a potential to overcome such resource use conflicts but it has to be incorporated to the existing water policies.*

Q3. How can the different interests from different sectors be combined under EMCA?

Response: *The best way forward is to commission the review of EMCA.*

Financing watershed management through PES – Case of Sasumua watershed

Dr. John Mwangi

Dr. Mwangi's presentation was based on a case study of Sasumua watershed, which provides water to Nairobi. Increased water treatment cost due to degradation and pollution, shortage of water during the dry season and reduced revenues have necessitated the call for sustainable ways of financing conservation of the watershed and hence the application of PES in the watershed is proposed.

The stakeholders' engagement, associated institutions, policies and legal frameworks, challenges and opportunities were discussed in the presentation. Key lessons that can be drawn from the proposed scheme are that:

- Scientific evidence, viable business case, supportive laws and policies are not enough.
- Governance and institutional issues can hinder PES implementation
- Tools used can sometimes separate modellers, policy makers and land owners if the results are not well communicated
- Innovative approaches to achieve scale (more area, more buyers) are needed

It was also noted that, although there is enough scientific study on this watershed and the applicability of PES to solve various problems, no contractual agreement has been reached so far which is largely attributed to the weak enforcement of institutional and governance frameworks.

Financing watershed management through PES – Case of Lake Naivasha basin

Ms. Nancy Njenga

Ms. Njenga made a presentation of an ongoing PES scheme in Lake Naivasha Basin implemented by WWF and CARE Kenya. The scheme was initiated in response to the threat facing Naivasha basin due to its catchment degradation, poor land management and weak policy enforcement. This has resulted in poor rural livelihoods which are driven by high population growth rates and weak institutional frameworks.

The purpose of the PES scheme is to reward land owners for voluntarily transforming their land use practices within the landscape to provide desired services to the downstream stakeholders.

However, implementation of this scheme is not without challenges that include:

- Very high demand for land use change vs. low buyers buy-in
- Weather variations
- Dealing with degraded public lands
- Uncertainty of self-sustainability

Key lessons that can be drawn from this scheme are:

- Presence of strong private sector enhances ability to secure incentives
- Strong Public-Private Partnership leads to successful implementation
- Need to have a strong business case for sustainability
- Appropriate and adequate capacity building to ES providers and Beneficiaries builds confidence in the scheme implementation

Issues raised and responses

Q1. How does catchment management fit in PES schemes?

Response: *PES schemes are new emerging practices and to be utilized in catchment management, there is strong need for existing policies to be revised to embrace PES.*

Q2. What are the effects of subdivision of farm land on catchment management?

Response: *This is recognized as one of the serious challenges not only to catchment management but also to the agricultural production of the country because subdivision results to small scale farmers who have no land to practice conservation agriculture.*

Q3. What are the prospects of investments in PES?

Responses: *Prospects for PES schemes are high due to the demand for environmental conservation.*

Group Discussions

After the lecture presentations and discussions on financing watershed management through PES, participants were given an assignment for group discussions. Four groups were formed by countries.

Question for discussion:

Identify one watershed and discuss environmental services provided by the watershed, list the ES providers and beneficiaries in this watershed, list desired land transformations required to provide ES, list two reward systems for above land transformations and justify why you have selected these and define what you would do to attract private sector into this scheme.

Group 1 Kenya: Shimba Hills watershed

The Kenyan group took the Shimba Hills watershed as a case study for application of a PES scenario. They identified the ecosystem services of the Shimba Hills watershed as: biodiversity, water, tourism carbon sink, medicine and cultural services. They also identified the custodians of the Shimba Hills watershed as the service providers. They include: Kenya Wildlife Service, Kenya Forest Service, National Museums of Kenya and the community. The beneficiaries of the ecosystems provided by the Shimba Hills watershed are: tourism companies & hotels, mining companies e.g. Base Titanium, sugar company e.g. KISCOL, coast water board and communities. The group outlined the likely land transformation under PES as: tree planting of desired species, on farm land management soil control measures and good Farming systems. Reword schemes could be through scholarships for students, cash vouchers for community and infrastructure development such as construction of schools, health centres and roads.

The group also suggested how to attract the private sector into the PES mechanism as: transparency, benefit sharing strategy, reduced investment risk strategy, CSR strategic plan, business development plan and cost effectiveness analysis of PES.

Group 2 Madagascar: Lake Aloatra watershed

Lake Aloatra is the largest lake in Madagascar, located in the highlands and surrounded by 80,000 hectares of rice fields on one side and a forest on the other side.

The watershed provides three environmental services:

- Economic Functions/ services e.g.400,000 tons of rice per year and fishing activities
- Ecological functions / services e.g. habitat for endemic species such as *Hapalemurgriseus*, water regulation through forest and soil filtration, habitat of aquatic birds (>50% of endemic) and a ramsar site.
- Cultural services e.g. site for cultural activities and traditional practices

The service providers were identified as:

- Local communities who live in the upstream of the watershed (mostly farmers who practice slash and burn agriculture)
- Community based organization who are responsible of management of upstream forest area

The beneficiaries of the ecosystem service:

- Rice producers (400,000 pers): Community, Cooperative, Companies)
- Fishermen and fish collectors (companies)
- AUE (Association des Usagers de l'Eau): Water Users Association
- Conservation NGOs (DURRELL)
- Government: the rice autonomy of Madagascar depends on the production from this area: about 30% of national needs are produced.

Desired land transformation required to provide ecosystem services include conservation of forest and sustainable land management in the upstream through local community participation to avoid soil erosion and mitigate sedimentation of the lake.

They proposed reward systems for land transformations through provision of government financing for local community efforts of conservation and sustainable forest and land management activities and the private sector pays for the ecosystem service. This is because the government has a national interest in conserving and maintaining national autonomy in rice production while the private sector has the interest of sustainability of productivity of their investment.

On how to attract buyers of ecosystem services the group suggested two main points:

- Carry out comparative studies based on rice production trends within and without PES scheme which will be used to convince buyers.
- Organize lobbying sessions for buyers based on these results.

Group 3 Mozambique: Umbeluzi basin (Maputo)

The ecosystem services were identified to be: water cleaning, water supply and fisheries. The providers of ecosystem services are the local community and farmers in the watershed area while the beneficiary is Maputo water board. The required transformations are reforestation and afforestation, use of organic fertilizers and agroforestry. The reward mechanism could be tax reduction, social services and vouchers in which farmers could use for buying inputs that are

compatible with conservation. In attracting buyers the group suggested tax exemption and eco-labelling and advertisements.

Group 4 Tanzania: Eastern Usambara Mountain –Zigi river watershed

Ecosystem services of the watershed were identified as water, microclimate regulation, fishing, irrigation schemes (agriculture) and support Amani Nature Reserve-biodiversity (tourism).

Ecosystem services providers were identified as villagers/community, CBO, Amani Nature Reserve and government institutions while beneficiaries were identified as Usambara tea estate, Muheza district council and Tanga city.

The group identified desired land transformation as afforestation and good agricultural practices. They suggested rewarding systems to include provision of alternative livelihood and income generating activities like beekeeping and social service support.

DAY 5 – Friday 29th November 2013

Field Visit to Gazi Mangroves and Mikoko Pamoja Project

The fifth day of the workshop was fully dedicated to field visit to Gazi Bay mangroves and the Mikoko Pamoja project.

In the field visit participants first visited the Kenya Marine and Fisheries Research Institute (KMFRI) field station in Gazi, where they were briefed on research and project activities in the research station. The participants proceeded to the mangrove forest where they were introduced to the various species of mangroves, their identification and other flora and fauna found in mangrove ecosystems. Further, the ecological, socio-economic and cultural importance of mangrove ecosystems was also discussed.

The participants also had the opportunity to visit Gazi women mangrove board walk. The mangrove boardwalk was established by local women to make use of and benefit from the 'landscape beauty' provided by the mangrove ecosystem. The 500 m long boardwalk meanders through animal-rich mangrove forest and has resting points, signets at strategic points, and viewing platforms. Wide ranges of activities are included in the mangrove ecotourism package, including; mangrove planting, trips inside the mangroves, excursions to the coral reef, bird watching and a guided tour to a typical African village. These activities support local livelihoods and generate income for the management of the boardwalk. The extra revenue from the ecotourism is channelled to the community kitty in order to support prioritized sanitation and education programs in the village. This way it has been easier to communicate the concept of biodiversity and ecosystem services; and how they could be enhanced through Payments for Ecosystem Service.

The participants were also introduced to Mikoko Pamoja project. This project aimed to channel finance towards the protection and restoration of mangrove ecosystems in Kenya through the provision of and payment for quantifiable ecosystem services. The project aims to protect, enhance and expand an area of mangrove forest in Gazi Bay. This project aims to protect initially 107 ha of the current forest from further degradation, leading to forest recovery and naturally enhanced carbon capture and stock.

Mikoko Pamoja project has already recorded success by selling carbon credits. The project attracted regional interest and is intended to be used as a role model for establishment of such projects elsewhere in Africa. The trainees were overwhelmed by the initial successes of the project and promised to make effort in order to replicate such projects in their respective countries.

DAY 6 – Saturday 30th November 2013

Closing ceremony

After going through the final house-keeping announcements, plan of action in the near future which included production of the workshop report, policy brief and revision of the training manual, Ms. Caroline Wanjiru asked participants to make sure that they hand in their workshop evaluation forms before the workshop is officially closed. Dr. Mangora then gave a final word of reminder to participants to keep up the networking spirit and asked all those who took photos to share them with the secretariat for possible inclusion in the report. He recognized the presence of Dr. James Kairo who only managed to join the workshop on the last day. He invited Dr. Kairo to briefly inspire the participants and welcome the guest of honour, Mr. Patrick Gwada, the Center Director of KMFRI to issue Certificates of Participation to participants and officially close the workshop.

Workshop evaluation

During the closing ceremony participants were given a workshop evaluation form (Appendix 5) to complete. The figure below presents participants evaluation of the workshop using the eight criteria

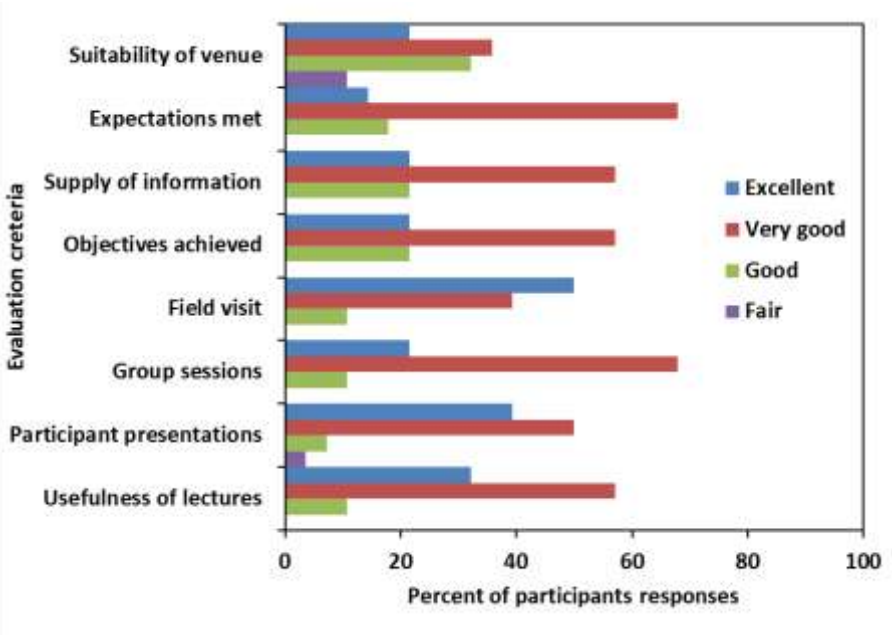

Fig 3. Results of workshop evaluation by participants

In terms of the usefulness of the lectures presented, all participants felt that the lectures were useful. Usefulness of participant's presentations was overall rated at 96% while group discussions were 100% useful. Participants were also impressed with the field visit to Gazi Bay mangroves and the Mikoko Pamoja project and rated it at 100% useful. On workshop objectives, all participants felt that they were achieved. All participants further felt that provision of information prior to and during the workshop was appropriate and their expectations were adequately met. The workshop venue was rated at 90%. Therefore overall, the responses indicated that the workshop was great success. One participant gave a dedicated account on the success of the workshop as quoted in Box 3 below.

Box 3. Workshop evaluation remarks from one of the participants

My primary goal was to increase my understanding of a new tool for conservation where conservation efforts are rewarded so as to motivated people, the Payment for Ecosystem Services. There were many topics covered during the workshop and the presenters did an outstanding job of sharing their expertise with us. The presenters were well prepared and the sessions were well attended, making it such a worthwhile experience. I have been pleasantly surprised by the training, having significant positive impact on individuals and even the whole team of colleagues. I hope you will find this to be the case in your organizations. Everyone felt that your organizations did a superb job organizing the sessions, selection of plenary speakers, by selecting thought – provoking topics, relevant and very helpful.

By going through the training, you have given a realistic expectation which is critical in success. I hope this will really improve work-based relationships. The gains made are real, and make the difference in everyday life. This unique interactive training experience utilized the cutting edge scientific research, personal stories, humour, photography, food, interaction and even a few surprises to communicate a very simple yet culture changing message, i.e. Maina's techniques of chairing of a session! I learned what intentional gratitude is, how the practical MIKOKO PAMOJA changes lives and what the scientific research into this area has discovered. I am inspired to continue my purpose to learn to inspire, inform and train our communities in the life changing practice of MIKOKO PAMOJA.

The workshop component was like intentionally directed to me. I understand that real change comes from the inside and the training programme is pitched to deliver just that!
I have learned what is needed for behaviour change of my communities and have to build factors from the training process, i.e., simple and understandable concepts, the opportunity to make corrections, deal with challenges experienced and social support from others.
My experience from MIKOKO PAMOJA is that, with a bit consistent honest effort, people (fairly quickly) begin to have positive interactions and examples to share with others – and the "positive snowball" has begun!

I have heard nothing but praise from all who attended the workshop. We were a great group and our enthusiasm and positive spirit helped make our time together both productive and fun. I hope our comments and suggestions will be given consideration so that future workshops will be even more a success.

Participants were also asked to give general views for the future:

1. What was missed or could have been done differently?
   - Participant presentations should have been given more time and allow for interventions/discussions as this would have strengthened the essence of highlighting opportunities for networking among participants
   - Evaluation of natural resources in terms of socio-economics was not well captured.
   - Group work in the first two days could be done after some theory sessions (e.g. the goal on the CCD exercise was not clear enough. It was felts participants did more of guess work based on limited knowledge, which could potentially lead to loss of focus.

- Writing materials were not enough.
- Consider bringing participants from all WIO countries
- Consider supplying teaching modules before lectures

2. Suggestions for future training
   - Time was short. Future workshops should be given more time (preferably 2 weeks) especially for the field visit (at least two different places/projects and stay with the community) to learn the practical experiences.
   - The programme was too packed. Need to consider relaxing the programme in the future to enable participants enough time to reflect on day's work. Also more time needed for comprehensive discussions on the outputs from the group work.
   - Future workshops should rotate around the WIO countries. Participants from Madagascar indicated clear interest to host next workshop.
   - More community members should be brought on board as they are the primary target of PES and CCD schemes
   - Consider including more participants from private sector e.g. carbon buyers
   - Conduct future training in field based local conditions such that communities can feel sense of recognition and so cultivate trust.
   - Strengthen information flow through the website
   - Make sure that the training becomes a regular/annual event.
3. Any other comment
   - Social event should be included in the programme to give opportunity for participants and trainers to interact and make friendship that strengthen networking
   - Devise, put in place and ensure effective mechanism for follow up on participants and maintenance of strong networking
   - Gender balance should be considered for future training.

Workshop outputs

News brief

Immediately after the workshop a brief article reporting on the workshop was prepared and submitted to WIOMSA for inclusion in the upcoming WIOMSA News brief.

Policy brief

A policy brief has also being prepared: Preparing for Climate Change – a climate compatible development future for coastal Kenya. Although this policy brief focuses on Kenya, it can be used by other countries as well as a reference. The policy brief makes part of this report.

Training manual

A training manual was prepared and used for the workshop. Each participant was given a copy of the manual and was advised that it is still in draft form. After the workshop, the manual is being revised to incorporate issues and lessons that emerged in the course of the workshop. It is

intended to subject the manual into peer review and formally publish it as a resource guide to PES and CCD practices in the WIO region. The manual forms part of this report.

Appendices

Appendix 1. List of participants, facilitators and trainers

1. Participants

Name	Country	Email
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2. Facilitators and Trainers

Mwita Mangora	Tanzania	mmangrora@yahoo.com
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Philip Walubengo	Kenya	walubengo@gmail.com
Michael Njoroge	Kenya	njoroge.michael04@gmail.com

Appendix 2. Participants' presentation titles

Name	Country	Title of presentation
Ezidio Cuamba	Mozambique	Conservation initiatives of mangroves in Northern Mozambique
Rose Sallema Mtui	Tanzania)	Tanzanian coastal and marine climate change impacts and national initiatives
Daudi Pandu	Tanzania-Zanzibar	Climate change effect on Zanzibar coastal ecosystems
Dannick Randriamanantena	Madagascar	Restoration of mangroves in the Manambolo and Tsiribihina seascape of Madagascar
Ngwali Makame	Tanzania-Zanzibar	Challenges of mangroves on climate change effect in Zanzibar.
Julie Mulongo	Kenya	Mangrove conservation project in Kipini village - Tana delta
Laurian Lenjo	Kenya	Benefit Sharing - Kasigau Corridor REDD+ project
Wilbard Mkama	Tanzania	Tanzania Coastal Management Partnership (TCMP) climate change and development activities: promoting capacity building and co-benefit practices in selected northern coastal villages of Tanzania
Joseph Kamau	Kenya	Kenya Coastal Development Project (KCDP)
RakotondrazafyAndria mampandry	Madagascar	Networking and partnerships possibilities on PES and CCD promotion for actors in WIO region
Lucas Zorad	Kenya	Increasing food security through schools
Bonaventure Baya	Tanzania	Development of payment for environmental services systems for enhancing watershed management in Tanzania
Micah Muema	Kenya	Mining of titanium by Base Titanium
Ricardina Matusse	Mozambique	Conserving flora and fauna while providing livelihoods to local communities in Limpopo National Park
Yusuph Kajia	Tanzania	Sustainable management of mangrove ecosystem in Tanga District (mainland Tanzania) and plan in engaging with PES and CCD activities
Alex Maina	Kenya	Skills for Fundraising for community capacity building in support of conservation initiatives
Nafasi Mfahaya	Kenya	PES opportunities in Forestry in Kwale County: a case of Shimba Hills National Reserve
Johnstone Omukoto	Kenya	Dynamics of fisheries production from coastal ecosystems and how these influence conservation initiatives of the coastal and marine resources
James Kamula	Kenya	Review of legal framework in relation to PES: a case the EMCA Act of 1999 and ICZM Action plan for Kenya
Armando Guenha	Mozambique	Trans-boundary natural resource conservation as a way to mitigate climate change use as a case the Lubombo TFCA
Mohamed Yasin	Tanzania	MikokoDaima
Gilbert Maigacho	Kenya	Coastal Development Authority's effort in Climate Adaptation and PES
Julio Josepha Duchene	Madagascar	Implementation of a Plan Vivo project in Ambrondrolava's mangroves forest in southwest Madagascar

Appendix 3. Workshop programme

Day 1: Monday, 25th Nov 2013 – Opening Ceremony and Introduction to Climate Change		
Session Chair: James Kamula	**Rapporteur: Amina Hamza**	
Time	Activity	Resource persons
08:30-09:00	Registration	Ms. Mwanakombo
09:00-10:00	Opening Ceremony Speeches by invited guests Opening speech	Caroline Wanjiru Dr. Ruwa
10:00-10:15	Self-Introduction	Dr. Mangora
10:15-10:25	Aims and Expectations of Workshop	Dr. Mangora
10:25-10:30	House Keeping	Mr. Kibwanga
10:30-11:00	COFFEE/TEA BREAK	
11:00-12:00	Coastal and marine ecosystems: concepts, definitions, values	Dr. Mangora
12:00-13:00	Climate change and society: impacts, adaption and mitigation	Dr. Kirui
13:00-14:00	LUNCH	
Session Chair: Celia Macamo	**Rapporteur: Johnstone Omukoto**	
14:00-14:30	Discussion (Q&A)	Dr. Kirui Dr. Mangora
14:30-14:45	Group Formation and Task Allocation	
14:45-16:00	Group Work	
16:00-16:15	COFFEE/TEA BREAK	
16:15-17:15	Group Presentations and Discussions	Dr. Kirui Dr. Mangora
17:15-18:30	Participants presentations	
1.	Ezidio Cuamba (Moz): Structure and Conservation of Mangroves in Northern Mozambique	
2.	Rose Sallema (Tz): Tanzania Coastal and Marine Climate Change Impacts and Current National Initiatives	
3.	Laurian Lenjo (Ke): Benefit sharing- Kasigau corridor REDD+ project	
4.	Daudi Pandu (Tz): Climate Change Effect on Zanzibar Coastal Ecosystems	
5.	Dannick (Mad): Restoration of mangroves in the Manambolo and Tsiribihina Seascape (Madagascar)	
6.	Ngwali Makame (Tz): Challenge of Mangrove on Climate Change Effect in Zanzibar	
7.	Julie Mulongo (Ke): Building resilience of mangrove ecosystems through ecosystem based climate change adaptation	
Day 2: Tuesday 26th Nov 2013 – Climate Compatible Development		
Session Chair: Mohamed Yasin	**Rapporteur: Rose Sallema**	
08:30-08:45	Recap of Day 1	
08:45-09:30	Climate change adaptations and mitigation –Forestry	Dr. Kirui
09:30-10:30	Climate Compatible Development I	Prof. Huxham
10:30-11:00	COFFEE/TEA BREAK	
11:00-12:00	Climate Compatible Development II	Prof. Huxham
12:00-12:30	Discussion (Q&A)	
12:30-13:00	Participants presentations	
8.	Wilbard Mkama: Climate compatible development; Co-benefit adaptation practices. A case study of Sange and Mwembeni ,Pangani district, Tanzania	

9.	Donald Avude: Potential of PES in Boni forest of Lamu	
10.	Yusuph Kajia: Sustainable management of mangrove ecosystem in Tanga District (Tanzania) and plan in engaging with PES and CCD activities	
13:00-14:00	LUNCH	
Session Chair: Yusuph Kajia	**Rapporteur: Wilbard Mkama**	
14:00-15:45	Climate Compatible Development III	Prof. Huxham
15:45-16:00	Discussion (Q&A)	
16:00-16:15	COFFEE/TEA BREAK	
16:15-17:15	Climate Compatible Development IV	Prof. Huxham
17:15-17:30	Discussion (Q&A)	
17:30-18:30	Participants presentations	
11.	Alex Maina (Ke): Fundraising for community capacity building	
12.	Mohamed Yasin (Tz): MikokoDaima	
13.	Nafasi Mfahaya (Ke): PES - Shimba Hills National Reserve	
14.	Johnstone Omukoto (Ke): Fisheries production from coastal ecosystems	
15.	RakotondrazafyAndriamampandry (Mad): Implementation of Carbon compensation for tourism in Andasibe- Madagascar	
16.	Lucas Zorad (Ke): Increasing food security through natural resource utilization	
Day 3: Wednesday, 27th Nov 2013 - Introduction to Payment for Ecosystem Services		
Session Chair: Dr. Mangora	**Rapporteur: Nafasi Mfahaya**	
08:30-08:45	Recap of Day 2	
08:45-09:45	PES theory and practice	Ms. Wanjiru
19:45-10:00	Discussion (Q&A)	
10:00-10:30	Developing Scenarios for PES – a presentation of two examples	
10:30-11:00	COFFEE/TEA BREAK	
11:00-12:00	Stakeholders engagement in natural resources management	Mr. Ochiewo
12:00-12:15	Discussion (Q&A)	
12:15-13:00	Group work – Country Perspectives	
13:00-14:00	LUNCH	
Session Chair: Alex Maina	**Rapporteur: Esther Wairimu**	
14:30-15:45	Valuation of natural capital	Mr. Ochiewo
15:45-16:00	Discussion (Q&A)	
16:00-16:15	COFFEE/TEA BREAK	
16:15-17:15	Group work – Practice on Valuation of Ecosystem Services	Ms. Wanjiru
17:15-17:50	Group Presentations	Mr. Ochiewo
17:50-18:30	Participants presentations	
17.	Bonaventure Baya (Tz): Development of payment for environmental services system for enhancing watershed management in Tanzania	
18.	Elias Kimaru (Ke): Potential of PES projects in sacred Mijikenda Kaya Forests	
19.	Manuel Menomussanga (Moz): Ecosystem Based Adaptation and Improved livelihood of Zongoene community	
20.	RicardinaMatusse (Moz): Conserving existing flora and fauna while providing livelihoods to local communities	
Day 4: Thursday, 28th Nov 2013 - PES Initiatives: Policy and Governance		

Session Chair: RicardinaMatusse	**Rapporteur: Abdirizack Hassan**	
08:30-08:45	Recap of Day 3	
08:45-09:45	Governance and Policy Relevant to PES	Dr. Walubengo
09:45-10:00	Discussion (Q&A)	
10:00-10:30	Group work – Country Perspectives on Policy & Governance for PES	
10:30-11:00	COFFEE/TEA BREAK	
11:00-12:00	Financing watershed management through PES – I	Dr. Mwangi Ms. Njenga
12:00-13:00	Financing watershed management through PES – II	
13:00-14:00	LUNCH	
Session Chair: Manuel Menomussanga	**Rapporteur: Julie Mulonga**	
14:00-14:30	Discussion (Q&A)	Dr. Mwangi Ms. Njenga
14:30-16:00	Group work – Country Perspectives - Watershed management scenarios for PES	
16:00-16:15	COFFEE/TEA BREAK	
16:15-17:40	Group Presentations and Discussion	Dr. Mwangi Ms. Njenga
17:40-18:30	Participants presentations	
21.	James Kamula (Ke): Review of legal framework in relation to PES: The case of EMCA 1999 and ICZM Action plan	
22.	Armando Guenha (Moz): Transboundary Natural Resource Conservation - a way to Mitigate Climate Change. A case of Lubombo TFCA	
23.	Gilbert Maigacho (Ke): CDA's effort in Climate Adaptation and PES	
24.	Josepha (Mad): Implementation of a Plan Vivo project in Ambondrolava's mangrove forest in southwest Madagascar	
Day 5: Friday, 29th Nov 2013 – Field Trip to Gazi Village, MikokoPamoja project		
Session Chair: Dr. Kirui	**Rapporteur: Elias Kimaru**	
08:00-08:30	Travel to Gazi Village	
08:30-08:40	Brief on Gazi Mangrove Field Station	Prof. Huxham Mr. Njoroge
08:40-09:40	MikokoPamoja I	
09:40-13:00	Get into the forest: Mangrove Marathon	
13:00-14:00	LUNCH	
14:00-15:00	Mikoko Pamoja II	Ms. Mwanakombo Mr. Njoroge
15:00-17:00	Getting on with the Community: perceptions, awareness, expectations and participation processes	
17:00-17:30	Discussions – take home lessons	
17:30	Travel back to Diani	
Day 6: Saturday, 30th Nov 2013 - Conclusion and way forward		
Session Chair: Caroline Wanjiru	**Rapporteur: Dr. Mangora**	
09:00-09:15	Recap of Day 5	
09:15-10:30	- Participants Perceptions: satisfactions, opportunities and networking - Filling of evaluation forms	
10:30-11:00	COFFEE/TEA BREAK	

11:00-11:30	Wrap-up, concluding remarks and way forward - Workshop proceedings/report - Emerging policy briefs	All Resource Persons
11:30-12:00	Awarding of certificates	Ms. Wanjiru
12:00-12:30	CLOSING CEREMONY	

Appendix 4. Opening Speech by the Guest of Honour

SPEECH BY DEPUTY DIRECTOR KMFRI, DR. RENISON RUWA, DURING THE OPENING CEREMONY OF THE WIO REGION CAPACITY BUILDING WORKSHOP ON PES AND CCD; KASKAZI BEACH HOTEL, DIANI, 25TH NOV. 2013.

Ladies and Gentlemen,
It gives me great pleasure to be here today on the opening ceremony of this regional training workshop on Payment for Ecosystem Services and Climate Compatible Development. I am informed that we have participants from Tanzania, Kenya, Mozambique, Madagascar and Scotland. Let me take this opportunity to welcome you to Kenya. Karibuni.

The idea of having such a workshop could not have come at a better time when a lot of efforts is being directed towards salvaging our threatened natural capital – both on land and in the sea. Concerns for human impacts on natural environment were raised during the 1992 World Summit in Reo de Jenairo in 1992; and it has been repeated in many regional and international fora. But what do we see today? Loss of habitats, collapsing fisheries, pollution, and increased frequencies of extreme events; such as droughts, floods, and typhoons. Unless we act urgently, humanity is in danger of its own creation.

Ladies and gentlemen, it goes without saying that we are all dependants of healthy ecosystems. The fresh air we breathe, the fertile soils we till, the beans and legumes we consume, and even the sweet waters we use to quench our thirst, are all products of a well-functioning ecosystems. Invaluable as these services are, usually, little or no value is attached to them. They do not fit in the conventional markets; and values differ widely depending on methods, value systems, and scales of analysis. What price, if I may ask, do you put to the fresh air you breathe? Or who pays animal pollinators (such as bees), for pollinating our farms so that we can harvest our beans? The decline of pollinators has become a major problem at a time when the global demand for crop pollinators is increasing.

Unfortunately, most of the ecosystem functioning are facing serious threats occasioned by a combination of natural and anthropogenic pressures. IPCC predications for African regions is that land-use changes as a result of population and development pressures will continue to be the major drivers of habitat and biodiversity loss over the next century. Resultant changes in ecosystems will affect the distribution and productivity of plant and animal species, water supply, fuelwood, and other ecosystem services. Losses of biodiversity are likely to be accelerated by climate change. On coastal areas, IPCC predicts that rising sea-levels, increased coastal erosion, saltwater intrusion, and flooding effects will impact negatively on coastal economies in Africa.

Africa and the WIO region at large must embrace climate change adaption and mitigation strategies in their national development blueprints. In climate change debate, adaptation means adjustment of our human systems in response to climate change; while mitigation entails an intervention to reduce human-caused net emissions of greenhouse gases.

Despite the many disturbing negative effects of climate change, there are windows of opportunities that we can exploit. In the face of climate change, governments in developing countries have a chance of steering their countries' development in a way that climate change adaptation and mitigation measures

will be incorporated. One such approach is Climate Compatible Development (CCD) which simply means "*actions that seek to minimise the harm caused by climate impacts, while maximising the many human development opportunities presented by transitions to a low-emissions, more resilient future*". Embracing CCD will result to a win-win-win condition – for society, environment, and biodiversity.

At the **Kenya Marine and Fisheries Research Institute (KMFRI)** we are at the fore front in spearheading research on a more resilient future focussing on marine and coastal ecosystems; and their potential to contribute to climate compatible development. Our most celebrated CCD project is the Mikoko Pamoja– which is a small-scale carbon offset facility involving mangroves. In this particular case, KMFRI and her partners were involved in research, design, and development of the first of its kind community based mangrove carbon project in the world. This innovative project is now being used as the case study to establish similar facilities in Tanzania and elsewhere in the world. Through Mikoko Pamoja Gazi community will receive US$12,000 from the sale of 3000tCO_2 every year; for the next 20 years.

Ladies and gentlemen, I wish to take the opportunity to thank you all for finding time to attend this very important training course. I am sure you will go home very knowledgeable and hopefully you will use the knowledge gained to impact climate compatible development in your areas. This workshop would not have been possible without the generous financial support of WIOMSA, Ecosystem Services for Poverty Alleviation (ESPA) and Climate and Development Knowledge Network (CDKN) of UK. We also wish to acknowledge Principle investigators involved in these projects; Prof. Mark Huxham who is with us here today, and Dr. James Kairo who could not manage to be with us because of commitment in Nigeria. Let me also congratulate the organising team led by Ms Caroline Wanjiru from KMFRI and Dr. Mwita Mangora from Institute of Marine Science Zanzibar.

And to our international guests, it is my hope that you will not go back without enjoying our national heritage, including our beautiful beaches, National Parks and of course Mombasa town and other places.

With those few remarks, I would like to declare the Regional Capacity building workshop on PES and CCD officially open.

Thank you.

Appendix 5. Workshop Evaluation Form

Training Workshop on Building Capacity for Payment for Ecosystem Services and Climate Compatible Development in WIO held at Kaskazi Beach Hotel, Diani and Gazi Village, Kenya, 25th – 30th November 2013

Workshop Evaluation by Participants

Issue	**1**	**2**	**3**	**4**	**5**
Q1: How useful did you find the lectures?					
Q2: How useful did you find the participant presentations?					
Q3: How useful did you find the breakout sessions?					
Q4: How useful did you find the field visit?					
Q5: To what extent did the workshop achieve its objectives?					
Q6: Did you feel sufficient information was provided prior to and during the workshop?					
Q7: Overall, to what extent did the workshop meet your expectations?					
Q8: How suitable was the venue for the workshop?					

1 = Excellent; 2 = Very Good; 3 = Good; 4 = Fair; 5 = Poor

Q9: What do you feel was missing or what could have been done differently?

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Q10: What are your suggestions for future training:

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Q11: Any other comment:

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Selected Workshop Photos

Opening speech by Dr. Ruwa

A section of participants following one of the lectures

In the field in Gazi Bay mangroves

Project Coordinator of MikokoPamoja elaborating financial distribution from the carbon credit sales

Participants at the women's board walk rest banda

One of the participants receiving a Certificate of Participation