Report of the

FAO WORKSHOP LAUNCHING THE BLUE GROWTH INITIATIVE AND IMPLEMENTING AN ECOSYSTEM APPROACH TO AQUACULTURE IN KENYA

Cover page
Top left: Ecosystem from mountain to sea, Barbara Herren.
Top right: Seaweed farming woman from Zanzibar coast, courtesy of A. Menezes.
Bottom left: Fishers from Mozambique coast, courtesy of B. Adrien.
Bottom right: Visitor centre on a pilot aquaculture facility on the Kenya coast, courtesy of A. Menezes.
Report of the
FAO WORKSHOP LAUNCHING THE BLUE GROWTH INITIATIVE AND IMPLEMENTING AN ECOSYSTEM APPROACH TO AQUACULTURE IN KENYA

This publication describes the outcomes of the Food and Agriculture Organization of the United Nations (FAO) Expert Workshop Launching the Blue Growth Initiative (BGI) and Implementing an Ecosystem Approach to Aquaculture (EAA) in Kenya, convened in Mombasa, Kenya, from 27 to 31 July 2015. The BGI and EAA are in response to a request by the Government of Kenya to improve the sustainable management of aquatic resources and sustainable development of mariculture. The workshop was jointly organized by the Government of Kenya and FAO with leading support from the office in Kenya, the Subregional Office for Eastern Africa, and the Fisheries and Aquaculture Department in Rome. The report was prepared by Ana Menezes and Doris Soto with the support of Gabriel Boc, Koen Joosten and Robert Allport.

The workshop was attended by 78 people representing high-level authorities from Kenya, representatives from the coastal districts, other international and national organizations, civil society organizations, training and research institutions, and representatives of the local communities. The training was attended by 32 people from the different organizations and specially representing the different districts and local communities. The report benefited from and includes participants’ observations, inputs and recommendations, and thus the document represents the views and needs of the people of Kenya.
ABSTRACT

The Blue Growth Initiative (BGI) is an FAO flagship initiative that aims at supporting more productive, responsible and sustainable fisheries and aquaculture sectors by improving the governance and management of the aquatic ecosystems, conservation of biodiversity and habitats, and empowering communities.

Under the BGI umbrella, FAO, in collaboration with the Government of Kenya, is implementing two projects for the coast of Kenya. The objectives of these initiatives are to: (i) increase knowledge of water basin to coral reef ecosystem services supporting food, nutrition and livelihood security; (ii) identify the drivers of ecosystem services deterioration as well as the management options to improve them; and (iii) foster investment in coastal sustainable mariculture and promote its development under the ecosystem approach to aquaculture (EAA).

This report describes the activities and outcomes of a workshop that took place in Mombasa, Kenya, from 27 to 31 July 2015. The objectives of the event were to: (i) launch the BGI in the country; and (ii) conduct a training session on the implementation of the EAA for the sustainable development of mariculture in Kenya by considering integration with other users of the coastal zones, such as tourism, fisheries and agriculture.

The launching of the BGI had the active participation of high-level country authorities and wide representation of stakeholders involved in coastal zone and watershed activities, including representatives of the different coastal districts. The initiative was well received and created significant expectation and willingness to be involved as a move forward to sustainable use of aquatic resources with the support of the BGI.

The second and third day of the weeklong workshop focused on a training module on the EAA, mixing lectures by the FAO technical team with extensive group “hands-on” work sessions and presentations. The subsequent parts of this report summarize the discussions following the implementation steps (scoping and identification of stakeholders, identification of issues, prioritization of issues using risk assessment, development of an EAA management plan, implementing the plan, monitoring and evaluation), followed by the development of the road map for implementing EAA in Kenya’s aquaculture sector. The fifth day of the workshop was dedicated to training on conflict resolution and negotiation regarding use of space for aquaculture and other activities along the coastal zone.

The four days of training activities were received with great interest and a high level of involvement. Participants especially enjoyed the hands-on experience of designing management plans for mariculture under the EAA for different coastal areas of Kenya. The experience and lessons learned can be applied to the mariculture strategy.
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## ABBREVIATIONS AND ACRONYMS

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<th>Description</th>
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<tbody>
<tr>
<td>BGI</td>
<td>Blue Growth Initiative</td>
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<tr>
<td>BMU</td>
<td>beach management units</td>
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<td>CEC</td>
<td>County Executive Committee</td>
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<tr>
<td>CBO</td>
<td>community-based organization</td>
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<td>CFA</td>
<td>community forest association</td>
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<td>EAA</td>
<td>ecosystem approach to aquaculture</td>
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<td>EIA</td>
<td>environmental impact assessment</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>HMP</td>
<td>Hazina ya Maendeleo ya Pwani</td>
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<tr>
<td>KCCMF</td>
<td>Chairman of the Kipini Community Conservation Management Forum</td>
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<tr>
<td>KCDP</td>
<td>Kenya Coastal Development Project</td>
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<td>KFS</td>
<td>Kenya Forest Service</td>
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<tr>
<td>KMFRI</td>
<td>Kenya Marine and Fisheries Research Institute</td>
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<td>KWS</td>
<td>Kenya Wildlife Service</td>
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<tr>
<td>NGO</td>
<td>non-governmental organization</td>
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<td>NEMA</td>
<td>National Environment Management Authority</td>
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<td>SEIA</td>
<td>socio-economic impact assessment</td>
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<td>SFE-FAO</td>
<td>Subregional Office for Eastern Africa</td>
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<td>TCP</td>
<td>Technical Cooperation Programme</td>
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<td>TRCG</td>
<td>Tana River County Government</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>VANTAGE</td>
<td>Valuation and Accounting of Natural Capital for Green Economy</td>
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ACKNOWLEDGEMENTS

Numerous individuals contributed to the successful organization and implementation of the FAO workshop launching the Blue Growth Initiative and implementing an ecosystem approach to aquaculture in Mombasa, Kenya, including support from FMM/GLO/112/MUL BABY04: *Ecosystem services and biodiversity for food and nutrition security,* and TCP/KEN 3502: *Support to the implementation of mariculture in Kenya within an ecosystem approach.* All of them are gratefully acknowledged for their efforts and contributions during the preparatory phase and at the workshop itself.

We would like to thank the workshop attendees who provided their views and insights, which were so instrumental in the formulation of the outcomes from the workshop.

Additional contributions were provided by FAO colleagues, in particular Marianne Guyonnet and Maria Giannini who provided editorial assistance, as well as Danielle Rizcallah who assisted in the completion of the final layout and final formatting to standard FAO editorial guidelines.
Introduction

Background

1. The Blue Growth Initiative (BGI) is an FAO flagship initiative that aims at supporting more productive, responsible and sustainable fisheries and aquaculture sectors by improving the governance and management of the aquatic ecosystems, conservation of biodiversity and habitats, and empowering communities (in particular, the vulnerable communities engaged in small-scale production) to act not only as resource users, but also as resource stewards. The FAO BGI is designed around four streams of work: (i) capture fisheries; (ii) sustainable aquaculture; (iii) livelihoods and food systems; and (iv) economic growth from aquatic ecosystem services.

2. The Government of Kenya has called for FAO to support and assist in the development of the fisheries and aquaculture sectors, compatible with the principles of sustainable development. For Kenya, home to some of largest aquatic biodiversity in the world, and a region both of great opportunities and needs, it is important to make sure that aquaculture grows in a way that will promote socio-economic development and food security, and that will not threaten the conservation of natural resources for the immediate needs of the users of these ecosystems, but also for the future generations.

3. FAO, in collaboration with the Government of Kenya, has developed two projects for the coast of Kenya, with the aim of: (i) increasing knowledge of water basin to coral reef ecosystem services supporting food, nutrition and livelihood security; (ii) identifying the drivers of change affecting these services and their values, as well as technical and management options to improve them; and (iii) fostering investment in coastal sustainable mariculture and promoting its effectively governed development (socially inclusive, equitable and environmentally responsible).

4. These two projects will foster investment in sustainable mariculture and promote an effectively governed aquaculture development that is socially inclusive, equitable and environmentally responsible, and that provides opportunities for sustainable and profitable aquaculture farming as well as the economic activities that grow around it. This includes a better integration of the sector to other activities in the coastal zones, and requires an increased understanding in conserving and improving coastal ecosystem services. The expected outcomes are:
   (i) supporting knowledge base and cross-sectoral collaboration in development and implementation of practices that increase and improve the provision of ecosystem services in fisheries and aquaculture in a sustainable manner;
   (ii) supporting capacity development of national stakeholders to identify, formulate, implement, monitor and evaluate innovative investment strategies, in particular, with respect to fisheries and aquaculture, river basin management and ecosystem services;
   (iii) implementation of a national mariculture strategy for better management of the sector activities in Kenya while increasing ecosystem services;
   (iv) the development of ecologically and socio-economically responsible forms of mariculture that can be profitably adopted by Kenya farmers and investors; and
   (v) the development of appropriate business models that will enable Kenya farmers/investors to explore market options and increase their knowledge of aqua-business management skills.

Objectives of the workshop

5. The general objectives of the workshop (see the agenda in Annex 1), held in Flamingo Beach Resort and Spa, Mombasa, Kenya, on 27–31 July 2015, were to launch the Blue Growth Initiative in Kenya and inform and train managers, developers, farmers and other relevant stakeholders on the ecosystem approach to aquaculture (EAA), including the development of EAA management plans for aquaculture areas in Kenya, and considering the integration with other users of the coastal zones such as tourism, fisheries and agriculture.
6. In particular, the training focused on:
   - Describing the process and steps for the EAA implementation, and considering the environmental, socio-economic and governance elements. Tools and approaches, such as an environmental impact assessment and socio-economic impact assessment, were included, thus providing a comprehensive understanding of the process of producing and implementing management plans that ensure minimizing environmental impacts while maximizing benefits and equity. Special emphasis was given to understanding, conserving and if possible improving ecosystem services.
   - Exploring aquaculture added value in interacting with the tourism industry and also with fisheries.
   - Examining the external forcing factors for aquaculture, specifically addressing climatic variability and climate change, and the impact from upstream changes to waterways, urban development and tourism.
   - Developing draft EEA management plan(s) for pilot area(s), emphasizing the interaction between aquaculture and tourism. This segment included the evaluation (and “valuation”) of ecosystem services provided by seaweed farming, nutrient extraction, provision of fish nursery ground, and fish biodiversity by mangroves.

**Participation and Process**

7. Since the EAA management plans intend to improve sustainability and integration of aquaculture into the coastal zone, the launching of the Blue Growth Initiative and training on EAA brought together a wide range of relevant stakeholders that learned together and built consensus to develop draft management plans. As presented in Annex 2, participants included representatives from the:
   - departments of fisheries from national governments and county governments, including the Minister of Fisheries, Livestock and Fisheries, the principal of fisheries at the national level, and the ministers of agriculture and fisheries from the four coastal counties that were beneficiaries of this initiative;
   - Department of Environment;
   - coastal management institution;
   - Water Resource Management Authority;
   - Ministry of Tourism;
   - aquaculture farmers, including youth and women’s groups and fishers, as appropriate;
   - research and training institutions and universities related to aquaculture research and training;
   - spatial planning experts;
   - potential private sector and/or investors;
   - risk-management agencies;
   - local press and communications agencies; and
   - relevant donors and civil society organizations (European Union, Norway, Italy, United Nations Environment Programme [UNEP], World Wide Fund for Nature [WWF]) and other environmental organizations.

8. In terms of process, the workshop consisted of introductory lectures (presentations and video clips) with time for questions and answers and working group sessions, where the participants analysed one or two real (or close to real) cases (the situations of some aquaculture areas in Kenya) and followed the process of developing an agreed-upon management plan step by step.
Outputs

9. The launching of the BGI and training workshop resulted in:
   - relevant institutions and stakeholders who are better informed about BGI;
   - better informed stakeholders on the EAA and its potential for aquaculture management at the local and national level;
   - improved understanding of aquaculture for stakeholders outside the sector (e.g. tourist industry);
   - one or more draft management plans for some pilot aquaculture management areas;
   - recommendations for the national aquaculture strategy in the context of EAA; and
   - better understanding of ecosystem services.


Introduction

10. The five-day FAO event started on Monday, 27 July, with the official launch of the Blue Growth Initiative in Kenya, followed by several technical presentations that prepared the ground for the subsequent four days of training and discussion. The first day was attended by a high-level panel of national and county level government officials and representatives from technical departments in the selected coastal counties, as well as development partners, non-governmental organizations (NGOs) and FAO staff.

Opening remarks: (08:45–09:30, chaired by Mr Harrison Charo, Director Fisheries Resources Development and Marketing, State Department of Fisheries)

11. Mr Antony Njaramba, County Executive Committee (CEC) member, Mombasa County, welcomed all participants and mentioned that it was an honour for Mombasa County to host this event. Mr Njaramba stressed that there is a need to ensure that food and fish are produced in a sustainable way and that such production is integrated with other sectors. Furthermore, societies need innovations for a sustainable future. In this regard, Mr Njaramba highlighted the example of container fish farming in Mombasa, where discarded shipping containers are used as fish farming ponds. This initiative has been very successful in Mombasa, creating job opportunities for youth. In conclusion, Mr Njaramba introduced the CEC members from Kwale and Tana River Counties, who also welcomed the participants to the launch of the BGI.

12. Mr Adam Barissa Dhidha, CEC member, Tana River County, stressed the huge potential of fisheries for Kenya, for employment and for economic development.

13. Ms Joan Nyamasyo, CEC member, Kwale County, noted that fisheries and aquaculture have huge potential in Kenya, especially in the coastal counties, as there are significant resources for capture fisheries, aquaculture/mariculture, tourism, shipping and many more sectors. There is a need to develop the aquaculture and fisheries sector using the ecosystem approach, since a holistic approach is required to use and sustain resources. As Ms Nyamasyo said: “The ecosystem approach is the way forward, we have not only fishermen, but wildlife that relies on ecosystem, tourism projects, anglers and fish farming, including seaweeds. The only way forward is to work at ecosystem level.” She emphasized that this situation needs to include governance aspects, as appropriate governance is key for a thriving fisheries sector.

14. Mr Luca Alinovi, FAO Representative in Kenya, welcomed all participants on behalf of FAO and its Director-General, Mr José Graziano da Silva. Mr Alinovi indicated that the Blue Growth Initiative is very important for FAO, and that the Director-General and the Head of the Fisheries and Aquaculture Department have put great emphasis on the initiative in FAO, particularly with Kenya.
Fisheries have always been seen as a purely technical matter, rather than viewing them with a cross-cutting environmental and social lens as well. An ecosystem approach taking these dimensions across sectors is much more likely to succeed in the long term, when there is pressure on fisheries and marine ecosystems that support them.

15. Mr Alinovi stressed that FAO is ready to push this initiative, as the sector has enormous potential for economic development, poverty alleviation, food security and environmental improvement. Kenya itself is also at the forefront of this development in the region, being of critical importance to marine tourism, as well as fisheries. Kenya has invested heavily in aquaculture, both in freshwater and at sea; the question remains how this investment can be boosted without the damaging activities that reduce their sustainability in the long term. FAO has invested already in small-scale projects that can be replicated on a larger scale, with the right partnership between industry, counties, the ministry and FAO.

16. However, there is an urgent need for an ecosystem approach to fisheries and aquaculture. The launch of the BGI provides an opportunity to revisit current thinking about the aquaculture and fisheries approach and to ensure sustainable coastal development. Environmental thinking is hugely important in ensuring long-term profitability, and Mr Alinovi particularly welcomed the participation of the UNEP colleagues at this workshop, a signal of the recognition that exists within Kenya that economic development must be sustainable.

17. The two projects being launched would create awareness, demonstrate results, and trigger new initiatives to move the ecosystem approach to aquaculture and fisheries forward and ensure sustainable development of the sector. It is imperative that the whole system works completely, which includes environmental, economic and social aspects.

18. Professor Micheni Ntiba, Principal Secretary, State Department of Fisheries, indicated that Kenya has recognized that Blue Growth is about all forms of economic activity related to water, in the face of climate change, which can be a serious challenge to all Kenyan businesses that are water based. He stressed that the scope of these businesses is very wide and should not be thought of as being limited to fish. The ecosystem approach in this regard is crucial for sustainable growth. Both living and non-living resources (such as oil and gas) can and must be utilized in a sustainable way, ensuring that future generations can still reap their benefits. If these are exploited without being mindful of the environment, costs of these industries could destroy related activities.

19. Mr Ntiba mentioned that practitioners really need to understand the Blue Growth concept and the need for it as Blue Growth moves forward. The concern is that other sectors may not have this recognition and therefore these constituents need to be involved. By next year, the State Department hopes to publish lists of all participants in Blue Growth, which has already started in Mombasa County. This will allow Kenya to sustainably develop aquaculture and fisheries together with all sectors that have an impact, or rely on, water, both fresh and marine. In regards to this, Mr Ntiba announced that the ministry plans to organize a conference on “Blue Growth” in 2016, in collaboration with FAO. This conference will aim to bring all practitioners and sectors together to further mainstream BGI in Kenya.

20. Mr Ntiba called upon everyone to open up their hearts and minds to the Blue Growth Initiative and the ecosystem approach to aquaculture and fisheries. The ministry is fully committed to supporting stakeholders and other ministries in this regard.

21. Mr Mohamed Adan, Acting Cabinet Secretary, Ministry of Agriculture, Livestock and Fisheries, delivered the keynote address. Mr Adan stressed the need to fully involve the youth of Africa and the continent’s women if significant development is to be successful. The commitment made by the Government of Kenya to youth and women applies directly to the Blue Growth Initiative.
Furthermore, the Acting Cabinet Secretary stressed that the launch of the BGI – and the subsequent training – comes at an appropriate time. The Blue Economy is the new frontier for coastal and ocean states. Oceans are crucial for maintaining the earth’s ecosystem and climate, for moving 80 percent of the world’s trade, for feeding populations and for marine tourism. Current levels of ecosystem management fall far below the needs of the oceans. Mr Adan noted that if “we fail to act, we will lose much of the current and future potential benefits from our oceans”.

Mr Adan emphasized the need to focus on use of renewable energy, including the ocean. He explained that as Kenya embarks on oil and gas extraction, great attention should be focused on mitigating the negative impact on the environment. The ecosystem approach to aquaculture will go a long way towards increasing capacity within this important sector, which has great potential. The ecosystem approach is expected to fill knowledge gaps, and introduce and support the best management practices for aquaculture and fisheries.

The entire fisheries and aquaculture sector offers a huge potential for employment along the value chains, including transportation, processing, packaging and value addition. Fisheries continue to suffer from market difficulties, poor management, trade, and lack of capacity of this important artisanal sector. The Kenya Government is encouraging the private sector into sustainable business-oriented fishing and fish farming. The fishing industry is at the core of the Government’s strategy for industrialization and employment growth. Sustainable aquaculture is part of this, but must pay attention to sustainability and water quality.

Since 2010, Kenyan aquaculture has seen production rise from 4 000 tonnes to 45 000 tonnes. However, this was realized only in freshwater, and Kenya has yet to see similar growth in the coastal area. The Acting Cabinet Secretary noted that Blue Growth and the ecosystem approach would be a key component of the new strategy for growth, and have both arrived at the perfect time to allow marine aquaculture to expand in a sustainable, equitable and profitable manner. The ministry sees the sector as a key pillar for economic growth in Kenya, with FAO as a key partner. The Acting Cabinet Secretary expects that the BGI will lead to more opportunities and investments in aquaculture and fisheries. With these remarks, the Acting Cabinet Secretary officially launched the Blue Growth Initiative.

Overview and discussion on the background, objectives and contents of the BGI in general and in particular the programme for BGI in Kenya

Ms Ana Menezes, FAO Lead Technical Officer, thanked the Government of Kenya and other stakeholders, and explained that the BGI rationale at the global level is rooted in the fact that fishers and aquaculture contribute to food nutrition security and livelihoods, as well as conservation of biodiversity. Thus, there is need to pay attention to the nutritional aspect of fish production because oceans are a critical component of Kenya’s economic activity.

Ms Menezes highlighted the principles and aims of the BGI, which include: supporting more productive, responsible and sustainable fisheries and aquaculture sectors by improving the governance and management of aquatic ecosystems; conserving biodiversity and habitats; and empowering communities to act. She stressed that it is an honour to have fishers, farmers and foresters present during the launch of the BGI.

She further explained that the BGI includes: (i) capture fisheries; (ii) secured food systems and improved livelihoods through the use of all ecosystem services; (iii) responsible intensification of aquaculture; (iv) trade, markets, post-harvest and social support. Kenya is privileged to be one of the countries where the Blue Growth Initiative is being implemented, along with Bangladesh, Cabo Verde, Madagascar, the Philippines and a few others.
29. The BGI in Kenya is important because a large percentage of the population depends on oceans and the coasts for livelihoods, and thus the changes to ecosystem services that provide food security in the Kenyan fisheries sector will affect other sectors such as tourism and the entire fisheries sector; “any action taken in one part of the shoreline would have direct effects elsewhere on the coastline”. Furthermore, the desire is to increase knowledge of water basin to coral reef ecosystem services supporting food, nutrition, livelihoods, the drivers of change affecting these services and values. As funds are limited, the initial implementation of the BGI in Kenya needs to be limited to very specific areas, such as Kilifi and Tana River, along with the implementation of the mariculture Technical Cooperation Programme (TCP) in Kilifi, Mombasa and Kwale.

30. These two projects will assist in fostering investment in sustainable aquaculture and promote an effectively governed aquaculture development that is socially inclusive, equitable and environmentally responsible, and that provides opportunities for sustainable and profitable aquafarming and the economic activities that grow around it. The expected outcomes are highlighted in the background of this report.

31. The ecosystem approach provides alternative schemes that are less environmentally degrading and offer potential for a more socio-economic growth. Through mariculture and Blue Growth, the desire is to assist the government increase business opportunities by designing investment plans. The expected result is the ability to know what to offer and what to communicate to investors regarding the potential and what the domestic capabilities are.

32. The ability to work together on this initiative could transform the minds and perceptions of the people, and by the end of the project, in two-year’s time, the mind-set of subsistence could be more business oriented. Ms Menezes concluded that “aquaculture is not charity, emotional, or political, but rather is a serious enterprise that requires a lot of physical effort, capital inputs and financial investment”. She appealed to all stakeholders to work together and coordinate development partners’ actions with the government.

The Blue Growth Initiative in Kenya: reaching across sectors from the implementation of the ecosystem approach to aquaculture

33. Mr Pushpam Kumar, Chief Ecosystem Services Economics Unit, UNEP, spoke on the topic of Valuation and Accounting of Natural Capital for Green Economy (VANTAGE). He explained that the overarching objective is to foster investment, as investment does not happen based on one argument or debate, but rather when it is evident that good return derives from this investment.

34. Mr Kumar explained that VANTAGE has a pan-African global flavour, so it links well with the objectives of the BGI. The objectives of VANTAGE are to contribute to a better integration of the value of ecosystem services and subsequent sustainable macroeconomic policies and development planning. The regional scope of VANTAGE is a reason why UNEP wants to assist FAO in the evaluation of ecosystem services within Asia-Pacific (Nepal), Africa (Uganda, Rwanda, Ethiopia, Kenya) and Latin America and the Caribbean. VANTAGE aims to develop a set of robust frameworks for linking macroeconomic policies with natural capital using macroeconomic-ecological indicators. Blue Growth will not work unless macroeconomic policy and natural capital are linked, as natural capital must be aligned with macroeconomic policies.

35. FAO approached UNEP to conduct an ecosystem service valuation study in Kilifi and the Tana River Delta. Activities include a knowledge base for ecosystem services in Kilifi and the Tana River and engaging stakeholders. The expected outcomes include increased knowledge of water basin to coral reef ecosystem services that support food, nutrition and livelihood security; and improved understanding of the drivers of change affecting these services and their values and understanding the trade-offs and synergies in generation of ecosystem services. The outcome will influence others, and
achieve results not only limited to Kenya but also for global potential, as it will help others understand ecosystem services.

**Introduction to the ecosystem approach to watershed and coastal resource use and its role and potential in the face of external forcing factors**

36. Ms Doris Soto informed the audience that an ecosystem approach to aquaculture is a “strategy for the integration of the activity within the wider ecosystem, such that it promotes sustainable development, equity and resilience of interlinked social-ecological systems”. The EAA provides a planning and management framework whereby parts of the aquaculture sector can be effectively integrated into local planning and affords clear mechanisms for engaging with producers, government and other users of coastal resources for the effective sustainable management of aquaculture operations by taking into account the environmental, socio-economic and governance aspects and explicitly including concepts of carrying capacity and risk. She stressed that within an ecosystem approach people, and not the environment, are at the centre of the action.

37. The EAA normally starts with a scoping and definition/agreement on the boundaries of the system to be managed, followed by the identification of issues, environmental, socio-economic and governance, and some form of risk assessment to prioritize those that require more immediate management; operational objectives then must be agreed upon and management plans developed to address the more relevant issues. There must be a monitoring and evaluation system to periodically assess the level of implementation and the ability to address the selected issues.

**Presentation of field assessments on mariculture, fish value chains and natural resources mapping**

38. Under the BGI programme, and with the special support of the FAO Subregional Office for Eastern Africa (SFE), two field assessments were undertaken during the months of May and June 2015, aiming at:
   - Identifying key points of intervention along the fish value chain, and recommending specific actions to optimize the utilization of catch, with the goal of increasing the productivity and profitability of the sector. Because of the importance of developing the small-scale fisher sector in Kenya (inland and coastal), this assessment covered Lake Victoria, Lake Turkana and the coast of Kenya.
   - A field assessment for the development of mariculture under the EAA in Kenya, including recommendations on enhancing seed production.

39. The mission leader met with private innovators, fishers, aquaculture farmers, fish processors and traders, beach management unit (BMU) staff and local and national officials; the mission covered the coast of Kenya, Lake Victoria and Lake Turkana.

40. Some improvements have been gradually introduced along the fish value chain in Kenya over the years; however, significant work is still needed in terms of:
   - infrastructure and equipment (improvement of the landing sites, including access roads, electricity and water; fish handling and processing facilities; seafood processing plants and markets);
   - operationalization;
   - good hygiene practices and good manufacturing practices, at all steps of the value chain;
   - required investments from public and private funds; and
   - development of capacity of value chain actors.
Mariculture in Kenya is underdeveloped, and characterized by the absence of hatcheries and production of seeds, use of seeds from the wild in almost subsistence quantities, lack of farming techniques, and also the lack of business-oriented plans to determine which species and what quantities to produce and for which markets.

Lack of seeds, appropriate farming technologies, suitable feeds and feed management techniques, and skilled human resource have been identified as the major problems. Some experiments under the pilot BGI should be built upon to kick-start mariculture interest in a more commercial and sustainable way.

Specific recommendations covered the fish value chain and immediate actions to kick-start mariculture:

- improve landing site infrastructure (see the following);
- increase availability and use of ice;
- increase availability and use of proper fish containers;
- improve fish drying, smoking and frying facilities;
- promote added-value products;
- improve retail markets;
- support good handling and manufacturing practices;
- develop the capacity of value chain actors;
- strengthen institutional capacity;
- operationalization of three large ponds for milkfish and shrimp culture (polyculture) for two groups (already started);
- provision of three cages for milkfish culture (experimental due to the fragile tenure of coastal land) to one group;
- increase seaweed production by improving quality through the construction of appropriate infrastructure, such as a transparent roof for the dry area and one store to stock dry seaweed ready for market;
- the absence of these two infrastructure results in a loss of 25–30 percent of production during the drying and storage stage;
- support to one new women’s group in seaweed culture;
- improve crab fattening by providing 70 cages with ten compartments each to three groups of young farmers, and improving handling and marketing capabilities;
- provision of plastic bags and ropes to restart oyster culture to two groups of farmers; and
- provision of technical assistance from FAO, Kwetu Centre and other local stakeholders.

Questions and answers and open discussion

- Item 1 – A participant enquired whether prior consultation was made with the Kenya Coastal Development Project (KCDP) with the objective of minimizing duplication of effort. FAO responded by conceding that extensive consultations took place with all key stakeholders. FAO acknowledged work done by KCDP and welcomed its partnership in promoting the EAA. In the spirit of information-sharing, FAO stressed that good ideas are always welcome and that they should be shared with the stakeholders and partners.

- Item 2 – Given the recommended immediate actions from the field visits, FAO project intervention should occur sooner. The audience stressed that the proposed efforts require a solid element of sustainability, so more resources from the counties are required.

- Item 3 – In terms of oyster farming, there is a need for a scientific or technical study about the suitability and/or feasibility of such activities. The experts agreed.
47. Item 4 – A more technical study on aquaculture in mangroves is also required: is it suitable, especially because often the mangrove value is higher than the aquaculture value? How will FAO do things differently, especially in terms of learning from past lessons/mistakes? FAO clarified that it has a clear understanding that no mangroves can be cleared for aquaculture. Aquaculture would need to be integrated in mangroves, especially in terms of addressing the mangrove clearing for the purpose of livelihoods (e.g. burning wood, domestic uses).

Kenya coastal development project – achievements

48. Ms Jacqueline Uku presented the highlights of the KCDP, which covers all six coastal counties. The purpose of this presentation was to sensitize participants on possible entry points that could be interesting for the BGI, as well as to present possibilities for BGI to engage with KCDP.

49. KCDP started in 2011 and has four main components:
   - sustainable fisheries resources management;
   - natural resources management;
   - sustainable/alternative livelihoods; and
   - capacity building, monitoring and evaluation, project management and communications.

50. Fisheries are an important part, as well as scaling up research and monitoring community measures. Aquaculture is included, as are landing sites and cold chain improvements. Under the sustainable fisheries resources management component, KCDP works to increase benefits from coastal fisheries. This includes fisheries research, technology development, coastal fisheries governance, and development of fisheries management plans. Specific activities include seaweed production in Kwale County, which encompasses harvesting, drying, and market/private sector linkages, among others. Future work will focus on adding value to the raw product. Another activity is aquaculture farming, focusing on pond construction, stocking, harvesting and storage.

51. Within the natural resources management component, KCDP focuses on biodiversity information systems, tourism enhancement, and research and extension in best practices on agro-forestry. A pilot project in the mangrove zones of Kilifi has seen integrated supply on sustainable feeds, pond development, harvesting technique and support for storage. Efforts are being made now to help train on business management, and not focus on purely technical issues. Wildlife tourism in the counties is a vital revenue earner, and KCDP is working with local communities to register and document biodiversity and habitats in the county. This is linked to work with the tourism sector and communities who use the mangroves as a source of timber. Work on this aspect is extended now to develop a national plan for managing mangroves, as well as similar ones for sable antelope, seagrass and coral reefs. These will provide a framework for intervention and adoption at the county level.

52. Under the support for sustainable/alternative livelihoods component, the project looks at supporting microenterprises and small and medium-sized enterprises (SMEs), environmental governance and integrated planning and development of land-capability plans. Among others, 393 SMEs were trained in business planning, particularly the 57 trainers who are now able to continue this work independently. The SMEs are working within a developed spatial plan, an integrated coastal zone management focus and an awareness strategy for this.

53. Besides capacity building, awareness raising, monitoring and evaluation, and project management, the fourth component includes a grant facility: Hazina ya Maendeleo ya Pwani (HMP). This facility provides grants to communities (maximum 90 percent of the total project cost) for projects that are not-for-profit, are public goods and benefit the community. So far, 124 small projects have received funds, with 13 already completed. These projects work at the community level to improve sustainable use of water and natural resources. Examples include the Dabasso Creek conservation group, where support was given to a new venture improving a local crab business,
helping create a resource centre that attracts tourists and provides education to other groups. In another project – the Okoa Maisha project – 605 households were involved in a waste collection project that has worked in particular with young mothers and intravenous drug users, recycling some of the waste into handicraft items that can be sold.

54. Opportunities of collaboration with the BGI, as identified by the KCDP project, include:
   - matching of community needs with appropriate technical support;
   - using research results for livelihood improvements;
   - capacity building at the community level using a small grant facility (HMP);
   - opportunity to “grow” entrepreneurs, especially within vulnerable and marginalized groups;
   - leveraging and upscaling of good practices in conservation; and
   - opportunities to enhance media outreach: telling a positive story (through the HMP).

The blue economy as a new paradigm for sustained economic development in the Western Indian Ocean Region

55. Mr Dixon Waruinge’s presentation focused on the Blue Economy concept, touching issues such as its definition, the gaps that need to be addressed, how to finance, and the drivers of the Blue Economy approach.

56. As Convention is rather unknown to many, Mr Waruinge gave a brief description of it, which is hosted within UNEP, and focuses on the protection of marine and coastal areas from Somalia to South Africa (and includes five island states). It covers five components, ranging from integrated ecosystem-based management of marine and coastal resources, assessment and capacity building on the valuation of ecosystem goods, adaptation and resilience to climate change, protocols on land-based pollution of coastal and marine areas, and environmental governance.

57. Coastal and marine resources are extremely important, and are an essential source of livelihoods for millions. As such, the Blue Economy concept is part of the Nairobi Convention’s mandate. Mr Waruinge noted that the Blue Growth Initiative launched by FAO is an opportunity to change and improve the approach for managing coastal resources, stressing that the current management must change. With the post-2015 agenda process, there is now a good momentum for the BGI.

58. Concerning the definition of the Blue Economy, Mr Waruinge explained that it should:
   - maintain the flow of benefits from renewable resources, for current and future populations;
   - capture the benefits of non-renewable resources even long after their depletion; and
   - ensure equity in the distribution of benefits.

59. The ability to achieve the above-mentioned gaps in current governance of coastal and marine resources need to be addressed. This includes issues such as jurisdiction. Furthermore, financing the Blue Economy requires innovative pathways such as partnerships with the private sector, but also the use of foreign capital and mobilizing public sector funding. Equally important, the drivers of the Blue Economy should be examined. These are multiple, and range from appropriate policies, technology and policy support to investment climate, equity and transparency. For a successful application of the Blue Economy approach, it is necessary that these aspects be well integrated.
Questions and answers session

60. The questions and answers focused on the following topics:

- Participants stressed the need for research results that need to be fed back into the field level, as currently this is not the case. Often, research is conducted, but does not reach the beneficiaries, let alone give them the opportunity to provide feedback and input.
- Participants manifested their uneasiness that the KCDP project has been running “alone”, and that stakeholders are not even consulted for matters related to land mapping, nor do the ministers at the county level receive any information regarding project implementation progress. The need was stressed for greater consultation and release of information from the project to the counties.
- Related to the discussion above, participants agreed that annual conferences for the coastal zone are important for aquaculture and fisheries development. Conferences make it possible for research to be translated into results.
- It is important for fisheries and aquaculture projects to actually examine how to measure success and what are the indicators of success? In this regard, it was noted that the KCDP looks at the number of beneficiaries, the project reach and, increasingly, beneficiary incomes.

Discussion of the BGI objectives, output, activities and work plan: the way forward

61. Ms Menezes revisited the general objectives of the BGI in Kenya, which include: (1) building the knowledge base of ecosystem services in support of food and livelihood security; (2) engaging stakeholders in a dialogue to build common understanding and joint action; and (3) identifying community-based tools and methods to improve ecosystem services in support of food and livelihood security and development of implementation plans (i.e. developing aquaculture management within EAA).

62. In terms of actions intended to be carried out, the specific objective is a report on integrated evaluation of food nutrition and livelihood security-related ecosystem services from water basin to coral reef (conduct ecosystem services valuation survey), which integrate the drivers of change impacting ecosystem services from water basin to coral reef (i.e. development of research map).

63. For objective 1 – building a knowledge base of ecosystem services in support of food and livelihood security – the following activities are proposed: initiate a capacity-building programme for the application of zoning, Geographic Information System (GIS), methodology, and tools under an ecosystem approach perspective; build the capacity of fisheries and aquaculture stakeholders to participate in the revision process of national fisheries and ocean policy and to contribute to other land/water management policies under review, which needs to be at a high national level.

64. For objective 2 – it is proposed to engage stakeholders in dialogue in order to build common understanding and joint action. The activities include identifying/mapping potential hotspot conflict areas for water and natural resources in the Kilifi and the Tana River Delta; identifying key stakeholders involved in conflict management of natural resources in coastal zones; training identified stakeholders in negotiating mechanisms to reduce conflicts for natural resources in coastal zone; and introducing a capacity-building programme on an environmental impact assessment.

65. For objective 3 – it is proposed to identify community-based tools and methods to improve ecosystem services in support of food and livelihood security and the development of implementation plans. The activities include promoting sensitization campaigns on mangrove conservation and ecosystem restoration in the basin and in both priority coastal areas (Kilifi and the Tana River Delta).
Implementing mariculture in Kenya

66. In terms of supporting the implementation of mariculture in Kenya, the main objective is to foster investment in coastal mariculture and to promote effectively governed mariculture. The expected outcome is the implementation of a national mariculture strategy.

67. A national policy, strategy and action plan need to be developed in order to achieve Outcome 1: implementing the Kenyan mariculture development strategy and action plan, particularly those aspects linked to marine environments and ecosystem services.

68. Ms Menezes explained that the empowerment of farmers does not mean including them in meetings, but rather providing them with a start-up pack that includes materials and equipment, so they can engage in mariculture and mangrove conservation in a meaningful way and develop the capacity to change thinking from subsistence to profit. She also explained that when the field assessment was done, one of the criteria for potential beneficiaries was whether each had a business orientation and the potential to sustainably develop an enterprise.

69. Also, there is need to build a database to achieve Objective 2: investors and the public sector require access to information related to the potential of the coast for development of environmentally friendly mariculture.

70. In conclusion, Ms Menezes suggested to the audience a coordinating meeting to occur in the subsequent two days, so that actions could be concerted and all resources made available for the good of the people of Kenya and their natural resources, and not for the good of showing one or another agency reporting.

Questions and answers session

71. This session focused on a range of technical and implementation-related questions and comments, from both the high-level government participants and the expert participants from the national and county- level institutions.

72. Item 1 – In response to questions about the mistakes often seen in reforestation of mangroves and who bears the responsibility of technically training communities and extension agents, Menezes stressed that the whole BGI project in Kenya addresses these concerns; she also reiterated that county governments and community-based organizations have a crucial role as they are at the centre of the matter.

73. Item 2 – In response to the timeline of the proposed activities to take place in Kilifi and Tana counties, FAO clarified that the first programme for ecosystem is supposed to run until the end of next year (December 2016), with the evaluation of the ecosystem to be ready by mid-November, 2015; after these assessments are completed, investment plans will be produced.

74. Item 3 – Passionate discussions revolved around the FAO obligation to assist in the establishment of one hatchery for the government to kick off mariculture. Menezes asked the audience to think in a reverse way instead: Should the private sector be involved in what is a private-sector enterprise or should development partners continue to fail the people by financing national government and transforming them into investors? The panel agreed that the development of aquaculture should be a private-sector effort. Investment should not come from or to the government, whose role should be to provide the best enabling environment for the development of the activity. FAO is part of the process, and under its core functions it could provide useful knowledge through demonstration projects, including hatcheries, when necessary, and best practices and protocols.
75. Item 4 – Addressing the questions related to the role of the government and the insistence for FAO to build hatcheries for mariculture, Ms Menezes re-affirmed that in fact the government’s role, besides research and to some extent extension services, should provide an enabling environment in terms of policies and regulatory frameworks and investment incentives to attract investors and retain small farmers within the activity and lead them to development. Previous work resulted in the identification of two potential farmers who can produce small hatcheries for milkfish and small crab (as highlighted in the field assessment). It is essential to further analyse and wait for the mapping of resources before finally deciding on the areas where to build hatcheries. However, at this current stage, as mariculture is still almost inexistent, she advised the government to start slow and within 18–24 months to re-evaluate the situation before taking a bigger step towards building large investments. Investors will see the potential, but before that there is a need to build up knowledge. Ms Soto emphasized the need for adequate planning in order to ensure proper investments; in particular, the location of the hatchery would be critical, given the needed proximity to areas where the real potential lies.

76. Item 6 – Several participants asked about the FAO experience regarding success factors particularly related to attracting the private sector. Mr Alinovi emphasized the need to find the best way to work together with other agencies and organizations. A lost opportunity will be detrimental to a large segment of stakeholders. Part of the strategy is to bring everyone together to make the best decision possible, and to move out of the work-related territorial borders in order to carry out the discussion properly. He proposed that in subsequent training, mixed groups should be organized to reflect the future reality of the projects.

77. Item 7 – Some participants questioned the timing of the suitability mapping as the basis for the proposed activities to be implemented. Ms Menezes stressed the need for further resource mapping for the main species, and said that the projects cannot be run under the pressure of just doing something; the government and donors need to have a good knowledge base of the ecosystem before embarking in activities that can be more detrimental than beneficial to livelihoods, business and the general environment. Ms Soto also agreed with the comment on suitability maps, and stressed that the decision on the final areas where aquaculture is to be done would be based on participatory processes. As a follow-up question, further explanation of what can be done in what areas needs to be provided. Ms Menezes agreed and stressed that the government’s role should be to avoid directing money and power in the wrong directions and wrong places, and stakeholders need to be involved; otherwise, they would not comply with whatever decision is forcefully put in front of them. Mr Alinovi mentioned the importance of sharing ideas at all levels. Overall, information needs to be made available so that all parties can work together.
Introduction

78. The second and third day of the weeklong workshop focused on a training module on the ecosystem approach to aquaculture, mixing lectures by the FAO technical team with extensive group “hands-on” work sessions and presentations. The subsequent parts of this report summarize the discussions following the implementation steps (scoping and identification of stakeholders, identification of issues, prioritization of issues using risk assessment, development of an EAA management plan, implementing the plan, monitoring and evaluation). This was followed by the development of the road map for implementing EAA in Kenya’s aquaculture sector.

Presentation on implementing the Ecosystem Approach to Aquaculture – Step 1: scoping and identification of stakeholders (Doris Soto, 08:30–09:15)

79. According to the training and activities for the coming days, the objectives were aimed at enabling participants to understand and develop EAA management plans in their own counties. In this process, combining local knowledge with science was deemed as very important, and should therefore be driven from the local level. Ms Soto introduced four steps to developing an EAA management plan, as shown in Figure 1.

![Figure 1: Process and steps to implement an ecosystem approach to aquaculture management plan](image-url)
The ecosystem approach to aquaculture can be used for planning at both the national and at the local level. Key elements include addressing biosecurity issues, risk mapping and analysis, looking at the carrying capacity of the area, and allocation of sites.

Step 1 in the development of an EAA management plan is the initiation, scoping and identification of stakeholders, which includes as specific tasks proper scoping, collection of baseline information, identifying stakeholders and setting broad objectives. In this step, it is important to define the boundaries of both the management unit and the ecosystem, which are often different. Availability of baseline data (through a baseline report) is essential. Not only does a proper baseline report enable a project to measure impact, it also ensures that everyone is on the same page with regard to the challenges, opportunities and issues centred around aquaculture – provided that all stakeholders have access to the baseline report.

**Group session 1: scoping and identification of stakeholders**

For the purpose of the training exercise, participants were assigned into three groups, each addressing one of three coastal zone areas; north, central and south that more or less reflected the coast of Kenya without using the specific county limits. For this step, each group had to address the main objectives of an EAA management plan, the boundaries of the area they wanted to choose, and the institutions and the stakeholders that should be involved in the development of the management plan.

**Zone A (largely Tana River County)**

The Zone A group consisted of ten participants from Tana River County, Kenya Forest Service (KFS), UNEP, Tana River County Government (TRCG), FAO Uganda and FAO Kenya.

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Organization/County</th>
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<tbody>
<tr>
<td>Awabh Mbarare</td>
<td>Chairman of the Kipini Community Conservation Management Forum (KCCMF)</td>
<td>Tana River – Kipini</td>
</tr>
<tr>
<td>Peter Kioko</td>
<td>Member</td>
<td>KFS</td>
</tr>
<tr>
<td>Swaleh Said</td>
<td>Member BMU</td>
<td>Tana River County</td>
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<tr>
<td>Said Ali Chufu</td>
<td>Ozi BMU</td>
<td>Tana River County</td>
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<tr>
<td>Thomas Mugo</td>
<td>County Department of Fisheries</td>
<td>Tana River</td>
</tr>
<tr>
<td>Beth Mbote</td>
<td>Ecological Economics Specialist</td>
<td>UNEP</td>
</tr>
<tr>
<td>Dr Paul Mwamburi</td>
<td>Chief Officer</td>
<td>TRCG</td>
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<tr>
<td>Adam Dhidha</td>
<td>CEC</td>
<td>TRCG</td>
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<tr>
<td>Olwo Jacob</td>
<td>Fisheries Officer</td>
<td>FAO Uganda</td>
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<tr>
<td>Md Tafiqul Islam</td>
<td>Fisheries Officer</td>
<td>FAO Kenya</td>
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The discussions focused on the need for and objectives of aquaculture, the siting of the aquaculture zone, and the identification of institutions and stakeholders were very lively and informative. All group members participated actively and each provided valuable inputs. The required four tasks were addressed as shown below:

**1 – Why do we want to develop aquaculture with an ecosystem approach?**

- conserve biodiversity within the zone;
- continue enjoying other ecological benefits (e.g. fishing, forests);
- keep the environmental condition of the ocean healthy;
- contribute to other environmental conservation activities; and
- Achieve sustainability of the sector.
Related to this, the group decided on their objectives for aquaculture:

- job creation;
- income generation;
- food security;
- enhancing the ocean’s productivity; and
- sustainable source of fingerlings from the ocean.

2 – Decide on the area where you are going to create an aquaculture zone

The group had a very interactive and engaged discussion on the suitability of different aquaculture activities for different areas of Zone A. Group members discussed shrimp and milkfish farming, crab fattening, cage aquaculture in general, and the necessity of protecting the large areas with mangroves along the coast in Zone A. Another discussion point was the possibility of developing aquaculture further upstream in the Tana River, where water is brackish. Ultimately, the group decided on creating two aquaculture zones:

(i) Delta zone junction:
   - crab fattening
   - shrimp farming

(ii) Upstream of Tana River:
   - prawn-rearing ponds
   - tilapia and catfish ponds

3 – Identify the institutions that should be involved

A comprehensive list of institutions was drafted, and members kept on adding names even after the discussion was finished. The institutions included:

- fisheries department (national and county levels);
- Kenya Forest Service;
- Kenya Marine and Fisheries Research Institute (KMFRI);
- Kenya Wildlife Service (KWS);
- Kenya Tourism Board;
- National Environment Management Authority (NEMA);
- NGOs involved;
- Wetlands International;
- departments of land;
- BMUs;
- community-based organizations (CBOs), such as KCCMF, KICE Foundation;
- Kenya Coastal Development Project; and
- Ministry of Agriculture.

4 – Identify the stakeholders that should be involved in the development of an EAA management plan:

- communities (opinion leaders, mzee wa kijiji, imam/pastors)
- CBOs, such as KCCMF, KICE Foundation, and site support groups;
- BMUs (traders, fishers, boat owners, crew);
- Administration;
- NGOs (Wetlands International, Nature Kenya);
- development partners (United Nations, donors, etc.);
- private sector (processors, commercial fishers); and
- financial institutions (e.g. banks).
Zone B (Largely Kilifi County)

85. The group comprised of eleven members: three representing community organizations, one from a community-based organization, three from the county government, one from the university and three from FAO. The group addressed the central area (B) of the coastline, which largely covers Kilifi County. Though one of the low-income counties in the country, this county has potential for aquaculture development.

1 – Interventions’ goals and objectives

After intense debate, the group concluded that the main goal for implementing aquaculture through and ecosystem approach should be to achieve food and nutrition security and improved livelihoods through sustainable aquaculture. This goal would be achieved through three specific objectives, intended to:

- improve food security and nutrition of the people in Kilifi County;
- increase household income and therefore improve livelihoods; and
- support and ensure sustainable mariculture.

2 – Area selection: (Kilifi Creek)

Three sites were proposed which covered the whole range of the coastal strip – Mida Creek, Kilifi Creek, Mtwapa Creek – Ngomeni and Mirereni areas were also considered suitable candidates. The choice was narrowed to Kilifi Creek, based on the fact that this is a relatively accessible area, centrally located, and that aquaculture has taken place there in the past. It was therefore relatively familiar territory with known potential stakeholders. It was also felt that the central location would provide an opportunity for the rest of the county to learn, adopt and upscale lessons.

3 – Relevant institutions identified:

- fisheries department;
- local communities;
- Kenya Forest Service;
- county government;
- Pwani University;
- KEMFRI;
- National museums of Kenya;
- NGOs – Kwetu Centre, CAST;
- hoteliers;
- BMUs and community forest associations (CFAs); and
- KWS, NEMA.
4 – Key stakeholders for preparation and implementation of the management plan:
- fisheries and BMUs;
- CFAs, KFS;
- Kwetu Centre, CAST; and
- FAO.

Zone C (largely Mombasa and Kwale Counties)

86. The Mombasa and Kwale group’s consisted of twelve participants from the two counties, from the central government, FAO and other organizations.

1 – Interventions’ goals and objectives

Goals:
- food and nutrition security;
- improvement of health and job creation for youth and women;
- making use of vast resources, such as marine resources (intermediate goal);
- improvement of livelihoods;
- economic development (including job creation);
- conservation of marine environment;
- restoration of endangered species for future generations;
- technology transfer;
- value chain development; and
- finance.

Objectives:
The Mombasa and Kwale group highlighted the following objectives: (i) to enhance aquaculture contribution to food security and nutrition, income generation and job creation, especially for women and youth; (ii) to conserve and restore marine resources; and (iii) to promote technological advancement in aquaculture.

2 – Area selection

Since Kilifi to the south coast consists of numerous hotels, developing mariculture in those areas is challenging; therefore, people are now moving to the creeks. There is a need to highlight the aspects of mariculture so that others are educated on the topic and why it is necessary. There was a rush to mark an area/zone for the focus of aquaculture, and stakeholders debated robustly on the ideal spatial location of the proposed initiative. The reason this took a while is because some felt that there was a need to define what mariculture is, and then proceed from there to decide what area is best. The final-decided boundaries include: (i) Ngomeni, near the Kilifi River; (ii) Mtwapa Creek; (iii) Port Reiz; and (iv) Kibuyuni. The last three are located near the southern coast.

3 – Relevant institutions identified:
- Secretary of State of Fisheries/Ministry of Agriculture, Livestock and Fisheries – national governments;
- BMUs;
- Forestry – KFS;
- NEMA;
- Kenya Maritime Authority;
- KWS;
- country governments;
- Ministry of Lands;
- KMFRI;
4 – Key stakeholders for preparation and implementation of the management plan:
- fishers/fish farmers;
- NGOs;
- fish traders;
- fish processors;
- fisheries departments;
- local community;
- transporters;
- CBOs;
- media; and
- county government.

Group session 2: identification of issues (environmental, socio-economic and governance)

87. Group session 2 focused on the identification of issues/challenges for aquaculture in the three zones. Ms Soto explained the use of some tools such as the “issue trees” to assist in identifying issues through the aquaculture production process, i.e. input and resource use and outputs.

88. Group members together came up with numerous issues, divided into socio-economic, environmental and governance categories. They identified issues occurring within and outside the aquaculture management responsibility that are affecting, or could affect, the performance of aquaculture in the future. Issues were directly or indirectly related to aquaculture and involved the whole fish production value chain.

Zone A (Tana River County)

Issues identified by group A included:

Socio-economic issues:
- lack of capital (poverty);
- low literacy level of the target community;
- conflicts over resource use;
- poor infrastructure (roads, electricity);
- lack of access to finance;
- lack of technical knowledge; and
- lack of organized marketing structures.

Environmental issues:
- shortage of fingerlings (seeds);
- sea level rise leading to destruction of some mangrove species due to changes in salinity;
- water pollution;
- siltation, especially around the delta;
- overfishing;
- unplanned cutting of mangroves;
- flooding of river;
- overgrazing of surrounding land, leading to erosion; and
- lack of environmental awareness.
Governance issues:
- lack of management plan for mangroves
- lack of mariculture management framework (no laws)
- lack of land use plans
- land grabbing by rich people
- poor knowledge of governance
- poor information flow to communities
- lack of accountability
- lack of inclusiveness in projects

89. Following the reporting by group A, Ms Soto explained that when talking about environmental issues, the subject normally refers to those issues directly caused by aquaculture, while others that could affect aquaculture are considered external forcing factors (such as climate change and pollution from upstream areas) and are usually placed under “governance issues”. The same goes for natural disasters, for which communities cannot normally handle, and are therefore considered external forcing factors. Environmental problems caused by aquaculture could be urgent and have more priority, but mostly these are issues that can be addressed within the sector and as part of a management plan. The group needed to make an overview of environmental issues that are caused by aquaculture. The list of environmental issues was therefore changed to:

- biodiversity losses due to harvesting of wild seed;
- destruction of mangroves due to aquaculture development;
- pollution of waterbodies by aquaculture; and
- siltation of the Tana River Delta due to aquaculture development.

In identifying the issues or problems, it was also noted that it is better to use “inadequate” rather than “lack of”, as some facilities and approaches exist, but they are not sufficient.

Zone B (Kilifi County)

Socio-economic issues:
- inequity in the land ownership systems;
- conflict among resource users;
- low productivity;
- low income;
- wrong investment approach;
- weak marketing linkages;
• limited technical capacity;
• poor adoption or uptake of mariculture in new communities;
• prohibited cost of inputs (including fingerlings and feed);
• lack of the required inputs locally; and
• lack of external attention and services.

**Environmental issues:**
• reliance on wild for the source of seed;
• sedimentation on mangroves;
• salinization of freshwater sources;
• reliance on wild gastropods for crab fattening;
• abandonment of ponds contribute to environmental degradation;
• impacts on biodiversity;
• diseases and parasites;
• genetic pollution from escapes;
• interference with capture fisheries; and
• impact on genetic pool in the wild.

**Governance issues:**
• weak community organizations;
• land ownership systems and land access;
• weak legal policy frameworks;
• corruption levels;
• conflicting legislations;
• inadequate coordination among actors.

**Zone C (Mombasa and Kwale Counties)**

**Socio-economic issues:**
• lack of start-up capital;
• lack of understanding/knowledge (skills) of aquaculture by community;
• lack of acceptability;
• availability of wild fish stocks (overabundance);
• land use conflict (competition);
• markets (culture/adaptations) as people could lose interest;
• political interference, if not supported by local politician;
• lack of hatcheries (fingerlings);
• community conflicts; and
• lack of equitable benefit-sharing mechanisms, if people are not informed on how the project is beneficial.

**Environmental issues:**
• pollution;
• overpopulation and overstocking;
• predation; and
• invasive species.

**Governance issues:**
• poor leadership;
• duplication (inadequate coordination mechanism between Government and NGOs results in duplication of effort leading to poor synergy);
• project reference (may not like the topic of aquaculture);
• political instability;
• political interference (lack of political support);
• conflicting policies;
• non-implementation of existing laws (enforcement conflicts);
• lack of transparency and accountability (corruption);
• sustainability of the project; poor/weak capacity development (government may not be willing to support/educate public on topic);
• lacking/ inadequate financial support;
• lack management plans or the implementation of strategies (poor management of management plans);
• implementation of management plans is weak);
• lack and ownership of resources (if do not sell the idea/concept to the people who own the land/resources this can result in a lack of project preference);
• deforestation;
• siltation;
• global warming; and
• natural disasters/floods/droughts.

**Group session 3: prioritization of issues using risk assessment**

90. Ms Soto introduced the concept of risk assessment, which is part of the EAA; it is used to assess the level of risk and prioritize the most important problems that might affect aquaculture development and that need management. This approach should especially be used for aquaculture investments. The risk assessment includes four main aspects: risk, consequence, likelihood and risk management.

91. Risks posed by hazards associated with aquaculture include environmental degradation, introduction and spread of pathogens/pests/invasive species, genetic impacts, food safety issues, and negative social and economic impacts.

92. Ms Soto explained that a risk analysis typically seeks answers to four questions:
   • What can go wrong?
   • How likely is it to go wrong?
   • What would be the consequence of it going wrong?
   • What can be done to reduce either the likelihood or the consequences of it going wrong?

93. Risk likelihood ratings range from “almost certain” to “rare”, and are divided into recurrent risks and single events. Similarly, risk consequence scales range from “catastrophic” to “insignificant or positive”, and are different for economic, socio-economic and environmental risks. For a proper risk assessment:
   • Issues need to be formulated, as possible negative outcomes of present management (or lack of it) in relation to stated broad objectives.
   • Risks need to be measured in relation to stated broad objectives and against better management.

94. Following the introductory presentation, groups were invited to review the issues they identified using the risk assessment. Groups were requested to tabulate a risk matrix after gaining a consensus of members. It was noted that each group interpreted likelihood and impact differently, leading to lack of consensus in tabulation of the risk matrix. Finally, group chairpersons ensured consensus building with each compiling their matrixes respectively.
Zone A (Tana River County)

The environmental risks used for the assessment were:

(i) biodiversity losses due to harvesting of wild seed;
(ii) destruction of mangroves due to aquaculture development;
(iii) pollution of waterbodies by aquaculture; and
(iv) siltation of the Tana River Delta due to aquaculture development.

These were ranked as follows:

Biodiversity losses due to harvesting of wild seed ranked with the highest risk level (9), although it is a mild risk followed by the destruction of mangroves.

The socio-economic risks used for the assessment were:

(i) low literacy level of target communities negatively impacts aquaculture development;
(ii) conflicts over resource use impact aquaculture development negatively;
(iii) poor infrastructure hampers investment in aquaculture; and
(iv) lack of access to finance limits investment in aquaculture.

The highest risk (20, which is considered an elevated risk level) was estimated for the conflicts over resource use, followed by the lack of finance (10, considered mild risk) (see figure below).
The governance risks used for the assessment were:

(i) lack of mangrove management plan limits aquaculture development in Zone A;
(ii) lack of mariculture frameworks (laws) limits aquaculture development;
(iii) land grabbing by rich people negatively impacts aquaculture development; and
(iv) lack of inclusiveness limits investments in aquaculture.

In this case, land grabbing by rich people is considered to pose the highest risk (16) (figure below).

![Risk Assessment Grid](image)

### Zone B (Kilifi County)

Zone B (Kilifi River) explained key issues within this area that pose high risks to the aquaculture objectives.

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<th>Environmental issues</th>
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- Environmental issues:
  1. reliance on the wild for the source of seed has high likelihood and medium impact;
  2. reliance on gastropods for crab fattening, which will result in a loss of biodiversity has high likelihood but mild impact;
  3. eutrophication has high likelihood and medium impact;
  4. diseases and parasites have high likelihood and impact; and
  5. interference with capture fisheries has high likelihood and mild impact.

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</table>
• Socio-economic issues:
  (1) land ownership system has medium likelihood and impact; (2) weak marketing linkages has medium likelihood and high impact; (3) wrong investment approach has high likelihood and impact; and (4) lack of required input locally has high risk due to its high likelihood and high impact.

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• Governance issues:
  (1) weak community organization has high likelihood and medium impact; (2) land access has high likelihood and impact; (3) conflicting legislations has medium likelihood and impact; (4) lack of coordination among different actors has medium likelihood and mild impact; and (5) corruption has very high likelihood and impact.

Zone C (Mombasa and Kwale Counties)

Zone C (Southern Zone – Kwale and Mombasa areas) – Mr Simon Losepicho presented the level of risk of key issues within this area.

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Environmental issues:
  (1) aquaculture production exceeding environmental carrying capacity has mild likelihood and impact; (2) escapes affecting biodiversity has medium likelihood and impact; (3) biodiversity losses due to aquaculture impacting mangroves has low likelihood but high impacts.

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• Socio-economic issues: (1) lack of knowledge has medium likelihood and high impact; (2) political interference has very high likelihood and mild impact; (3) land use conflict can serve as a hindrance to aquaculture and has high likelihood and impact.
Governance issues

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- Governance issues:
  1. duplication of donor effort has high likelihood but mild impact;
  2. conflicting policies has high likelihood and medium impact;
  3. poor leadership (which leads to poor management) has high likelihood and high impact, as political interference will lead to biodiversity loss due to mariculture.

Group session 4: development of an EAA management plan for an aquaculture management area and ensuring its implementation, monitoring and evaluation

95. Ms Soto introduced the development of a management plan module in the ecosystem approach to aquaculture, the first step of which is to define a broad objective. The appropriate steps of developing such a management plan are:
   - prioritization of issues (done in the previous session);
   - consolidation of issues finding the root cause(s);
   - defining operational objectives (practical objectives to address the issues);
   - identification of management options to address the highest risk issues and agreement on those most suitable;
   - preparation of the final plan;
   - initiate implementation; and
   - monitoring and implementation.

96. Ms Soto underscored the importance of “selecting appropriate indicators and performance measures” for the monitoring of implementation. This is essential to monitor the success of the management plan in meeting each of the objectives. Therefore, across the aquaculture activity, a combination of ecological, social, economic and institutional indicators may be needed. As for the indicators, it was mentioned that both quantitative and qualitative can be appropriate. Indicators can be directly measured (e.g. number of cages, annual production), estimated using a model (e.g. nutrient output, sediment impact), measured indirectly (such as feed delivered to an aquaculture zone), or even just inferred (e.g. social conflict as an indicator, or local attitudes to management).

97. Another important aspect of a management plan includes the “carrying capacity estimation”, which represents the extent of nutrient discharge or other wastes to the receiving waterbody, which may lead to a deterioration in the ecosystem structure (biodiversity), and the supply of ecosystem services (food, clean water, waste assimilation, etc.). Estimating the carrying capacity requires an understanding and assessment of environmental capacity, which is dependent on society’s wishes and needs. If carrying capacity can be estimated, then strategic precautionary limits might be placed on aquaculture and other activities to ensure that standards are not breached.
98. Ms Soto invited the different groups to develop their management plans for their respective zones, which can be used as input in their own individual work after the training. She asked the groups to generate an operational plan by going through the full set of management measures to determine:

- What are the specific activities that need to be completed?
- Who are the actual persons/institutions that will be responsible for executing these activities?
- How is this going to be done – whether there are really enough resources (both people and financial) to execute each of the tasks?

99. Therefore, Ms Soto asked the groups to ensure that their operational plan included details on the timing, resources, institutions and stakeholders that need to work together. It must also consider the practicality or feasibility of the proposed management arrangements, as well as the need for scheduling activities and responsibilities with clear milestones. The three groups therefore worked on the following tasks:

(i) defining the operational objectives;
(ii) describing the management measures;
(iii) identifying who is responsible for leading;
(iv) describing the resources needed;
(v) drafting a timeline; and
(vi) defining indicators and targets.

100. Following Ms Soto’s introductory presentation, the groups developed their management plan, addressing their highest risk issues (see, for example, Table 1). The subsequent group debates benefited from inputs from the FAO technical team that clarified doubts and addressed some aspects of the proposed plan and measures; thereafter Ms Soto went through some of the elements of the plan, seeking more clarification from the group and proposing some amendments. For example, regarding addressing impacts on biodiversity, Ms Soto stated that the act of measuring biodiversity loss (as in the example in Table 1) could be technically cumbersome and could be costly, and thus it would be more practical to measure the reduction on the use of larvae in the wild (measuring the driver). She also explained that there is no way to ensure that there will not be any new invasive species (when using new exotic species in aquaculture). Ms Soto suggested, rather, that there should be the prevention of the farming of invasive farming, and that new invasive species could no longer be allowed if that is the agreed decision.

101. Furthermore, Ms Doris Soto stressed that a real plan should provide the destination of required funds, and that preferably the responsible institutions should not be development agencies or donors, but the government at the national or local level and/or the involved national stakeholder organizations. Ms Soto highlighted that there must be a separate line for different management measures; namely, it should be clear that the target needs are related to management measures.
Ms Soto explained that operational objective number 3 (as in the example in Table 1 below) should have one indicator to ascertain if there is any damage to biodiversity (to measure if there has been any impact on the ground).

102. Finally, the question of whether there is an initial baseline analysis done on the selected areas was discussed. Also, it was re-emphasised that there needs to be an indicator that is directly related to the operational objective. Additionally, it was stressed that the management measures should also include establishment of feed formulation and/or training of farmers because the one provided is for large commercial areas and cannot be applied to small farmers. Ms Soto explained that under management measures, it is useful to include discussions and agreements about who owns the land, as some of this ownership could be beneficial to local communities. She also stated that the strengthening of community organizations would be difficult to measure (whether or not it is “vibrant”; see the example in Table 1). Thus, Ms Soto suggested that the number of communities trained and the number of meetings held could serve as the indicator instead.
<table>
<thead>
<tr>
<th>Issue</th>
<th>Operational objective</th>
<th>Management measures</th>
<th>Target</th>
<th>Dates</th>
<th>Indicators</th>
<th>Resources</th>
<th>Responsible institutions</th>
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<tr>
<td>(1) Lack of knowledge</td>
<td>To increase aquaculture knowledge of the local community by 30% in 2 years</td>
<td>Training the community; group leaders; Sensitization</td>
<td>Community; group leaders; members; women and youth; 30% of community groups</td>
<td>2 years (by 2017): Year 1 = 100 people trained; Year 2 = 150 people trained.</td>
<td>Number of people trained Workshops; people sensitized/brochures produced/banners/meetings held</td>
<td>Year 1 = US$1 million Year 2 = US$1.5 million</td>
<td>SDF; county government; BGI; CDF; KDP; development partners</td>
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<tr>
<td>(2) Land use conflict rise</td>
<td>To reduce land use conflict by 50% in 2 years (by 2017)</td>
<td>Community sensitization; reconciliation meetings</td>
<td>All land users; resource users (fishers/BMUs, hoteliers, fisheries department)</td>
<td>By 2017: Year 1 = 20% of cases resolved; Year 2 = 30% of cases resolved</td>
<td>No. of people sensitized; no. of sensitization workshops; no. of reconciliation meetings; no. of conflicts resolved</td>
<td>US$1.5 million in 2 years</td>
<td>SDF; county government; community leaders; provincial administration; Ministry of Land; land commission; BMUs; CFAs</td>
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<tr>
<td>(3) Biodiversity loss due to larvae harvesting</td>
<td>To reduce biodiversity loss by 50% in 5 years</td>
<td>Hatchery production of larvae</td>
<td>50% larvae production from hatcheries</td>
<td>By 2020 (5 years) 2 hatcheries</td>
<td>No. of hatcheries established for larvae production</td>
<td>1 unit by 2017 (US$15 million); 1 unit by 2020 (US$15 million)</td>
<td>KMFRI; SDF; BGI; NEMA; PPP; county government</td>
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<tr>
<td>(4) Invasive species</td>
<td>To prevent incidences of invasive species</td>
<td>Ensure non-introduction of new aquaculture species</td>
<td>100% compliance</td>
<td>By 2017</td>
<td>Incidence of invasive species</td>
<td>US$1 million annually for 2 years (until 2017)</td>
<td>SDF; KMFRI; VET; NEMA; BMUs</td>
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<tr>
<td>(5) Poor leadership management</td>
<td>To improve group leadership by 50% by 2017</td>
<td>Capacity building on group leadership</td>
<td>50% of the group leaders</td>
<td>By 2017</td>
<td>Number of leaders trained</td>
<td>US$1.5 million per year for 2 years</td>
<td>SDF; CDA; YCDP; BGI</td>
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<tr>
<td>(6) Lack of management plans</td>
<td>To develop an aquaculture management plan by 2017</td>
<td>Develop an aquaculture management plan</td>
<td>A management plan</td>
<td>By 2017</td>
<td>One aquaculture management plan by 2017</td>
<td>US$10 million Year 1 = $5 million; Year 2 = $5 million</td>
<td>BGI; DCKP; SDF; CBOs; KMFRI; KCDP; KWS; KFS; BMUs; academic institutions</td>
</tr>
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Conflict management: introduction, defining resource use conflicts and resolution framework

103. Mr John Ngatia began the session by discussing conflict, focusing on dispute resolution and conflict management in the context of mariculture and natural resources, as well as the drivers of conflict in reference to natural resources management.

104. Conflict in natural resources management occurs when natural resources (land, water, forests, minerals, oil and fisheries) are important sources of livelihoods, income, influence for countries and communities around the globe. When such natural resources are poorly managed or inequitably shared, or business operations are implemented without consideration for communities, this can contribute to tensions that can escalate into violent conflict or exacerbate pre-existing conflict dynamics. Natural resources conflicts are disagreements or disputes over access, control or use of natural resources. These are multidimensional and involve complex interactions between many different individuals.

105. Population growth and environmental degradation are intensifying competition over already scarce resources, while climate change threatens to further increase competition. For example, a participant from the Tana River group explained that conflict can occur due to scarcity, and also due to an overabundance of natural resources, as there will be increased interest in the ownership of the resources. As the population continues to grow and environmental/social/political/economic conditions evolve, competition for coastal resources increases, resulting in situations of conflict that pit individuals against each other.

106. Conflict is disagreement due to different interests, as conflict is a relationship involving two or more parties that have actual or perceived differences in needs, interests and goals. Conflict occurs when two or more people have, or perceive themselves as having, incompatible interests, express hostile attitudes and pursue interests through actions that are damaging to other parties.

107. Conflict resolution is a process where two or more conflicting parties amicably resolve their differences. It is concerned with resolving the underlying issues and not just the problem at hand. Conflict resolution is subsequent to the conflict having happened.

108. Conflict management is the practice of identifying and handling conflicts in a manner that prevents the situation from getting out of control and escalating into violence. Conflict settlement seeks to end a conflict through an agreement among the conflicting parties, without necessarily addressing the underlying conflict causes. Conflict transformation focuses on long-term efforts oriented towards producing outcomes, processes and structural changes. It promotes conditions that can help to create cooperative relationships. Conflict has three elements: the problem, people and process.

(i) Problem – substantive issues: bottom-line issues; the content of the problem; “root causes”. It involves differences in resource use and divergent interest or needs; non-conforming data, standards and rules.

(ii) People – relationship issues: emotional dimension; it is about how people think and relate to conflict, feelings, emotions of the problem, and how these relate to one another and natural resources in securing livelihoods. Involves status, prestige, power and influence; likes and dislikes; distorted perceptions and negative attitudes towards other conflict parties.

(iii) Process – procedural issues: ways decisions are made; how people feel about the way decisions are made. Involves consultation, planning, coordination and information-sharing.
In terms of how to deal with conflict issues, some indicative options are:

- **People issues** – demonstrate interest, empathy, understanding and acknowledgement, which influences perceptions and emotions positively by matching the ways people want to be treated and feel about themselves.
- **Problem** – provide tangible, measurable outcomes based on objective indicators.
- **Process issues** – use the preferred process, create forum and participatory opportunities to think through issues and make decisions.

As already introduced, the drivers/causes for natural resources management conflicts can include:

- Growing competition over natural resources (demographic changes, market pressure, environmental changes); structural changes (institutional organization and mandates); socio-economic changes (introduction of new technologies; and economic development both exerting pressure on natural resources).
- Natural resources management policies, programmes and projects – policies imposed without local participation; poor stakeholder identification/consultations; uncoordinated planning; inadequate or poor information-sharing; limited institutional capacities; inadequate monitoring and evaluation of programmes; and lack of effective mechanisms.

Resulting from their joint work, Group A explained and exemplified that sources and drivers of conflict include land use, benefit-sharing, ownership of the project and water sources ethnicity.

The barriers to conflict resolution include politics, ethnicity, religious differences, gender issues and traditional customs, communication/language barrier and rich versus poor. These barriers are in reference to interests regarding the siting/zoning, which can act as a hindrance to the projects.

The opportunities for conflict resolutions include desire for peace by community, desire for development projects, legal framework (i.e. river delta land-use plan), administrative boundaries and land-sharing as part of a plan for conflict resolution.

Similarly, Group B (Kilifi group) explained that the sources and drivers of conflict include:

(i) site ownership of land (forest, fisheries); (ii) changes in livelihood; (iii) interpretation of legislation mandate; (iv) interest in the resource users; (v) institutional rivalry; and (vi) different priorities among community groups.

The discussed barriers to conflict resolution include: (i) wrong institutional application and interpretation of the law; (ii) non-participatory approval; (iii) lack of legal framework defining participation; and (iv) lack of people centred development agenda.

The stated opportunities for conflict resolutions include: (i) existence of CBOs; (ii) devolved government structures; (iii) advocacy groups (civil rights groups); (iv) community participation; (v) the ongoing reforms in institutions by land ministry; and (vi) increase in community enlightenment (public awareness).

Group C (Kwale and Mombasa counties) explained the sources and drivers of conflict, which include:

(i) building of shades for drying seaweeds (land-use conflict), serves as a potential conflict space of drying during construction, and also the availability of sufficient space after construction.

The emphasized barriers to conflict resolution include lack of information-sharing; lack of cooperation between farmers; farmers varying interests; lack of sensitization; and poor planning of the donor who planned to build the shade.

The highlighted opportunities for conflict resolution include information-sharing; acknowledging the conflict; transparency and accountability; and involvement of all members in implementation.
A participatory and negotiated approach to conflict resolution

114. Mr Joseph Matere, Head of Geographic Information System and Knowledge Management of the FAO Kenya Representation, presented “BGI in Kenya Spatial Analysis of Conflict Hotspots in the Coast Region”. He outlined the following – spatial mapping of conflict; main causes of conflict; conflict index in the coast region; key resources in the coast region; migration induced conflicts; politically triggered conflicts; approach to conflict mapping analysis – and engaged participants in group work. The group work was designed to obtain participants’ perception of conflicts in the region under four thematic areas: fisheries-based conflicts, land-based conflicts, pasture-based conflicts and water-based conflicts.

115. Mr Matere stated that the coast region’s main causes of conflict are: political issues, which account for 30 percent of reported conflicts, followed by security-related reasons (22 percent), social-cultural reasons (19.6 percent), economic (16 percent), justice-related (8.8 percent) and environmental degradation (4.4 percent).

116. Mr Matere explained that in the BGI, conflict mapping is covered under activity 1.3.1: Identify and map potential hotspot conflict areas for natural resources (land, water, pasture, fisheries); and activity 1.3.2: Identify key stakeholders (including relevant institutions) involved in the conflict management for natural resources in the coastal zone.

117. The previous baseline survey conducted by the Constitution and Reform Education Consortium (CRECO), before the last general election, indicated that the highest conflict prevalence areas were: (i) Mombasa at 16.5 percent; (ii) Kwale 16.5 percent; (iii) Kilifi 15 percent; (iv) Tana River 15.5 percent; and (v) Lamu 13 percent. However, this is no longer the case, as Lamu County has experienced enhanced insecurity within the past six months.

118. Mr Matere presented compiled thematic maps of fisheries resources for the target counties:
   - Kwale County resource map depicted turtle nesting points, fish landing sites, hotel sites, shoreline types, priority coral areas, land use types, and mangroves. These will assist in conducting suitability analysis for the fisheries and environmental groups located in Kwale to ensure the integration of the expansion activities within the wider ecosystem, such that it promotes sustainable development, equity and resilience of interlinked social-ecological systems.
   - Mombasa County resource map depicted turtle nesting, fish landing sites, hotels, shoreline types’ land use, mangrove areas, priority coral sites and marine park areas, in addition to socio-economic resources.
   - Kilifi County resource map depicted turtle nesting, fish landing sites, hotels, shoreline types’ land use, mangrove areas, priority coral sites, marine park area and salt works, in addition to socio-economic resources.
   - Tana River County resource map depicted turtle nesting, fish landing sites, hotels, shoreline types’ land use, mangrove areas, priority coral sites, marine park areas, salt works and tidal flats, in addition to socio-economic resources.

119. The maps were designed to enable participants to visualize the possible linkage between groups in their locality when implementing the ecosystem approach and executing the participatory mapping of conflicts in their counties.

120. Mr Matere focused on resource-based conflicts that have been reported in the coast region, with specific reference to pasture. He displayed results obtained from the Kenya Food Security Steering Group assessment, which indicated widespread migration of livestock from the north-eastern parts of Kenya to the coast region, especially the Kwale and Tana Delta regions. Pastoralists do not have a transhumance protocol to ease their movement, resulting in overgrazing in the delta with
resultant land degradation and destruction of the fragile ecosystem that is contrary to the ecosystem approach.

121. The 2012/2013 conflicts between the agriculturalist Pokomo and pastoralist Orma tribes were triggered by politics. This conflict escalated to land use, where each group armed its youth for retaliatory attacks. These conflicts resulted in displacement of large populations into refugee camps with resultant pressure on settled area ecosystem services.

122. The presentation indicated that the conceptual framework for mapping conflicts in the coast region would be based on the following schematic diagram (Figure 2).

![Figure 2: Conceptual framework for mapping conflicts in the coastal region](image)

123. A follow up to the Blue Growth Initiative in the Kenya TCP entitled “Ecosystem Services and Biodiversity for Food and Nutrition Security through Fisheries and Aquaculture” was undertaken by a study on potential development of marine aquaculture realized in April 2015. As part of the follow-up, several groups were visited and provided with technical support for the intensification of production within an ecosystem approach. The GIS team, in compiling the resource inventory for the target counties, will georeference listed groups in addition to a matrix recommended by directors of fisheries. The spatial expansion potential of selected groups within the ecosystem approach will be executed using the multi-criteria evaluation (MCE) analysis approach, which will provide weights depending on the economic activity within the area. These maps will provide a baseline for production intensification in the context of ecosystem functions and services, improve the well-being and equity of group members, and embrace intensification in the context of other sector goals and policies. This will minimize conflicts in the coast region and promote the ecosystem approach for all livelihoods.

124. A suggested practical approach was that mapping the site would help, as the idea is to mitigate conflict within the ecosystem approach to aquaculture. Therefore, whatever the overall objective is, the
intention is to do what is possible without causing too much conflict. Thus, there is a need to think of the best way to suggest how to expand the site with minimal conflict, including conflicts arising from inhabitants being relocated and having to live off new lands, which may cause environmental degradation. In conclusion, a Ugandan participant explained that in Uganda there is no consideration of what already exists within the neighbourhood of the selected areas. Thus, there is a need to find which areas are most suitable, before various institutions can be advised on what to do next regarding the matter.

Conclusions and the way forward

Recap, feedback and concluding discussions

125. Recapitulating the key aspects of the training, Mr Joseph Matere explained that feedback is needed in order to use the available budget in the best way to map the four groups with high potential for mariculture production intensification. In order to avoid bias, participants recommended use of an objective evaluation matrix to be completed by a team consisting of the directors of fisheries, KFS and a local NGO involved in mariculture production. Key evaluation issues included:

- Group registration with national or county government social services;
- Group membership dynamics (registered versus active members/gender dynamics):
  - potential value of in-kind contribution;
  - resource focus areas;
  - current production levels (kg)/resource coverage (area in acres);
  - future production targets (area in acres); and
  - current challenges.

126. In answering some of these questions, the group agreed that mariculture is a tedious activity, so greater efforts need to be made to call for members to take part in such an activity. The members who participate should sign up to demonstrate their involvement by way of registration (which requires payment). Registration is more relevant, as it shows commitment; members will be more keen to follow up because they paid for it. In terms of production, the levels will be measured in kilograms, and will highlight the dedication of members.

127. Regarding who would conduct the evaluation, it should not be left only to the directors; nor can it be left to youth group leaders, as they have a conflict of interest. Rather, people who are neutral should be given this responsibility, as they have no interests that will hamper the process. This could include the directors of fisheries, ecosystem coordinators and KMFRI. This responsibility ensures that the evaluating individual is held accountable.

128. Ms Ana Menezes recapitulated the event, highlighting that BGI is a flagship programme of FAO, which aims to support more productive, responsible, sustainable fisheries and aquaculture sectors (done by improving the governance, management of aquatic ecosystems; conservation of biodiversity, habitats; empowering communities (especially vulnerable communities engaged in small-scale production) to act as resource users and resource stewards). In addition, she emphasized that the project is focused on the ecosystem and on the support to food security and livelihoods that tackle all integrated sites (fishers, aquaculture and land tenure, forests, mangroves, and any other form regarding livelihoods).

129. Ms Menezes reiterated the need to formulate a doable working plan for the next six months, as the necessary resources, activities, financial resources, human capacity and future goals are all available. How to go about creating and implementing the work plan is the most urgent immediate task of the stakeholders. If/ in order to be practical, the fisheries county directors and FAO Kenya colleagues under her supervision would have to formulate and implement plans for where the project would be located in the future. They would take into account the field assessments (presented on July 27), where
actions were already identified. Ms Menezes explained that the project should be very focused, start small but think large for the near future; she appealed to county directors to respect the boundaries and targets set by both projects and to refrain from expanding to the whole coast, as it would result in doing little interventions and a waste of resources.

130. The best management practices would be developed insofar as there is time, so while collecting information there would be some aspects that are not as important as others (due to prioritization), which would be determined based on stakeholders’ participation and suggestions.

131. Ms Menezes appealed to county directors to own the project and initiate discussions with stakeholders to enable feedback that would result in the successful implementation of the BGI.

132. A participant requested Ms Menezes to explain the criteria that would be used to identify and allocate beneficiaries for cages and fish ponds. She explained that this would be based on an objective assessment, which would evaluate the following attributes: potential for mariculture production, business potential, local input in starting the initiative and an ecosystem approach to aquaculture.

Closing remarks

133. Alongside the county director of fisheries (Tana River), Ms Menezes presented closing remarks by describing the way forward for the subsequent six months. The county director of fisheries for Tana River explained his experiences of the launch, acknowledging that the speeches given were enlightening and thanked FAO for its involvement. During the launch of BGI, the group gained clarity on the topic, as it was thoroughly explained during speeches by trainers, and can now communicate the information gained to colleagues and beneficiaries. The information and knowledge acquired at the workshop will provide better livelihoods, incomes and conserve biodiversity and peace within communities. The EAA process may not be new to all, but there is a need for an ecological approach while still conserving the environment.

134. The Mombasa County Director representative, Mr Simon Rosipito, expressed gratitude for introducing this initiative and the acquired knowledge on the subject and the process. He raised the issue that the county would want to know the number of cages provided, more specifically if there would be a certain number for the whole county or for each individual site. The Kilifi County Director, Mr Mwangi, stressed that a lot of knowledge was acquired that week and that it was a great learning experience. Mr Mwangi explained that Kilifi County focuses on mariculture and that though the practice is not new, the concept of ecosystem approach is new. Mr Mwangi stated that the focus for the project is the outcome, and more specifically the need to acquire a resource map. Mr Martin, representing Kwale and Mombasa Counties, explained that the future of fisheries relies on aquaculture. Moreover, as it relies on women, emphasis should be placed on the need to increase the current number of women within the field of aquaculture and mariculture.

135. Ms Mbaru from CAST gave a vote of thanks on behalf of all participants and expressed her gratitude for this event, but stressed that because she works with communities, her concern with communities is that women have a lot of other responsibilities both in and out of the house; thus it may be difficult for women to actively participate in this initiative unless affirmative action is taken to ensure that they are mainstreamed in the BGI project.

136. Ms Ana Menezes represented the FAO Representative in Kenya in delivering closing remarks for the BGI workshop. She expressed her gratitude to all participants for having taken time off from their busy schedules to attend the workshop. She lauded the enthusiasm displayed during the week of capacity building. She emphasized that the BGI will mainstream both women and youth in all activities. She appealed to all participants to own the BGI to ensure impact on food security at the household level through mariculture production intensification.
## ANNEX 1

### DAY 1 – 27 JULY 2015

#### LAUNCHING OF THE BLUE GROWTH INITIATIVE AND INCEPTION WORKSHOP

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair/Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 08:30</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>08:30 – 08:45</td>
<td>Self-introduction of participants/expectations</td>
<td>Chair – NPC Nyonje</td>
</tr>
<tr>
<td>08:45 – 09:30</td>
<td>Opening remarks:</td>
<td>FAO Representative (FAOR – Alinovi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Principal Secretary, State Department of Fisheries – Kenya (SDF – Ntiba)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minister of Fisheries from Mombasa, Kilifi, Kwale and Tana River (CEC Mombasa – Njaramba)</td>
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<tr>
<td></td>
<td></td>
<td>Cabinet Secretary, Ministry of Agriculture, Livestock and Fisheries – Kenya (CEC Kilifi – Menza)</td>
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<tr>
<td></td>
<td></td>
<td>– Keynote speech (CEC Tana River – Buketa, CEC, Kwale – Nyamasyo, CS – Adan)</td>
</tr>
<tr>
<td>09:30 – 10:00</td>
<td>Overview and discussion of the background, objectives and contents of the BGI in general and in particular the programme for BGI in Kenya</td>
<td>FAO LTO – Menezes</td>
</tr>
<tr>
<td>10:00 – 10:15</td>
<td>The BGI in Kenya: reaching across sectors from the implementation of the EAA</td>
<td>UNEP – Kumar</td>
</tr>
<tr>
<td>10:30 – 11:00</td>
<td>Group photo and coffee break</td>
<td></td>
</tr>
<tr>
<td>11:00 – 11:30</td>
<td>Introduction to the “Ecosystem approach to watershed and coastal resource use” and its role and potential in the face of external forcing factors, e.g. climate change, competing sectors</td>
<td>FAO -Soto</td>
</tr>
<tr>
<td>11:30 – 12:00</td>
<td>Presentation of field assessments on mariculture, fish value chains and natural resources mapping</td>
<td>Menezes</td>
</tr>
<tr>
<td>12:00 – 13:00</td>
<td>Questions and answers and open discussion</td>
<td>Chair</td>
</tr>
<tr>
<td>13:00 – 14:00</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>14:00 – 15:00</td>
<td>Kenya Coastal Development Project – Achievements</td>
<td>Uku – Coordinator KCDP</td>
</tr>
<tr>
<td>15:00 – 15:30</td>
<td>The Blue Economy as a new paradigm for sustained economic growth in the Western Indian Ocean Region</td>
<td>Waruinge – UNEP</td>
</tr>
<tr>
<td>15:30 – 15:45</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>15:45 – 17:00</td>
<td>Discussion of the project objectives, output, activities and work plan – the way forward</td>
<td>Chair</td>
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</tbody>
</table>

### DAY 2 – 28 JULY 2015

#### TRAINING ON THE ECOSYSTEM APPROACH TO AQUACULTURE (EAA)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair/Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 08:30</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>08:30 – 09:00</td>
<td>Overview of the background, objectives and contents of the workshop</td>
<td>Session Chair: TBD</td>
</tr>
<tr>
<td>09:00 – 10:00</td>
<td>Ecosystem approach to aquaculture (EAA) and how this links to EIA, SEIA, risk analysis (RA), BMPs, etc; and its role and potential in the face of external forcing factors, e.g. climate change, competing sectors, etc.</td>
<td>Soto</td>
</tr>
<tr>
<td>10:00 – 10:30</td>
<td>Group photo and coffee break</td>
<td></td>
</tr>
<tr>
<td>10:30 – 11:00</td>
<td>Questions and answers and open discussion</td>
<td>Chair</td>
</tr>
<tr>
<td>11:00 – 13:00</td>
<td>Implementing the EAA practical training by working groups</td>
<td>Soto</td>
</tr>
<tr>
<td></td>
<td>1) Scoping and identification of stakeholders</td>
<td></td>
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<tr>
<td></td>
<td>Presentation (FAO) followed by exercise with working groups</td>
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</tr>
<tr>
<td></td>
<td>a) government institutions;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) aquaculture farmers and representatives of the sector; and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) civil society (tourism industry, civil society organizations, fisheries)</td>
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<tr>
<td></td>
<td>Through the scoping, the groups will attempt to select an area to focus the exercise and the development of a management plan</td>
<td></td>
</tr>
<tr>
<td>13:00 – 14:00</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>14:00 – 15:45</td>
<td>Reporting by working groups</td>
<td>Chair</td>
</tr>
<tr>
<td>15:45 – 16:00</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>16:00 – 17:30</td>
<td>2) Identification of issues (environmental, socio-economic and governance – the latter includes external forcing factors such as climate change)</td>
<td>Soto</td>
</tr>
<tr>
<td></td>
<td>Presentation followed by exercise with working groups</td>
<td>(three working groups: environmental, socio-economic and governance)</td>
</tr>
</tbody>
</table>
### DAY 3 – 29 JULY 2015

**TRAINING ON THE ECOSYSTEM APPROACH TO AQUACULTURE (EAA) (CONT.)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair/Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:30</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>08:30–9:00</td>
<td>Reporting by working groups</td>
<td></td>
</tr>
<tr>
<td>09:00–10:00</td>
<td><strong>3) Prioritization of issues by risk assessment</strong>&lt;br&gt;- Presentation (FAO)&lt;br&gt;- Exercise with working groups (three working groups: environmental, socio-economic and governance)</td>
<td>Session Chair: TBD</td>
</tr>
<tr>
<td>10:00–10:30</td>
<td><strong>Coffee break</strong></td>
<td></td>
</tr>
<tr>
<td>10:30–11:00</td>
<td>Brief reporting by groups</td>
<td>Chair</td>
</tr>
<tr>
<td>11:00–12:30</td>
<td><strong>4) Development of an EAA management plan for an aquaculture management area (AMA)</strong>&lt;br&gt;- Presentation (FAO) with examples of management measures regarding, for example, integration of aquaculture with other sectors&lt;br&gt;- Exercise with working groups (three working groups: environmental, socio-economic and governance)</td>
<td>Soto and Menezes</td>
</tr>
<tr>
<td>12:30–13:00</td>
<td>Brief reporting by groups</td>
<td>Chair</td>
</tr>
<tr>
<td><strong>13:00–14:00</strong></td>
<td><strong>Lunch break</strong></td>
<td></td>
</tr>
<tr>
<td>14:00–14:30</td>
<td><strong>5) Implementing the plan, monitoring and evaluation</strong>&lt;br&gt;- Presentation (FAO)&lt;br&gt;- Open discussion</td>
<td>Session Chair: TBD</td>
</tr>
<tr>
<td>14:30–16:00</td>
<td>Developing a road map for implementing EAA in Kenya aquaculture&lt;br&gt;- Presentation (FAO)&lt;br&gt;- Exercise with working groups (three working groups: main obstacles, opportunities, and the role of the EAA and aquaculture management areas (AMAs) in national aquaculture strategy)</td>
<td>Chair</td>
</tr>
<tr>
<td><strong>16:00–16:15</strong></td>
<td><strong>Coffee break</strong></td>
<td></td>
</tr>
<tr>
<td>16:15–16:45</td>
<td>Reporting by groups</td>
<td>Chair</td>
</tr>
<tr>
<td>16:45–17:30</td>
<td>General discussion and recommendations in relation to the national aquaculture strategy</td>
<td>Chair</td>
</tr>
</tbody>
</table>

### DAY 4 – 30 JULY 2015

**TRAINING ON DISPUTE RESOLUTION AND CONFLICT MANAGEMENT**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair/Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:30</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>08:30–08:45</td>
<td>Conflict management: introduction, defining resource use conflicts and resolution framework</td>
<td>Session Chair: TBD Ngatia</td>
</tr>
<tr>
<td>08:45–09:15</td>
<td>Presentation of spatial analysis of conflict hotspots on the coast</td>
<td>Matere</td>
</tr>
<tr>
<td>09:15–10:00</td>
<td>Group work on: identification of sources/drivers/barriers related to resource use conflicts and opportunities for resolution</td>
<td>Chair</td>
</tr>
<tr>
<td><strong>10:00–10:30</strong></td>
<td><strong>Coffee break</strong></td>
<td></td>
</tr>
<tr>
<td>10:30–11:15</td>
<td>Brief reporting by groups</td>
<td>Chair</td>
</tr>
<tr>
<td>11:15–11:45</td>
<td>Collaborative conflict management approach for NRM</td>
<td>Ngatia</td>
</tr>
<tr>
<td>11:45–12:30</td>
<td>A participatory and negotiated approach to conflict resolution</td>
<td>Carranza</td>
</tr>
<tr>
<td>12:30–13:00</td>
<td>Open discussion</td>
<td>Chair</td>
</tr>
<tr>
<td><strong>13:00–14:00</strong></td>
<td><strong>Lunch break</strong></td>
<td></td>
</tr>
<tr>
<td>14:00–14:30</td>
<td>Strategies for finding solutions – approaches to conflict resolution: instruments for building dialogue, traditional systems, negotiation, mediation, arbitration and courts</td>
<td>Carranza, Ngatia and Kisoyan</td>
</tr>
<tr>
<td>14:30–15:30</td>
<td>Group work on: developing framework for resource conflict in coastal region</td>
<td>Chair</td>
</tr>
<tr>
<td>15:30–14:30</td>
<td>Reporting by groups and plenary discussions</td>
<td>Chair</td>
</tr>
<tr>
<td><strong>16:30–17:00</strong></td>
<td><strong>Coffee break and wrap up</strong></td>
<td></td>
</tr>
</tbody>
</table>
# DAY 5 – 31 JULY 2015
## WRAP UP AND THE WAY FORWARD

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter/Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00-08:30</td>
<td>Registration</td>
<td></td>
</tr>
<tr>
<td>08:30-09:00</td>
<td>Recap and feedback</td>
<td>Chair</td>
</tr>
<tr>
<td>09:00-10:00</td>
<td>Remarks from counties and other stakeholders</td>
<td>Chair</td>
</tr>
<tr>
<td>10:00-10:30</td>
<td>Coffee break</td>
<td>Menezes and Nyonje</td>
</tr>
<tr>
<td>10:30-11:30</td>
<td>Way forward</td>
<td></td>
</tr>
<tr>
<td>11:30-12:30</td>
<td>Closing</td>
<td>AFAO KE – Allport</td>
</tr>
<tr>
<td>12:30-14:00</td>
<td>Lunch and departure</td>
<td></td>
</tr>
</tbody>
</table>
## List of Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Organization</th>
<th>County</th>
<th>Telephone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mohammed Adan</td>
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<tr>
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<tr>
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<tr>
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<td>DoF</td>
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The Blue Growth Initiative (BGI) is an FAO flagship initiative that aims at supporting more productive, responsible and sustainable fisheries and aquaculture sectors by improving the governance and management of the aquatic ecosystems, conservation of biodiversity and habitats, and empowering communities.

Under the BGI umbrella, FAO, in collaboration with the Government of Kenya, is implementing two projects for the coast of Kenya. The objectives of these initiatives are to: (i) increase knowledge of water basin to coral reef ecosystem services supporting food, nutrition and livelihood security; (ii) identify the drivers of ecosystem services deterioration as well as the management options to improve them; and (iii) foster investment in coastal sustainable mariculture and promote its development under the ecosystem approach to aquaculture (EAA).

This report describes the activities and outcomes of a workshop that took place in Mombasa, Kenya, from 27 to 31 July 2015. Objectives of the event were to: (i) launch the BGI in the country; and (ii) conduct a training session on the implementation of the EAA for the sustainable development of mariculture in Kenya by considering integration with other users of the coastal zones, such as tourism, fisheries and agriculture.

The launching of the BGI had the active participation of high level country authorities and wide representation of stakeholders involved in coastal zone and watershed activities, including representatives of the different coastal districts. The initiative was well received and created significant expectation and willingness to be involved as a move forward to sustainable use of aquatic resources with the support of the BGI.

The second and third day of the weeklong workshop focused on a training module on the EAA, mixing lectures by the FAO technical team with extensive group “hands-on” work sessions and presentations. The subsequent parts of this report summarize the discussions following the implementation steps (scoping and identification of stakeholders, identification of issues, prioritization of issues using risk assessment, development of an EAA management plan, implementing the plan, monitoring and evaluation), followed by the development of the road map for implementing EAA in Kenya’s aquaculture sector. The fifth day of the workshop was dedicated to training on conflict resolution and negotiation regarding use of space for aquaculture and other activities along the coastal zone.

The four days of training activities were received with great interest and a high level of involvement. Participants especially enjoyed the hands-on experience of designing management plans for mariculture under the EAA for different coastal areas of Kenya. The experience and lessons learned can be applied to the mariculture strategy.