Food and Agriculture Organization of the United Nations

Report from the FAO regional policy dialogue on ecosystem services from sustainable agriculture for biodiversity conservation

Nairobi, Kenya, 25-26 May 2016

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Food Landscapes Climate Biodiversity Water
Incentives for Ecosystem Services in Agriculture (IES)

ACP MEAs 2

The Nature Conservancy

World Agroforestry Centre

Executive Summary

On 25-26 May 2016, the Plant Production and Protection and Land and Water divisions of FAO Rome convened in Nairobi a Regional policy dialogue on ecosystem services from sustainable agriculture for biodiversity conservation.

The event brought together some 50 participants from government agencies, academia, NGOs and FAO country offices, with the overall goals to:

- Raise awareness on the key linkage between the conservation of agricultural ecosystem services and biodiversity, and the benefits that ensue from this for agricultural production; and
- Establish mechanisms for cross-sectoral coordination geared towards the formulation of policies that support ecosystem services and biodiversity in Kenya – and more broadly within countries of the East African Community.

The goals set were successfully met, and outcomes include:

- The participatory formulation of specific recommendations on how to mainstream specific ecosystem services in agriculture – from soils, water, pollination, ecological management of weeds and pests and indigenous local knowledge – into the Kenya National Biodiversity Strategy and Action Plan (NBSAP) that is currently undergoing revision.
- Liaising with the Ministries of Environment and Agriculture to ensure uptake of such policies recommendations into the revised NBSAP, and into other agricultural and environmental policies of relevance. FAO will support the national consultant that will be appointed to undertake the revision of the NBSAP, due in Q3 2016.
- The establishment of a cross-sectoral task force with the purpose of mainstreaming ecosystem services and biodiversity into agriculture, involving research and academia, NGOs and government agencies.

Acknowledgements

The **Ministry of Environment and Natural Resources** and **Ministry of Agriculture Livestock & Fisheries** of Kenya
for their interest in coming together to advance work on the key area of linking agricultural ecosystems and biodiversity.

Braulio Dias
Executive Secretary, Convention on Biological Diversity
for his engaging opening speech and participation to the first day of the event.

Robert Allport
Active Representative, FAO Kenya
for his savvy and engaging opening speech.

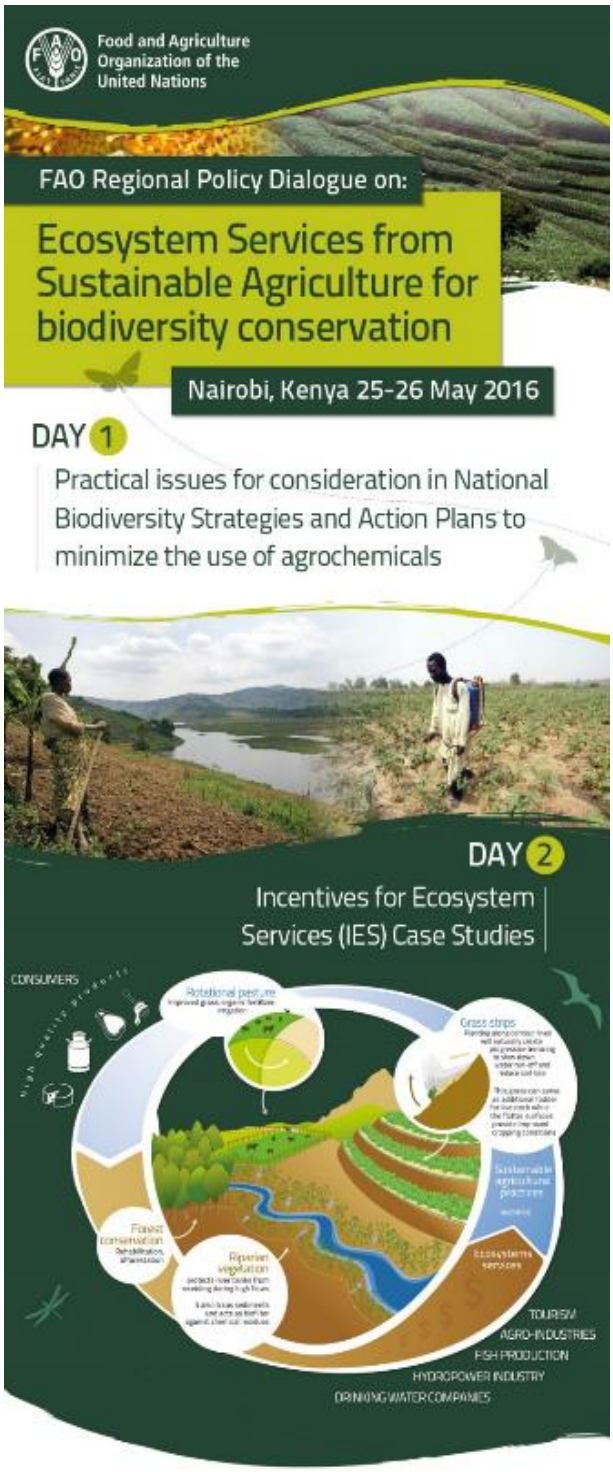
Barbara Gemmill-Herren
Consultant to FAO and ICRAF
for supporting this programme of work on agro-ecosystems services and biodiversity since the beginning.

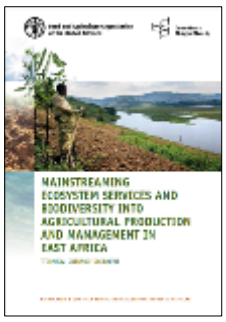
Philip Kisoyan
Natural Resources Manager Officer, FAO Kenya
for discussing options for organizing this event over several months and gathering an excellent audience.

Stella Simiyu Wattimah
Independent Biodiversity Consultant,
for facilitating the meeting and keeping participants engaged and focused.

Phyllis Obayo
Operations assistant, FAO Kenya
for all the support with the organization of the event.

Background





The Capacity-Building Related to Multilateral Environmental Agreements (MEAs) in ACP Countries – Phase 2 (ACP/MEAs 2) project[1] seeks to strengthen regional and national institutional capacity for the synergistic implementation of target MEA clusters (on chemicals/wastes and biodiversity). This is done by working with the Convention for Biological Diversity (CBD) Secretariat, to develop tools and guidance on integrating agriculture into NSBAPs and address selected Aichi targets (e.g. Targets 7, 13 and 14) that are key to the agricultural sector; and by building synergies with measures to eliminate the use of toxic chemicals in agricultural production systems.

The Incentives for Ecosystem Services from Agriculture (IES) programme[2] aims to improve institutional and technical conditions to develop, combine and scale-up public and private interventions towards a common objective. The project will facilitate the development of integrated packages of incentives for sustainable agriculture. To identify how to upscale these synergies, avoid overlap and potential barriers within policies, key policy-makers need to discuss solutions to create a suitable enabling environment for IES. This brings added value by enabling a forum to discuss how different institutions can collaborate to work towards shared objectives to implement landscape restoration and food security activities.

[1] http://capacity4dev.ec.europa.eu/acp-meas/minisite/food-and-agriculture-organization-united-nations-fao
[2] www.fao.org/in-action/incentives-for-ecosystem-services; www.fao.org/ecosystem-services-biodiversity/incentives/ies-step-by-step

Structure of the meeting

The *FAO regional policy dialogue on ecosystem services from sustainable agriculture for biodiversity conservation* was held at ICRAF's headquarters in Nairobi on 25 and 25 May. The event was organized jointly by the FAO Rome team working under the EU-funded project "Capacity Building related to Multilateral Environmental Agreements in African, Caribbean and Pacific (ACP) Countries Phase 2 (ACP/MEAs 2)" and the Incentives for Ecosystem Services from Agriculture (IES) programme also based at FAO Rome. Approximately 50 people attended over the two days, representing a wide range of stakeholders (agenda and list of participants in the annex)[3].

The first day of the event was organized by the Plant Production and Protection Division (AGP) and had the specific aim to bring together key stakeholders from the Ministry of Environment and Natural Resources, who are leading the revision of Kenya's National Biodiversity Strategy and Action Plan (NBSAP), the Ministry of Agriculture, as well as others from research and academia (e.g. Kenya Agriculture and Livestock Research Organization (KALRO); University of Nairobi; University of Eldoret). The final target was to discuss the relevance of ecosystem services and biodiversity in agricultural management practices, with the angle of harnessing the benefits of these to reduce the use of agrochemicals, and to facilitate discussions around the mainstreaming of this approach to agricultural production into the country's NBSAP that is due to be revised within 2016.

The second day was organized by AGL to discuss opportunities for cross-sectoral coordination of policies to promote ecosystem services from agriculture, to support the integration of these guidelines into agriculture and environmental programmes. The ultimate goal was to bring together key stakeholders for the ministries of Environment and Agriculture, and prepare suggestions and action points to mainstream ecosystem services and biodiversity in agriculture for uptake in Kenya's National Biodiversity Strategy and Action Plan (NBSAP) that is currently under revision.

At National level, the meeting resulted in the creation of a Kenyan taskforce to support a better integration of environmental concerns into development plans, and an agreement to develop the NBSAP as a set of documents that mainstream biodiversity and ecosystem services into specific policies and programmes. The taskforce will be instrumental in supporting this cross-sectoral work. FAO Kenya will convene the taskforce to agree on its own composition, Terms of Reference and work plan. The long-term goal is that this taskforce will evolve into a funding facility that supports the implementation of cross-sectorial work, bridging the gaps identified in the various programmes and policies that prevent work at the landscape level.

At Regional level, there were requests to increase regional exchange of technical guidelines to enhance ecosystem services from agriculture and experience with cross-sectoral dialogue required to implement an ecosystem approach to agriculture. FAO HQ will work with ICRAF to revive its previous network of regional partners with experience on this: Pro-poor Rewards for Environmental Services in Africa (PRESA) involving over 40 institutions in the region. This will also provide an active basis for the future Ecosystem Services Partnership (ESP) Africa network, which ICRAF expects to form with the participants to the ESP Africa meeting in November 2016.

[3] Participants were about 10 from FAO various offices, 20 from Government institutions (mostly from Agriculture and Environment), and 30 from national and international research institutions and NGOs; about 50% of the participants were female.

Objectives of the meeting

- Providing guidance to decision-makers on developing and implementing NBSAPs by
  - Highlighting the role of biodiversity and ES in agricultural production and how they help reducing agrochemicals use.
  - Presenting successful initiatives and best practices already in place in East Africa.
- Sharing regional experiences in ecosystem services assessment, barriers to adopting sustainable practices, and integrated approaches to support conservation and productivity improvement, including private sector engagement.
- Outlining policy recommendations to improve collaboration across sectors and coordination of public-private co-financing.

Overview of the workshop presentations and discussions

Day 1 – 25 May 2016

The meeting was opened by Robert Allport, FAO Kenya's acting Representative. He emphasized the relevance of the meeting towards achieving a sustainable approach to agriculture " that recognizes and rewards the vital role that other elements of the ecosystem – from broad water catchments to pollinators and earth worms – provide to both local agricultural systems and to other sectors of society, through reduced soil erosion, clean water, biodiversity protection and carbon sequestration." He also stressed how "the full economic benefits of such ecosystem services are rarely felt by the people providing them, on the contrary maintaining a healthy ecosystem can come at a significant cost".

Braulio Dias, Executive Secretary of the Convention on Biological Diversity, also joined the opening session. He highlighted the relevance of such an initiative in the broader framework of achieving and mainstreaming a sustainable ecological approach to agriculture, through the provision of better incentives and, equally important, removal of existing perverse incentives (e.g. instances where rural loans require a percentage of the loan to be invested in chemical inputs).

After the opening, the second session of the day focused on the technical aspects of managing ecosystems in agriculture. A number of presentations were given by the authors of chapters in the *FAO document Mainstreaming ecosystem services and biodiversity into agricultural production and management in East Africa* (www.fao.org/3/a-i5603e.pdf) that was recently published under project ACP/MEAs 2, to specifically support the workshop and the following NBSAP revision process.

The topics covered were:

1 An introduction to the ACP/MEAs 2 project, the FAO collaboration with UNEP under

this and the importance of the workshop in the context of the project:

Francesca Mancini (Plant Production and Protection Division, FAO) and Raphaelle Vignol (Division of Environmental Law and Conventions, UNEP) opened the presentations session with an overview of the EU-funded ACP/MEAs Phase 2 project.

This second phase of the project, which started in 2014, is coordinated by UNEP and has a subcomponent on agriculture which led by FAO. It targets African, Caribbean and Pacific (ACP) countries, and has the overall objective to improve national and regional capacities to implement Multilateral Environmental Agreements (MEAs) that focus on chemicals and waste (including the Basel, Rotterdam and Stockholm Conventions) and on biodiversity (the Convention on Biological Diversity).

The rationale behind this synergistic implementation of MEAs is that sound chemical, in particular pesticides, management is key to sustainable intensification of agriculture and the conservation of biodiversity. The Nairobi workshop is part of the effort to provide policy and technical support to sustainable agricultural approaches that reduce reliance on agrochemicals and provide alternatives for sustainable management. In particular, it is intended to support key stakeholders in Kenya from the Ministry of Agriculture and the Ministry of Environment and Natural Resources in the revision process of its National Biodiversity Strategy and Action Plan (NBSAP).

2 An overview of the NBSAPs and other MEAs, such as the Aichi Biodiversity Targets, the Rotterdam, Basel, Stockholm and Minamata Conventions, and their relevance to sustainable agriculture;

Barbara Gemmill-Herren (FAO/ICRAF) outlined past and current experiences with NBSAPs and their role in biodiversity and ecosystems conservation. In the broader context of the Convention on Biological Diversity – a national framework for action on biodiversity conservation and sustainable and equitable use of natural resources – an NBSAP is a process by which countries can plan to address the threats to their biodiversity, by making sure that the action identified for this purpose are mainstreamed into policy instruments and activities of all the sectors whose activities can have an impact on biodiversity. NBSAPs have no standard format, and the CBD suggests that these should in fact be "living documents", comprising multiple elements such as laws, scientific research agenda, projects, awareness raising activities, for a for inter-ministerial and multi-stakeholder dialogue.

A keyword-based analysis of NBSAPs carried out by FAO noted how, when ecosystem services are mentioned in the body of existing NBSAPs, it is almost exclusively to refer to natural ecosystems. Comparatively, those in an agricultural context ("agro-ecosystems") are often not considered (with some notable exceptions, e.g. Argentina, Italy, Uganda).

3 An introduction to the concept of ecosystem services and the linkages with the agricultural sector, with a focus on the Kenyan context;

Abigael Otinga (University of Eldoret) gave an overview of the concept of ecosystem services and how these relate to biodiversity conservation and agricultural development. Ecosystem services can be thought of as the direct and indirect contributions of ecosystems to human well-being; they support directly or indirectly our survival and quality of life.

There are different types of ecosystem services, and one of the classifications proposed divides them into: provisioning (products obtained from ecosystems, e.g. food and freshwater); regulating (benefits obtained from the regulation of natural ecosystem processes, e.g. climate regulation, pollination); habitat (the provision of habitat for migratory

species); and cultural (including non-material benefits that people obtain from ecosystems, e.g. spiritual enrichment, recreation and aesthetic values).

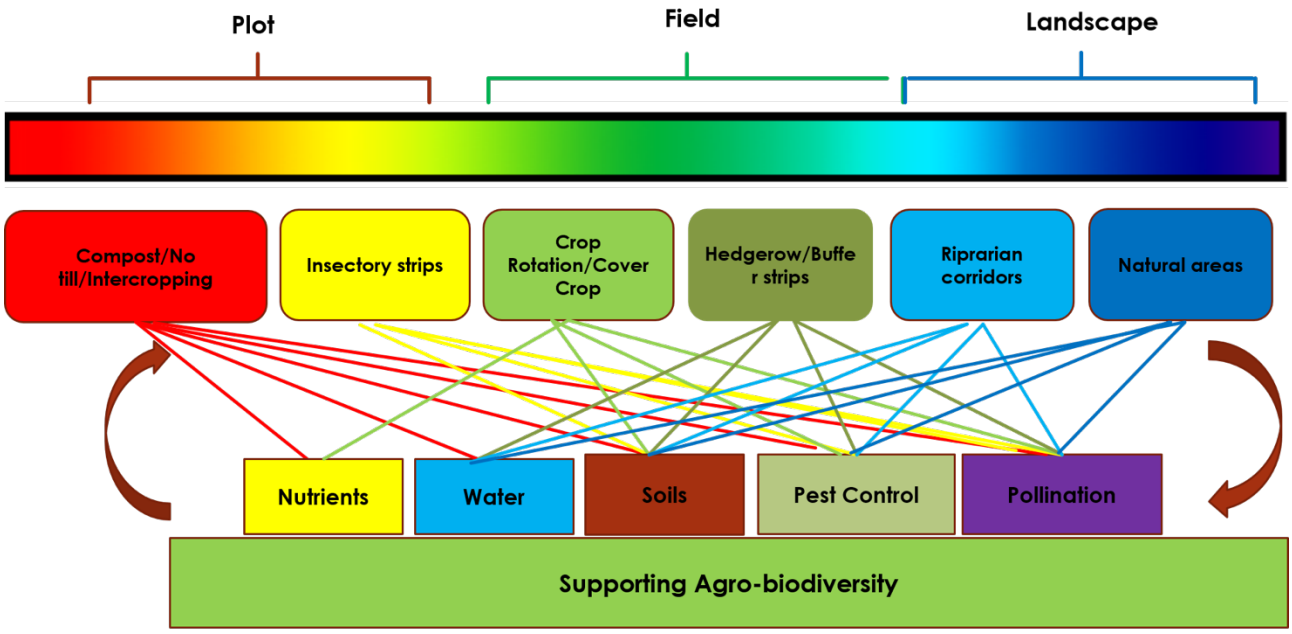
In agriculture, examples of agricultural ecosystems include annual crop monocultures, grazing systems, shifting cultivation systems, smallholder mixed cropping systems, paddy rice systems, tropical plantations and agroforestry systems. Agroecosystems are mostly associated with provisioning services, but also provide regulatory (e.g. flood control, carbon sequestration) and cultural (scenic beauty, tourism, traditional use) services. Agricultural ecosystems can be actively managed to provide such services at multiple scales **(Figure 1).** At the policy level, African leaders have identified a number of key priority areas in relation to the safeguarding of ecosystem services while reducing poverty throughout the continent. These include: enhanced financial support to ecosystems management (e.g. Payment for Ecosystem Services (PES) schemes); reduction of deforestation; support to the establishment; and, contribution to the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services (IPBES), including the creation of a pan-African committee. Among the challenges that remain are the valuation of ecosystem services and the revision of national policies, including NBSAPs, to include a national biodiversity assessment and actions in the agriculture sector.

The cost of deforestation to the Kenyan economy reaches 35USD Million a year, through reduction in regulating services more than **2.6 times the cash revenue of deforestation.**

Breakdown of the 3.65 billion Kenyan shillings (B KES)… (Effects of deforestation)[4]

Loss of Regulatory Service	Monetary Value (B KES)
Changes in river flows resulting from a reduction in dry-season river flows, which reduced the assurance of water supply to irrigation agriculture – **reduction in agricultural output**	**2.630**
Reduced river flows also **lowered hydropower generation by**	**0.012**
In 2010, reduction in water quality due to siltation and elevated nutrient levels running off degraded land into fresh water systems **reduced inland fish catches**	**0.086**
Increased the cost of water treatment for potable use by	**0.192**
Well-managed montane forest cover **reduces malarial disease prevalence**. Incidence of malaria as a result of deforestation is estimated to have cost. This resulted in additional health costs to the Government of Kenya and through losses in labour productivity	**0.395**
Forest loss is also detrimental to the global carbon cycle. The **above-ground carbon storage value forgone through deforestation was estimated**	**0.341**
TOTAL	**3.650**

[4] UNEP, (2012). Kenya. Integrated forest ecosystem services. Technical report.



Kremen, Iles and Bacon, 2012. ecology and society

Figure 1. Management of agricultural ecosystems to realize services.

1 Technical presentations on:

a Pollination:

Muo Kasina (Kenya Agriculture and Livestock Research Organization – KALRO) highlighted the role of pollination in agricultural production: from a recent global analysis, including data from Kenya, it was shown for example how, especially in diversified smallholder farmers' systems, managing pollinator services could increase the yield of pollinator dependent crops by 24 percent. Consequently, if measures are not put in place to protect the increasing declines in pollinators' populations, negative effects are likely to ensue for agricultural production, and also for health and well-being as diets would be affected by lack of production of vitamin-rich fruit and vegetable crops. The presentation outlined a number of practices to sustainably manage and enhance pollinators on farm (e.g. the establishment of hedgerows, groundcovers and the planting of species that can act as suitable habitats for pollinators) and at the landscape level (e.g. diversifying land use around the farm, by planting hedgerows and setting aside patches of lands for grazing). The revised Kenya NBSAP must also ensure pollinator-friendly measures such as raising awareness on the role of pollinators for the production of healthy and abundant yields and measures for conservation of pollinators on farm.

a Ecological pest management:

> "You spray in the farm, they (the pollinating insects) come in the house. Let them leave, because the good ones will eat the bad ones. Better to have both."
>
> Muo Kasina, Economic entomologist, Kenya Agricultural & Livestock Research Organization - KALRO

Kasina gave a second talk, on the topic of ecological management of pests and disease in agricultural production, with particular reference to the Kenyan context. The ecosystem services of natural pest control consists of the activities of predators and parasites that control the populations of potential pests and disease. Natural enemies control an astounding 99 percent of potential crop pests – and if best management practices

are mainstreamed, they could sustain crop yields even more.
The "push-pull system", based on the planting of species that push away pests from the crop, and of "trap plant" species on the borders of the plot that in turn pull them away from it, represents a successful example of ecological management of pest and disease. Kasina highlighted how the NBSAP could help mainstreaming such practices, by encouraging research on biological interactions in the field, supporting capacity building for extension workers in ecological management and in promoting a site-specific approach to pest management practices.

b Ecological weed management:

Gualbert Gbèhounou (FAO Rome) outlined how weeds are a major crop production constraint in most African countries. He also stated how they are often responsible for a vicious circle that starts from subsistence agriculture practices leading to poor weeding, which in turn leads to increased prevalence of weeds and pests and ultimately to low yield. This reduces income and leads to decreased farm size, which may cause migration, hence labour shortage which in turn constrains producers to subsistence practices.

Ecological weed management is the combination of methods aimed to achieve long-term weed suppression through the use of ecological interactions between crop, weeds, soil and/or other with the least possible use of direct weed control methods, e.g. chemical or mechanical. Examples of such methods include cover cropping, which effectively controls weeds by increasing the mortality of weed seedlings, and mulching, which stimulates the increase of soil microorganisms and increases mortality of weed seeds and seedlings.

The presentation suggested that weed management should be appropriately incorporated in the revised Kenya NBSAP. For example by including suggestions to encourage preservation in seed banks and breeding of high performance varieties of cover crops; including cover and trap crops into national seed policy and seed value chain; and developing of national capacity for production of bio-control agents against invasive alien plants (e.g. water hyacinth).

c Soil management:

> "It takes 1000 years for 1cm of soil to form. It only takes a 10min rain shower to wash it away."
> Charles Gachene, University of Nairobi

The presentation, by Charles Gachene (University of Nairobi) explored the key role of soils and of soil health in providing ecosystem services, including supporting healthy plant growth, sequestering carbon, and offering habitat to a wide range of microorganisms that are crucial for agricultural production. A number of strategies to increase and protect soil organic matter were discussed, including good practices in land use planning, promotion of soil fertility management practices such as use of cover crops and legumes and inclusion of several crops in a field at the same time. At the policy level, the presentation noted how Kenya is lacking a proper policy on soil health that addresses current threats such as erosion, decline in soil organic matter and contamination issues.

d Water:

Bancy Mati (Jomo Kenyatta University of Agriculture & Technology) outlined current water issues in Kenya. These included the declining availability of freshwater and the increasing pressure in terms of demands, especially in the growing Nairobi metropolitan area, all in the broader framework of a changing climate including higher mean annual temperatures and increased likelihood of extreme climate events. Good practices to manage water to preserve and improve the provision of ecosystem services in agriculture include rainwater harvesting and runoff

farming techniques, establishment of vegetative buffers, and the use of conservation tillage techniques. On the policy side, the presentation noted how recent policies, including the 2002 Water Act, the 2014 Water Bill, which is expected to become a law soon, and the new Constitution of Kenya of 2010 have addressed a number of key areas that are essential for sustainable water management and that had not been addressed before. These key areas included the recognition of water as a key right and its prioritization in the national development agenda.

e Integrated livestock-crops-trees farming systems:

Abigael Otinga (University of Eldoret) gave an overview of the relevance of integrated farming systems – particularly those that integrate crops, trees and livestock – in the provision of ecosystem services. Integrated and diversified farming systems are key to increasing agricultural production to meet Africa's growing population while preserving habitats and other ecosystem services.

Diversified farming systems are able to promote agrobiodiversity at multiple scales and maintain ecosystem services that provide critical inputs to agriculture, such as soil fertility, pest and disease control, water use efficiency and pollination, therefore reducing the need for off-farm inputs, including agrochemicals. While some policies that are relevant to the issue of diversified and integrated farming systems already exist in Kenya, these are somehow vague and not specific to the issue. The revised Kenya NBSAP should include, to bridge this gap, a recognition of the fact that such integrated systems contribute to ecosystem services and biodiversity conservation.

f Farmers' knowledge and innovation:

The presentation by Staline Kibet (University of Nairobi), framed the importance of local farmers' knowledge in the context of East Africa and Kenya. Traditional ecological knowledge is a cumulative body of knowledge, practice and belief about the relationship of living beings (including humans) with one another and with their environment. This evolves through adaptive processes and is handed down through generations by cultural transmission. In East Africa, farmers' traditional knowledge, and innovations based on this knowledge, are vital resources contributing to ecological management of agro-ecosystems and minimized use of external inputs. Examples of innovations in agriculture that are based on traditional knowledge, and that are relevant to the overall goal of reducing the use of agrochemicals, include push-pull technologies for the management of pests and selection of local crop landraces. Suggestions for recognition of the importance of local traditional knowledge and for its uptake at broader policy levels include:

- Their incorporation into NBSAPs;
- The recognition of the role of local governments (e.g. Counties, in Kenya);
- The need for increased documentation on existing traditional knowledge-based practices; and,
- An increased collaborative approach between traditional and scientific approaches to agricultural science.

The third and last session of the meeting was focused on getting participants to develop, through breakout groups and in a participatory manner, suggestions for how the country's NBSAP could best reflect the importance of ecosystem services and biodiversity conservation in the agricultural sector. The session was successful and participants, divided in a number of groups discussing each specific ecosystem service that was presented during the plenary, identified for each service, the most relevant Aichi Targets and Sustainable Development Goal they should be framed under. The participatory groups also summarized a number of practical suggestions and action points for uptake in the next NBSAP.

Presentations from day 1 are available at:
www.slideshare.net/Faooftheun/tag/esb-nairobi
www.slideshare.net/ExternalEvents/tag/esb-nairobi

Findings of day 1

Day 1 provided the opportunity to develop, through participatory group discussions, suggestions on a number of elements that the NBSAP could capture during its revision, and that could benefit each of the agricultural ecosystem services discussed during the event. These include:

- On traditional indigenous knowledge, the drafting of a number of supporting elements, e.g. a specific policy document on ILK, voluntary guidelines for land tenure and land use, customization of the NBSAP at the county governments' level.
- On pest and weeds management, the revised NBSAP should encourage the diversification of production systems, and the minimization of the hazards from pesticides through e.g. removing subsidies and fast tracking the registration of safe products.
- On pollination, the NBSAP could include specific provisions to incorporate plant species that are suitable to attract them within the land set aside for three cover, and to encourage the use of hedgerows, patches and strips within farming systems.
- On soils, it would be key to include in the NBSAP a robust definition of all the ecosystem services that these provide, and issues of land use planning and sustainable land management should be addressed through cross-sectoral coordination.
- On water, the NBSAP's role could be to both build capacity on water conservation practices, and make available resources that specifically target such measures.
- To mainstream crop-tree-livestock integrated systems, the NBSAP could make provision to allocate resources (including through Payment for Ecosystem Services schemes) to raising information and awareness on the benefits of these types of systems and training extension staff.

In addition, a bilateral meeting with the focal point for the Convention on Biological Diversity at the Ministry of Environment and Natural Resources, Mr. Parkinson Ndonye, gave the opportunity to discuss a number of follow up steps to ensure that the recommendations identified will be incorporated into the revised NBSAP. These include:

- Once the consultant that will lead the revision of the NBSAP is identified, the Ministry will draft a letter to formally request FAO's technical support in the process, and clearly define responsibility. FAO's role was deemed crucial given the expertise on the interrelations between agricultural production and environmental aspects that was similarly considered key for inclusion in the document. This will include the joint development of a roadmap outlining a timeline and milestones for the NBSAP review.
- The revision of the NBSAP will not be limited to FAO and the Ministry of Environment, but where possible collaboration of other key Ministries and agencies within the Government of Kenya will be sought.
- In addition, it was agreed that it will be crucial to include in the process, as well as in the specific measures that the NBSAP will build on, the sub-national levels of governments, and particularly the county governments.

Day 2 -26 May 2016

Following the range of sustainable options to manage soil and crop health and increase water availability, Day 2 focused on how to support farms in adopting these practices: Which programmes are already there that can mainstream this technical guidance? Who are the off-farm beneficiaries of these improvements that could also contribute to this support package?

a Incentives for Ecosystem Services from Agriculture – Introduction

The first presentation explained the IES approach and set the scene for the case studies that followed. IES maps the various existing public and private initiatives which represent a wealth of funding sources that, if better coordinated, could offer farmers an integrated solution capable of assisting them in the transition to commercial agriculture that also protects the agro-ecosystem it depends on - Payment for Ecosystem Services is but one. For more information see: www.fao.org/ecosystem-services-biodiversity/incentives

b Cost-effective methods to assess and value ecosystem services from sustainable agriculture

Professors from the University of Nairobi and JKUAT presented the results of their studies in the Coastal Mangroves (contributing to the Kenya Ridge to Reef Initiative) and Arid and Semi-Arid Water Towers of Kenya. Both shared the methods they used, and the value of these ecosystems for the Kenyan economy. Coastal mangroves ecosystem goods and services contribute approximately US$ 1000 per local household per year. Harvesting fog in the forests that cover these arid water towers could yield 400 - 1,000 litres of water per day, depending on the size and design of the mesh, and the atmospheric fog density.

c Strategies used in the region for cross-sectoral coordination and financing of sustainable management of agro-ecosystems

TNC highlighted the partnership already established **(Figure 2)** but noted the policy barriers still faced in expanding and improving this partnership to improve watershed management in the Tana basin, including the Kenyan tax law (which does not incentivize voluntary investments in natural resource management such as these). TNC, however, also noted the opportunities provided by the Benefit Sharing bill under discussion and the Public-Private Partnerships Law.

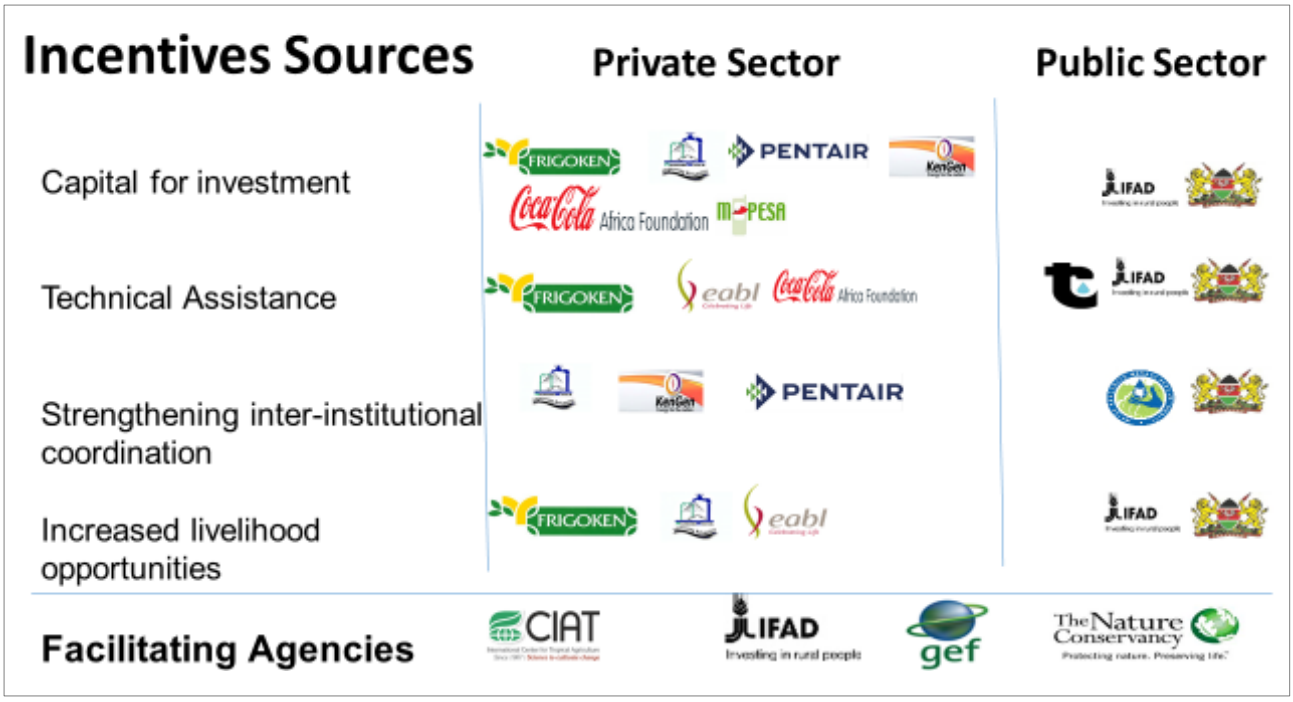


Figure 2

Partnerships are essential for scalability and sustainability. Pauline Nantongo, Ecotrust Uganda

ECOTRUST illustrated how they have built a large partnership that, in some cases, adopts the approaches of their partners, and in others they not only adopt the approach but also the associated financing to implement activities on their behalf. This allows them to offer farmers an integrated package of incentives **(Figure 3)**.

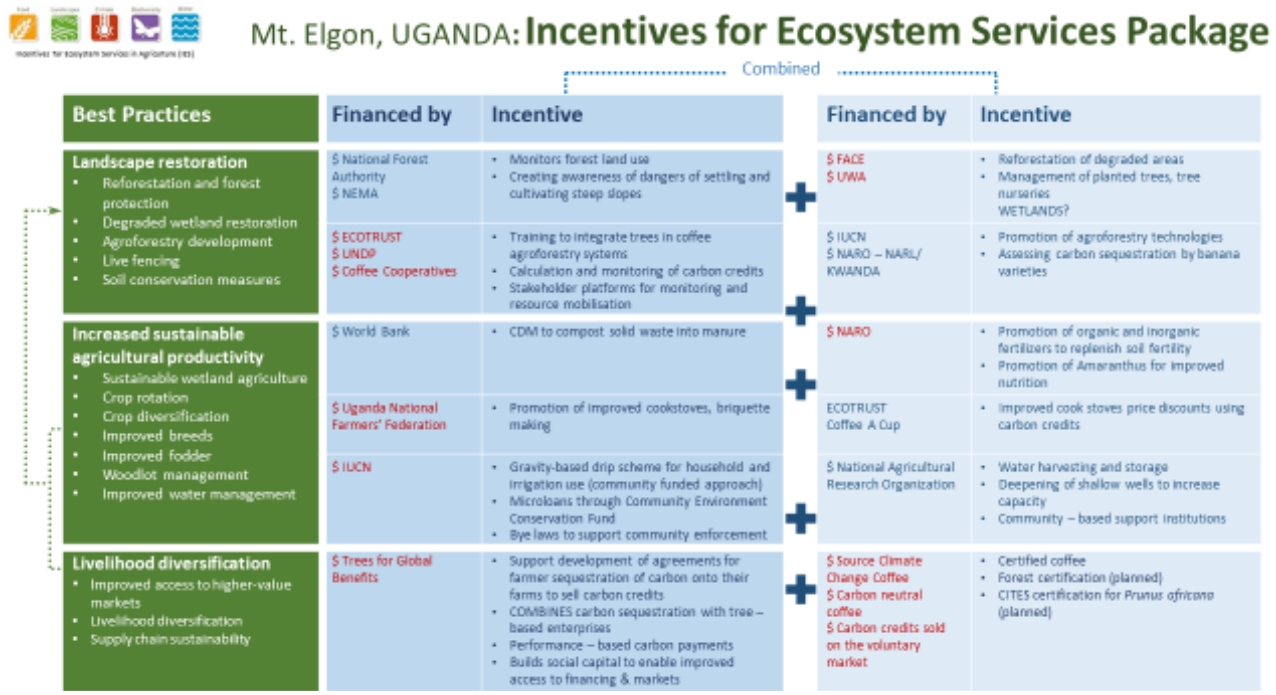


Figure 3

The case studies in the afternoon were examples of partnerships for conflict management. In Lake Naivasha, large commercial water users have entered into agreements with upstream farmers to reduce soil loss, and consequent sedimentation of the lake. This situation (i) reduces water storage capacity of the lake and (ii) causes eutrophication (leading to damage to pumps [groundwater is brackish, flower growers need to mix in with lake water] (untreated waste water from various uses is also contributing to the later). While this programme has achieved the creation of a partnership with the commercial flower growers downstream, their contribution is still very limited for the upscale requirements needed to change the conditions in the lake. A broader partnership is needed, and possible, as shown in **Figure 4** below.

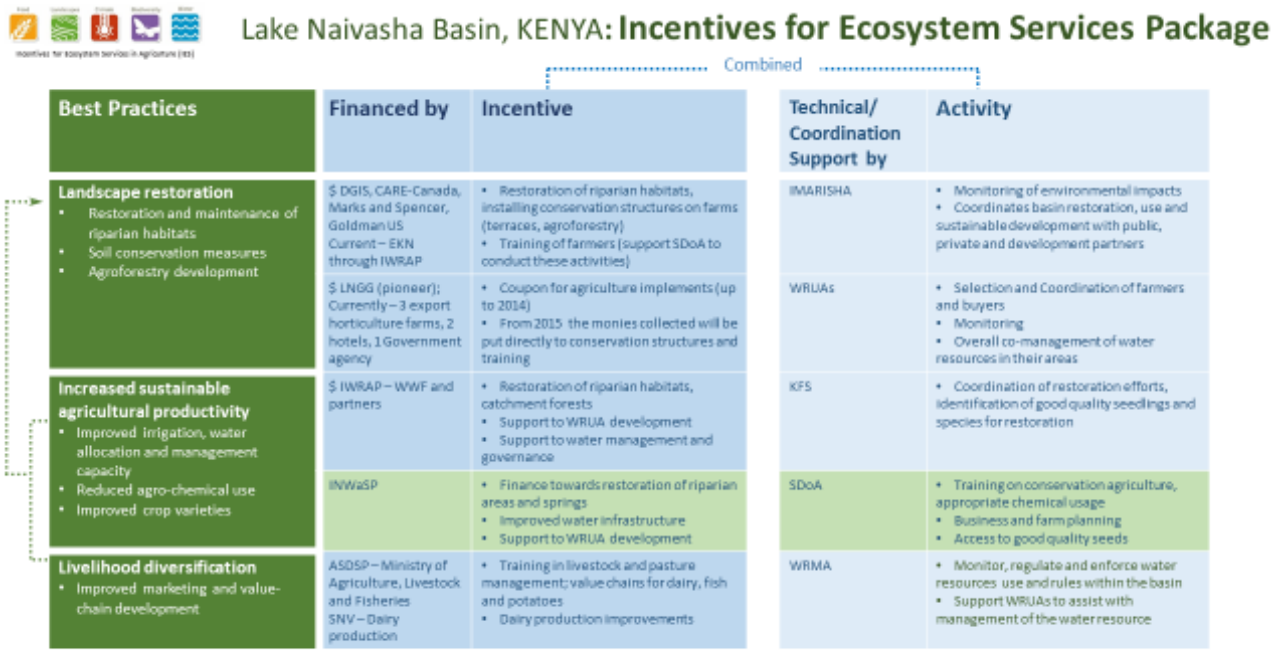


Figure 4

In Engaresero, traditional pastoralism competes for pasture and water access with agriculture and tourism. The Globally Important Agriculture Heritage Sites (GIAHS) programmed assisted Maasai communities in the area to negotiate contributions from tourism to build rainwater harvesting dams and other community improvements that can start compensating the Maasai community for the loss of these natural assets. GIAHS will continue working with the community to expand the sources of financing, building a broader partnership with other public programmes. This aims to further improve and protect the traditional livelihoods, and the important ecosystem services provided here by Pastoralists.

Presentations made on day 2 are available at:
www.slideshare.net/Faooftheun/tag/esb-nairobi
www.slideshare.net/ExternalEvents/tag/esb-nairobi

Findings of day 2 and next steps

Case studies presented, and others identified during the meeting, will continue to be developed to: (i) better show the partnerships achieved or, (ii) further discuss the possibilities to include other partners.

The last session of the day focused on recommendations for next steps which resulted in the call for the formation of a Taskforce on Mainstreaming Ecosystem Services and Biodiversity across sectors. FAO Kenya will maintain communication with the partners in question to agree on its composition, Terms of Reference (ToR) and work plan.

Proposed composition

At the meeting the institutions most willing to eventually be part of such a taskforce were the National Museums of Kenya (NMK), International Centre of Insect Physiology and Ecology (ICIPE), Kenya Forest Service (KFS), as well as the local offices of WWF and Conservation International. FAO Kenya will discuss further with others such as Kenya Agriculture and Livestock Research Organization (KALRO) to seek official clearance for their participation.

Possible items for the ToR:

- Review of existing information on the investment opportunities in Ecosystem Services and Biodiversity across sectors in Kenya.
- Identify a repository of Ecosystem Services and Biodiversity knowledge.
- Compile a list of Ecosystem Services and Biodiversity experts in Kenya.
- Improve awareness on agri-environmental interactions across NRM and economy sectors.
- Assist in mainstreaming of IES in national and county integrated investment development plans to maximize agri-environmental synergies.
- Identify a regional policy home for this initiative (eg. the EAC Environmental Protocol).
- Organizing public and technical dialogues on mainstreaming Ecosystem Services and Biodiversity across sectors.

Possible items for the workplan:

- Kenya NBSAP: Advise the consultant in the definition of the set of documents that this innovative NBSAP will produce, as annexes to other existing policies.
- Kenya benefit sharing bill: Discuss and propose dialogue events to ensure that the funds it will raise support the implementation of existing agro-environmental targets, and builds on existing institutions who already have NRM management mandates at county level.
- Explore linkages of these two policies with the Kenyan Green Economy Strategy to see if still in time to improve the coordination between the three.
- Stocktaking of:
  - (a) policy opportunities to in-build in the different implementation programmes support for integrated tree-crop-livestock systems - so far none of the Kenyan policy mechanisms supports integration – and;
  - (b) perverse incentives operating or planned under various programmes. Further discussion with FAOKE Forest and Farm Facility to explore funding opportunities for this work with co-financing from FAO MAW-ESB, as a continuation of its support last year to the ecosystem service assessment.

- Develop a fundraising proposal for an integrated approach financing facility for activities that are implemented jointly to a) increase productivity and income in a sustainable way and, therefore, b) also comply with environmental conservation goals.
- Propose how to render obtaining the Farm Forestry Certificate (if farmer maintains 10% forest cover) attractive to farmers, perhaps as requirement to participate in public programmes or for easier access to rural credit.
- Create linkages and with ongoing or pipeline projects for knowledge sharing and sustainability.

Annex I – Agenda

Day 1 – Wednesday 26 May 2016.

Mainstreaming ecosystem services and biodiversity into agricultural production and management: Practical issues for consideration in National Biodiversity Strategies and Action Plans to minimize the use of agrochemicals

8.30 - 9.00	**Opening**	Braulio Dias **Executive Secretary (CBD)** Robert Allport **Acting FAO Representative (FAO Kenya)**
9.00 - 9.15	**Welcome:** Introduction of participants and meeting objectives	Philip Kisoyan **(FAO Kenya)**
9.15 - 10.00	**Session 1** Review the relevance of NBSAPs for agriculture	**Chair:**
	Scope of NBSAPs as a "living document", analysis of past NBSAPs Experiences from other countries and introduction to Technical Guidance Document	Barbara Gemmill-Herren **ICRAF**
	Kenya NBSAP process	Parkinson Ndonye **MoE (cancelled)**
	Ecosystem services – concept and use in both biodiversity conservation and agricultural development	Abigael Otinga **(University of Eldoret)**
	Synergies with other Conventions (chemical Conventions, other biodiversity-related instruments)	Raphaelle Vignol **(UNEP)** Francesca Mancini **(FAO)**
	Questions	
10.00 - 11.00	**Session 2** NBSAP development and Implementation: Review of the ecosystem services provided by agriculture	**Chair:**
	Pest management/bio-pesticides	Muo Kasina
	Pollination	Dino Martins
	Soil management	Charles Gachene
	Questions	
11.00 - 11.15	**Break**	

11.15 - 12.30	**Session 3** NBSAP development and Implementation: Review of the ecosystem services provided by agriculture (cont.)	**Chair:**
	Water	Bancy Mati
	Ecological weed management	Gualbert Gbehounou
	Livestock and trees	Abigael Otinga
	Indigenous knowledge	Staliine Kibet
	Questions	
12.30 - 13.30	**Lunch**	
13.30 - 15.30	**Group Work on revision of Kenya NBSAP** to better reflect the contribution of ecosystem services and biodiversity to sustainable and healthy agricultural production	**Group chair:** **Presenters of each ES**
15.30 - 15.45	**Break**	
15.45 - 16.45	Presentation of Group Work	
16.45 - 17.30	Discussion and wrap up of the day	Barbara Gemmill-Herren

Day 2 – Thursday, 26 May 2016

Opportunities for cross-sectoral coordination of policies to promote ecosystem services from agriculture

9.00- 9.15	Opening and goals of the day	Philip Kisoyan **FAO Kenya**
9.15-9.30	Overview and objectives of workshop: strategies to support the implementation of policies to promote ecosystem services from agriculture	Bernardete Neves **FAO HQ**
9.30- 10.30	Cost-effective methods to assess and value ecosystem services, from sustainable agriculture	**Chair:** Philip Kisoyan **FAO Kenya**
	• Kenya Ridge to Reef initiative: Valuing Coastal Ecosystems as Economic Assets • ASAL Water Towers, Kenya: Ecosystem Services assessment methodologies and early findings • Discussion: other examples of cost-effective methods, advice to the future development of FAO MAW ESB	Jane Mariara and Richard Mulwa, **University of Nairobi** **Bancy Mati, JKUAT**
10.30 - 11.00	**Break**	
11.00-12.30	Opportunities for cross-sectoral coordination of policies to promote ecosystem services from agriculture (part 1)	**Chair:** Bernardete Neves, **FAO HQ**
	• Case study: Key policies to facilitate coordinated public and private investment in the Tana Basin: The Nairobi Water Fund, Kenya • Case study: Mount Elgon ecosystem-based adaptation though carbon payments, coffee certification and subsidies for improved seed varieties. • Discussion: Financing integrated landscape management through incentive packages- institutional barriers and opportunities	Fred Kihara **TNC** Pauline Nantongo **ECOTRUST, Uganda**
12.30- 13.30	**Lunch**	
13.30- 14.30	Opportunities for cross-sectoral coordination of policies to promote ecosystem services from agriculture (part 2)	**Chair:** Barbara Herren, **ICRAF-FAO**
	• Introduction to FAO Globally Important Agriculture Heritage Sites- GIAHS • Case study: Supporting GIAHS in Engaresero Maasai Pastoralist Heritage Area, Tanzania • Case study: Engaging private sector investments in Lake Naivasha • Discussion: Financing integrated landscape management through incentive packages- institutional barriers and opportunities	Xu Ming **FAO GIAHS Secretariat** Arpakwa OleSikorei Kennedy Onyango **WWF Kenya**
14.30 - 15.00	**Break**	

15.00-15.15	Natural Resource Policy Coordination Opportunity: The NR Benefit Sharing Bill and its potential	Dominic Walubengo **Forest Action Network (cancelled)**
15.00-16.30	Group work and Panel discussion: Financing integrated landscape management through incentive packages: opportunities and barriers	Fred Kihara **TNC**
16.30- 17.00	Summary of findings and recommendations for next steps for FAO and partners	**Chair:** Philip Kisoyan **FAO Kenya**

Annex II – List of Participants

	Organisation	Name	Email
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