

# Agriculture and fisheries and their impact on marine and terrestrial biodiversity

P.K Kisoyan  
FAO



REGIONAL WORKSHOP FOR EAST AFRICA ON UPDATING NATIONAL BIODIVERSITY STRATEGY AND ACTION PLANS  
Kigali, Rwanda, 27 - 30 June 2011



# Presentation outline

- Introduction
- Agriculture and terrestrial biodiversity
- Fisheries and Marine biodiversity
- FAO and CBD
- FAO regional programmes
- Recommendations

# FAO GOAL

FAO's goal is to alleviate poverty and hunger by promoting sustainable agricultural development, improved nutrition and food security, and the access of all people at all times to the food they need for an active and healthy life

**Food sources - wide variety of terrestrial and freshwater/marine biodiversity**

# Introduction



Implementation of the Strategic Plan for Biodiversity for the period 2011-2020



The year 2011 was declared the International Year of Forests by the United Nations to raise awareness and strengthen the sustainable forest management.

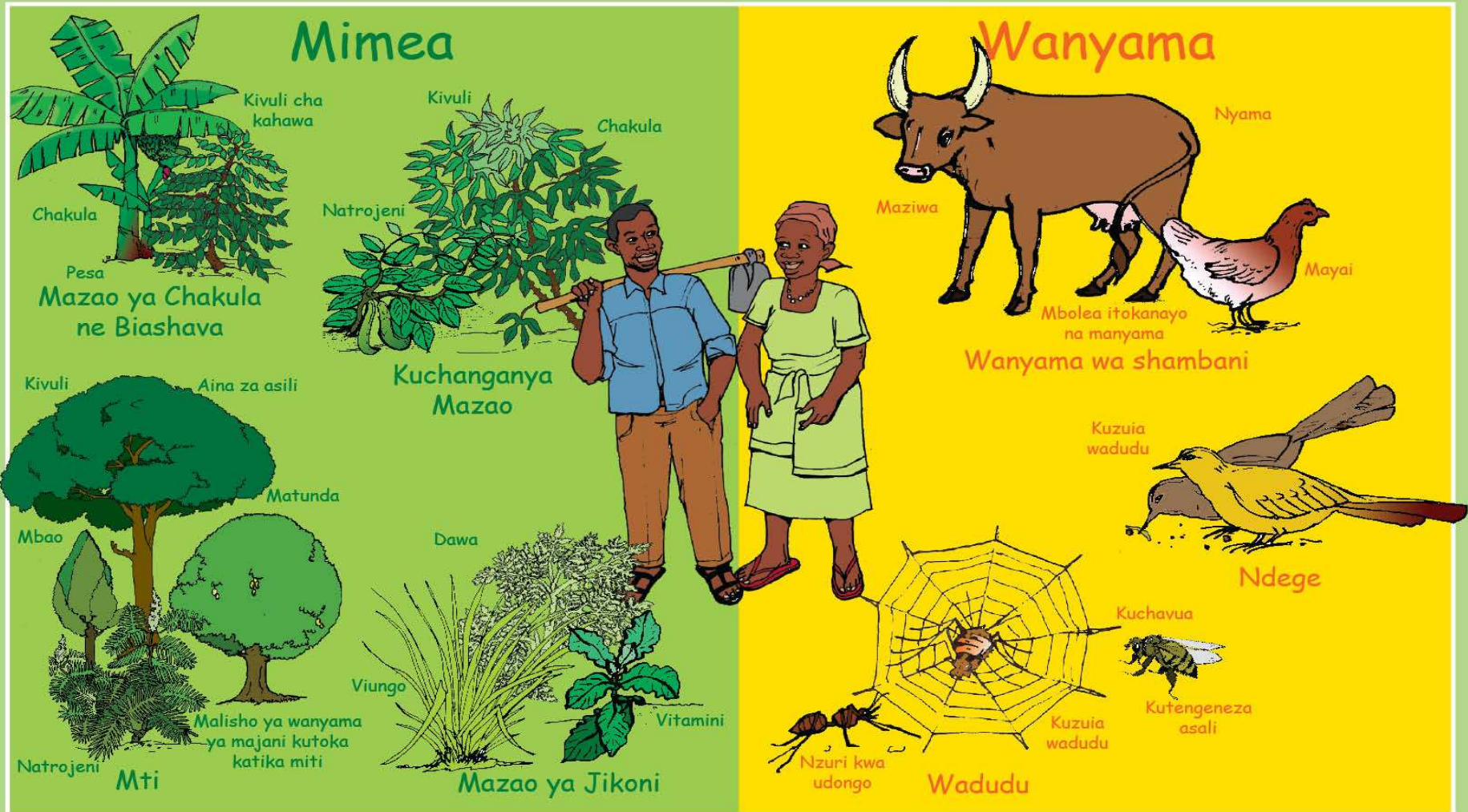
Forests provide habitats to about two-thirds of all species on earth.

Around 13 million hectares of forest were converted to other uses or lost each year in the last decade



# What is Biodiversity in Local Language ?

## Bioanuai ni nini?



# Agriculture and Biodiversity

How does Biodiversity benefit to agriculture?

- **PRODUCTIVITY:** Conservation and management of broadbased genetic diversity within domesticated species has been improving agricultural production for centuries
- **ADAPTATION:** A diverse range of organisms contributes to the resilience of agricultural ecosystems and their capacity to recover from environmental stress and to evolve.
- **MAINTENANCE OF ECOSYSTEM FUNCTIONS:** Essential functions such as nutrient cycling, decomposition of organic matter, crusted or degraded soil rehabilitation, pest and disease regulation, and pollination are maintained by biodiversity

# Agriculture and Biodiversity...

How does Agriculture benefits to biodiversity?

- **Delivery of Ecosystem Services:** Agriculture occupies more than one-third of the land in most countries of the world. Agricultural lands and coasts managed sustainably as ecosystems contribute to wider ecosystem functions such as maintenance of water quality, soil moisture retention with reduction of runoff, water infiltration, erosion control, carbon sequestration, pollination, dispersal of seeds of wild and endangered plants, and refugia for species during droughts.
- **Incentives:** A range of populations needed by agriculture, such as pollinators and beneficial predators, need habitat diversity to survive. Agriculture therefore provides incentives to preserve areas such as hedgerows and field borders.
- **Ecological Knowledge:** A large part of the human legacy of knowledge of biodiversity, its importance and functions has been gained and will continue to be gained across cultures through agriculture practice and reflection. This is a resource that should be more actively used, as in schools' programmes, to strengthen the ecological literacy of all citizens.



# Impacts of Agriculture on Biodiversity

- Land use conversion
- Use of chemical fertilizers and pesticides
- Mechanization
- Monocultures
- Breeding systems
- Invasive species
- Global climate change

FAO estimates that 75 per cent of crop diversity was lost between 1900 and 2000



# Agricultural Practices for Biodiversity Conservation

- ✓ Conservation Agriculture
  - minimum tillage
  - soil cover,
  - crop rotation
- ✓ Integrated Pest Management (IPM)
- ✓ Agro-forestry
- ✓ Organic farming
- ✓ Promotion of PES in agriculture



# Marine ecosystems



# Marine ecosystems

- ❖ Coastal forests
- ❖ Mangrove forests
- ❖ Estuaries
- ❖ Beaches
- ❖ Coral reefs
- ❖ Sea-grass



# Marine Biodiversity

## Marine Diversity in the East African ecoregion

- 1,000 different seaweeds
- Hundreds of sponge species
- Over 200 coral species
- 3,000 species of molluscs
- Over 300 species of crabs
- At least 50 species of starfishes
- Over 100 species of sea cucumbers
- More than 1,500 species of fish
- Still more to be discovered

About 10-15% of the Eastern African marine life are endemic

(WWF 2004)



# Importance of marine biodiversity

- A diverse and healthy marine biodiversity is more productive and provides more fish, other goods and services.
- More and diverse species maximizes the productivity of the marine ecosystem.
- A diverse and healthy marine life protects against environmental changes (e.g. sea level rise, flooding, hurricane and cyclone damage).
- A diverse and healthy marine biodiversity support livelihoods and economic activities in the coastal regions including fisheries, tourism, etc

# Threats to marine biodiversity

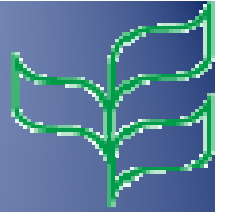
- Overexploitation ( over 70% of the world's fish species are fully exploited).
- Destructive Fishing practices (By catch ave 27.0 million/yr)
- Pollution (industrial, domestic and agricultural wastes, oil spills)
- Habitat destruction and fragmentation
- Sedimentation due to bad land use practices in the watershed,
- Non -native invasions
- Global climate change

# Sustainable Fisheries Management

- FAO Code of Conduct for Responsible Fishing - This Code sets out principles and international standards of behavior for responsible practices with a view to ensuring the effective conservation, management and development of living aquatic resources, with due respect for the ecosystem and biodiversity
- Integrated Coastal Management
- Incorporating Indigenous Traditional Management Systems
- Zonation of Protected Areas based on biodiversity hotspots



# FAO and CBD



Cooperation between the Food and Agriculture Organization of the United Nations (FAO) and the Convention on Biological Diversity (CBD) has been strong and effective, with FAO being a key partner and contributor to the implementation of CBD. Long term strategic partnership include:

- International Treaty on Plant Genetic and Animal Resources
- State of the World's Plant Genetic Resources for Food and Agriculture;
- Global Forest Resources Assessment
- Role of Agriculture Biodiversity in addressing hunger and climate change
- Youth Quick Guide to Biodiversity
- International initiatives on conservation and sustainable use of pollinators, soil biodiversity and agrobiodiversity food and nutrition
- Cartagena protocol on Biosafety
- Implementing agency for GEF projects
- NAGOYA plan of action for biodiversity



# FAO regional programmes

- GEF/UNEP/FAO Global Pollination Project (Kenya)
- CA SARD: Conservation agriculture for Sustainable Agriculture and Rural Development in Africa
- Conservation of Globally Important Agricultural Heritage Systems (GIAHS) for food security in Kenya and Tanzania
- Transboundary Agro-ecosystem Management Programme for the Kagera River Basin
- Sustainable Management of inland wetlands in Southern Africa:
  - Biodiversity Indicator Partnership programme with UNEP/GEF;
  - Integrated Natural Resources Management (INRA)

# Recommendations

What can FAO do to support NBSAP process?

- Knowledge management
- Capacity building
- Resource mobilization
- Policy harmonization
  - Domestication of MAEs (CBD, UNCCD, UNFCCC)
  - Regional policy harmonization on conservation and sustainable use of natural resources (support to EAC environmental protocol)



*Thank you*