NASA IDS: Seasonal Prediction of Hydro-Climatic Extremes in the Greater Horn of Africa (GHA)
The First Participatory Research Workshop and Project Meeting

A Brief Summary of FAO activities across the Sub-regional Office for Eastern Africa

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Fantahun Assefa (PhD)
FAO- Subregional Office for Eastern Africa

Introduction

- The Sub regional Office for Eastern Africa (SFE) for FAO serves eight countries - Burundi, Djibouti, Ethiopia, Kenya, Rwanda, Somalia, South- Sudan and Uganda
- Agriculture is an important component of the economies, livelihoods and land use of the 8 SFE countries
- In the 8 Eastern African countries served by FAOSFE approximately 75.5 million people (of which an average of 49% are women) are economically involved in agriculture either in full time employment or as a main household livelihood
- Land dedicated to agriculture in 2011 was an average of 66% of total land area of the 8 countries (excluding fisheries and forestry).

- Agricultural production accounted for approximately 31% of GDP in the 8 countries in that same year (FAOSTAT).
- Despite the importance of this sector of the economy 95 percent of the food in Eastern Africa is still grown under rain fed agriculture, and is thus highly vulnerable to adverse weather conditions such as droughts, dry spells and erratic rainfall
- Agricultural production in the region is also characterized by problems linked to:

  -low soil productivity,

  -extensive production systems,

  -land degradation and lack of appropriate inputs such as drought resistant varieties.

- Millions of people in the region, particularly in the Horn of Africa's arid and semi-arid areas, are at risk of, or already experiencing food insecurity
- The 2011 drought in the Horn of Africa is a recent example of the precarious food security situation that people in the region are in. That drought resulted in up to 12 million people requiring urgent life saving food assistance and was the worst food security crisis in decades

- Rising food demand in the region, persistent food insecurity and malnutrition, rural poverty, economic instability, unemployment and climate change are all problems which need to be tackled in the region and this is being done through FAOSFE.

Subregional Office for Eastern Africa (FAO_SFE)

- SFE is an advisory service center to the countries it covers, with a core team of professionals based in Addis Ababa, it has the capacity to also draw upon a large body of expertise in FAO Headquarters as well as in the Regional Office for Africa (RAF).
- The SFE office support the implementation of initiatives and programmes across the eight countries in the sub-region , composed of a Multi-disciplinary Team with technical expertise in:

1. crop and animal production,
2. forestry and natural resource management,
3. land and water management,
4. fisheries and aquaculture,
5. agribusiness and enterprise development
6. policy development among others, is able

Regional Initiatives

Three initiatives were developed by FAO's Regional Office for Africa (RAF) aiming to nurture cooperation between regional, sub-regional and national entities over two biennia (2014-2015 and 2016-2017) in an integrated and coordinated manner structured around significant policy processes and FAO Country Programming Frameworks.

FAOSFE will be undertaking all work in the sub-region in line with these initiatives which are:

1. "Renewed Partnership for a Unified Approach to End Hunger in Africa by 2025 under the Framework the Comprehensive Africa Agriculture Development Programme (CAADP)"
2. "Sustainable production intensification and commercialization through integrated management of agricultural landscapes"
3. "Building resilient livelihoods in crises prone areas of Sub-Saharan Africa"

RI1: "Renewed Partnership for a Unified Approach to End Hunger in Africa by 2025 under the Framework the Comprehensive Africa Agriculture Development Programme (CAADP)"

- SFE will seek to support the Ethiopian Government in improving their capacity in developing sectoral/cross-sectoral policy frameworks and investment plans and programmes on nutrition and food security.
- The Government will also be assisted in organizing stakeholders' forum in support of the High Level Meeting renewed partnership that was held in July 2013, as well as improving policy dialogue on natural resource access and management rights of the vulnerable and small scale producers.
- Support will also be delivered in terms of strengthening partnerships with RECs in designing an investment strategy in agro-business/industries models and for its implementation which will enable the enhancement of inclusiveness and efficiency in agrifood chains.

RI2: "Sustainable production intensification and commercialization through integrated management of agricultural landscapes"

- SFE will seek to support countries in planning and implementing climate change adaptation and mitigation measures by strengthening forest management practices in the sub region.
- Member countries will be supported to elaborate and implement NAPAs, NAMAs and NAPs.
- SFE will be providing support in the conceptualization of agroecology approaches in crop livestock integrated systems, especially involving the strategies for availing water sources for livestock in dry season reserve areas and livestock routes.
- In partnership with NGOs and governments in Kenya and Uganda, sustainable integrated innovative practices in all steps of the milk and meat value chains will be provided.

Statistics

Global strategy to improve agricultural and rural statistics

The initiative to develop the global strategy came as a response to the declining quantity and quality of agricultural statistics. The global strategy will also address the emerging data requirements posed by the MDGs, mainly on biofuels, global warming, the environment and food security.

CountrySTAT

CountrySTAT is a web-based information technology system for food and agriculture statistics at the national and subnational levels. It provides decision-makers access to statistics across thematic areas such as production, prices, trade and consumption.

Global Information and Early Warning System
– on food and agriculture [GIEWS]

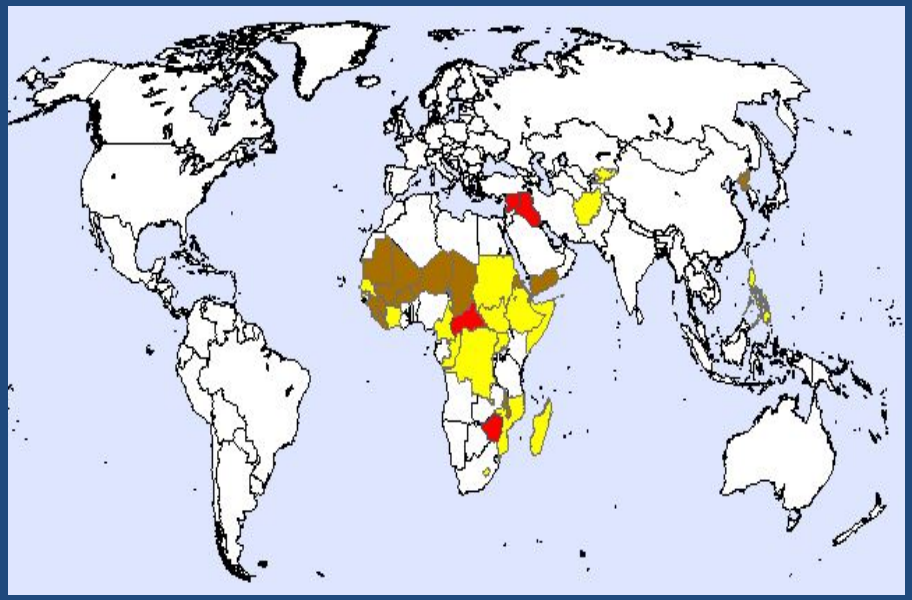
- The GIEWS Workstation is a web mapping application that gives access to food security related information and serves as main information management tool at global, regional and national levels.
- The aim of the Workstation is to harmonize food security and early warning data within/across countries and to strengthen analytical capacity of key national institutions to support food security policy formulation and emergency interventions.

  The Workstation includes software tools to analyze food security implications of natural and man-made disasters. These tools allow users to process historical and recent data in order to detect anomalies of environmental and economic factors (e.g. drought; excessive increase of market prices) that may reduce local populations' capacity to access key food items. The application also includes text management tools that facilitate the compilation and dissemination of early warning messages.

- The application handles different types of information such as remote sensing data, GIS layers, databases and texts. The Workstation is structured as a network in which individual instances of the application (e.g. Workstations installed in the countries) represent the nodes of this network. The network architecture is the base for information sharing. A communication tool built on a peer-to-peer technology (the same architecture used for sharing music across the Internet) regulates the flow of information among nodes of the Workstation network.

The application is entirely based on an open-source technology to avoid license constraints and to allow free distribution. Training, data collection and development of tools are integral parts of the Workstation "package". These activities are carried out with full involvement of national partners/stakeholders that play

- **GIEWS Country Briefs** provide up to date information on the food security situation of monitored countries. The Country Briefs include information on current agricultural season and the harvest prospects for main staple food crops and livestock situation.
- In addition, the briefs provide estimates and forecasts of cereal production and imports together with food price and policy developments.
- Other topical information may be included when relevant. The Briefs are updated no less than **four** times per year



COUNTRIES REQUIRING EXTERNAL ASSISTANCE FOR FOO

Shortfall in aggregate food production/supplies

Widespread lack of access

Severe localized food insecurity

GeoInfo IDWG

- Inter-Departmental Working Group (IDWG) to strengthen the use and management of geographic and geospatial information.
- **Objectives:**
- Provide a governance framework and community of practice for geo-information.
- Build a cross-departmental and multi-disciplinary framework to develop innovation solutions.
- Promote the responsible use, management, production and dissemination of geo-information.
- Mainstream awareness and understanding of geo-information.

Dimension Geographic Task Force (GDTF

- The objective of the GDTF was to support/contribute to the corporate governance of the production, usage and dissemination of geographic information and geo-referenced data.

TIPS ON FAO's INTRVENTION AREAS

Climate change: FAO has decades of experience in promoting agricultural practices and policies that also safeguard the natural resource base for future generations.

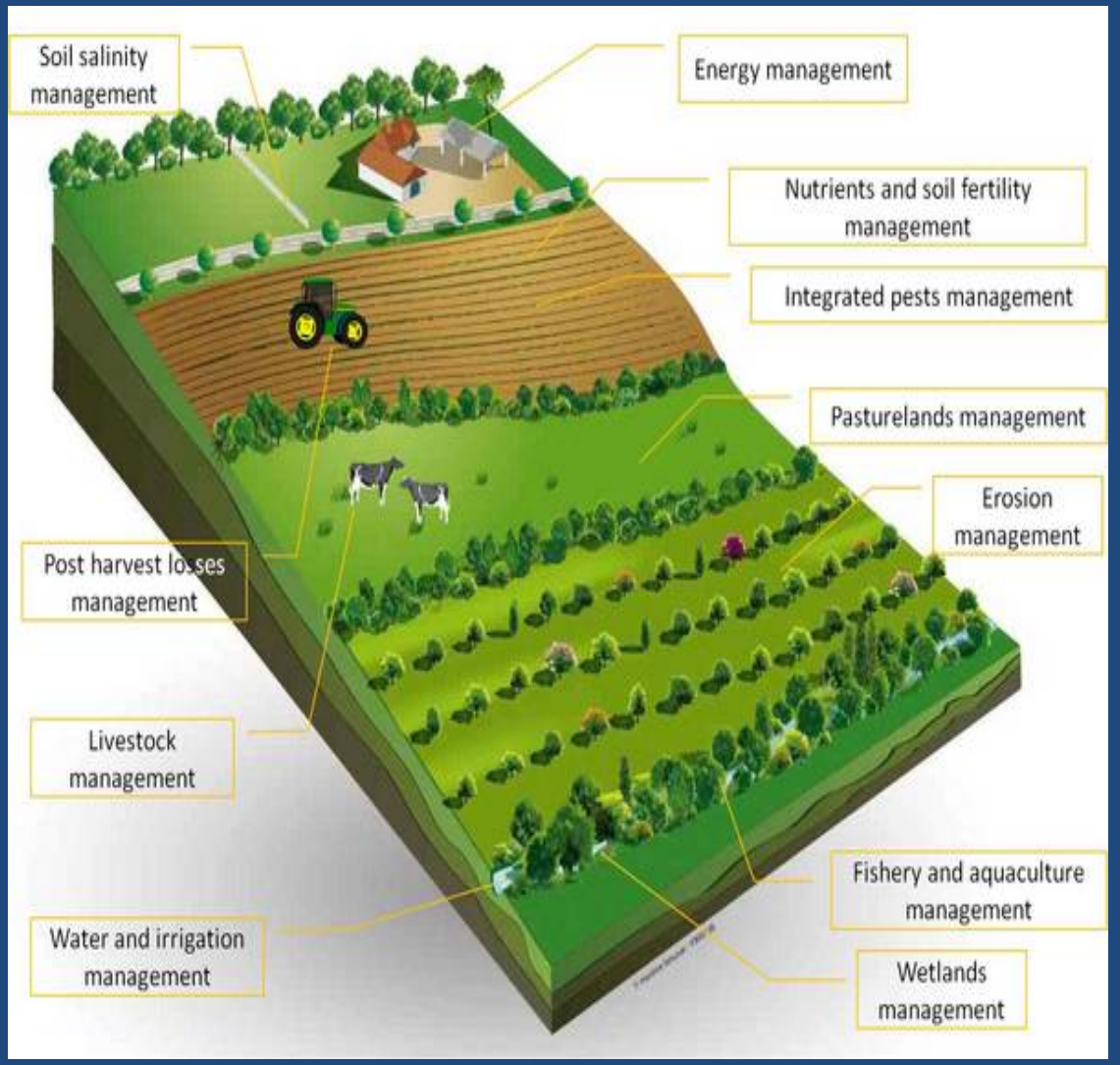
1. Sustainably increase agricultural productivity and incomes
2. Help rural communities and farmers adapt to and become more resilient to the effects of climate change
3. To reduce or remove agriculture's greenhouse gases emissions, when possible.
4. Exactly how farmers go about tackling these goals can change from place to place, depending on local circumstances.

Towards a sustainable agriculture platform in partnership with farmers' cooperatives and organizations:

- A possible solution to support farmers facing the threats of climate change and increase productivity in a sustainable manner is to implement climate smart agriculture (CSA) and green agriculture support platforms.

Sustainable agriculture practices

Sustainable agriculture platform prototype, gathering some technical manuals and guidelines to help farmers implementing better agronomic practices.

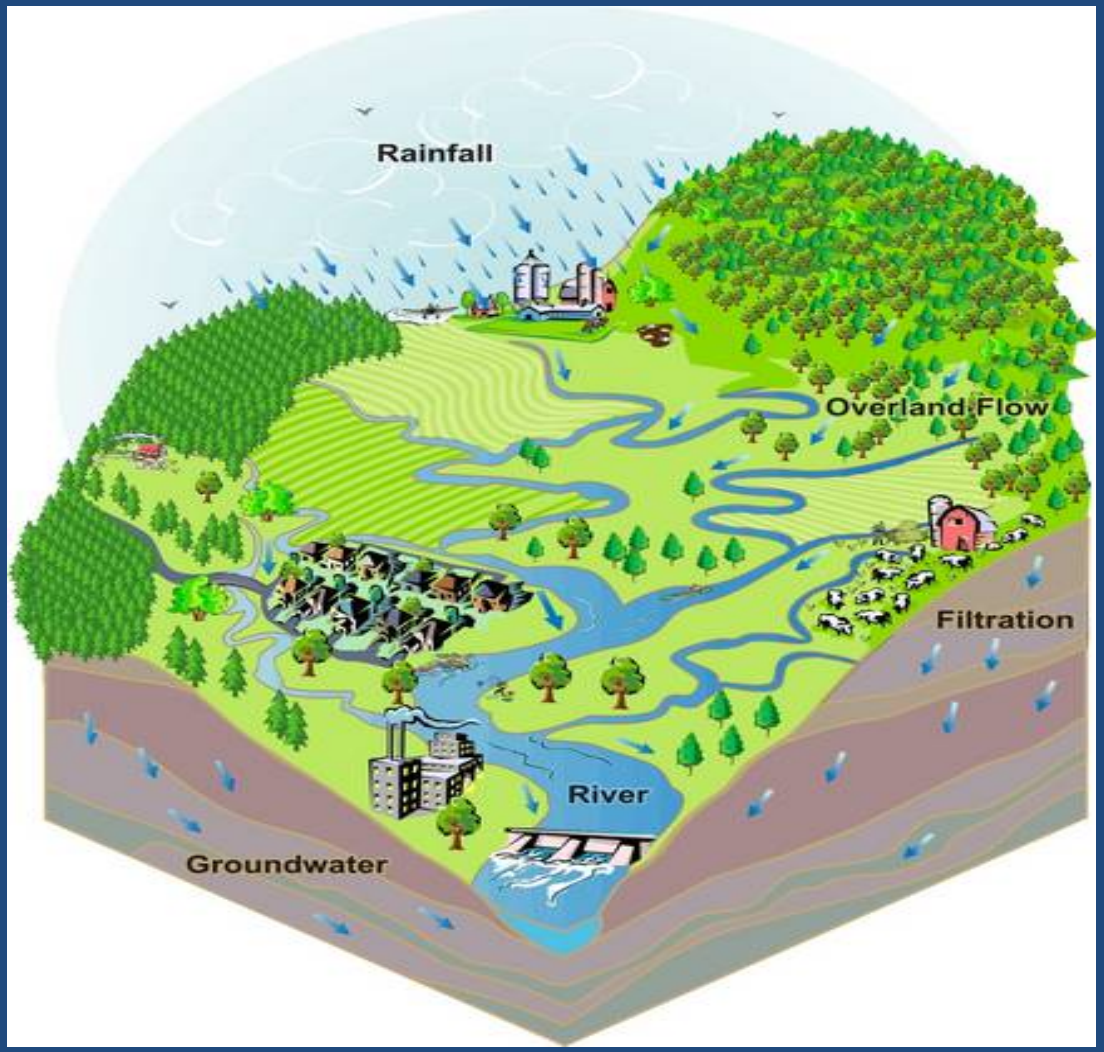


Erosion management

- Soil erosion in agricultural systems is a very important problem to manage. Each year, about 10 million ha of cropland are lost due to wind or water erosion. **Overall soil is being lost from land areas 10 to 40 times faster than the rate of soil renewal, therefore imperilling food security and the environment.**
- However, several techniques exist to prevent, reduce and control soil erosion.

Watershed management

A watershed, also known as a catchment basin or area, includes all of the land that is drained by a watercourse and its tributaries. The watershed must be managed to protect and preserve the natural features important to our society and to ensure that our continued use of them is sustainable. **Watershed management preserves a healthy ecosystem and a dependable supply of contaminant-free water.** Effective watershed management includes both planning and implementation components.



Nutrients and soil fertility management

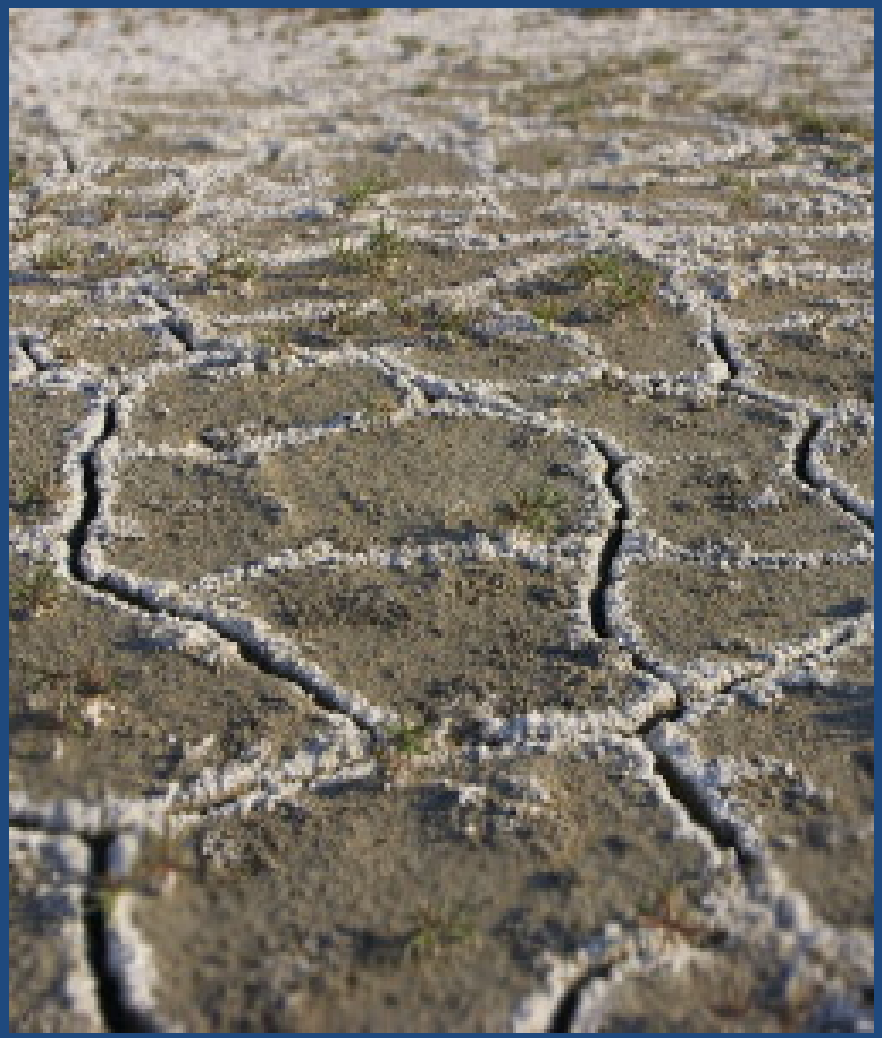
- **Soil fertility is the capacity to receive, store and transmit energy to support plant growth.** It is the component of overall soil productivity that deals with its available nutrient status, and its ability to provide nutrients out of its own reserves and through external applications for crop production.

Water and irrigation management

- Agriculture is a major user of water resources and also contributes to water pollution from excess nutrients, pesticides and other pollutants. But the competition for water is increasing and the costs of water pollution can be high. Farming accounts for around 70% of water used in the world today.
- **Climate change could affect water supply and agriculture through changes in the seasonal timing of rainfall and snow pack melt, as well as higher incidence and severity of floods and droughts**.
- Sustainable management of water in agriculture is critical to increase agricultural production, ensure water can be shared with other users and maintain the environmental and social benefits of water systems. Agriculture needs therefore to use water in a more efficient way.

Soil salinity management

- Accumulation of excess salts in the root zone resulting in a partial or complete loss of soil productivity is a worldwide phenomenon. The problems of soil salinity are most widespread in the arid and semi-arid regions but salt affected soils also occur extensively in sub-humid and humid climates, particularly in the coastal regions where the ingress of sea water through estuaries and rivers and through groundwater causes large-scale salinization.
- **Managing salinity involves striking a balance between the volume of water entering the groundwater system (recharge) and the volume of water leaving it (discharge)**.



Wetlands management

- Wetlands include a wide variety of habitats such as marshes, peat lands, floodplains, rivers and lakes, and coastal areas such as salt marshes, mangroves, and sea grass beds, but also coral reefs and other marine areas no deeper than six meters at low tide, as well as human-made wetlands such as waste-water treatment ponds and reservoirs.
- **Wetlands play a number of roles in the environment, principally water purification, flood control, and shoreline stability**.
- Wetlands are also considered the most biologically diverse of all ecosystems, serving as home to a wide range of plant and animal life. The UN Millennium Ecosystem Assessment determined that environmental degradation is more prominent within wetland systems than any other ecosystem on Earth

Livestock management

- The livestock industry and value chain employ about 1.3 billion people worldwide, i.e. almost 40% of the active population (ILO, 2011 and Thornton, 2009), directly supporting the livelihoods of 800 million poor smallholders.
- Livestock products provide 17% of the calorie consumption at the global level, and 33% of the protein in human diets.
- The demand for animal products is rapidly increasing in LDC, because of the galloping demography and the rise in the standard of living. By 2050 the global demand for dairy and meat is projected to increase by 74% and 58% respectively, and a large part of this demand will originate from developing

- **Such increased demand will certainly impact the effect of the livestock sector on the environment, climate change and land use**.

- **Currently, it is estimated that livestock directly and indirectly occupies 30% of ice free terrestrial surface and that this activity shapes the landscapes, modifying and reducing natural habitats (FAO, 2006). 18% of the total anthropogenic emissions come from the livestock sector, i.e. about 7.1 Gt CO_{2-}eq (FAO, 2006).**

- Several ways to reduce the carbon footprint of livestock exist.

- In many areas of the world, crops and livestock compete for the same resources, and require proper management to meet conservation agriculture objectives. Synergistic integration of crops and livestock offers numerous advantages. Farming systems that successfully integrate crop and livestock enterprises stand to gain synergies that directly impact production and agro-ecological efficiencies.

Integrated Pests Management

- Integrated Pest Management (IPM) is an ecosystem approach to crop production and protection that combines different management strategies and practices to grow healthy crops and minimize the use of pesticides.
- IPM programs use current, comprehensive information on the life cycles of pests and their interaction with the environment. This information, in combination with available pest control methods, **is used to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment**.
- IPM is not a single pest control method but, rather, a series of pest management evaluations, decisions and controls. In practicing IPM, growers who are aware of the potential for pest infestation follow a four-tiered approach. The four steps include: (1) Set Action Thresholds, (2) Monitor and Identify Pests, (3) Prevention, (4) Control

Pasturelands management

- An annual management regime is important to maintaining and developing permanent grasslands. Grasslands are normally managed as either pastures (animal grazing) or hay meadows.
- The way grasslands are managed affects not only their diversity and productivity, but also the extent to which they nourish soil organisms.
- The resource degradation associated with unmanaged grazing often leads to well-intentioned requests for permanent "grazing exclusion"

- **The use of fire as an alternative method of biomass removal and growth stimulation may appear attractive, but results in atmospheric pollution**, the loss of many nutrients which would be recycled in the grazing process, loss of surface litter, and, if used frequently, bare ground with a capped soil surface which inhibits the infiltration of rainfall (Savory 1988). Managed grazing is arguably the only natural process by which grasslands can be "improved" on a sustainable basis.
- **Unmanaged grazing, or complete exclusion from grazing, will inexorably (whether it be quickly or slowly) lead to desertification in all but the high rainfall areas** (Savory 1988). To achieve healthy grasslands in medium to low rainfall areas, stock need to bunched into large mobs and moved frequently (Savory 1988).

Fishery and aquaculture management

- Fisheries and aquaculture are a crucial source of income and livelihood for hundreds of millions of people around the world, with the increase in employment in the sector outpacing world population growth and employment in traditional agriculture.
- Capture fisheries and aquaculture supplied the world with about 142 million tones of fish in 2008. Globally, fish provides more than 1.5 billion people with almost 20 percent of their average per capita intake of animal protein, and 3.0 billion people with at least 15

Blue Growth

Fishery and aquaculture management cont'd

- Fisheries and aquaculture have the capacity – if supported and developed in a regulated and environmentally sensitive manner – to contribute significantly to improving the well-being of poor and disadvantaged communities in developing countries and to achievement of several of the Millennium Development Goals, especially those related to poverty reduction and food and nutrition security, environmental protection and biodiversity.

Blue Globe: Health & Wealth from Oceans

- Healthy & nutritious food
- Poverty relief
- Jobs & livelihoods
- Trade and wealth
- Climate services

Blue Globe: Threats to Oceans & its potential

- Overfishing
- Overcapacity coupled with IUU fishing
- Climate change & oceans acidification
- Coastal degradation
- Biodiversity loss & habitat destruction

Energy management

- Agriculture has a dual role as an energy user and as an energy supplier in the form of bioenergy. This energy function of agriculture offers important rural development opportunities as well as one means of climate change mitigation by substituting bioenergy for fossil fuels.
- **Agriculture uses energy directly for pumping water, housing livestock, cultivating and harvesting crops, heating protected crops, drying and storage and indirectly in the fertilizers and chemicals produced off the farm. After harvest, it is used in processing, packaging, storing, transportation and consumption.**
- **However, energy is becoming rarer and more and more expensive, threatening the profitability of agriculture. The sector needs to become less fossil fuel dependent**.

- Among the most obvious solutions is to simply improve the energy efficiency of food production and distribution. This can be accomplished by shifting from energy-intensive industrial agricultural techniques to less intensive methods (e.g., pasture-raised livestock, drip irrigation, non-synthetic fertilizers, no-till crop management, etc.), using more efficient machinery and equipment, reducing food processing and packaging, promoting decentralization of food production and improving the efficiency of food transportation.
- Farms can also generate their own energy. While houses, barns and other buildings provide ample roof space for the installation of solar panels, farms with large swaths of land in windy areas are ideal sites for wind turbines. Energy crops and agriculture wastes (dung, residues) are also a source of bioenergy.

Post-harvest losses management

- The postharvest sector includes all points in the value chain from production in the field to the food being placed on a plate for consumption. Postharvest activities include: harvesting, handling, storage, processing, packaging, transportation and marketing.
- Significant amounts of the food produced in developing countries are lost after harvest thereby aggravating hunger. The causes of post-harvest losses, which some estimates suggest could range from 15 to as high as 50 percent of what is produced, are manifold. These include: harvesting at an incorrect stage of produce maturity, excessive exposure to rain, drought or extremes of temperature, contamination by micro-organisms and physical damage that reduces the value of the product.

Post-harvest losses management cont'd

- **Food losses contribute to high food prices by removing part of the supply from the market. They also have an impact on environmental degradation and climate change as land, water, human labour and non-renewable resources such as fertilizer and energy are used to produce, process, handle and transport food that no one consumes.**
- There are a wide range of postharvest technologies that can be adopted to improve losses throughout the process of pre-harvest, harvest, cooling, temporary storage, transport, handling and market disbursement. Recommended technologies vary depending on the type of loss experienced and include: Using liners for existing packages, sorting produce by quality, providing shade, using tables, using dry ice for insect control, low energy cold storage, monitoring produce temperature, improved transportation, low-cost food processing, solar drying and curing (Kader 2003).

Partners in the United Nations system

- FAO's climate change related activities are embedded in the UN Climate Change Initiative.

- The UN Climate Change Gateway provides access to the climate change activities of all UN agencies.

United Nation Framework Conversation on Climate Change

- **United Nations Framework Convention on Climate Change (UNFCCC) supports cooperative action by States to combat climate change and its impacts on humanity and ecosystems**. Guided by the Parties to the Convention, it provides organizational support and technical expertise to their negotiations and institutions and facilitate the flow of authoritative information on the implementation of the Convention.
- **FAO supports UNFCCC and its secretariat through document reviews and technical papers, through active participation in expert groups on the CDM and technology transfer, and through side events synchronized** with the negotiations. FAO is working closely with IPCC on forest-related definitions and on forest carbon assessment in the IPCC Good Practice Guidance.

United Nations Environment Programme

- **UNEP aims to strengthen the ability of countries to integrate climate change responses into their national development processes, both by helping them to build resilience to a changing climate, and by facilitating a transition towards low carbon societies**. Working through the UN Environment Management Group, as well as in cooperation with key countries and other UN bodies, UNEP is promoting carbon neutrality, which it will facilitate through a carbon neutral network.
- UNEP also continues to build the case for the wider environmental, social and economic benefits from combating climate change through innovative policy options, pilot projects and creative market mechanisms. Creative markets and financial incentives can play their part in overcoming barriers to low carbon technologies.

World Meteorological Organization (WMO)

- **WMO is the UN system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources. Under WMO leadership and within the framework of WMO programmes, National Meteorological and Hydrological Services contribute substantially to the protection of life and property against natural disasters, to safeguarding the environment and to enhancing the economic and social well-being of all sectors of society in areas such as food security, water resources and transport.**
- WMO promotes cooperation in the establishment of networks for making meteorological, climatological, hydrological and geophysical observations, as well as the exchange, processing and standardization of related data, and assists technology transfer, training and research. issues and the mitigation of the impacts of natural disasters.
- WMO facilitates the free and unrestricted exchange of data and information, products and services in real- or near-real time on matters relating to safety and security of society, economic welfare and the protection of the environment. It contributes to policy formulation in these areas at national and international levels. In the specific case of weather, climate and water-related hazards.

United Nations Development Programme (UNDP)

- **UNDP is committed to supporting developing countries in responding to climate change concerns as part of their overall sustainable development efforts. UNDP works with developing countries to create integrated solutions to social, economic and environmental challenges, with a primary focus on improving the lives of those living in extreme poverty.**

- With its widespread country offices, UNDP has established a unique position as a long-term, trusted partner to developing countries and is well-placed to share its sustainable development expertise and provide assistance to national governments in addressing climate change in ways that are compatible with their own particular domestic development and poverty reduction agendas and developing countries on **adopting climate change adaptation and mitigation measures that reduce the vulnerability of the poor and expand opportunities for sustainable livelihoods**.

World Food Programme (WFP)

- WFP is the United Nations frontline agency in the fight against global hunger. Operations aim to: (1) Save lives in refugee crisis and other emergencies; (2) Improve nutrition and quality of life of world's most vulnerable people at critical times in their lives and (3) Enable development by (a) helping people build assets that benefit them directly; (b) promoting the self-reliance of poor people and communities. **WFP and FAO carried out several Joint FAO/WFP Crop and Food Supply Assessment Missions in**

International Fund for Agricultural Development (IFAD)

- IFAD is dedicated to eradicating rural poverty in developing countries. Seventy-five per cent of the world's poorest people - 800 million women, children and men - live in rural areas and depend on agriculture and related activities for their livelihoods. Working with rural poor people, governments, donors, non-governmental organizations and many other partners, IFAD focuses on country-specific solutions, which can involve increasing rural poor peoples' access to financial services, markets, technology, land and other natural resources.

- **In response to the growing magnitude of climate change, IFAD is increasingly integrating adaptation into its operations and contributing to mitigation programmes to make them beneficial to poor rural people.** By listening to the voices of poor rural people when planning adaptation and mitigation processes, IFAD is working to reduce the risks of climate change, while accelerating progress towards a world without poverty.

International Strategy for Disaster Reduction (UNISDR)

- **The ISDR aims at building disaster resilient communities by promoting increased awareness of the importance of disaster reduction as an integral component of sustainable development, with the goal of reducing human, social, economic and environmental losses due to natural hazards and related technological and environmental disasters**. The UN/ISDR is the focal point in the UN System to promote links and synergies between, and the coordination of, disaster reduction activities in the socio-economic, humanitarian and development fields, as well as to support policy integration.
- **The ISDR secretariat is providing information and guidance on disaster risk reduction as a tool to manage climate risks and adapt to climate change, both to inform international policy deliberations and to assist governments and other parties to reduce climate-related vulnerabilities and risk, in**

The World Bank

- **World Bank considers that climate change is clearly not just an environmental issue but one with severe socioeconomic implications, particularly in developing countries. Climate change impacts directly on the World Bank's mission of poverty reduction, and has the potential to hamper the achievement of many of the United Nations Millennium Development Goals (MDGs), including those on poverty eradication, child mortality, combating malaria and other diseases, and environmental sustainability. Accordingly, the World Bank has developed a 7-point Agenda on Addressing Climate Change:**
- Mainstream adaptation and mitigation into core development work;
- Provide innovative and concessional financing;
- Pioneer and advance new market mechanisms;
- Help create a link for environment to tap the private sector;
- Support technology development and adoption in developing countries;
- Support applied research on climate change economics in developing countries; and
- Contribute to an international regime based on areas 1-6 above.

Global Environment Facility (GEF)

- It's a catalyst and a facilitator of global environment sustainability with the core mandate of providing new and additional funding for agreed incremental costs of projects and programs in developing countries that produce global environmental benefits. **GEF projects in climate change help developing countries and economies in transition to contribute to the overall objective of the United Nations Framework Convention on Climate Change (UNFCCC).** The projects support measures that minimize climate change damage by reducing the risk, or the adverse effects, of climate change.

United Nation Commission on Sustainable Development (CSD)

- Development paths and production and consumption patterns have various impacts on the climate system. *Increasingly climate change is being considered in the broader context of sustainable development. The Commission seeks to integrate the climate policies into national development planning and national sustainable development strategies.*
- The Division for Sustainable Development provides leadership and is an authoritative source of expertise within the United Nations system on sustainable development. It promotes sustainable development as the substantive secretariat to the UN Commission on Sustainable Development (CSD) and through technical cooperation and capacity building at international, regional and national levels.

Convention on Biodiversity (CBD)

- **The objectives of the CBD are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.**
- Its principal functions are to prepare for, and service, meetings of the Conferences of the Parties (COP) and other subsidiary bodies of the Convention, and to coordinate with other relevant international bodies. As a neutral organization staffed by international civil servants, the Secretariat is accountable to the COP and its subsidiary bodies and carries out those tasks that fall under its associated mandate.

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Thank you

Merci!