



# **UNEP-China-Africa Cooperation Programme on the Environment:**

## **Success Story for South-South cooperation**

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# African Ecosystems

- ❖ Ecosystems is the foundation of Sustainable development in Africa .
- ❖ Sustainable development in Africa is associated with conservation of its ecosystem base, therefore, Africa cannot afford to lose its environmental assets through degradation as millions of Africans depends on the ecosystem services provided as water; biodiversity resources, and land for their livelihood.



# Biodiversity

Africa is rich in biological diversity.

- ❖ It has about  $\frac{1}{4}$  of the world's 4,700 mammal species.
- ❖ It has more than 2,000 species of birds— $\frac{1}{5}$  of the world's total.
- ❖ About 2,000 species of fish; between 40,000 to 60,000 plant species





# Biodiversity

## Challenge

- ❖ Although Africa contains over 3,000 protected areas they are under threat by civil wars and encroachment, as well as the introduction of alien species.
- ❖ Logging, mining, hunting, and human population growth are placing extreme stress on the forests causing habitat loss at an unprecedented pace.

# Land resources

- ❖ Africa is the second largest region in the world accounting for 20 % of the world's land mass.
- ❖ 66 % of Africa is arid or semiarid.
- ❖ 22 % of Africa's land area is under forest, 43% is deserts and 21 % is suitable for cultivation.
- ❖ 30 % of the total land area is permanent pasture.
- ❖ Main practices are small-scale cultivation, or pastoralism, which is common in arid areas of northern, eastern and southern Africa

# Land resources

## Land Degradation

- ❖ 31% of the region's pasture lands and 19 % of its forests and woodlands are classified as degraded.
- ❖ Forests account for over 20 % of Africa's 30 million km<sup>2</sup> of land area, but are being destroyed and degraded by logging and conversion to plantations, agriculture, roads, and settlements.
- ❖ As a region, Africa is losing more than 4 million hectares of forest every year—twice the world's average deforestation rate.

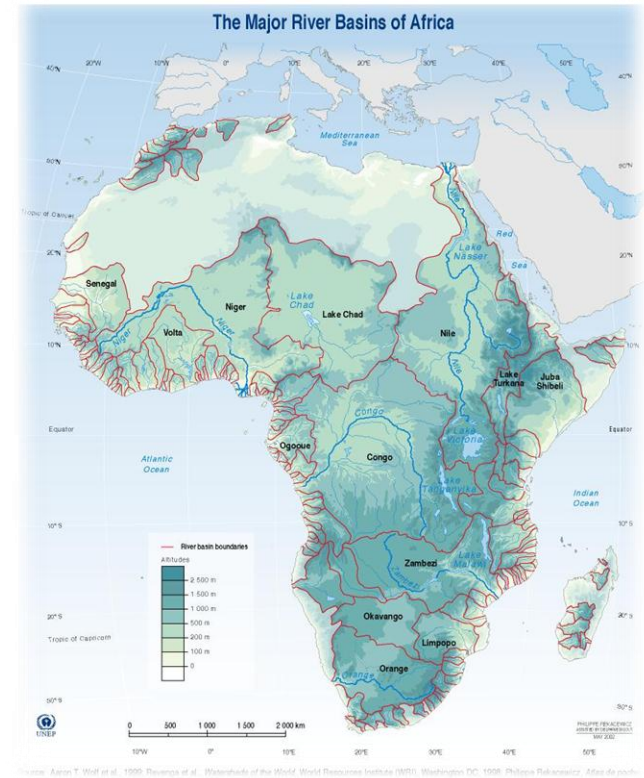




# Water resources

## Large trans-boundary ecosystems

- More than 80 of Africa's river and lake basins are shared by two or more countries and many countries depend on water flowing from outside their national boundaries.
- Conflict due to political and economic difficulties increased the number of refugee migrations, causing further pressure on the already-stressed environment.





# water resources

## Water shortage

- ❖ Although Africa contains rich water resources, it is the second driest continent in the world.
- ❖ Millions of Africans suffer from water shortages due to climate change and variability, population growth and increasing water demand.
- ❖ Over 300 million people in Africa face water scarcity conditions.
- ❖ About 58 % of the population has access to piped water supply, and only about 37 % of the population has access to improved sanitation (World Bank).



## Water Quality

- ❖ Almost half of the population in Africa suffers from one of the major water-related diseases



# Climate change impact on water

## 1- Coastal Areas:

- ❖ The coastal areas of West Africa (from Senegal to Nigeria), of eastern and southern Africa (from Mozambique to Tanzania) and the Nile delta, are at risk from flooding, sea level rise, storm surges (except the Nile delta), and saline intrusion into surface and groundwater.

## Sea-level rise:

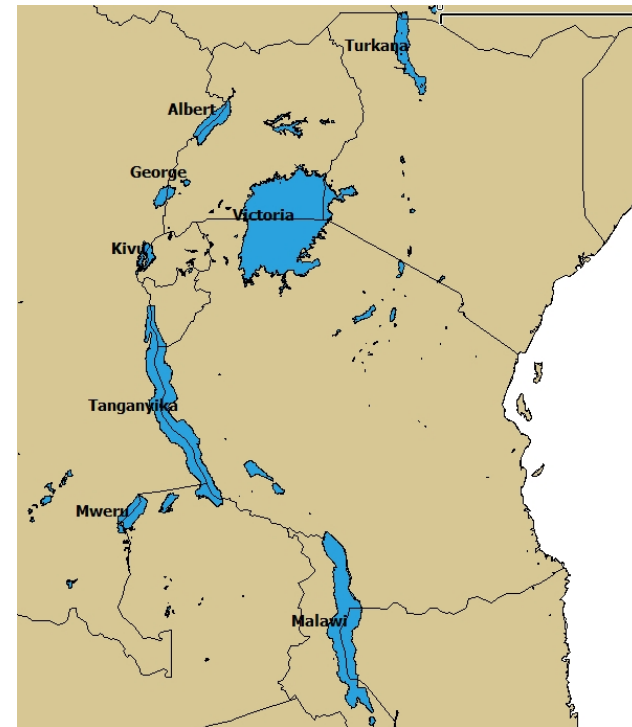
- ❖ Africa has close to 320 coastal cities (with more than 10,000 people), and an estimated population of 56 million people (2005 estimate) living in low elevation (<10-m) coastal zones. Sea-level rise will probably increase the high socio-economic and physical vulnerability of coastal cities.



# Climate change impact on water

## 2. Great lakes:

- ❖ The great lakes of the Rift Valley (Lakes Victoria, Turkana, Tanganyika, and Malawi) and Lake Chad are extremely vulnerable to climate change.
- ❖ Around 50 million people are currently dependent on these lakes, most of which are already experiencing a reduction in fish stocks, decreasing water quality, and reduced water levels. Climate change will aggravate these inclinations with the possibility of the collapse of the fisheries, massive loss in biodiversity, increased eutrophication and decreased water quality.



# Climate change impact on water

## 3. The semi-arid regions:

- ❖ In the semi-arid regions of the Sahel, central and eastern Southern Africa, and the Horn of Africa, large rural and peri-urban communities are largely dependent on rain-fed agriculture, and bio-mass derived energy.
- ❖ Their water supplies are often insecure and may be dependent on local rivers or groundwater. Increased climatic variability in these regions, combined with more intense droughts and floods, increased temperatures and lower rainfall overall, will put these communities hugely at risk.



# Ecosystem Based Adaptation Program for Africa

## Context:

- ❖ Climate change adaptation an immediate and urgent global priority
- ❖ Majority of Africa's ecosystems heavily affected
- ❖ Several years after the development of national adaptation programs of action (NAPAs), many Sub Saharan African countries are still struggling to implement adaptation actions that build the resilience of their ecosystems and communities.
- ❖ Concrete and speedy actions required to match the urgency

## Proposed Response:

- ❖ Regional Ecosystem Based Adaptation (EBA) approach

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# Ecosystem-based adaptation (EBA)

- ❖ is an emerging approach that helps people to adapt to the adverse impacts of climate change. It is the use of biodiversity and ecosystem services as part of an overall adaptation strategy.
- ❖ EBA uses sustainable management, conservation and restoration of ecosystems, taking into account anticipated climate change impact trends, to reduce the vulnerability and improve the resilience of ecosystems and people to climate change impacts





## UNEP response

- ❖ UNEP Climate Change Adaptation and Development Program (CC DARE) for Sub-Saharan Africa.
- ❖ CC DARE countries : Benin, Ethiopia, Ghana, Malawi, Mozambique, Rwanda, Senegal, Seychelles, Tanzania, Togo and Uganda.
- ❖ Activities covered education, training, public awareness activities; Capacity Development and Policy influence and adjustment.
- ❖ The CC DARE Program has provided countries in sub Saharan Africa with concrete climate change adaptation actions that will continue to sustainably provide them with resilient livelihoods under a changing climate.

# Project Objectives

- ❖ To provide regional Ecosystem Based Adaptation approach necessary to support countries with climate change implementation strategies
- ❖ To identify and disseminate lessons learnt and best practices

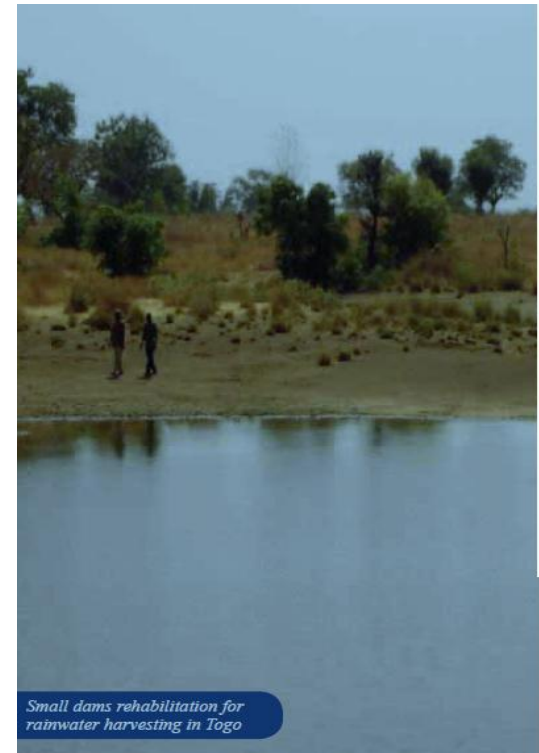
## Expected Outcomes:

- ❖ Increased number of regional/national governments incorporating EBA approaches, best practices
- ❖ Aggregation and dissemination of lessons learnt, new knowledge and experiences; replication and upscaling of EBA actions

# Working at the country level

## Togo

- ❖ Rehabilitation of two small dams serving local communities with their water supplies jointly implemented by UNEP and UNDP for Sub-Saharan Africa.
- ❖ The rehabilitation of small dams is currently serving 13 villages with 20,000 people benefiting.



*Small dams rehabilitation for rainwater harvesting in Togo*

# Working at the country level

## Seychelles

- ❖ Raising awareness among the general public on climate change impacts on the Seychelles, and rain harvesting as a means of adapting to water problems due to climate change.
- ❖ About 400 teachers and the students of 6-7 schools were educated on ecosystem management principles.



Water cisterns installed in local villages and schools

# EBA for the mountain ecosystem

The project “Ecosystem Based Adaptation in Mountain Ecosystems” looks at the impacts of climate change on the integrity and functioning of mountain ecosystems in three countries, namely Nepal, Peru and Uganda.

- ❖ The project is a jointly implemented by UNDP, UNEP and IUCN. Now an initiative to support the sustainable mountain development is being implemented by UNEP, FAO and UNESCO.



# Basin approach

## Adapting to Climate Change in the Nile Basin

- ❖ Adaptation to Climate Change Induced Water Stress in the Nile River Basin, is a Swedish Government funded project which ran from 2009 to 2012 , focused on the Nile River Basin.
- ❖ It entails engaging all Nile Basin Countries in the collection of relevant data, mapping of "hot spots" within the basin, defining adaptation options at national, sub-national and local levels and demonstrating adaptation at field/community level.





# UNEP-China-Africa Cooperation:

- ❖ In November 2008, UNEP has started to work with MOST in a cooperation agreement to build the capacity of African countries in the fields of ecosystem management, disaster reduction, climate change adaptation.
- ❖ Under UNEP-Regional Office for Africa's overall coordination, four environmental demand-driven projects were implemented in Africa in Phase 1, focusing on enhancing the capacity of monitoring shared water resources of Lake Tanganyika, Re-use of waste water for forest irrigation, drought early warning system and adaptation to drought, and promoting rainwater harvesting in Africa.

# UNEP-China-Africa Cooperation:




# UNEP-China-Africa Cooperation: Phase 2

- ❖ Aiming at strengthening the capacity of the African countries to assess and maintain ecosystem functioning of the freshwater ecosystems, UNEP and MOST signed the new Memorandum of Understanding on November 2011.
- ❖ The program has now moved into Phase 2 under the theme of “One River, One Lake, and One Desert”.





## Six Projects of Phase 2

1. Water resources planning for selected water catchments in Africa.
  2. Development and demonstration of new technologies for safe water supply.
  3. Water quality and ecosystem monitoring and demonstration of new waste water treatments.
  4. Drought early warning system and adaptive technologies for the dry areas of Africa.
  5. Development and demonstration of water-saving techniques for dry land agriculture and agricultural mapping in Africa.
  6. Development and demonstration on technologies for combating desertification.
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# Project 1: Water resources planning for selected water catchments in Africa

## Objectives

To provide water resources planning and management technical support for African catchments and countries for purpose of improvement of food security, sustainable development and environment conservation, particularly in Nile basin, Lake Tanganyika watershed.

- ✓ Participating African Countries: Uganda, Kenya, Burundi, Ethiopia, Sudan, Egypt .
- ✓ Participating Institutes from China: Gansu Research Institute for Water Conservancy.



## Project 2: Development and demonstration of new technologies for safe water supply

### Objectives

Develop African capacity for safe drinking water supply by diagnosing and revealing the problems of safe water supplying in urban and rural area in cooperation with local organizations.

- ✓ Participating African Countries: Kenya, Uganda, Burundi
- ✓ Participating Institutes from China: Tongji University, Water Resources Research Institute of Gansu.





# Project 3: Water quality and ecosystem monitoring and demonstration of new waste

## Objectives

Capacity building on monitoring water quality through implementing pilot project on monitoring Lake Tanganyika basin and sharing experiences on new techniques for urban sewage management.

## Participating African Countries:

Lake Tanganyika Basin, the Lake Victoria Basin, the Nile Basin

## Participating Institutes from China:

Nanjing institute of geography and limnology, Chinese Academy of Sciences, The Institute of Botany of Chinese Academy of Sciences, Lanzhou University, Tongji University, China University of Geosciences



# Project 4: Drought early warning system and adaptive technologies for the dry areas of Africa

## Objectives

Develop the capacity of the participating countries to cope with drought through demonstrating new farming technologies for water conservation and use.



✓ Participating African Countries:  
Morocco, Zambia, Egypt, Niger, Ethiopia

✓ Participating Institutes from China:  
The Institute of Agricultural  
Environment and Resources, Shanxi  
Academy of Agricultural Sciences.



## Project 5: Development and demonstration of water-saving techniques for dry land agriculture

### Objectives

Build capacity of local authorities to improve soil/water conditions for higher crop production under limited water resources.

#### ✓ Participating African Countries:

Kenya, Ethiopia, Egypt, Mali, Zambia, Zimbabwe

#### ✓ Participating Institutes from China:

Lanzhou University; Northwest Agricultural and Forest Science and Technology University.





# Project 6: Development and demonstration on technologies for combating desertification

## Objectives

To enhance combating desertification capacities and demonstrating innovative technologies for sand fixation and dry land management.

### ✓ Participating African Countries:

Algeria, Kenya, Niger, Nigeria, Egypt, Mauritania

### ✓ Participating Institutes from China:

Gansu Desert Control Research Institute, Xinjiang Ecology & Geology Research Institute of Chinese Academy of Sciences, Lanzhou University, China Science and Technology.





Thanks for your attentions !