Annex I Expert Global Forum on Sustainable Development:
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Domestic adaptation to climate change in Rwanda

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Outline of Presentation

- Rwanda Key NAPA Findings;
- Mainstreaming adaptation priorities into planning (EDPRS –Economic Development & Poverty Reduction Strategy);
- Emerging knowledge on adaptation strategies
- Challenges for a programmatic approach in Rwanda

Vulnerability of Rwanda to climate variability and change

1. Rwanda, country of thousand hills: 26.338 km^2;
   Population: 9,600,000 habitants (2008);
   High densely country: 364 habitants per km^2.

2. Increasing population rate : 3.1%.

3. About 17 % living in urban area.

4. People living under the poverty line is estimated at 56%

5. Practice of rain-fed agriculture (GDP contribution = 36.4 %,
   (Food crop = 31.4 %)

6. over 99% of the rural population depend on energy sources other than electricity; estimated 95% of the total energy supply made up of firewood, charcoal, and agricultural residues

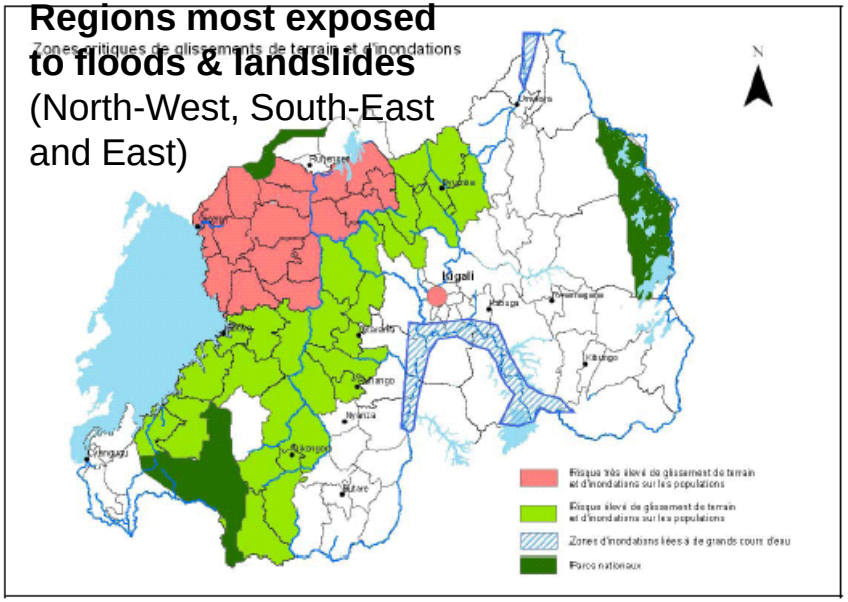
- Rwandan population is subject to multiple stresses and these often cannot be separated in adaptive practice to climate change

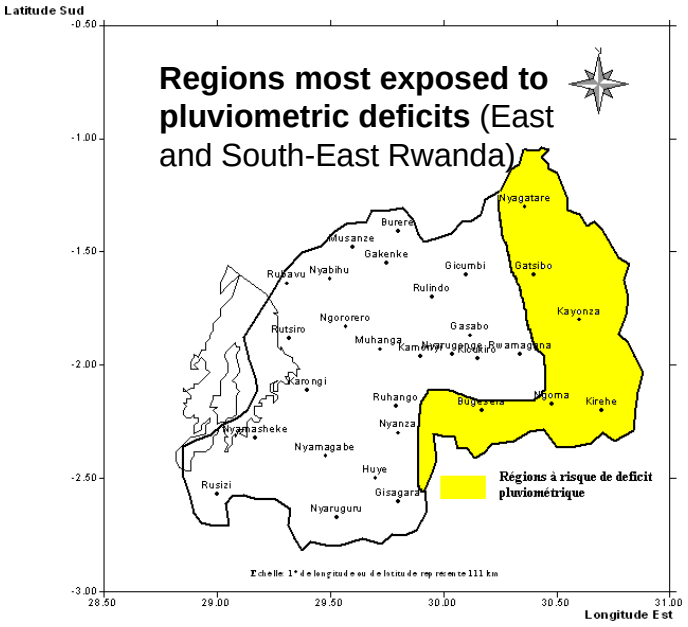
Rwanda , land of thousand hills

Located in high-risk natural landscape areas and its adaptive capacity is undermined by poor socio- economic development.

Flash floods with serious impact on lives and infrastructure, Sept 2007

The agriculture sector: almost 90% of the population directly dependent on the natural environment and agriculture for its survival.





Identified risks and impacts to climate change during NAPA Process: LEG Methodology/ Regional/National participatory consultations, MCA/ NAPA team

N°	Risks	Impacts	
1	**Prolonged seasonal drought**	Failure of harvest; loss of young seedlings; increased water demand	
2	**Short period droughts in rainy seasons (dry spells)**	Critical growth of food producing crops and reduced productivity of harvests.	
3	**Recurrent droughts on 2 or 3 successive years**	Reduction in water resources and hydroelectric energy; Drying of banana plantations; Pauperization of the population especially in rural areas; Displaced populations; Food aid.	
4	**Rains with high intensities of more than 50 mm/h**	Rise in the water level, floods, landslides, localized landslides; Loss of production in swamps products; Soil erosion on basin sides and expansion of river beds; Malaria case increase.	
5	**Low precipitation**	Critical growth of food producing crops and poor harvests.	

Barriers & Challenges to implement NAPA activities in RWANDA

- NAPA priorities, urgent and immediate activities, high costing and lack of financial resources due to high level of poverty. Indeed, LDCF, SCCF, Adaptation Fund are in place, but very long procedures;

- Literacy level is low; Sensitization to create awereness is needed

- Lack of local expertise to conduct research on adaptation measures

Identified Priority Options

PRIORITY OPTIONS selected (MCA) for which projects shall be prepared for funding and implementation of NAPA in Rwanda (Water & Land Ecosystems, Agriculture, Energy).

- Priority n° **1**: **An integrated water resources management (IWRM**)
- Priority n° **2**: **Setting up an information system for early warning of hydro agrometeorological systems and rapid intervention;**
- Priority n° **3**: **Promotion of non agricultural income generating activities;**
- Priority n° **4**: **Promotion of intensive agro-pastoral activities;**
- Priority n° **5 : Introduction of species resistant to extreme conditions;**
- Priority n° **6**: **Development of alternative sources of energy to firewood.**

Mainstreaming adaptation priorities into planning (EDPRS 2008 - 2012 Economic Development & Poverty Reduction Strategy)

• EDPRS development: High representation of Public institutions (Ministries, Research Institutions, Government Agencies…….), UN Agencies (WB, UNDP,WFP, WHO, UNICEF), local & international organisations;

• Establshment of 12 sectoral working groups, which must mainstream the environment as a cross-cutting issue; Environment have been integrated into the discussion of sectoral policies and programmes.

• Evaluation of PRSP1 (2002-2005)

• Sector self evaluation

Inputs of Environment into the EDPRS?

A. Environment as a pillar:

- **Aim: Ensure optimal utilization & sustainable management of natural resource base**

B. Environment as a cross cutting issue (Real mainstreaming):

- **Process:**

- A checklist was prepared to mainstream environment into sector logframe (objective, objectively verifiable indicator, means of verification, assumptions) and District Development Plans

- A Key note was prepared to be used in each sector.

- For mitigation of impact of climate change,key activities were identified in the following sectors:

Inputs of Env (next)

- Agriculture: intensification, soil conservation, varieties resistant to the peristant drought, irrigation and crops conservation
- Energy: access to electricity, increase the use of alternatives to the woods cooking stoves
- Infrastructures: Increase the density and quality of the road network, urban Master plan and settlement, a functionning an early waring system
- Employment: Off-farm employment
- Industry: crops transformation and add value for income generation
- Forestry: reforestation and better management of forestry resources for economic and ecologic services.
- Water and sanitation: increase the access to safe drinking water, increase access to sanitation, integrated management.
- Health: Increase environmental health by reduction of water-borne deseases

Emerging knowledge on adaptation strategies

Convincing on- going pilot project demonstrations on how the ground livelihood activities can link with policy processes to reduce existing and future climate related vulnerability:

- **UNEP/GEF Pilot Project on reducing the vulnerability of the energy sector to the impacts of climate change in Rwanda:**

  (collective adaptation experience),
- **IMCE (Integrated Management of Critical Ecosystems)**
- **DEMP (Decentralisation Environment Management Project);**

UNEP/GEF Pilot Project on reducing the vulnerability of the energy sector to the impacts of climate change in Rwanda: (collective adaptation experience),

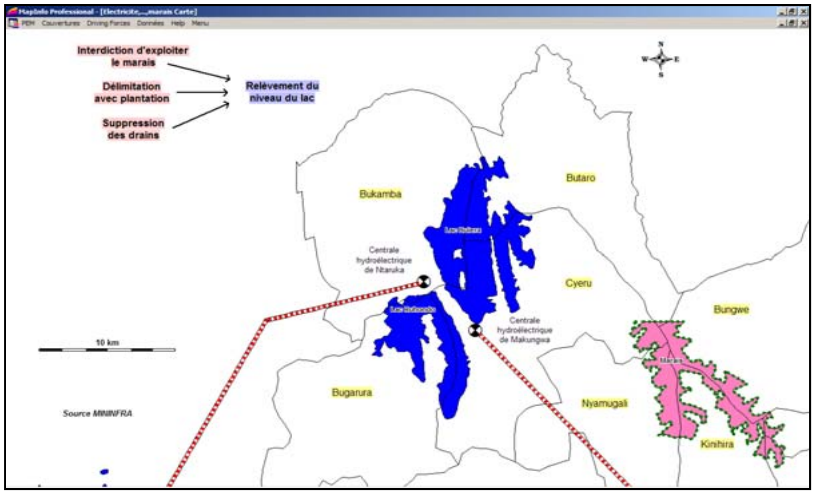
The objective is to improve the management of hydro potential in Rwanda.

This will:

- involve identifying the causes for reductions in water potential across the country with respect to weather and climate change phenomenon and implementing a pilot project addressing the identified causes.

- initiate policy change that supports the implementation of appropriate measures that safeguard long-term sustainability of hydropower use in the country and in the region.

A pilot project is therefore proposed on two hydropower stations (Ntaruka and Mukungwa) that are fed by three series Rugezi marshland and 2 lakes (Bulera & Ruhondo) in Northern Province.



Due to changes in rainfall patterns (2004 – 2006) period) and erosion from inadequate agricultural practice, the level of Bulera lake fell by 4 m altitude .

This has reduced Ntaruka's production from 11,25 MW to only 1 MW; and Mukungwa's production from 12.5 to 3 MW during 2007 year.

UNEP/GEF Pilot Project on reducing the vulnerability of the energy sector to the impacts of climate change in Rwanda: (collective adaptation experience),

- **achievements, phase 1** (May 2005 to February 2006) :

- Engagement and information Needs assessment of decision makers.

- Initiation of engagement with communities located in the watershed area:

- Energy Baseline, the purpose of which is to allow for the monitoring and evaluation of the pilot project's impact on energy production, use and efficiency in Rwanda.

Ongoing, Phase2 (March 2007 to March 2009) includes extensive field activities, continued policy engagement and policy up-scaling.

- three areas in which this project would like to affect change:

(a) community vulnerability, where peoples' vulnerability to climate stress is reduced through improved livelihoods and ecosystems;

(b) energy, both in terms of increased supply and more efficient use, and

(c) policy, where climate change is integrated into national and sub-national policy strategies.

3.2 **IMCE Project**
(Integrated Management of Critical Ecosystems)

The project's goal is to achieve "a better protection and conservation of natural resource base through the promotion of an integrated approach to land resource management"

Specific objectives include:

- Rehabilitation of farmed wetlands and hill-side areas by providing incentives to farmers and farmers organizations with the aim to induce an adoption of soil and water conservation technologies

- Promote an environmentally friendly farming technologies to help increase food production and rural income

Adopted guiding principles:

Bottom-up planning involving the cells and sectors
A participatory M&E system that integrates the leadership of cells, sectors and districts
Provision of capacity building to the CDC "Community Development Committee"

Adoption of a much stronger participatory approach using community-based ecosystem management plans

3.2 **IMCE Project**

The IMCE project achievements to date include:

- Socio-economic studies for the 4 critical ecosystems

- Development of a policy and legislation framework for the sustainable management of wetlands

- Construction of terraces
- Integrated Watershed management plans of the four project sites
- Establishment of a bamboo and Pennisetum belt around the marshlands

- Put in place a system to decrease the speed of water flow through the central channel of Rugezi marshland

- Mainstream biodiversity and environmental conservation aspects into sector-based policies and local development plans

- Develop environmental education, information and communication plan to be approved by the beneficiaries

DECENTRALISATION AND ENVIRONMENT MANAGEMENT PROJECT (DEMP), 2004- 2007

DEMP Objectives:

- Support districts to mainstream environment in development plans
- Financial support to environment projects included in District development plans

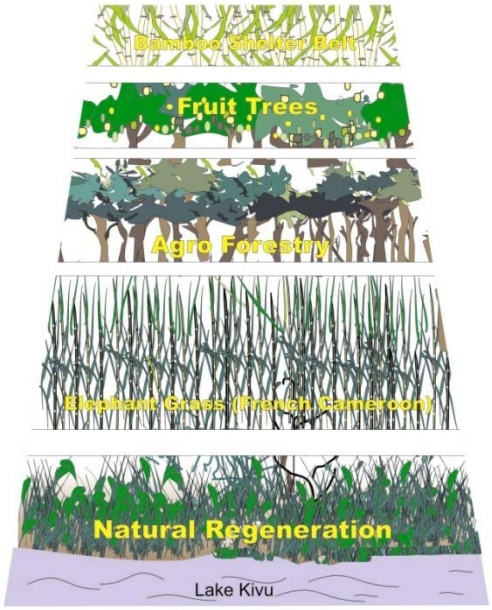
Realisation:

- Protected lake Kivu banks on 50 meters by following means:
  - Left 10 meters for natural grass regeneration,
  - 20 meters for elephant grass,
  - 10 meters for agroforestry
  - 5 m for fruits trees and
  - 5 m for bamboos

- Protected the banks of tributaries rivers of Kivu Lake
- Supported districts to construct houses for 1146 families shifted from 50 m
- Supported each family with a cow which, is fed on the elephant grass mentioned above
- Reforested 200 ha of Mukura natural forest by planting natural seeds

Figure showing how Kivu lake banks have been restored

Kivu lake banks on 50 m



Before and after rehabilitation

Lessons learnt

Close relationship of the pilot project team with the community and the work with community-based approaches demonstrate:

- a good position to adapt to and help communities prepare for changes in disaster patterns due to the climate.
- the community engagement activities have been useful raising awareness about the project and that local stakeholders are now looking forward to participating in its implementation.
- the best possible adaptive mechanisms of response to the climate change effects.
- that there is no single solution to propose the sustainable development of catchments areas/watershed. Indeed, the development of new forms of governance of critical ecosystems passes by the control of a "cocktail" of strategies related to ecological, social, economic and cultural conditions on the territory of management
- Activities lead to environment protection also contribute to poverty eradication
- In presence of the desired capacity building, the population can attain sustainable results
- Involvement of local authorities is mandatory if a project in environment management is to succeed

Challenges for a programmatic approach in Rwanda

- Weak integration of adaptation activities in some sectoral plans and budgets: ex. Private sector

- Poor allocation of budget for research

- Meteo early warning systems not considered in the work of the most of sectors

Thank you for attention.