



Building Consensus on Albertine Rift Climate Change Adaptation for Conservation

The National Adaptation Programme of Action (NAPA) process in Rwanda

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Outline

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1. Background

- **Context:**

- ✓ Ratification of the UNFCCC by the GoR: 18/08/1998
- ✓ Awareness by the COP of the UNFCCC that Least Developed Countries (LDC) lack necessary means to face the problems linked to climate change,
- ✓ Establishment of guidelines for the preparation and implementation of National Adaptation Programmes of Action (NAPA): Decision 28 of the 7th Conference of Parties (28/CP.7) : 29th to 10th November 2001.
- ✓ Publication of the First National Communication on CC: June 2005.
- ✓ Rwanda, as Party to UNFCCC, received in July 2005 an LDC grant for the preparation of NAPA;
- ✓ Technical advice to the project coordination and training of the people of the national NAPA team in OUAGADOUGOU and DAR ES SALAAM in 2003 and 2004 respectively: Facilitated by UNEP.

Background (Ctn)

Composition of the NAPA Team:

- ✓ The National Coordinator of NAPA project,
- ✓ The National Focal Point of the Convention (UNFCCC) was Director from Rwanda Environment Management Authority (REMA),
- ✓ The Representative of Environment Programmes in the Ministry of Lands, Environment, Forests, Water and Mines (MINITERE),
- ✓ The Representative-Focal Point of Environment Programmes at the Development Planning Unit/Ministry of Finance and Economic Planning (MINECOFIN), and
- ✓ The Director of Lands and Environment in the Prime Minister's office.

Background (Ctn)

- **Other stakeholders involved:**
 - ✓ Representatives from sectors most linked to CC : Infrastructures, agriculture, education, trade and industry and health;
 - ✓ National experts coming from research institutions: NUR, ISAR, KIST, PSF, IRST, Electrogaz (RECO-RWASCO), Consultants;
 - ✓ Representatives of the civil society including women and youth associations.
 - ✓ Representative of local communities : Environment officers at the district level.

2. Methodology

- **Objectives of the study:**
 - ✓ To evaluate the present vulnerabilities to climate change according to eight guiding steps of NAPA considering the socio-economic aspects and land use that exacerbate these vulnerabilities;
 - ✓ To identify the most vulnerable groups of population, regions and sectors;
 - ✓ To determine priority adaptation options;
 - ✓ To select urgent and immediate activities and projects to be implemented;
 - ✓ To define their profiles.

Methodology (Ctn)

- **8 Steps followed:**

- ✓ Phase 1: Creation of a pluridisciplinary team;
- ✓ Phase 2: Synthesis of available information;
- ✓ Phase 3: Rapid participatory vulnerability assessment :
- ✓ Phase 4: Consultation of stakeholders and the public;
- ✓ Phase 5: Identification of NAPA Activities ;
- ✓ Phase 6: Prioritization of criteria and screening activities;
- ✓ Phase 7: Ranking activities;
- ✓ Phase 8: Development of NAPA Project profiles;
- ✓ Phase 9: Validation and submission of NAPA.

3. NAPA Structure

3.1. Baseline of Socio-economic and environmental context :2002 (Step 2):

- ✓ In 2002, agriculture contribution to GDP accounted for 43% and sustained almost 90% of the population;
- ✓ The population living below poverty line: 60%, of which 66% in rural areas. About 43% of the population were in a situation of extreme poverty.
- ✓ The rate of use of wood in the national energy production was : 94%
- ✓ The rate of soil protected against soil erosion was 20%;
- ✓ A weak capacity of observation, description and evaluation;
- ✓ Existing adaptation actions to climate change in Rwanda:

Baseline of socio economic context (Ctn)

- The policy of managing disasters ;
- Irrigation in the regions seriously and regularly affected by the famine
- The cultivation of rice in swamps and shallow areas;
- One cow per family program;
- Annual programmes of reforestation and fight against erosion;
- UNEP/GEF Pilot Project on reducing the vulnerability of the energy sector to the impacts of climate change in Rwanda.

3.2. The climate change in Rwanda

Normal situation : Equatorial climate deeply modified by the relief at a varied altitude (900 m in south-west, to 3000-4507 m in the regions of Congo-Nile Crest and the chain of volcanoes.

Climate change in Rwanda (Ctn)

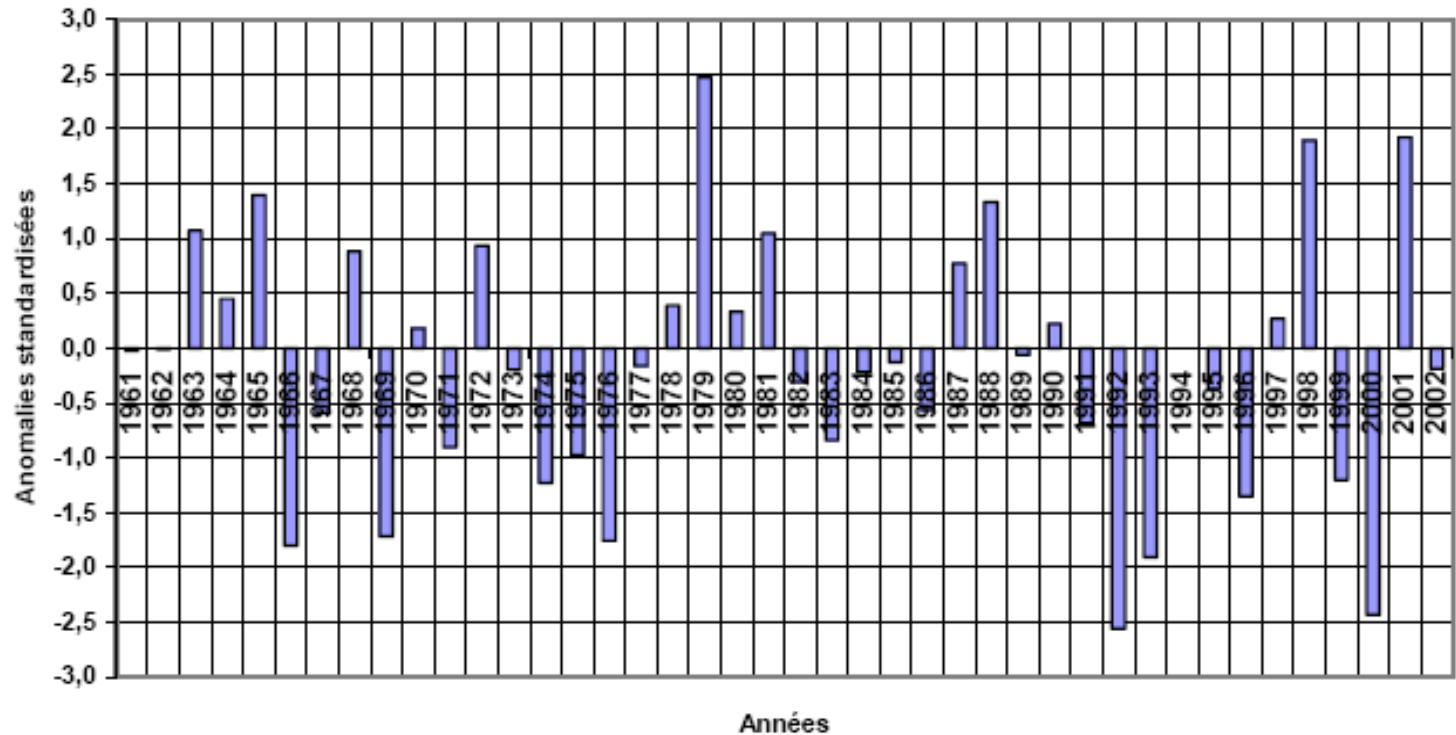
Observations from the past decades indicates that rains as well as temperatures were moderate due to a number of factors:

- ✓ General and regional atmospheric circulation:
ITCZ which , crosses Rwanda twice a year and determines two rainy periods ,
- ✓ Local micro climatic conditions: Breezes of the lake Kivu, Orographical rains

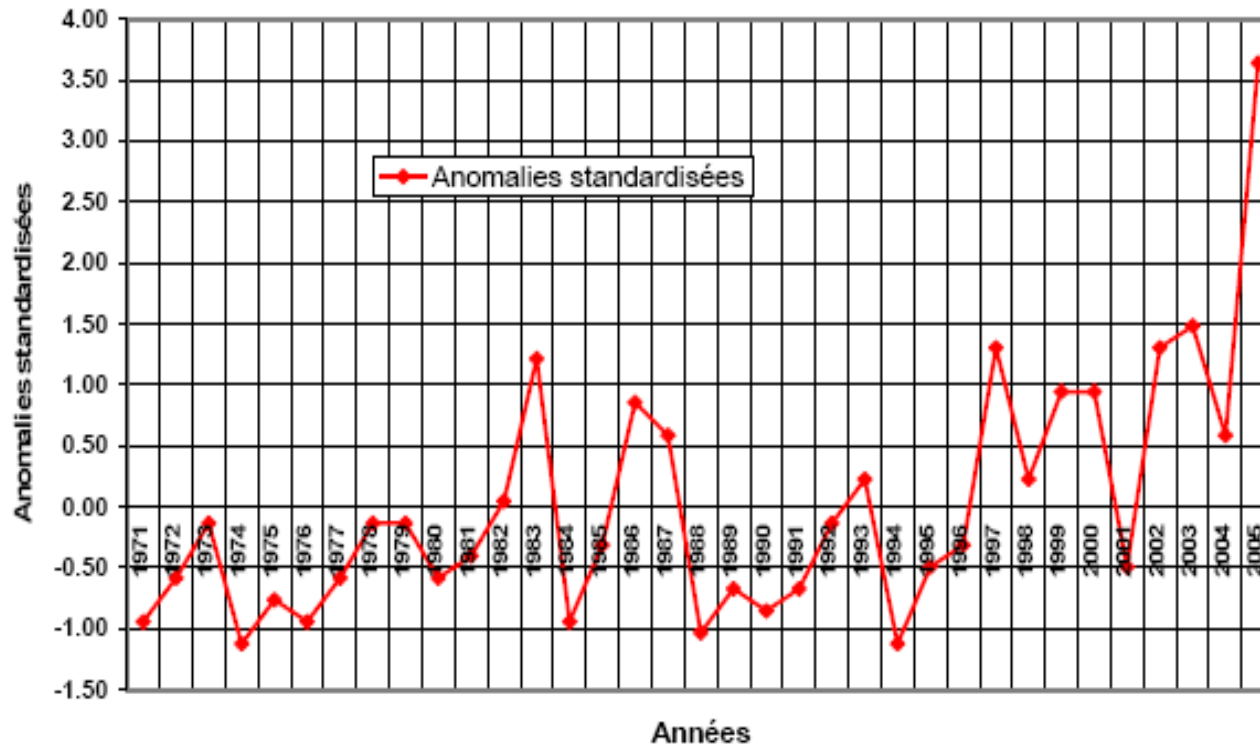
3.3. Climate variability and extreme - historical trends

- ✓ Observations from 1961 to 2002 indicates periods of pluviometric deficit (1992, 1993, 1996, 1999 and 2000), pluviometric excesses (1998, 2001) and abnormalities variation of annual average maximum temperature and annual average minimum temperature.

Standardized anomalies of the rainfall in Kigali (1961-2002).



Variation of the standardized anomalies of the annual maximum temperatures in Kigali (Period: 1971-2005)



3.4. Vulnerability assessment (Steps 3-4)

Sectorial studies conducted by Experts, the PRSP1, The Initial communication on CC , public consultations in all provinces in 2005, made it possible to demonstrate 6 sectors and 4 regions most vulnerable to climate change:

Sectors: agriculture and livestock, energy&industry, land , water resources, human settlement and forestry .

Regions: East, South-East, North, Centre-west.

Vulnerability Assessment (Ctn)

Climate hazards	Vulnerable regions	Consequences on most affected sectors
Increase of temperature, prolonged droughts and high evapo-transpiration	Swamp complexity of Akagera river, Akagera National park, Rugezi swamp.	Water resources : -Low river flows and disturbance of hydraulic cycle in general. -Low water level of lakes and rivers; -Drying up of water sources. -Loss of aquatic ecosystems (25 Hippopotamus dead in the Akagera National Park during la Nina 1999-2000).
	East , Southeast and some zones of the Central plateau (Umutara, Kibungo, Bugesera, Mayaga Gitarama) .	Land Ecosystem and Agriculture - Decrease banana production. - Cereal and leguminous production especially maize and beans growth becomes almost impossible. - Favorable conditions to parasites (caterpillars on sweet potatoes and beans). - Pastures without perpetual water or from irrigation become threatened and extinct. (1999-2000, 2005-2006).

Vulnerability Assessment (Ctn)

Climate hazards	Vulnerable regions	Consequences on most affected sectors
		Food security Fluctuations in the production, risks of food insecurity and favorable conditions to famines.
	6 hydroelectric stations, Ntaruka, Mukungwa, Gihira and Gisenyi, RUSIZI I and RUSIZI II.	Hydroelectric and wood energy Reduction of hydroelectricity production. Limited forest resources and exposed to direct and indirect drought effects (bush fire). Low production of wood resources.
Heavy rains, floods, frequent landslides and landslips.	Riverside regions of Akagera, Akanyaru and Nyabarongo rivers.	Health Proliferation of mosquitoes and diseases of water-borne origin (malaria, diarrhoea, etc). Loss of animal (175) and human lives (108 died among 266,993 affected) : 1998-2003.

Vulnerability Assessment (Ctn)

Climate hazards	Vulnerable regions	Consequences on most affected sectors
	High altitude regions of West, South-West, North, Centre and Congo Nile crater foothills.	Agriculture Erosion becomes an important factor for low agricultural production and food insecurity. Crops destruction risks and high silting-up particularly in swamps and shallows. Infrastructures Destruction of anti erosive systems, destruction of economic infrastructures (roads, bridges, schools, hospitals, houses, etc.). Economy Reduction of production, and GDP. Reduction of rural population revenues. Increase of foodstuff cost. Movements of the population in search of food.

Vulnerability Assessment (Ctn)

Climate hazards	Vulnerable regions	Consequences on most affected sectors
	Catchment areas of: Nyabarongo, Rugezi, Akagera and Mukungwa rivers.	Ecosystems - Water pollution and invasion of aquatic pollutant plants (toxic products, water hyacinth...); -Loss of soil fertility by leaching of arable lands; -Increase of sediments on arable land at the outlets of slopes; -Risks of irreversible land leaching -Soil erosion and degradation; -River, lake and reservoir sedimentation.

3.5. Identification and classification of adaptation options (Step 5)

During the phase 4 (Consultation of stakeholders and the public) a set of 40 options were identified in 6 vulnerable sectors. The NAPA Team proceeded by selecting 20 options taking into account the integrated approach and cross cutting relations among sectors. Those options were then confronted to national priorities for maintaining a comprehensive process linking **urgent and immediate needs** established into the PRSP and other national development programs. Then 11 priority options were retained as follows:

1. Promotion of non rain-fed agriculture;
2. Intensive agriculture and animal husbandry;
3. Introduction of drought resistant species;

Identification of options (Ctn)

4. Integrated water resource management;
5. Storing and conservation of agriculture produce;
6. Information systems, early warning and rapid intervention mechanisms;
7. Development of sources of alternative energy to firewood;
8. Preparation and implementation of a national land development plan;
9. Access to health facilities and fight vectors of water-borne diseases;
10. Promotion of non agricultural activities, and
11. Preparation of a forest development plan.

3.6. Evaluation of criteria for each option

Options	Criteria				
	Impact on vulnerable groups and resources	Contribution to the sustainable development (social, ecological, economic)	Synergy with MEAs	Loss avoided by poor people	Cost effectiveness
Unit	Scale 1-5	1-3	1-10	1-5	1-10
2. Early warning system and rapid intervention	2	2	10	5	6

Note: Unit for evaluation of Risk mitigation and cost effectiveness should be in currencies per unit or capita but due to the lack of exact data, the team preferred to use the scale .

3.7. Standardised scores and initial Ranking of the 11 Options (Step 6).

Options	Standardised scores on options/Criteria All criteria are scored on a scale of 0-1					MCA 1 average score (Ranking 1)
	Impact on vulnerable groups and resources	Contribution to the sustainable development	Synergy with MEAS	Risk mitigation	Cost effective- ness	
6.Early warning system and rapid interven- -tion.	I	0.50	I	I	0.33	0.76 (2)

At this stage every score for each criterion has been expressed in the same standardized unit (o, a 0 to 1 scale) with ascending values for benefits (advantages) and decreasing values for disadvantages (Cost). This allowed to calculate the average score for each option: sum of standardized values for each criterion , divided by the number of criteria (in this case 5). The highest average receives the highest average ranking.

3.8. Weighted scores and analysis of MCA (Step 7)

Options	Standardized scores on criteria					MCA 2 Average scores (Ranking 2)
	Impact on vulnerable groups and resources	Contributio n to the sustaina- ble develo- pment	Synergy with MEAS	Risk mitigation	Cost effective- ness	
Absolute weight	3	2	1	2	1	$\Sigma=9$
Realtive weight	0.333 (3/9)	0.222 (2/9)	0.111 (1/9)	0.222 (2/9)	0.111 (1/9)	$\Sigma= 1 (9/9)$
4. IWRM:	1X0.333	0.50X0.222	1X0.111	1X0.222	0.33X0.111	0.813 (2)

Note: With the aim of always seeking the highly priority options, the team considered useful to allocate to certain criteria a higher weighting taking into account their importance with respect to others, as above indicated. The weighted score of an option is the relative weight x the standardized score for that option.

3.9 Results of the Multicriteria Analysis simulation (MCA 1,2)

Options	Simulation MCA I	Simulation MCA 2
	Score (Ranking)	Score (Ranking)
1. Promotion of non rain-fed agriculture	0.42 (9)	0.325 (9)
2. Intensive agro-animal husbandry.	0.68(5)	0.765 (4)
3. Drought resistant Varieties	0.63 (7)	0.739 (5)
4. IWVRM	0.82 (1)	0.903 (1)
5. Storage and transformation of agricultural products.	0.49 (8)	0.310 (10)
6. Early warning system and rapid intervention	0.76 (2)	0.813 (2)
7. Development of energy sources alternative to firewood.	0.67 (6)	0.726 (6)
8. Preparation and implementation of a land use Master plan.	0.32 (10)	0.326 (8)

3.9 Results of the Multicriteria Analysis simulation (MCA 1,2)

Options	Simulation MCA 1	Simulation MCA 2
	Score (Ranking)	Score (Ranking)
9. Access to health facilities and fight against water-borne diseases.	0.05(11)	0.031 (11)
10. Promotion of off –farm income generating schemes	0.71 (4)	0.800 (3)
11. Preparation and implementation of forestry development plan.	0.74 (3)	0.633 (7)

3.10. Development of NAPA Project profiles (Step8).

- In the spirit that NAPAs must constitute a set of realistic and concrete measures to respond to urgent and immediate needs of targeted groups , NAPA team has taken into account a series of considerations /questions to enable spreading out program execution.
 - **Is it an isolated activity or is it part of wide program?**
 - **Is it a sectoral or a multisector option?**
 - **Who will be in charge of execution of program or activities in the project?**
 - **Activities are already (half) financed ? By who?**
- Thus, 6 programs were selected as priority and their logical framework developed, while 7 project profiles were also developed to be implemented between 2007-2012.
- Interventions of UNEP Consultants to finalize 7 projects and their profile
 - Estimated cost of the 7 projects was 8,110,000 USD (0.08% of the total EDPRS estimation cost).

6 Priority Programs

- 1: Integrated water resources management (IWRM)**
- 2: Early warning system and rapid intervention**
- 3: Promotion of income generating activities**
- 4: Promotion of intensive agriculture and animal husbandry**
- 5: Introduction of varieties resisting to environmental conditions**
- 6: Development of energy sources alternative to firewood**

4. Post NAPA Planning and implementation framework

- NAPA is a National planning tool
- NAPA is a guideline for policy makers, National planners and vulnerable sectors.
- NAPA was mainstreamed into the EDPRS (2009-2012) and mainstreaming into sector strategies is an ongoing process;
- Stocktaking meeting of LDC Expert Group to evaluate best practices in NAPA Process, mainstreaming and implementation, Bangkok Sept. 2009.
- Since NAPA was published, only 3 Projects were financed: 1 by multilateral coop. , 2 by bilateral coop.
- Other frameworks: EAC/AMCEN CC meeting preparing for copenhagen (Kigali, Nairobi 2009);
- CC DARE: **C**limate **C**hange and **D**evelopment **A**dapting by **RE**ducing Vulnerability : Financed one Project to an NGO.

NAPA and the MTEF

Ministry	Sub-Program	Budget 2010/2011 (Rwf)
MINAGRI	Sustainable management of Natural resources and soil conservations (Dev.)	9,692,315,007
	Irrigation Development (Dev.)	12,666,713,479
	Food security and Vulnerability management (Recurrent)	3,531,751,280
	Integrated system of intensive agricultural and livestock production (Dev.)	4,851,546,400
	Research for transforming agriculture (Dev.)	700,000,000
MINELA	Land use planning and management (Dev.)	2,200,000,000
	Rehabilitation of degraded watersheds and promotion of Rational use of water resources (Dev.)	30,000,000
	Climate Change management (Dev.)	57,683,703
	Sustainable management of ecosystem for income generation (Dev.)	2,757,075,137

NAPA and the MTEF

Ministry	Sub-Program	Budget 2010/2011 (Rwf)
MININFRA	Diversification of energy sources and supply security (Dev.)	3,776,396,000
	Promotion of Imidugudu (Dev.)	525,000,000
	Weather forecasting (Recurrent)	2,033,766,117
	Access to drinking water & sanitation	28,159,804,906
MINISANTE	Fight against Malaria	9,107,362,024
	Fight against malnutrition (Rec., Prevention and control)	295,759,000
	Promotion of Hygiene & environmental health (Rec. Prevention & Control)	130,785,190
	IEC for health (Recurrent).	302,530,555
MINICOM	Support to Small & Medium enterprise Development	1,426,757,000

NAPA and the MTEF

Ministry	Sub-Program	Budget 2010/2011 (Rwf)
MINIFOM	Management of forestry and agroforestry resources	3,530,466,592
MIDIMAR	Risks and disasters management (Recurrent)	483,793,929
MIFOTRA	Employment promotion	651,533,005
TOTAL		86,911,039,324
		8.8% of the total budget

NAPA Financed projects

- 1) Reducing Vulnerability to Climate Change by establishing early warning and disaster preparedness system and support for Integrated Watershed management in flood prone areas (LDCF)
 - Location/Duration : North and West of Rwanda (2009-2012);
 - Cost : 1,193,010,000 Rwf (2,022,051 \$)
 - Donor: LDCF +co-financing
 - Implementing agency: REMA
- 2) Supporting Integrated and Comprehensive Approach to Climate Change Adaptation in Africa - Building Comprehensive National Approach in Rwanda (AAP)
 - Location/Duration : Countrywide
 - Cost : 1,468,072,700 Rwf (2,488,259 \$)
 - Donor : Japan Government ;
 - Implementing agency: REMA

NAPA Financed projects (Ctn)

3) Building capacity and rising awareness for a sensitive community on climate change adaptation in Rwanda a CC DARE Project (UNEP/UNDP).

- Location/Duration: Countrywide (August-2009-January 2010) ;
- Cost : 83,100\$
- Donor:CC DARE (Denmark)
- Implementing agency: RENGOF.

Key expected outcomes through EDPRS (2012)

Selected key indicators	Baseline in 2007	Where we want to be in 2012
Real GDP growth	6.9%	8.1%
Poverty	56.9%	46%
Extreme poverty	36.9%	24%
Employment in agriculture	80%	70%
Electricity generation	45 MWh	130 MWh
Access to electricity	4%	15%
Wood energy in the total energy consumption	94%	50%
Water (% access to clean water)	64%	80%

Key expected outcomes through EDPRS (2012)

Selected key indicators	Baseline in 2007	Where we want to be in 2012
Soil conservation (% of land terraced)	40%	80%
Irrigation (ha of marshland and hillside land)	15 000 ha	2 4 000ha
Forest coverage	20.2%	24.3%
Acces to improved sanitation	38%	65%
Child malnutrition U5: (Underweight)	23%	16.3%
Urban population	17%	22%
Areas protected to maintain biodiversity	8%	10%

The way forward

- Disseminate the second national communication to the CC: GHG inventory, Vulnerability assessments;
- Updating guidelines for mainstreaming NAPA into the planning process;
- Participate in advocating forums and reinforce the resources mobilization mechanisms.
- Reinforce capacity building in climate change projects design and management.



**Thank you for your
attention.**