

CEDRA Assessment Report: An urban programme in Uganda, A Rocha Uganda, April 2010

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PART 1a: Background information – Science

General climate:

Located on the East African Plateau, Uganda's climate is tropical, but is moderated by its high altitude. Temperature does not vary greatly across Uganda, with an annual average of around 25 degrees. Across much of Uganda the climate is bimodal, with two rainy seasons. The long rains start in March and last until June and the short rains start in October or November and last until December or January.

Rainfall and flooding:

- According to the climate analysis in the Ugandan Government's National Adaptation Programmes of Action (NAPA), published in December 2007, the wetter areas of Uganda, around the Lake Victoria basin and in the east and northwest, are tending to become wetter. Meteorologists report that in most districts, recent years have witnessed increasingly erratic onset and cessation of the rainfall seasons, and when the rain comes it is heavier and more violent. (Oxfam)
- The impacts of heavy rains are compounded by rapid unplanned urbanisation and various land-use changes which result in less drainage capacity in the ground. (Ministry of Water and Environment)
- According to a study by the fair trade organisation Cafédirect and German Technical Co-operation (GTZ), Uganda received a total amount of rainfall of 1410.2 mm in 2001 and 1373.8 mm in 2006. The difference is small. However, in 2001 the rain fell over 136 days with an average of 10.36 mm per day; in 2006 it fell in 98 days with an average of 14 mm per day. (Oxfam)
- Uganda suffers regularly from flooding events and associated landslides. Climate change projections consistently project overall increases in the proportion of rainfall that falls in heavy events, putting the region under increasing threat from flooding. (Tearfund)
- Uganda is also at risk from other extreme weather events, such as hailstorms. (Tearfund)
- Flooding as a result of El Nino is expected to occur every two to five years in the months of October to December. When this occurs, it tends to extend into the usually dry months of January and February of the following year. (Ministry of Water and Environment)
- Projections of average rainfall are broadly consistent in indicating increases in annual rainfall (with central estimates projecting increases of 5 to 11mm per month by 2060 and 9 to 14mm per month by 2090). (Tearfund)
- Maximum 1- and 5-day rainfall totals are projected to increase, by up to 27mm in 1-day events, and up to 37mm in 5-day events by the 2090s. The largest increases are seen in the rainy seasons. (Tearfund)
- Drawing from climate models used by the Inter-Governmental Panel on Climate Change (IPCC) and other reports, it seems that for Uganda future climate change will likely have the biggest impact on the later, short rains. During October to December there will likely be a big increase in the frequency of heavy rainfall, with the number of significantly wetter years rising considerably as a result; indeed, as many as one year in five may well be much wetter than is currently the norm. (Oxfam)

- The droughts that periodically affect the western, northern and northeastern districts are becoming more frequent. Uganda as a whole has experienced seven droughts in the 1990s, compared to just 8 between 1911 and 1990. (Tearfund)

Temperature

- The average annual temperature in the country increased by 1.3°C between 1960 and 2003. (Tearfund)
- Over the last 4 years mean maximum temperatures have generally been high with the highest peak of 30°C experienced in 2007 (National Environment Management Authority)
- The average number of 'hot' days per year in Uganda has increased by 74 (an additional 20.4 per cent of days) between 1960 and 2003. The rate of increase is seen most strongly in June, July and August. All projections indicate further increases in the frequency of days and nights that are considered 'hot' in current climate. (UNDP)
- The frequency of cold days has decreased significantly in all seasons except December, January and February. The frequency of cold nights has, however, decreased more rapidly and significantly in all seasons. The average number of 'cold' days per year has decreased by 20 (5.5 per cent of days) between 1960 and 2003. This rate of decrease is most rapid in September, October and November when the average number of cold days has decreased by 2.2 days per month over this period. The average number of 'cold' nights per year has decreased by 42 (11.3 per cent of days). This rate of decrease is most rapid in December, January and February when the average number of cold nights has decreased by 3.4 nights per month (11.1 per cent of nights) over this period. All projections indicate decreases in the frequency of days and nights that are considered 'cold' in the current climate. (UNDP)
- The average annual temperature is projected to increase by 0.9 to 1.7°C by the 1930s, by 1.0 to 3.1°C by the 2060s, and 1.4 to 4.9°C by the 2090s. (UNDP)
- The World Bank Climate Portal projects a mean annual temperature increase of 1°C by 2030-2049, from 1980-1999. (World Bank)
- Temperature increases will become particularly noticeable over the next 10 years. (Oxfam)

Health

- There is a direct relationship between malaria transmission and monthly rainfall in the region. A similar relationship exists between other diseases such as cholera, diarrhoea, dysentery and typhoid. Over 90 per cent of the disease burden in Uganda is related to the environment. (National Development Plan)
- Flash flooding often results in outbreaks of waterborne diseases such as diarrhoea and cholera. With increasingly variable rainfall, and an increasing number of extreme events, this region will be at a higher risk of such disease outbreaks. With increasing pressures on agriculture, the risk of malnutrition – particularly in children – will increase. (Tearfund)

Sources:

Interview with the Ministry of Water and Environment, conducted in February 2010
 Uganda's National Development Plan 2010/11 – 2014/15
 National Environment Management Authority (2008) *State of the Environment Report for Uganda - 2007/2008* - http://www.nemaug.org/national_s_o_reports.php
 Oxfam (2008) *Turning up the heat: Climate change and poverty in Uganda* – <http://policy-practice.oxfam.org.uk/publications/turning-up-the-heat-climate-change-and-poverty-in-uganda-112505>
 Tearfund (2010) *Uganda Climate Change Profile* – http://tilz.tearfund.org/webdocs/Tilz/Topics/Environmental%20Sustainability/Uganda_Final.pdf
 UNDP (2008) *UNDP Climate Change Country Profile* – <http://country-profiles.geog.ox.ac.uk>
 World Bank Climate Portal - <http://sdwebx.worldbank.org/climateportal/>

PART 1b: Background information – Community experiences

Findings

Three villages were visited in order to collect community experiences: Kasubi, Namungoona and Kiwunya, all located on the outskirts of Kampala. These represent 60 per cent of the total project area. Focus group discussions were held, and transect walks through the communities were conducted with the help of key informants.

- In the last few years we have seen increasingly unpredictable weather patterns. For example, there are more hail storms and longer periods of heavy rains. The dry seasons are also hotter.
- When flooding happens, businesses are disrupted, property is lost, buildings (such as houses, schools and toilets) are damaged and some people have been killed. There has also been an increase in suicide and depression as a result.
- Our spring wells (both protected and unprotected) seem to be heavily contaminated due to frequent flooding and poor waste management, leading to an increase in waterborne diseases. Women are particularly impacted by this.
- During the rains, people keep children home from school for fear that they will be swept away by the running waters.
- In Kiwunya slum: Due to the dense population all crammed in a valley that collects runoff from all the surrounding hills, the quantity and frequency of rainfall no longer really matters; a small drizzle now causes flooding.
- We are seeing an increase in respiratory and sanitation related diseases, for example, cholera, diarrhoea, skin diseases, typhoid and malaria. Children are the worse affected.
- The major sources of income in the slums are the small roadside markets. However, flooding and prolonged droughts in neighbouring districts has led to poor crop yields meaning high food prices for us. Crop production has also reduced due to the loss of soil fertility and erosion. Food scarcity has led to malnutrition, particularly in children.
- Poultry feeds are a problem because the prices are high, maize is scarce, and the alternative source of food peelings usually rot in the rainy season and take long before being dry enough to use.
- The sun is now very harsh and sometimes breathing is hard, especially at night.
- There are many plastic bags littering our communities that are causing us a sanitation problem and blocking drainage channels.
- Ten years ago the normal climate cycle was planting in February and then harvesting in June, but now the crops rot before maturity and people have to sow whenever the rains appear.

Conclusion

There are many similarities between community experiences and the scientific information gathered. This provides a clear basis on which to conduct the risk assessment below.

PART 2: Project risk assessment

Sig = Significance of impact: (4= high; 1= low) Lik= Likelihood of impact: (4= high; 1= low) Rsk= Risk = Significance X Likelihood (Multiply figures D and E)

A Locations or Sector(s)	B Projects (by sector)	C Climatic and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation option to strengthen projects and communities
Education	Primary and Secondary School sponsorship	Schools are closed due to flooding.	4	3	12	<p>Improve early warning systems for flooding in the area.</p> <p>Work with teachers and parents to raise awareness of risks, to teach about appropriate safety precautions and to be more prepared for flooding.</p>
		Children are hurt or killed in the flooding.	4	2	8	<p>Work with teachers and parents to raise awareness of risks, to teach about appropriate safety precautions and to be more prepared for flooding.</p>
		School buildings are destroyed by strong winds and floods.	4	3	12	<p>Develop a system of school safety checks to ensure preparedness for floods and where possible make buildings more resistant to damage by flooding.</p>
		Flooding leads to increased emotional and other stresses amongst children and parents.	3	3	9	<p>Provide guidance and counselling in communities affected by floods.</p>
		Children drop out of school or develop poor academic performance due to lack of food (as a result of poor crops and increases in food prices).	4	2	8	<p>Develop demonstration sack gardens in schools.</p> <p>Mobilise churches to advocate for better care of creation and protection of the most vulnerable.</p>
Capacity building, Advocacy & Networking	School outreach on Environmental Education	Flooding leads to the inaccessibility of roads meaning that project staff cannot reach the schools.	4	3	12	<p>Construction of fly-overs to enable movement and access to schools.</p>
		Flooding and strong winds lead to soil erosion around the school buildings affecting demonstration gardens.	2	3	6	<p>Plant trees around school to act as wind breaks, to maintain soil quality and to minimise erosion.</p>

A Locations or Sector(s)	B Projects (by sector)	C Climatic and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation option to strengthen projects and communities
Water, Sanitation and Hygiene (WASH)	Integrated WASH project	Flooding destroys the work done to protect spring wells.	4	4	16	Construction of wider drainage channels around the spring wells.
		Flooding leads to contamination of ground water and spring well water supply, reducing water quality. This leads to an increase in waterborne diseases especially amongst children and women.	4	3	12	<p>Rainwater harvesting.</p> <p>Awareness raising in the communities about climate change and coping with floods.</p> <p>Train communities in water safety measures such as boiling water before drinking.</p> <p>Train communities to make and use BioSand Filters.</p> <p>Position more toilets to be raised above the ground.</p>
Agriculture	Vegetable gardens	Erratic rains lead to soil erosion and a decrease in soil productivity.	3	3	9	<p>Encourage use of organic manure to fertilize the soil</p> <p>Encourage use of kitchen waste water to irrigate the vegetables in dry periods.</p> <p>Sack gardens</p>
		An increase temperature leads to more pests that destroys vegetable crops.	2	2	4	Use of ash to kill off the pests.
	Poultry rearing	Flooding leads to an increase in diseases amongst the chickens.	2	3	6	Early vaccination and treatment.
		Increase in food prices (chicken feeds).	3	3	9	Encourage the use of kitchen waste (vegetable peelings etc) for feeds.
Health	Malaria prevention and control	Floods increase breeding grounds for mosquitoes leading to an increase in malaria.	3	4	12	<p>Construct channels to drain stagnant water.</p> <p>Provision of mosquito nets in the communities.</p> <p>Treatment for those infected.</p> <p>Encourage the burning of cow dung to produce smoke</p>

A Locations or Sector(s)	B Projects (by sector)	C Climatic and environmental impacts	D Sig	E Lik	F Rsk	G Possible adaptation option to strengthen projects and communities
						around homes.
	HIV and AIDS prevention and care	Opportunistic infections such as malaria are more common due to increased temperatures	3	4	12	Ensure people living with HIV and AIDS receive adequate nutrition, and access to clean water and to ARVs.

PART 3: Any decisions made to work in new zones or with new beneficiaries

- We are going to develop a programme to raise awareness about climate change in the communities. This will run alongside hygiene promotion and Community Led Total Sanitation (CLTS). The programme will focus on specific groups such as the youth, women, school children and elderly people.
- We are going to start a recycling project with young people. The aims are to develop a means of income generation for the youth, while also tackling the problem of waste and rubbish in the slum communities, helping to protect the environment.
- When consulting the communities we learnt that most people had never heard a sermon on caring for creation. We are therefore going to start advocacy amongst church leaders to spread the message that God wants us to care for His earth.
- Safety information, first aid training and any other flood survival techniques need to be taught in the schools since several children have been killed in the floods.
- More research and advocacy is needed for the largest remaining part of the wetland in the whole city. Data must be collected in order to formulate an initial sustainable management plan and develop habitat restoration efforts.

Part 4: Action Plan

Proposed activities	Where	Who is responsible	When	How (course of action)
Conduct CEDRA training for other organisations in Uganda	16 Districts in the Central Region	A Rocha staff	September 2010 – May 2011	Contact organisations to offer training. Access training materials from Tearfund website. Develop training plan and time tables
Increase the climate resilience of our Water Sanitation and Hygiene (WASH) project	Namungoona slum – Kampala city	A Rocha staff and the community residents	2010	Construction of springs with wider channels to accommodate more storm water. Active involvement of the community residents to construct spring wells and BioSand water filters. Training in communities on water safety and hygiene.
Awareness campaigns on climate change	4 schools and 2 market places in our project area	A Rocha staff and volunteers from the community	21st – 26th September 2010	ARU staff and volunteers will show videos about climate change as well as teach using materials translated into local languages.
DRR in schools	The same 4 schools as the activity about	A Rocha staff	September 2010	Train teachers in each school to be Safety Officers to ensure preparedness for floods. Plant trees around school to act as wind breaks, to maintain soil quality and to minimise erosion.
Introduce the use of organic manure in the agriculture project	Throughout all project areas	Agriculture Project Manager	May 2010	Include in project plans and implement as part of project.
Livelihood diversification projects	Selected slums (4 villages) in Kampala	A Rocha staff	2011 – 2012	Training women and children in how to make charcoal briquettes and fireless cookers to minimise the use of wood fuel.
Distribution of mosquito nets	All project areas	Health Project Manager	2011	Include in project proposal for 2011 and apply for funding. If successful distribute as part of on-going malaria control programme.
Church mobilisation for creation care	Kawaala and Lungujja communities both in Kampala	A Rocha staff	2011 – 2013	Select 30 churches as part of the church and community project of ARU. Incorporate the training in the project such that church leaders actively engage their congregations and communities through seed projects, and also ensure churches are providing counselling for communities

				affected by floods.
First Aid training	Kampala	ARU staff	July 2011	ARU staff to undergo a Training of Trainers workshop and thereafter train communities and schools.

The following activities were not initially planned but developed as a result of the activities above – inspired by the training and application of CEDRA.

Proposed Issues/activities	Where?	Who is responsible?	When?	How? (course of action)
Awareness campaigns on disaster risk reduction among schools in the slums of Kampala.	Kawempe Division Kampala city	ARU together with other agencies like Oxfam, Plan International, ACTogether, Red Cross	10th – 12th October 2011 (DRR week)	<i>Background: Two children drowned in the September floods in the Kawempe area of Kampala.</i> - Mobilisation of students and other community members to de-silt drainage channels to reduce risks of flooding of the low lying areas in the slums. - Sensitisation of children and youth on how to reduce and avoid risks – through drama and talks.