

CLIMATE VULNERABILITY ASSESSMENT REPORT

MARCH, 2021

Communities:

Katwe, Kinawataka, Kyebando, Kirombe, Kunya, Kitintale and Kamwanyi



In partnership with Dreamtown

Supported by Civil Society in Development (CISU)



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One of the highly affected areas by floods in Katwe.



INTRODUCTION

Network for Active Citizens (NAC) in partnership with Dreamtown is implementing the programme Ghetto Go Green: Youth-led climate adaptation in the ghetto communities of Kampala. As part of this programme, NAC conducted the Climate Vulnerability Assessment in the K-zone communities of Katwe, Kirombe, Kunya, Kitintale, Kinawataka, Kyebando and Kirombe.

As a baseline in this project, this activity intended to create context specific evidence-based information and knowledge about the K-zone communities informed by the people who live in these communities. The findings from the assessment will guide the advocacy work of the programme. Additionally, the purpose of the assessment was to improve understanding of the target ghetto communities' vulnerability to climate change with a focus on current and projected changes in climate, and how these affect livelihoods of the people who live there. The assessment also looked into hazards and key adaptation strategies, and resources available to address the devastating effects of climate change.

In view of generating holistic solutions, the vulnerability assessment involved participatory multi-stakeholders' analysis to gain enhanced understanding of climate change effects, the future implications, constraints, and opportunities for addressing climate change. The participants in the assessment generated draft options and enriched recommendations as adaptive "pathways" to inform the investment strategies and implementation plans of the programme, as well as of Government of Uganda, Kampala City Council Authority, Civil Society and the community for climate change resilience.

Overall, the vulnerability assessment involved: (1) a desk review of relevant literature; (2) a field assessment phase; (3) data compilation and analysis; (4) participatory analysis and defining alternative climate adaptation actions; and (5) presentation of results.



Participants from Kitintale drawing map of their community to show the resources and climate hazards during the Climate Vulnerability Assessment.

NAC's Staff facilitating a Climate Vulnerability Assessment exercise in Kamwanyi.



METHODOLOGY AND TOOLS

NAC utilized the CARE Climate Vulnerability and Capacity Analysis Guide and Capacity Analysis Guide to gather and analyze information to design climate change adaptation initiatives. The CVCA process provides a basis for identifying options for building climate resilience. It uses a participatory and community-based approach to gain a locally specific understanding of vulnerability to climate change, the impacts of climate change and existing resilience capacities in the project communities.

The exercise employed specific Climate Vulnerability Assessment (CVA) tools, including the hazard map, transect walk, historical timeline, resource mapping, seasonal calendar, daily clock, vulnerability matrix and focus group discussions. The approach assesses climate change vulnerabilities and initiates recommendations or actions for resilience building while primarily seeking to build upon adaptive capacities which already exist in relation to available community resources and plans.

The data collection emphasized strongly participatory and community driven approaches to the vulnerability assessment. The methodology has been influenced by the need to ensure maximum ownership and understanding by community members. Both primary and secondary information from different sources have been collected and used in the assessment.

The secondary information was collected from sources including the target communities (key informant interviews with Local Council One Leaders), Research Gate (Twinomuhangi et al. 2021, Regional Environmental Change) and KCCA (Kampala Climate Change Action Strategy 2016-2019). This supported reconciliation of different existing knowledge substantiated by empirical data for clear assessment and provided more insights into the community context.

Primary data was collected by drawing upon CVA methodological tools. To collect the information required, the below matrices were used in order to ensure completeness and logical flow of information:

- a) Identifying climatic threats and impacts, based on both experiences and certain perceptions in the communities.
- b) Assessing threats and impacts through an asset or resource lens.
- c) Identifying vulnerabilities with view to determine impacts understood to be function of exposure and sensitivity to climate threats.
- d) Identifying response actions to vulnerabilities aimed at generating adaptation options in response to identified vulnerabilities.

In summary, the specific objectives of the participatory CVA are:

- i. To analyze climate change vulnerability and adaptive capacity of 7 ghetto communities in Kampala.
- ii. To enhance community knowledge to yield greater understanding about local impacts of climate change in 7 ghetto communities in Kampala.

This assessment and the analysis show how current patterns shape and how future climate patterns may influence the livelihoods of those that that depend on them. In addition, this report includes recommendations on key actions generated by the participants, who included community members, duty bearers from Kampala Capital City Authority, youth leaders, and civil society during the participatory climate vulnerability assessment.

The results analyzed from each CVA tool are summarized below:

CVA Tools	Results
Hazard mapping	The mapping exercise allowed for spotting valuable infrastructure and environmental assets and analyzing their exposure to changes in climate and hazards in each ghetto community. As a result, the following were identified; (a) Areas exposed to climate related hazards (e.g., areas prone to floods, eroded areas, areas prone to water stagnation, among others). (b) Critical point facilities within the communities such as schools, churches, mosques, health centers or hospitals. (c) Non-climate related hazards in the settlement (e.g., environmental pollution). (d) Hazard impacts based on past events and feedback from community members (e.g., lake water levels, most affected areas during past flooding, etc.). (e) Unsafe areas (e.g., related to crime). (f) Sanitation facilities (e.g., community toilet block, wastes dumping sites). (g) Key drainage lines and locations where blockages occur, waterlogged areas. (h) Main transport routes and associated problems. (i) Location of natural resources being used by the communities (e.g., water bodies such as Lake Victoria, forests, etc.). (j) Location of crops/farming areas that are affected by climate hazards. (k) Location of poorest households and houses that are in precarious conditions. (l) Areas not exposed to climate related hazards (safe havens) where community members can run to. (m) Roads, key community infrastructure (e.g., churches, community halls, etc.), water sources, etc. It enhanced the understanding of the spatial dimension of vulnerability with respect to livelihoods in each community.
Transect Walk	The transect walk allowed the assessments and verification of aspects of each community such as access to water and sanitation, areas that are particularly exposed to hazards, construction materials and techniques common in the area, risk locations, among others. It made the CVA participants aware and gained understanding of the settlements' condition and characteristics including buildings, sanitation, areas that are prone to hazards, e.g., steep slopes that may be prone to flooding. The transect walk was used to obtain information to complement the hazard mapping.
Seasonal calendar	Calendars were constructed for each ghetto community. In all cases, typical seasons and expected weather conditions were defined. For example, the dry season and the wet season. Once the seasons were defined, the timing of key human activities were documented, often related to crops, such as when to plant or harvest, and income generating activities.
Vulnerability matrix	Through the vulnerability matrix, participants analyzed and documented the threats, critical assets and vulnerability and ascertained the level of risks as per predetermined scale of 1 to 5 for each critical asset against each applicable threat.
Historical timelines	Through this, the participating communities identified, described and documented changes in temperature, rainfall, extreme weather events, and seasonal patterns and their impacts on agriculture and other human activities in historical times.
Daily clock	As a result of the daily clock, the participants were able to determine the division of roles and responsibilities in the household on a typical day and decision-making power between women and men, their access to and control over livelihood assets (during normal periods and during crises).
Focused Group Discussions (FGD)	In order to better understand the challenges faced by communities, discussion with its inhabitants is paramount. The FGD allowed participants to gather and capture relevant information related to environmental, social and economic conditions of each community. These included main climate change impacts and hazards, effects on communities, underlying vulnerabilities, barriers to adapt, and climate-resilient building needs and possible solutions.

Summary of participants categorized by gender:

S/N	Category	Male participants	Female participants	Total
1	Kunya	9	9	18
2	Kamwanyi	7	11	18
3	Kitintale	9	9	18
4	Kyebando	8	10	18
5	Katwe	9	9	18
6	Kinawataka	9	10	19
7	Kirombe	7	11	18
Total		58	69	127

Part of residents surrounded by water way with poor sanitation in Kitintale.



KEY FINDINGS

Following the engagement of the targeted communities using the assessment tools, a number of issues, including seasonal droughts and change in rain seasons, were identified to be having significant socio-economic impacts currently, as well as in the past. Key general findings of the climate vulnerability assessment include:

- (a) Floods have caused widespread infrastructural damage, displacement and destruction of livelihood assets, including shelters, in all the targeted ghetto communities.
- (b) Droughts have also affected the ghetto communities significantly. This is visible in terms of malnutrition and caused forced migrate in search for survival.
- (c) Some ghetto communities still face inland water flood risk from Lake Victoria and heavy rainfall as a result of climate change. For example, in Kamwanyi and Kitintale where some people live along Lake Victoria's shore, over hundreds of people have been displaced. It is projected that additional people may be displaced due climate change experienced in terms of increased water level and socio-economic hardship.
- (d) Outbreak of diseases. The floods also put the population living along Lake Victoria (Kamwanyi and Kitintale) at high risk of malaria and outbreak of cholera as a result of poor sanitation arising from flooding.
- (e) Increased food insecurity arising from shifts in the viable area for farming as a result of elevated rates of erosion and land degradation because of increased abnormal heavy rainfall or higher temperature intensity. One of the participants from Kunaya noted that "I used to grow my own food for consumption, but now I have no land for growing crops for my family because it was all taken by the rich people, and now I have to look for money to buy food".
- (f) Adaptive Capacity. The level of income among the community members affects the ability of households to adapt to climate change effects. The assessment revealed that households with greater adaptive capacity manage more diverse livelihood portfolios as they have a more varied mix of on-farm and off-farm income sources compared to the counterparts with one or limited sources of income sources.
- (g) Community access to land plays a big role in on-farm diversification, and as a result, land pressure in the most densely populated ghetto communities increases their vulnerability to climate change effects.
- (h) The proximity to urban centers also increases off-farm income and thus significantly reduces vulnerability to climate change effects.

The assessment identified a wide range of measures that community members in the households employ to adapt to climate variability and change. People seek different sources of income outside of agriculture, both through short-term 'coping' strategies, such as hiring themselves out as casual labourers, brick laying, borrowing to start or grow businesses, and through longer-term strategies, such as investments in the education of their children, some are going the extra mile of borrowing to pay school fees, and sometimes migration.

OPTIONS FOR INCREASING CLIMATE RESILIENCE

The climate vulnerability assessment and analysis validate the fact that climate change is locally experienced and disproportionately affects vulnerable communities such as the ghetto communities. Therefore, adaptive actions or strategies are required that relate to local ecosystems and socio-cultural influences. The assessment further reiterates that adaptation actions should involve different stakeholders and effective multi-pronged approach to yield sustainable adaptive benefits. The assessment teams and participants summarized the proposed actions as below:

Climate Hazard	Proposed Action(s)	Actor(s) Responsible
Drought	Planting more trees	KCCA Communities
Poor sanitation and increased incidences of water-borne diseases	Awareness creation on preventive measures including encouraging the use of national water other than the unclean water from the wells	KCCA Local Council Communities
	Proper wastes disposal	Communities
	Encouraging waste recycling	KCCA
	Building public toilets in order to check on the dumping of fecal waste in the water channels during times of rainfall	Communities
Increased food insecurity	Optimize waste water reuse for irrigated urban agriculture as a means to produce food during drought period	Communities
	Growing crops or plants that are more resistant to drought, flood and pest	Communities KCCA
	Skilling in climate smart urban farming	Civil Society Organizations focusing on addressing climate change.
Increased floods	Better urban physical planning	KCCA
	Infrastructure development (roads construction) with improved drainage system	KCCA
	Preserve wetlands and create vegetated buffers along the lake shores to reduce any flooding, runoff and erosion	Communities KCCA National Environmental Management Authority



A flooded swampy area in Kitintale as result of increased water level from Lake Victoria.

NEXT STEPS

The following were identified by NAC and the CVA participants as next steps in the process of addressing climate change issues in the target communities:

- a) Social mobilization and advocacy or dialogue about adaption actions to address climate change in the ghetto communities.
- b) Collaborations to leverage additional technical and financial resources to expand climate adaptation efforts.
- c) Engage in planning to inform and influence development plans and policies mainstreaming climate adaptation actions for the well-being of city residents.
- d) Provide regular information on vulnerability and potential policy responses to the targeted communities.
- e) Scaling up successful community-based adaptation (CBA) initiatives, designed by or with vulnerable communities.



Work of the participants as part of the CVA exercises

ANNEX: CVA FINDINGS FOR EACH PROJECT COMMUNITY

Kamwanyi Ghetto Community

Climate change threat	Impacts	Existing adaptive capacities	Vulnerabilities	Proposed Action(s)
Flooding	(a) Displacement of people due to loss of houses as a result of too much water. (b) Destruction of properties (c) Loss of lives. (d) Deterioration of health condition owing to waterborne diseases.	(a) Constructing on raised land (relocating to the highest parts of the dwelling that residents think is secure). (b) Creation of temporary trenches or water channels to divert water away from the houses. (c) Using sandbags to prevent the ingress of water.	(a) Loss of assets and life. (b) Low-lying and poorly drained areas remained threatened and prone to flooding. (c) Poorer individuals migrate due to lack of suitable housing.	(a) Plant more trees. (b) Creation of more drainage channels. (c) Construct deeper and wider drainage to accommodate the increased floodwaters. (d) Preserve wetlands. (e) Create vegetative buffers along Lake shores. (f) Build planned new houses. (g) Awareness of proper garbage and solid wastes disposal.
Food insecurity	(a) Widespread hunger in the community (most people going with one meal a day in order to survive). (b) Undesirable actions such as theft.	(a) Reducing the number of meals in a day for most households. (b) Buying and use of precooked cheap street foods. (c) Retail businesses.	(d) Insufficient quality of food accessed by households. (e) Insufficient food intake as a result of reducing quantity of food eaten and number of meals in a day.	(a) Optimum utilization of water for urban farming (simple irrigation) during drought period. (b) Skilling community members in climate smart farming.
Sanitation challenges	(a) Increase in communicable diseases such as diarrhea, dysentery and typhoid. (b) Decrease in schooling as some children are not able to attend schools because of diseases and issues relating poor sanitation.	(a) Use of public toilets. (b) Plastic wastes recycling. (c) Enforcing by-laws on wastes dumping.	(a) Exposure to communicable diseases. (b) Unsafe water.	(a) Gazette sites for dumping wastes. (b) Strict enforcement of by-laws on wastes disposal. (c) Regular collection of wastes by KCCA. (d) Proper wastes disposal. (e) Waste recycling.

Katwe Ghetto Community

Climate change threat	Impacts	Existing adaptive capacities	Vulnerabilities	Proposed Action(s)
Drought (extended periods without rain, increasing temperatures, intense heat)	(a) Decreased agricultural production. (b) Reduced work hours leading to decreased work efficiency. (c) Income loss or reduced income generation due to crops failure.	(a) Use of traditional agricultural practices, including manure for compost and mulching. (b) Drip irrigation practices.	(a) Decreasing agricultural productivity and income due to changing rainfall patterns and shifting seasonality. (b) Declining water levels in some community wells. (c) More labor-intensive agricultural crops and increasing labor costs	(a) Plant more trees. (b) Use of drought tolerant plants/crops. (c) Applying simple irrigation in farming such as drip irrigation.
Flooding	(a) Reduced yields of crops. (b) Loss of soil fertility. (c) Displacement of people due to loss of houses as a result of too much water. (d) Destruction of properties. (e) Loss of lives. (f) Sewage runoffs.	(a) Constructing on raised land (relocating to the highest parts of the dwelling that residents think are secure. (b) KCCA constructed drainage. (c) Creation of temporary trenches or water channels to divert water away from the houses. (d) Using sandbags to prevent the ingress of water.	(a) Food security threatened. (b) Loss of assets and life. (c) Erosion of soil fertility. (d) Decreasing productivity. (e) Low-lying and poorly drained areas remained threatened and prone to flooding. (f) Poorer individuals migrate due to lack of suitable housing.	(a) Plant more trees. (b) Creation of more drainage channels. (c) Build planned new houses. (d) Awareness of proper garbage and solid wastes disposal. (e) Strict enforcement of by-laws on the construction of houses and sanitation solutions.
Food insecurity	(a) Reduced nutritional crops. (b) Undernourished people especially children. (c) High dependence ratio. (d) Widespread hunger in the community (most people going with one meal a day in order to survive). (e) Illness as a result of having weak immune system.	(a) Retail businesses to provide income for buying food. (b) Reducing the number of meals in a day for most households. (c) Buying and use of precooked cheap street foods. (d) Buying poor quality food, particularly old or expired ones which are cheaper than fresh foods.	(a) Take away the attention of affected households from other priorities such as children's schooling as they concentrate on survival. (b) Insufficient quality of food accessed by households. (c) Insufficient food intake as a result of reducing quantity of food eaten and number of meals in a day.	(a) Skilling community members in climate smart farming. (b) Growing drought resistant crops.

	(f) Undesirable actions such as theft.			
Sanitation challenges	(a) Increase in communicable diseases such as diarrhea, dysentery and typhoid. (b) Decrease in schooling as some children are not able to attend schools because of diseases and issues relating poor sanitation. (c) Reduction in fresh water availability. (d) Ground water contamination. (e) Mortality especially among the children.	(a) Use of public toilets. (b) Plastic wastes recycling. (c) Community cleanliness. (d) Enforcing by-laws on wastes dumping. (e) Some community members boil drinking water.	(a) Exposure to communicable diseases. (b) Unsafe water.	(a) Strict enforcement of by-laws on wastes disposal. (b) Subsidization of wastes collection fees by the private sector players. (c) Regular collection of wastes by KCCA. (d) Proper wastes disposal. (e) Waste recycling. (f) Construction of public toilets by KCCA.

Kunya Ghetto Community

Climate change threat	Impacts	Existing adaptive capacities	Vulnerabilities	Proposed Action(s)
Drought (extended periods without rain, increasing temperatures, intense heat)	(a) Decreased agricultural production. (b) Reduced work hours leading to decreased work efficiency. (c) Income loss or reduced income generation due to crops failure.	(a) Use of traditional agricultural practices, including manure for compost and mulching.	(a) Decreasing agricultural productivity and income due to changing rainfall patterns and shifting seasonality. (b) Declining water levels in some community wells. (c) More labor-intensive agricultural crops and increasing labor costs.	(a) Plant more trees. (b) Use of drought tolerant plants/crops. (c) Applying simple irrigation in farming such as drip irrigation.
Flooding	(a) Reduced yields of crops. (b) Loss of soil fertility. (c) Displacement of people. (d) Destruction of properties. (e) Loss of lives. (f) Deterioration of health condition owing to waterborne diseases. (g) Loss of livelihoods. (h) Flooding of unprotected pit latrines. (i) Hunger due to destruction of crops. (j) Sewage runoffs.	(a) Constructing on raised land (relocating to the highest parts of the dwelling that residents think are secure. (b) Creation of temporary trenches or water channels to divert water away from the houses. (c) Using sandbags to prevent the ingress of water.	(a) Food security threatened. (b) Loss of assets and life. (c) Erosion of soil fertility. (d) Decreasing productivity. (e) Low-lying and poorly drained areas remained threatened and prone to flooding. (f) Poorer individuals migrate due to lack of suitable housing.	(a) Awareness of proper garbage and solid wastes disposal. (b) Plant more trees. (c) Construct deeper and wider drainage to accommodate the increased floodwaters. (d) KCCA to get permanent workforce to maintain and clean the drainage. (e) Strict enforcement of by-laws on the construction of houses and sanitation solutions.
Food insecurity	(a) Reduced nutritional crops. (b) Undernourished people especially children. (c) High dependence ratio. (d) Widespread hunger in the community (most people going with	(a) Reducing the number of meals in a day for most households. (b) Buying and use of precooked cheap street foods. (c) Retail businesses for additional income used to buy food.	(a) Take away the attention of affected households from other priorities such as children's schooling as they concentrate on survival.	(a) Skilling community members in climate smart farming. (b) Optimum utilization of water for urban farming (simple irrigation) during drought period.

	one meal a day in order to survive). (e) Undesirable actions such as theft.	(d) Buying poor quality food, particularly old or expired ones which are cheaper than fresh foods. (e) Prioritizing children over adults. (f) Borrowing of foods from neighbors.	(b) Render efforts to promote growth and better quality of life ineffective. (c) Insufficient quality of food accessed by households. (d) Insufficient food intake as a result of reducing quantity of food eaten and number of meals in a day.	
Sanitation challenges	(a) Increase in communicable diseases such as diarrhea, dysentery and typhoid. (b) Decrease in schooling as some children are not able to attend schools because of diseases and issues relating poor sanitation. (c) Reduction in fresh water availability. (d) Ground water contamination. (e) Mortality especially among the children.	(a) Use of public toilets. (b) Plastic wastes recycling. (c) Community cleanliness. (d) Enforcing by-laws on wastes dumping. (e) Some community members boil drinking water.	(a) Exposure to communicable diseases. (b) Unsafe water.	(a) Gazette sites for dumping wastes. (b) Strict enforcement of by-laws on wastes disposal. (c) Subsidization of wastes collection fees by the private sector players. (d) Regular collection of wastes by KCCA. (e) Proper wastes disposal. (f) Waste recycling. (g) Construction of public toilets by KCCA.

Kitintale Ghetto Community

Climate change threat	Impacts	Existing adaptive capacities	Vulnerabilities	Proposed Action(s)
Drought (extended periods without rain, increasing temperatures, intense heat)	(a) Decreased agricultural production. (b) Reduced work hours leading to decreased work efficiency. (c) Income loss or reduced income generation due to crops failure.	(a) Use of traditional agricultural practices, including manure for compost and mulching. (b) Drip irrigation practices.	(a) Decreasing agricultural productivity and income due to changing rainfall patterns and shifting seasonality. (b) Declining water levels in some community wells. (c) More labor-intensive agricultural crops and increasing labor costs.	(a) Plant more trees. (b) Use of drought tolerant plants/crops. (c) Applying simple irrigation in farming such as drip irrigation.
Flooding	(a) Reduced yields of crops. (b) Loss of soil fertility. (c) Displacement of people due to loss of houses as a result of too much water. (d) Destruction of properties. (e) Loss of lives. (f) Deterioration of health condition owing to waterborne diseases. (g) Loss of livelihoods. (h) Flooding of unprotected pit latrines. (i) Hunger due to destruction of crops. (j) Sewage runoffs.	(a) Constructing on raised land (relocating to the highest parts of the dwelling that residents think are secure. (b) KCCA constructed drainage. (c) Creation of temporary trenches or water channels to divert water away from the houses. (d) Using sandbags to prevent the ingress of water. (e) Growing perennial plants that do well in waterlogged areas.	(a) Food security threatened. (b) Loss of assets and life. (c) Erosion of soil fertility. (d) Decreasing productivity. (e) Low-lying and poorly drained areas remained threatened and prone to flooding. (f) Poorer individuals migrate due to lack of suitable housing.	(a) Plant more trees. (b) Preserve wetlands. (c) Create vegetative buffers along Lake shores. (d) Creation of more drainage channels. (e) Construct deeper and wider drainage to accommodate the increased floodwaters. (f) Build planned new houses. (g) KCCA to get permanent workforce to maintain and clean the drainage. (h) Awareness of proper garbage and solid wastes disposal. (i) Strict enforcement of by-laws on the construction

				of houses and sanitation solutions.
Food insecurity	(a) Reduced nutritional crops. (b) Undernourished people especially children. (c) High dependence ratio. (d) Widespread hunger in the community (most people going with one meal a day in order to survive). (e) Illness as a result of having weak immune system. (f) Undesirable actions such as theft.	(a) Reducing the number of meals in a day for most households. (b) Buying and use of precooked cheap street foods. (c) Buying poor quality food, particularly old or expired ones which are cheaper than fresh foods. (d) Prioritizing children over adults. (e) Borrowing of foods from neighbors. (f) Retail businesses for extra income used for buying food.	(a) Take away the attention of affected households from other priorities such as children's schooling as they concentrate on survival. (b) Render efforts to promote growth and better quality of life ineffective. (c) Insufficient quality of food accessed by households. (d) Insufficient food intake as a result of reducing quantity of food eaten and number of meals in a day.	(a) Optimum utilization of water for urban farming (simple irrigation) during drought period. (b) Skilling community members in climate smart farming. (c) Growing drought resistant crops.
Sanitation challenges	(a) Increase in communicable diseases such as diarrhea, dysentery and typhoid. (b) Decrease in schooling as some children are not able to attend schools because of diseases and issues relating poor sanitation. (c) Reduction in fresh water availability. (d) Ground water contamination. (e) Mortality especially among the children.	(a) Use of public toilets. (b) Plastic wastes recycling. (c) Community cleanliness. (d) Enforcing by-laws on wastes dumping. (e) Some community members boil drinking water.	(a) Exposure to communicable diseases. (b) Unsafe water.	(a) Gazette sites for dumping wastes. (b) Strict enforcement of by-laws on wastes disposal. (c) Subsidization of wastes collection fees by the private sector players. (d) Regular collection of wastes by KCCA. (e) Proper wastes disposal. (f) Waste recycling. (g) Construction of public toilets by KCCA.

Kinawataka Ghetto Community

Climate change threat	Impacts	Existing adaptive capacities	Vulnerabilities	Proposed Action(s)
Flooding	(k) Reduced yields of crops. (l) Loss of soil fertility. (m) Displacement of people due to loss of houses as a result of too much water. (n) Destruction of properties. (o) Loss of lives. (p) Deterioration of health condition owing to waterborne diseases. (q) Loss of livelihoods. (r) Flooding of unprotected pit latrines. (s) Hunger due to destruction of crops. (t) Sewage runoffs.	(a) Constructing on raised land (relocating to the highest parts of the dwelling that residents think are secure. (b) KCCA constructed drainage. (c) Creation of temporary trenches or water channels to divert water away from the houses. (d) Using sandbags to prevent the ingress of water. (e) Growing perennial plants that do well in waterlogged areas.	(a) Food security threatened. (b) Loss of assets and life. (c) Erosion of soil fertility. (d) Decreasing productivity. (e) Low-lying and poorly drained areas remained threatened and prone to flooding. (f) Poorer individuals migrate due to lack of suitable housing.	(a) Plant more trees. (b) Creation of more drainage channels. (c) Construct deeper and wider drainage to accommodate the increased floodwaters. (d) Build planned new houses. (e) KCCA to get permanent workforce to maintain and clean the drainage. (f) Awareness of proper garbage and solid wastes disposal. (g) Strict enforcement of by-laws on the construction of houses and sanitation solutions.
Food insecurity	(a) Reduced nutritional crops. (b) Undernourished people especially children. (c) High dependence ratio (d) Widespread hunger in the community (most people going with one meal a day in order to survive). (e) Illness as a result of having weak immune system.	(a) Reducing the number of meals in a day for most households. (b) Buying and use of precooked cheap street foods. (c) Buying poor quality food, particularly old or expired ones which are cheaper than fresh foods. (d) Retail businesses . (e) Borrowing of foods from neighbors.	(a) Take away the attention of affected households from other priorities such as children's schooling as they concentrate on survival. (b) Render efforts to promote growth and better quality of life ineffective. (c) Insufficient quality of food accessed by households.	(a) Optimum utilization of water for urban farming (simple irrigation) during drought period. (b) Skilling community members in climate smart farming. (c) Growing drought resistant crops.

	(f) Undesirable actions such as theft.		(d) Insufficient food intake as a result of reducing quantity of food eaten and number of meals in a day.	
Sanitation challenges	(a) Increase in communicable diseases such as diarrhea, dysentery and typhoid. (b) Decrease in schooling as some children are not able to attend schools because of diseases and issues relating poor sanitation. (c) Reduction in fresh water availability. (d) Ground water contamination. (e) Mortality especially among the children.	(a) Use of public toilets. (b) Plastic wastes recycling. (c) Community cleanliness. (d) Enforcing by-laws on wastes dumping. (e) Some community members boil drinking water.	(a) Exposure to communicable diseases. (b) Unsafe water.	(a) Gazette sites for dumping wastes. (b) Strict enforcement of by-laws on wastes disposal. (c) Subsidization of wastes collection fees by the private sector players. (d) Regular collection of wastes by KCCA. (e) Proper wastes disposal. (f) Waste recycling. (g) Construction of public toilets by KCCA.

Kyebando Ghetto Community

Climate change threat	Impacts	Existing adaptive capacities	Vulnerabilities	Proposed Action(s)
Drought (extended periods without rain, increasing temperatures, intense heat)	(a) Decreased agricultural production. (b) Reduced work hours leading to decreased work efficiency. (c) Income loss or reduced income generation due to crops failure.	(a) Use of traditional agricultural practices, including manure for compost and mulching. (b) Drip irrigation practices.	(a) Decreasing agricultural productivity and income due to changing rainfall patterns and shifting seasonality. (b) Declining water levels in some community wells. (c) More labor-intensive agricultural crops and increasing labor costs.	(a) Plant more trees (b) Use of drought tolerant plants/crops. (c) Applying simple irrigation in farming such as drip irrigation.
Flooding	(a) Reduced yields of crops. (b) Loss of soil fertility. (c) Displacement of people due to loss of houses as a result of too much water. (d) Destruction of properties. (e) Loss of lives. (f) Deterioration of health condition owing to waterborne diseases. (g) Loss of livelihoods. (h) Flooding of unprotected pit latrines. (i) Hunger due to destruction of crops (j) Sewage runoffs.	(a) Constructing on raised land (relocating to the highest parts of the dwelling that residents think are secure. (b) KCCA constructed drainage. (c) Creation of temporary trenches or water channels to divert water away from the houses. (d) Using sandbags to prevent the ingress of water. (e) Growing perennial plants that do well in waterlogged areas.	(a) Food security threatened. (b) Loss of assets and life. (c) Erosion of soil fertility. (d) Decreasing productivity. (e) Low-lying and poorly drained areas remained threatened and prone to flooding. (f) Poorer individuals migrate due to lack of suitable housing.	(a) Plant more trees. (b) Creation of more drainage channels. (c) Construct deeper and wider drainage to accommodate the increased floodwaters. (d) Build planned new houses. (e) KCCA to get permanent workforce to maintain and clean the drainage. (f) Awareness of proper garbage and solid wastes disposal. (g) Strict enforcement of by-laws on the construction of houses

				and sanitation solutions.
Food insecurity	(a) Reduced nutritional crops. (b) Undernourished people especially children. (c) High dependence ratio (d) Widespread hunger in the community (most people going with one meal a day in order to survive). (e) Illness as a result of having weak immune system. (f) Undesirable actions such as theft.	(a) Reducing the number of meals in a day for most households. (b) Buying and use of precooked cheap street foods. (c) Buying poor quality food, particularly old or expired ones which are cheaper than fresh foods. (d) Prioritizing children over adults. (e) Retail businesses for additional income. (f) Borrowing of foods from neighbors.	(a) Take away the attention of affected households from other priorities such as children's schooling as they concentrate on survival. (b) Render efforts to promote growth and better quality of life ineffective. (c) Insufficient quality of food accessed by households. (d) Insufficient food intake as a result of reducing quantity of food eaten and number of meals in a day.	(a) Optimum utilization of water for urban farming (simple irrigation) during drought period. (b) Skilling community members in climate smart farming. (c) Growing drought resistant crops.
Sanitation challenges	(a) Increase in communicable diseases such as diarrhea, dysentery and typhoid. (b) Decrease in schooling as some children are not able to attend schools because of diseases and issues relating poor sanitation. (c) Reduction in fresh water availability. (d) Ground water contamination. (e) Mortality especially among the children.	(a) Use of public toilets. (b) Plastic wastes recycling. (c) Community cleanliness. (d) Enforcing by-laws on wastes dumping. (e) Some community members boil drinking water.	(a) Exposure to communicable diseases. (b) Unsafe water.	(a) Gazette sites for dumping wastes. (b) Strict enforcement of by-laws on wastes disposal. (c) Subsidization of wastes collection fees by the private sector players. (d) Regular collection of wastes by KCCA. (e) Proper wastes disposal. (f) Waste recycling. (g) Construction of public toilets by KCCA.

Kirombe Ghetto Community

Climate change threat	Impacts	Existing adaptive capacities	Vulnerabilities	Proposed Action(s)
Drought (extended periods without rain, increasing temperatures, intense heat)	(a) Decreased agricultural production. (b) Reduced work hours leading to decreased work efficiency. (c) Income loss or reduced income generation due to crops failure.	(a) Use of traditional agricultural practices, including manure for compost and mulching. (b) Drip irrigation practices.	(a) Decreasing agricultural productivity and income due to changing rainfall patterns and shifting seasonality. (b) Declining water levels in some community wells. (c) More labor-intensive agricultural crops and increasing labor costs	(a) Plant more trees. (b) Use of drought tolerant plants/crops. (c) Applying simple irrigation in farming such as drip irrigation.
Flooding	(a) Reduced yields of crops. (b) Loss of soil fertility. (c) Displacement of people due to loss of houses as a result of too much water. (d) Destruction of properties. (e) Loss of lives. (f) Deterioration of health condition owing to waterborne diseases. (g) Loss of livelihoods. (h) Flooding of unprotected pit latrines. (i) Hunger due to destruction of crops. (j) Sewage runoffs.	(a) Constructing on raised land (relocating to the highest parts of the dwelling that residents think are secure. (b) KCCA constructed drainage. (c) Creation of temporary trenches or water channels to divert water away from the houses. (d) Using sandbags to prevent the ingress of water. (e) Growing perennial plants that do well in waterlogged areas.	(a) Food security threatened. (b) Loss of assets and life. (c) Erosion of soil fertility. (d) Decreasing productivity. (e) Low-lying and poorly drained areas remained threatened and prone to flooding. (f) Poorer individuals migrate due to lack of suitable housing.	(a) Plant more trees. (b) Creation of more drainage channels. (c) Construct deeper and wider drainage to accommodate the increased floodwaters. (d) Build planned new houses. (e) KCCA to get permanent workforce to maintain and clean the drainage. (f) Awareness of proper garbage and solid wastes disposal. (g) Strict enforcement of by-laws on the

				construction of houses and sanitation solutions. (h) Preserve wetlands. (i) Create vegetative buffers along Lake shores.
Food insecurity	(a) Reduced nutritional crops. (b) Undernourished people especially children. (c) High dependence ratio (d) Widespread hunger in the community (most people going with one meal a day in order to survive). (e) Illness as a result of having weak immune system. (f) Undesirable actions such as theft.	(a) Retail businesses for additional income used for buying food. (b) Reducing the number of meals in a day for most households. (c) Buying and use of precooked cheap street foods. (d) Buying poor quality food, particularly old or expired ones which are cheaper than fresh foods. (e) Prioritizing children over adults. (f) Borrowing of foods from neighbors.	(a) Take away the attention of affected households from other priorities such as children's schooling as they concentrate on survival. (b) Render efforts to promote growth and better quality of life ineffective. (c) Insufficient quality of food accessed by households. (d) Insufficient food intake as a result of reducing quantity of food eaten and number of meals in a day.	(a) Optimum utilization of water for urban farming (simple irrigation) during drought period. (b) Skilling community members in climate smart farming. (c) Growing drought resistant crops.
Sanitation challenges	(a) Increase in communicable diseases such as diarrhea, dysentery and typhoid. (b) Decrease in schooling as some children are not able to attend schools because of diseases and issues relating poor sanitation. (c) Reduction in fresh water availability. (d) Ground water contamination.	(a) Use of public toilets. (b) Plastic wastes recycling. (c) Community cleanliness. (d) Enforcing by-laws on wastes dumping. (e) Some community members boil drinking water.	(a) Exposure to communicable diseases. (b) Unsafe water.	(a) Gazette sites for dumping wastes. (b) Strict enforcement of by-laws on wastes disposal. (c) Subsidization of wastes collection fees by the private sector players.

	(e) Mortality especially among the children.			(d) Regular collection of wastes by KCCA. (e) Proper wastes disposal. (f) Waste recycling. (g) Construction of public toilets by KCCA.
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