



Ministry of Foreign Affairs

Climate Change Profile

Uganda

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Introduction

This climate change profile is designed to help integrate climate actions into development activities. It complements the publication 'Climate-smart = Future-Proof! – Guidelines for Integrating climate-smart actions into development policies and activities' and provides answers to some of the questions that are raised in the step-by-step approach in these guidelines.

The current and expected effects of climate change differ locally, nationally and regionally. The impacts of climate change effects on livelihoods, food and water security, ecosystems, infrastructure etc. differ per country and region as well as community and individual, with gender a particularly important vulnerability factor. This profile aims to give insight in the climate change effects and impacts in Uganda, with particular attention for food security and water. It also sheds light on the policies, priorities and commitments of the government in responding to climate change and important climate-relevant activities that are being implemented, including activities being internationally financed.

Summary

A landlocked country, Uganda's regions - the mountain regions, lowlands, and the cattle corridor - differ in their vulnerability and adaptive capacity. Agriculture is the main economic sector, accounting for over 25% of its Gross Domestic Product (GDP) and employing over 70% of the labour force. Uganda faces several developmental constraints, including high population growth (3.3%), post-conflict conditions in the north, soil erosion and degradation, and pernicious impacts of malaria and HIV/AIDS. Increasing variability in rainfall and rising temperature will present an additional stress on development in the country, especially with its high dependency on rain-fed agriculture. Rising temperatures and shifting or increasingly unpredictable rainfall patterns can reduce the amount of agricultural land, shorten growing seasons, hamper crop production, undermine the (ground) water resources and alter the occurrence and distribution of pests.

Overall ranking

Uganda is a low GHG emission country, ranking 176 of 188 countries in per capita emissions¹ and contributing 0.07% to global GHG emissions². However, Uganda ranks 155 of

181 countries in the ND-GAIN index³ (2016) for climate vulnerability. Uganda is the 14th most vulnerable country and the 48th least ready country – meaning that it is very vulnerable to, yet unready to address climate change effects. *Vulnerability* measures the country's exposure, sensitivity, and ability to cope with the negative effects of climate change by considering vulnerability in six life-supporting sectors: food, water, ecosystem service, health, human habitat and infrastructure. *Readiness* measures a country's ability to leverage investments and convert them to adaptation actions by considering the country's economic, governance and social readiness.

Biophysical vulnerability

*Current climate*⁴. Uganda lies within a relatively humid equatorial climate zone, but the topography, prevailing winds and water bodies cause large differences in rainfall patterns across the country. Average annual **rainfall** ranges from 800 mm to 1500 mm, generally falling in two **seasons** in the south (March to May and September to November), and in one season in the north (April to October). Average daily temperature is around 28 °C, but varies with altitude (temperatures can reach 0 °C in the highlands)⁵.

Changes in sea surface temperatures in the distant tropical Pacific, Indian and, to a lesser extent, Atlantic Oceans strongly influence annual rainfall amounts and timing in Uganda. Year to year variations in annual rainfall can be considerable, and the onset of seasons can shift by 15 to 30 days (earlier or later). In some locations, the length of the rainy season can also change by 20 to 40 days from year to year.

Current trends. In comparison of records from 16 different climatic zones over two 30-year periods, from 1951 to 1980 and from 1981 to 2010 the data overall indicate no clear changes in annual **rainfall** in Uganda (save for a modest decrease in the northern districts of Gulu, Kitgum, and Kotido, as well as Kasese in the west). Analyses identified a statistically significant increase in **temperature** at a rate of 0.52°C per decade over the past 30 years⁶. The magnitude of

¹ <https://en.actualitix.com/country/uga/uganda-co2-emissions-per-capita.php> based on an analysis of World Bank 2011 data

² WRI (2017) <http://caitz.wri.org/>

³ GAIN index summarizes a country's vulnerability to climate change and other global challenges in combination with readiness to improve resilience. <http://index.gain.org/country/uganda>

⁴ Draws heavily from: Uganda Climate Change Findings, USAID, ARCC brief, 2013 <https://www.climatelinks.org/resources/uganda-climate-change-vulnerability-assessment-report> and USAID Climate Change Adaptation Plan, June 2012 <https://www.usaid.gov/sites/default/files/documents/1865/Agency%20Climate%20Change%20Adaptation%20Plan%202012.pdf>

⁵ Climate Service Center Germany (2015). Climate-fact-sheet. Uganda. Updated version 2015. http://www.climate-service-center.de/products_and_publications/fact_sheets/climate_fact_sheets/index.php.en

⁶ Climate Service Center Germany (2015). Climate-fact-sheet. Uganda. Updated version 2015. http://www.climate-service-center.de/products_and_publications/fact_sheets/climate_fact_sheets/index.php.en

observed warming, especially since the early 1980s is large and unprecedented within the past 110 years, representing a large deviation from the climate norm. Between 1960 and 2003, the average number of hot days per year increased by over 20%; the average number of hot night per year increased by over 37%⁷.

Climate change. Global projections downscaled to Uganda for the 2015-2045 period indicate that there may be an increase in **precipitation** during December, January and February, which has historically been the dry season across the country. However, rainfall patterns are expected to change – leading to a potentially less favourable rainfall distribution over the year and an increase of projected precipitation ranging between -2% and +22%. Some models predict large variations across the country, with significant increases in rainfall in the north of the country and a decrease in the southeast (see [Map 1](#)).

The **warming** trend is projected to continue with some models projecting an increase of more than 2 °C by 2030. A warming ranging between 1.4 °C and 4.2 °C is projected for the end of the century⁸. There is a potential for an increase in the frequency of **extreme events** (e.g. heavy rainstorms, flooding, droughts, etc.). All projections indicate substantial increased in the frequency of days and nights that are considered ‘hot’ in the current climate⁹. Uganda has experienced an increase in the frequency and intensity of droughts and floods in recent years. The percentage of rainfall coming in the form of heavy precipitation events is anticipated to increase, which would escalate the risk of disasters such as **floods** and **landslides**.

Water resources are likely to be increasingly strained in Uganda’s future climate. While it is projected that precipitation will increase in some parts of East Africa, warmer temperatures will accelerate evapotranspiration, reducing the benefits of increased rainfall. With more frequent and severe droughts, countries in the region, such as Uganda, will likely experience negative impacts on water supply, biodiversity, and hydropower generation. A shift in rainfall patterns will decrease the recharge of rainwater into the soil, which will have a negative impact on groundwater resources and water tables in wells. Climate change may also affect the health of wetland and forest ecosystems, which provide critical ecosystem (and economic) services for communities.

If temperatures rise and the frequency and intensity of extreme droughts and floods increase, it can reduce crop yields and cause a loss in livestock, which will have important implications for **food security**. The increase in rain during dry seasons could have a significant impact on livestock and agriculture – especially on perennial crops and post-harvest activities such as drying and storage. An overall decrease in the predictability of rainfall intensity and onset of the rainy season increases the chance of crop failure.

Socio-economic vulnerability¹⁰

Key facts:

GDP (PPP) per capita (2014) ¹¹ :	USD 1,848.8
Population (July 2017) ¹² :	42,862,958
Projected population (2050) ¹³ :	105 698,000
Population density per km ² (2016) ¹⁴ :	206.9
Human Development Index (2016) ¹⁵ :	163 out of 188 countries
Corruption Perceptions Index (2016) ¹⁶ :	151 out of 176 countries
Gender Inequality Index (2016) ¹⁷ :	121 out of 188 countries
Adult literacy (2015) ¹⁸ :	78.4% (male 85.3%; female 71.5%)

Due to Uganda’s poverty, low rural incomes, lack of income diversity and heavy dependence on rainfed-agriculture, the country and its people are very vulnerable to climate change. Agriculture is a critical part of Uganda’s economy. It accounts for 25.8% of Gross Domestic Product (GDP)¹⁹, employs 72% of the population²⁰ and accounts for over 50%

⁷ UNDP (2012). Climate Change Country Profiles: Uganda. Also cited in USAID(2015), Climate Change Information Fact Sheet: Uganda available at <https://www.climatelinks.org/resources/climate-information-factsheet-uganda>

⁸ Climate Service Center Germany (2015). Climate-fact-sheet. Uganda. Updated version 2015. http://www.climate-service-center.de/products_and_publications/fact_sheets/climate_fact_sheets/index.php.en

⁹ USAID (2015)

¹⁰ Draws heavily from Environment and Climate Change Policy Brief: Uganda, E. Cesar and H. Wolf, Sida’s Helpdesk for Environment and Climate Change, 2013. <http://sidaenvironmenthelpdesk.se/uganda-environmental-and-climate-change-policy-brief-2013/>

¹¹ World Bank Data – GDP per capita, PPP. <http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>

¹² World Population Review – Uganda. <http://worldpopulationreview.com/countries/uganda-population/>

¹³ UNDESA (2017). *World Population Prospects: The 2017 Revision, Key Findings and Advance Tables*. Working Paper No. ESA/P/WP/248. https://esa.un.org/unpd/wpp/Publications/Files/WPP2017_KeyFindings.pdf

¹⁴ World Bank Data – Population density. <http://data.worldbank.org/indicator/EN.POP.DNST>

¹⁵ UNDP (2017) Human Development Report 2016: Human Development for Everyone Table 1. <http://hdr.undp.org/en/content/human-development-index-hdi>

¹⁶ Transparency International (2017). Corruption Perceptions Index. https://www.transparency.org/whatwedo/publication/corruption_perceptions_index_2016

¹⁷ UNDP (2017) Human Development Report 2016. Table 5. <http://hdr.undp.org/en/content/human-development-index-hdi>

¹⁸ CIA (2015). The World Factbook – Uganda. Available via <https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html>

¹⁹ <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>

²⁰ <https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS>

of total export²¹. Half of the agricultural labour force is female farmers, focusing mainly on their families' food security rather than the production of cash crops.

Uganda has greatly diversified its export structure, by including a variety of crops. Although it is the largest coffee exporter in Africa (Ethiopia produces more, but exports less), it is moving away from only producing coffee. Climate change is likely to have a strong negative effect on coffee production (see [Map 2](#)). Uganda is also the largest source of locally procured maize in Africa for the World Food Program. Food staples in Uganda remain less expensive than in most neighbouring countries, which allow Ugandan farmers to compete with their food products across borders. However, agricultural productivity is threatened by land degradation and climate change effects (see [Map 3](#) and [Map 4](#) for effects of climate change on maize producing regions). Deforestation (resulting in erosion) is estimated at 2.3% a year mainly due to increasing demand for agricultural land and fuel wood by the rapidly growing population. Settlements and cultivation on steep slopes are further increasing the risk of landslides and rates of soil erosion²².

Rapid population growth and the expansion of farming and pastoralism under an unpredictable and warmer climate regime could decrease the resilience of the ecosystem and dramatically increase the number of at-risk people in Uganda in the next 20 years. A recent vulnerability assessment suggests that many of Uganda's crops are vulnerable to the projected rising temperatures and rainfall pattern unpredictability (including increasing dry season rainfall). Overall, the report mentioned the following crops ranging from most to least sensitive to climate change effects: Arabica coffee, Robusta coffee, rice, maize, East African Highland banana (matooke), beans, sorghum, sweet potatoes, and cassava²³.

It has been suggested that climate change significantly contributes to conflicts in Uganda. In many cases, areas with changing climate are coincident with zones of substantial conflict, indicating some degree of association. For example, the frequent scarcity of pastures and water resulting from droughts has been put forward as a major cause of intra- and inter-district as well as inter-regional conflicts. While the contribution of climate change to these conflicts is currently not well understood, it is anticipated that as extreme weather events, e.g. floods and droughts,

become more frequent due to climate change there will be an increasing risk for conflicts, potentially also due to rising food prices.

Among the findings of the recent USAID vulnerability assessment (six research districts: Gulu, Lira, Luweero, Mbale, Isingiro and Kasese) was that households faced important challenges indirectly related to climate, such as declining soil fertility and increasing land pressure. Households reported (on average) being food insecure for almost three months in 2011²⁴.

Specific attributes make some households more sensitive to climate variability and change. More vulnerable households are those with many of the following characteristics:

- lower proportion of able-bodied (working) members;
- less well educated;
- more likely to be headed by a female;
- less likely to sell a portion of their crops or livestock;
- participating less frequently in community groups such as producer associations, cultural or labour savings groups, and religious organizations;
- earning income less frequently from off-farm sources (and when they do, that income is less than the amount that more secure households earn).

The systemic vulnerability of households studied also stems from the fact that they depend heavily on crops whose value chains are sensitive to climate variability and change; any change in food production critically increases overall vulnerability. For example, maize is an essential part of the diet of most vulnerable households. Households sell a small portion of their harvest; yet this small amount of maize sold represents a significant source of cash for the household. Less vulnerable households sell a greater portion of their harvest, and have other more important sources of incomes.

The level of income diversity affects the ability of households to adapt to climate change. The assessment concludes that households with greater adaptive capacity manage more diverse agricultural portfolios; they plant more crops and invest in livestock. They also have a more varied mix of on-farm and off-farm income sources. Marked differences by districts significantly affect this diversity. Access to land plays a strong role in on-farm diversification; as a result, land pressure in more densely populated districts, such as Mbale, increases vulnerability. Proximity to urban centres also increases off-farm income and thus significantly reduces vulnerability to climate variability and change.

²¹ CIA (2015). The World Factbook – Uganda. Available via <https://www.cia.gov/library/publications/the-world-factbook/geos/ug.html>

²² UNDP (2013): *Climate Profiles and Climate Change Vulnerability of the Mbale Region of Uganda: Policy Brief*. http://www.undp-alm.org/sites/default/files/downloads/tacc_mbale_climate_profiles_policy_brief_final.pdf

²³ USAID and ARCC (2013): *Uganda Climate Change Vulnerability Assessment Report*. <http://community.eldis.org/.5b9bfce3/ARCC-Uganda%20VA-Report.pdf>

²⁴ USAID and ARCC (2013)

National government strategies and policies

Uganda has ratified the UN Convention on Biological Diversity (CBD), the Convention to Combat Desertification (CCD), the Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Uganda signed the Paris Agreement on climate change in April 2016 and ratified the agreement in September 2016 with it entering into force in November 2016 (see Nationally Determined Contributions below).

Being a natural resources-based economy, Uganda identified sustainable management and use of natural resources – including the necessary measures for climate change mitigation and adaptation – as a priority. Especially for the agricultural sector, climate change is considered influential and calls for measures to enhance soil carbon as well as soil conservation practices²⁵. Priorities and measures are elaborated in national strategies and policies, and supported via various sources of funding. Although there is an increasing number and variety of policy documents, it has been stated that national policy articulation on climate change is becoming increasingly consistent, clear, and coherent²⁶. It has however also been stated that policies are unlikely to produce useful strategies for Uganda's farming communities if they are not complemented by locally relevant and tested strategies for adaptation²⁷.

Uganda developed and implements a number of national policies and strategies related to climate change. Its National Adaptation Programme of Action (NAPA), firstly, prioritized the following nine projects:

- Community Tree Growing Project;
- Land Degradation Management Project;
- Strengthening Meteorological Services;
- Community Water and Sanitation Project;
- Water for Production Project;
- Drought Adaptation Project;
- Vectors, Pests and Disease Control Project;
- Indigenous Knowledge and Natural Resource Management;
- Climate Change and Development Planning Project²⁸.

However, only a few of these projects were financed and implemented. Currently, a National Adaptation Plan is under preparation.

To date, Uganda has submitted nine proposals seeking support for the preparation of Nationally Appropriate Mitigation Actions (NAMAs). These proposals focus on waste management (solid waste, waste-water treatment), energy (institutional stoves), agriculture (livestock methane emissions; high-yielding upland rice), and transport (a bus transit, vehicle emissions inspection, fuel efficiency).

The National Development Plan II (NDPII, 2015-2020) notes that climate change is one of the greatest challenges for Uganda to realise its Vision 2040 of a transformed modern and prosperous country. The response is to mainstream climate adaptation and mitigation into sector planning and implementation. NDPII promotes a low emissions development (LED) pathway for the country and climate-proof national development.

The National Vision 2040 prioritizes among others renewable energy, appropriate adaptation and mitigation strategies, knowledge and information sharing on climate change, increased coordination and capacity, and improved monitoring/evaluation regarding climate change interventions²⁹. An important operationalization of this vision is the 'National Strategy and Action Plan to strengthen human resources and skills to advance green, low-emission and climate-resilient development in Uganda 2013-2022'. This learning strategy aims at reviewing and updating the skills and knowledge of key institutions and individuals³⁰.

An important development was the approval of a Climate Change Policy in early 2015. Priority concerns in this policy are climate change adaptation, mitigation, and research and observation. The policy identifies common policy priorities as well as adaptation and mitigation responses, aims to strengthen prediction and monitoring of climate change, supports integration of climate change issues in planning, decision-making and investments, and facilitates mobilization of financial resources to address climate change³¹. The policy is accompanied by a costed implementation strategy which contains more detailed provisions. These include a roadmap to early policy implementation, an elaboration of the institutional framework (including on the Focal Climate Change institution and the National Climate Change Commission – see below), and an overview of resources/funding required for implementation of the policy. The document

²⁵ Republic of Uganda (2012): National report on progress on the implementation of the Rio commitments on sustainable development in Uganda (draft).

²⁶ Tumushabe, G.; Muhumuza, T.; Natamba, E.; Bird, N.; Welham, B.; Jones, L. (2013): *Uganda National Climate Change Finance Analysis*. <http://www.cbd.int/financial/climatechange/uganda-climate.pdf>

²⁷ USAID and ARCC (2013)

²⁸ Republic of Uganda (2007): *Uganda National Adaptation Programmes of Action*. <http://unfccc.int/resource/docs/napa/uga01.pdf>

²⁹ Government of Uganda (2013): *Uganda Vision 2040*. <http://npa.ug/wp-content/themes/npatheme/documents/vision2040.pdf>

³⁰ Ministry of Water and Environment – Climate Change Unit (2013): *National Strategy and Action Plan to strengthen human resources and skills to advance green, low-emission and climate-resilient development in Uganda 2013-2022*.

³¹ Maikut, C. (2013): *National Climate Change Policy – Overview*. Ministry of Water and Environment - Climate Change Department.

identifies international climate funds as an important potential source to cover these costs, estimated at USD 93 million for adaptation and USD 26 million - for mitigation, for the first year of implementation (and an additional USD 10 million for monitoring, coordination, etc.)³².

Many Ugandan institutions are associated with climate finance and policies/strategies on climate change. A study identified 11 Ministries involved, and a further 9 subsidiary agencies. As a result of the approval of the Climate Change Policy, a Climate Change Department (CCD) within the Ministry of Water and Environment has replaced the Climate Change Unit.

The implementation of the Climate Change Policy has been delayed due to the lack of progress in the preparation and submission to Parliament of a climate change bill that would provide the legal and regulatory framework for the operationalization of the policy. The climate change bill is still under preparation and has undergone a consultative process. It was anticipated that it would be submitted to Parliament in 2017. However, in recent meetings (December 2017) Members of Parliament (MPs) and CSO members expressed dissatisfaction with the current Bill which will likely result in further delays before a Bill can be submitted.

A Green Growth Strategy has been finalized by UNDP and GGGI working with the Ministry of Finance, Planning and Economic Development (MOFPED), CCD and the National Planning Authority. It provides guidance for the implementation of NDPII and supports the implementation of Uganda's NDC.

While some progress has been made on the development of policies and strategies, a well-defined institutional setup with appropriate capacity to implement them is still missing. This is not only the case at the national level, but also – perhaps more – at local levels, where the implementation challenge is most acute³³.

Nationally Determined Contributions (NDC)

Uganda submitted its Intended Nationally Determined Contributions (INDC) to the UNFCCC in October 2015 and its First Nationally Determined Contribution (NDC)³⁴ in September 2016. In its NDC, Uganda presents itself as being highly vulnerable to the impacts of climate change³⁵.

The total cost of adaptation and mitigation measures mentioned in the NDC are estimated at \$5.3 billion (\$2.9 billion for mitigation and \$2.4 billion for adaptation), of which 70% is conditional upon international support and 30% will be covered by national sources.

Uganda's NDC strongly maintains that its major concern is *adaptation* rather than mitigation. and prioritizes the following sectors:

1. **agriculture and livestock:** actions include expanding climate information, early warning systems and climate smart agriculture (for which there is a detailed national program), diversification of livestock, expanding small-scale water infrastructures, investing in research on climate resilient crops and animal breeds and extend electricity in rural areas;
2. **forestry:** forest restoration, promoting biodiversity and watershed conservation, encouraging agroforestry and efficient biomass energy production;
3. **infrastructure:** climate resilient building, updating regulation regarding transport, updating risk assessment guidelines and improving water catchment protection;
4. **water:** improving water efficiency, ensuring water supply for agriculture and for domestic use and flood prevention (via establishment of an Integrated Water Resources management system);
5. **energy:** increasing efficiency in use of biomass, promoting renewable energy, increasing efficiency of electricity sector;
6. **health:** actions include improving early warning systems for disease outbreaks and developing contingency plans for climate change resilient health systems, building hospitals and making provisions for safe water and sanitation supply;
7. **disaster risk management:** actions include mainstreaming climate resilience in all sectors, vulnerability risk mapping at sectoral and regional level, improving drainage plans and early warning systems.

Mitigation. Uganda's mitigation measures focus on policy implementation in the energy, forestry and wetland sector, which would result in a 22% reduction of GHG-emissions by the year 2030 compared to a Business-as-Usual (BAU) scenario.

1. **energy:** construction of powerlines, substations and transmission facilities for the electricity sector, aiming to achieve 3,200 MegaWatts renewable electricity generation capacity by 2030;
2. **forestry:** establishing community forest management groups, strengthening forest institutions (including strengthening forest law enforcement and governance), increasing forest cover to 21% in 2030 through forest protection, afforestation and sustainable biomass production;
3. **wetlands:** improving wetland management and increasing wetland coverage to 12% by 2030 through demarcation, gazettement and restoration of degraded wetlands.

³² Republic of Uganda – Ministry of Water and Environment (2013): Uganda National Climate Change Policy – Part II: Draft Costed Implementation Strategy.

³³ Tumushabe et al. (2013)

³⁴ The First NDC submitted was the INDC.

³⁵ <http://www4.unfccc.int/ndcregistry/PublishedDocuments/Uganda%20First/INDC%20Uganda%20final%20%2014%20October%20%202015.pdf>

Uganda has moved forward in implementing its NDC. The Uganda National Baseline Study was developed in May 2017 to assess the current situation of NDC, LED, climate finance, and various stakeholders' engagement. Uganda has initiated the process of requiring annual budget requests to undergo a climate screening to ensure that each ministry fully considers climate change in its budgeting. To monitor and report on climate action progress, Uganda is also starting to integrate climate indicators into its development plans as a means to further mainstream climate planning across levels of government and monitoring the implementation of the NCCP and the NDC.

Uganda became a member of the NDC-Partnership and will be receiving technical support in the implementation of its NDC in areas such as budgeting, investment, monitoring and evaluation, such as developing and testing the budget tracking system and developing of Sector Development Plans (SDPs) that are aligned with the NDC³⁶.

Climate finance

National government expenditures on climate change in Uganda are relatively low. Between 2008/09 and 2011/12 they were found to be on average 0.2% of GDP – which is significantly lower than the 1.6% which has been indicated as necessary investment in the Implementation Strategy of the new Climate Change Policy. These climate change expenditures were around 1% of total government expenditures in these years, equal to ca. USD 20 million annually (including all 'climate relevant' expenditures). Of this amount, circa two thirds were spent on adaptation measures, and the remaining one third on mitigation. On district level, climate-relevant investments were higher: 2% of total government expenditures, of which 98% was for adaptation activities, mostly in water, agriculture and natural resources sectors. Effectiveness of public spending on climate change actions is yet unclear. While there has been progress in policy development, on-the-ground impact are not reported³⁷.

Since 2013 Uganda has received additional international climate finance for both adaptation and mitigation. For adaptation, Uganda is a pilot country of the CIF/Pilot Program for Climate Resilience (PPCR) and is preparing its program. For mitigation, the UNREDD national program for Uganda was launched in November 2015. It will include the set-up of a National Forest Monitoring System (NFSM) with appropriate monitoring reporting and verification functions (MRV) with support from the Forest Carbon Partnership

Facility of the World Bank and Austrian Cooperation. An investment plan is under preparation for the World Bank Climate Invest Fund (CIF) Forest Investment Program (FIP). Uganda has also been selected as a pilot country for funding under the Scaling Up Renewable Energy in Low Income Countries Program (SREP) of Climate Investment Funds (CIF). Its investment plan of \$50 million (indicative) focusing on solar, geothermal and wind energy endorsed and being finalized. Uganda was also awarded a grant by the Green Climate Fund (GCF) focusing on wetlands and climate adaptation.

For a list of international and multilateral climate projects in Uganda, see the [Annex](#).

Bilateral climate change projects

As noted above, various international and multilateral climate change related activities are being implemented in Uganda, through international climate funds. Bilateral funding as reported by the Climate Funds Update in 2016 was around \$50 million (with the likelihood of under-reporting due to the integration of climate change into food security, disaster risk reduction, and water programs).³⁸ Bilateral projects currently being implemented, related to food security and/or water, include:

- 'Feed the Future', a regional programme with a climate change component, funded by USAID;
- various other climate change support activities by USAID, including capacity building of Makerere University faculty, and a national vulnerability assessment (completed in 2013)³⁹;
- 'Reducing Community Risk and Strengthening Disaster Response', funded by DFID;
- DFID's food security programme, which is being reframed to be more climate-smart;
- a resilience context analysis in the Karamoja area (funded by DFID);
- CDKN's Uganda programme (funded by DFID and the Netherlands) which undertook an economic assessment of the costs of climate change in Uganda (2014/5) and assisted in the preparation of the Ugandan INDC;
- various water initiatives supported by GIZ/KfW;
- GET FIT: a multidonor programme that focuses on the East African region. Phase I is being implemented in Uganda. and is concerned with improving electrification and renewable energy production⁴⁰.

³⁶ <http://connect.wri.org/webmail/120942/847130494/482e-7c04145a49b0d5941b9628e4cb8e675ae90bf6063f4f09102a54118eb58b>

³⁷ Tumushabe et al. (2013)

³⁸ Climate Funds Update website: <http://www.climatefundsupdate.org/data>

³⁹ Uganda Climate Change Vulnerability Assessment Report, USAID. <http://community.eldis.org/5bbzfb84>

⁴⁰ <http://www.getfit-uganda.org/>

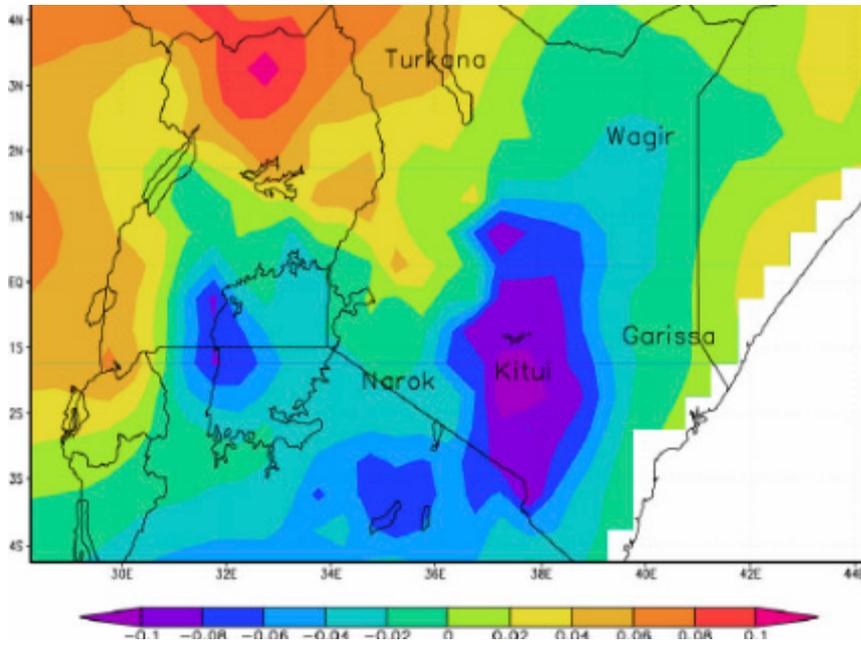
Climate contribution of the Netherlands

The Netherlands supports climate-relevant projects in Uganda through a variety of channels and in cooperation with range of actors in the fields of food security, renewable energy and DRR. Projects focus on:

- covering 'hot spots' of climate change in the seed, dairy and agro-skilling projects in the (South) West of the country to tackle climate change where it hurts the most;
- targeting the capacities of 200,000 small farmers, of which at least 40% women and many youth, to cope with the effects of climate change, by increasing income, diversifying production and improving knowledge;
- aiming principally at an extra sustainable income thereby increasing the farmers' capacity to invest in climate adaptation measures, and their coping ability to 'save for a rainy day';
- focusing on more resilient integrated farming systems of value chains such as rice, cassava, potatoes, instead of mono-cropping;
- strengthening the dairy sector by increasing yield per cow for 5000 farmers (18% women), thereby increasing income and contributing to more sustainable production systems and mitigation of greenhouse gas emission through reducing the number of cows.
- developing climate adaptive inputs, particularly seeds, and building sustainable linkages with agri-input providers financial institutions and innovative processors, some of which originate from the Netherlands;
- investing in skills and job opportunities for 3800 youth in the agribusiness sector, promoting climate smart agricultural practices such as use of drought tolerant and early maturing crop varieties;
- assisting 50,000 farming households (= 250,000 people) and labourers in Uganda to access quality solar products;
- reducing trade barriers and improving border management with a view to facilitating trade to regional markets, enhancing income generation, mitigating price volatility and allowing efficient cross-border trade between surplus and climate affected deficit areas;
- improving the policy and regulatory environment for sustainable agricultural intensification in two zones with the greatest population pressure (potato-growing areas in the south-west and irrigated rice-systems in the south east, an area with the largest number of poor people in the country).
- Provision of methodological, technical and financial support in the fields of energy policy, promotion of improved biomass technologies, rural electrification and energy efficiency; advising on developing sector investment plans for renewable energies and energy efficiency. Focus is on (1) improved cookstoves (ICS), (2) picoPV and solar home systems (SHS), and (3) grid densification (Energising development)
- Strengthening resilience/DRR by promoting the inclusion of Integrated Risk Management principles and approached in policies, plan and programmes, in particular the Uganda national climate change policy/act, Uganda national wetlands management policy and the national policy on disaster preparedness and management; making private and public investments in fragile ecosystem areas more risk informed (Partners for Resilience).

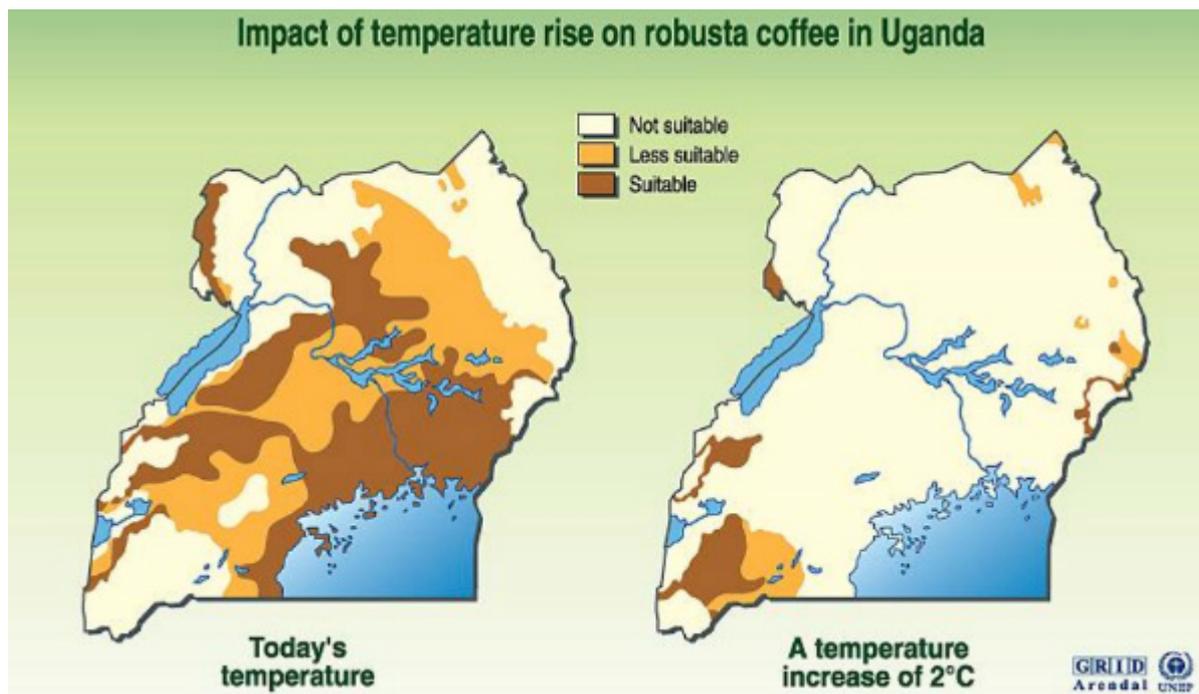
Maps

Map 1 Differences in rainfall changes due to climate change across Uganda



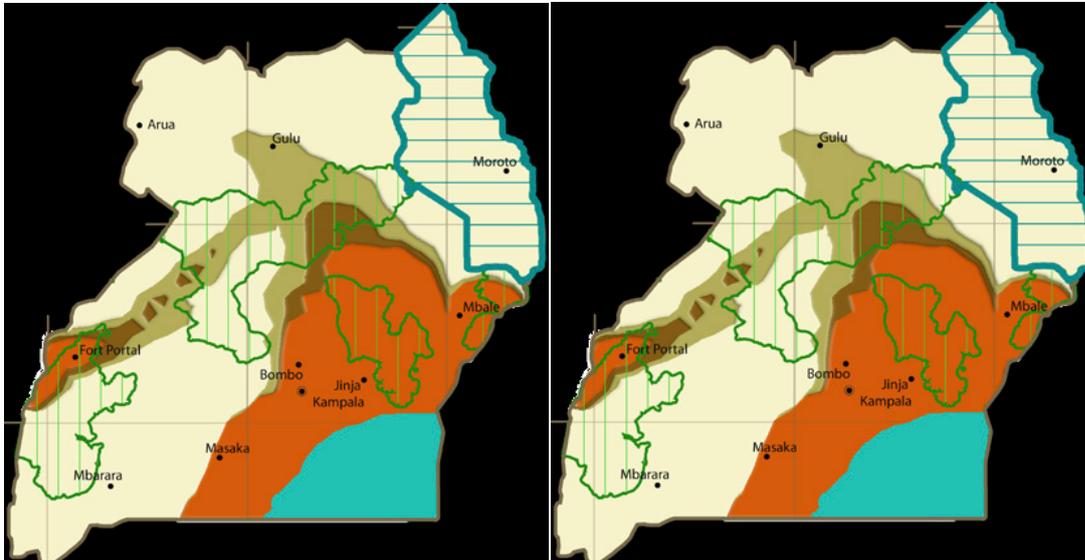
Source: Semazzi, F. (2005): Opportunities for Collaboration with Uganda Institutions in Climate Change Education & Development of Adaptation Strategies. North Carolina State University. http://climlab02.meas.ncsu.edu/confpres/Semazzi_Uganda_July_2010Talk_v6.pdf

Map 2 Effects of temperature increase on coffee production



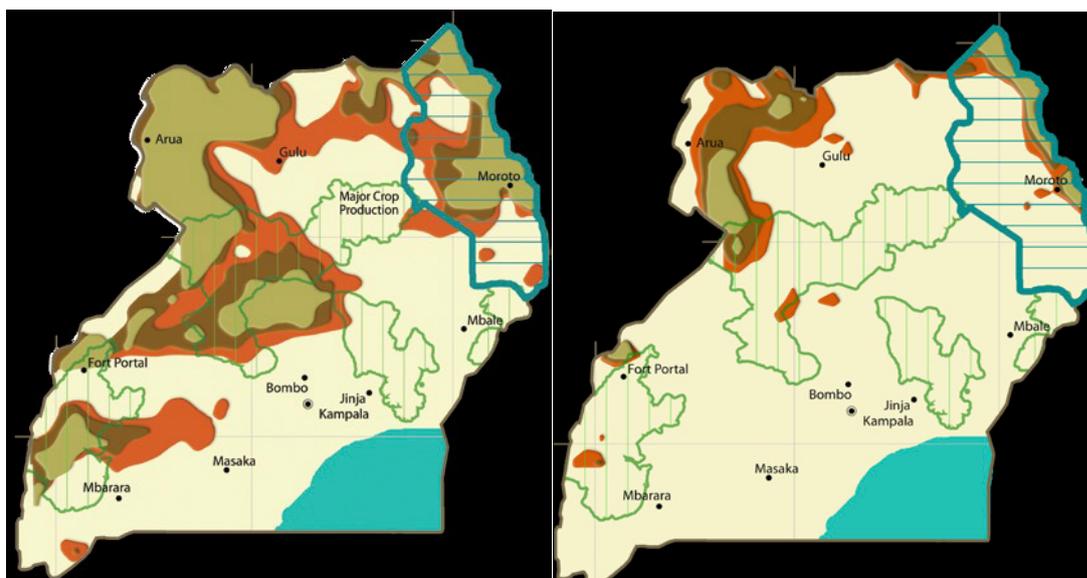
Source: GRID Arendal / UNEP: <http://www.grida.no/publications/vg/climate/page/3090.aspx>

Map 3 Climate change in Uganda – influence on maize producing regions



The left map shows the average location of the March–June 500 mm rainfall isohyets for 1960–1989 (light brown), 1990–2009 (dark brown), and 2010–2039 (predicted, orange). The green polygons in the foreground show the main maize surplus regions; these areas produce most of Uganda’s maize. The blue polygon in the upper-right shows the Karamoja region. The right map shows analogous changes for the June–September 500 mm rainfall isohyets.

Map 4 Warm regions expand in Uganda – influence on maize producing regions



The left map shows the average location of the March–June 24 degrees Celsius (°C) iso-therms for 1960–1989 (light brown), 1990–2009 (dark brown), and 2010–2039 (predicted, orange). The green polygons in the foreground show the main maize surplus regions. The blue polygon in the upper-right shows the Karamoja region. The right map shows analogous changes for the June–September 24°C isotherms.

Annex

International and multilateral climate projects (since 2012)

Source Climate Funds Update (2017)⁴¹ and World Bank (2017)⁴²

World Bank Climate Investment Funds: <http://www-cif.climateinvestmentfunds.org/>

Name of Project	Fund	Amount of Funding Approved (USD millions)	Disbursed (USD millions)	Dates
Programme for the Restoration of Livelihoods in the Northern Region (PRELNOR)	Adaptation for Smallholder Agriculture Programme (ASAP)	10	1	2014
Enhancing resilience of communities to climate change through catchment based integrated water management	Adaptation Fund	7.75	1.5	2016-2020
Reducing Vulnerability of Banana Producing Communities to Climate Change Through Banana Value Added Activities - Enhancing Food Security and Employment Generation	Least Developed Countries Fund (LDCF)	2.82		2013
Uganda - Strengthening Climate Information and Early Warning Systems in Africa to Support Climate Resilient Development and Adaptation to Climate Change	Least Developed Countries Fund (LDCF)	4.1	4.1	2012
Building Resilience to Climate Change in the Water and Sanitation Sector	Least Developed Countries Fund (LDCF)	8.6	8.6	2013
NAMA on Integrated Waste Management and Biogas in Uganda	Global Environment Facility (GEF6)	2.2	2.2	2015
Direct support to the design and implementation of UNREDD National Programmes	UNREDD Program	1.8	1.8	2015-2017
Readiness preparation grant	Forest Carbon Partnership Facility (FCPF)	3.8	1.9	2013-2016
Building Resilient Communities, Wetland Ecosystems and Associated Catchments	Green Climate Fund	24		2016-2025
Pilot Program for Climate Resilience (PPCR)	WB / Climate Investment Funds	tbd		In Planning
Strategic Program for Climate Resilience (preparation of the implementation plan)		1.5		
Scaling Up Renewable Energy	WB/ CIF Funds	50		In Planning
Forest Investment Program (FIP)	WB/ CIF Funds	tbc		In Planning

⁴¹ <http://www.climatefundsupdate.org/data>

⁴² <http://www-cif.climateinvestmentfunds.org/>

