

**The impact of
climate, energy,
and environment
on children and
their families
in Burundi**



Cover page:
A child plays in the floodwaters in Gatumba, near Bujumbura in Burundi.



A mother of four children prepares maize to feed her children in Kibande, Burundi. As unpredictable rain patterns have ruined many crops in the area, she now has to walk 30 km to work as a day labourer on farms.

Acronyms

COP26	Conference of the Parties
DHS	Demographic and Health Survey
DMT	Displacement Tracking Matrix
GAM	Global Acute Malnutrition
GDP	Gross domestic product
HDI	Human Development Index
HNO	Humanitarian Needs Overview
HRP	Humanitarian Response Plan
IDP	Internal Displaced People
INDC	Intended Nationally Determined Contributions
INFORM	Index for Risk Management
IOM	International Organization for Migration
NAPA	National Adaptation Plan of Action
NAP	National Adaptation Plan
NCs	National Communication
ND GAIN	Notre Dame Global Adaptation Index
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
UNSDIR	United Nations International Strategy for Disaster Reduction
WASH	Water Sanitation and Hygiene
WHO	World Health Organization

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The impact of climate, energy, and environment on children and their families in Burundi

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Executive summary

Burundi is a landlocked country of 27,834 km² located in the Great Lakes region of East Africa. The landscape is largely hilly and mountainous. With a population of 12 million, Burundi is the fourth most densely populated country in Africa, with 435 people/km².

Although the Burundian government has made progress in promoting children's rights, the effects of climate change are straining the already fragile socioeconomic structure. Of 181 countries ranked according to their vulnerability to climate change, Burundi ranks 169th on the Notre Dame Global Adaptation Index (ND GAIN). Climate change through increased rainfall and temperature variations intensifies pre-existing challenges such as the high levels of vulnerability. The trend of recurrent flooding, landslides and soil erosion is increasing, with devastating consequences on the livelihoods of the population.

Generally, children are hit hard by the effects of climate change as they are particularly vulnerable. In Burundi, one in two children under the age of five are chronically malnourished and climate shocks affect food availability and quality. With 94% of the population employed in rain-fed agriculture, the fragility of this dependence is seen during the prolonged dry seasons, delayed or intense rains.

Climate change can have devastating effects on children's health. Malaria, a major health problem and the leading cause of death for children in Burundi, is worsening as previously cold regions are becoming warmer. Cholera or other water-borne diseases may also become more frequent due to contaminated water, lack of water for hygiene, and damaged infrastructure following natural disasters.

The consequences of climate change were seen throughout the 2019/2020 school year, with education and daily school disruptions for over 110,000 children in 1,609 schools. As a result, increasing the resilience of the education sector is considered a priority. Sustainable progress may be achieved through strategically identifying climate resilient building locations and construction technologies, and further developing the capacity of children and teachers to adapt to climate change.

Furthermore, climate change negatively impacts women's already limited access to basic social services and further increases existing gender inequalities. In Burundi, women compared to men have less access to land, financial resources and are not as present in decision-making structures. Addressing climatic effects is therefore also an opportunity to address these disparities and strengthen gender equality.

Adopting a multidisciplinary approach towards climate change is essential to succeed in attaining children's rights and ensuring sustainable and inclusive socioeconomic development in Burundi. This situation analysis provides insights on the impact of climate, energy and environment on children and their families. This document is intended to contribute to the knowledge base and help stakeholders identify or refine their priority actions and strategies in view of ensuring a sustainable future for children in Burundi.





An aerial view of an Internally Displaced Camp in Gatumba on 5 March 2021, located near Bujumbura in Burundi. At least 50,000 people have been affected by the floods in the region in the past year. A few kilometres from the floodwaters, a big IDP camp has been formed to shelter people displaced by the flooding.

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Country overview

Burundi is a country located on the borders of Central Africa and East Africa with a surface of 27,834 km² of which 25,000 km² are terrestrial. Despite its modest size, Burundi is distinguished by its diversity of relief and its landscapes. Its climate is tropical and humid, influenced by its altitude, which varies between 773 m and 2,670 m¹.



Several villagers walk past landslides near Gisheke, Burundi.

The distribution of large landforms accurately reflects the country's climatic diversity, resulting in an uneven distribution of rainfall in the area. It is characterized by five eco-climatic zones, namely the lowland plain of Imbo, the steep region of Mumirwa, the mountainous zone of the Congo-Nile ridge, the central plateaus and the depressions of Kumoso and Bugesera.

→ Geographical areas also influence thermal variations. The higher regions experience on average colder temperatures than the lowlands. In general, in Burundi, the monthly average maximum temperatures are highest at the end of the dry season (September), which varies from 25° C (Imbo region) to 15.7 ° C (Mugamba region) while averages monthly minimum temperatures are lowest during the dry season (July) and range from 23.3° C (Imbo region) to 13.9° C (Mugamba region).

→ As for hydrology, Burundi has abundant water resources. In most parts of Burundi, there is a dense network of permanent watercourses and many drainage axes. It belongs to two major African watersheds, the Nile basin with an area of 13,800 km² and the Congo River basin with an area of 14,034 km². In addition, Burundi is very rich in natural lakes including Lakes Tanganyika, Cohoha, Rweru and Rwhinda. Lake Tanganyika, located at 774 m altitude and 677 km long, is the second deepest lake (1,470 m) in the world, and the largest freshwater reservoir in Africa (18,880 km³). It is also a reservoir of biodiversity hence its classification as a heritage of humanity². **Despite these wealthy water resources, water in Burundi is a vulnerable resource.** It is limited by a variety of factors including particularly the frequent unfavorable climate conditions in some areas (too little rainfall in the North-East, too much in other areas), such as the unequal space-time distribution of rainwater, and the contamination due to agricultural practices and unimproved sanitation.

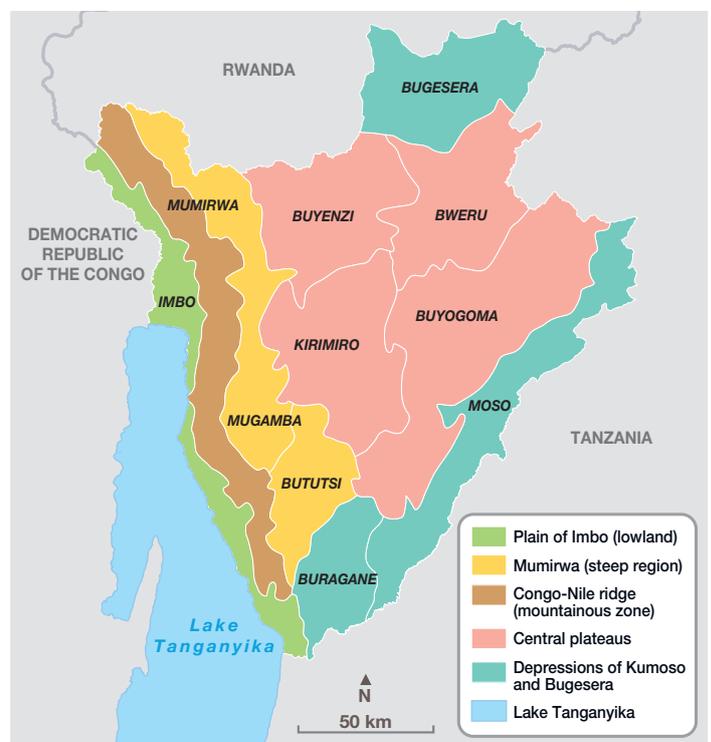
→ Burundi has 12,524 millions of people and is **the fourth most densely populated country in Africa**, with approximately 435 inhabitants per square kilometer which is almost 10 times the average for sub-saharian Africa of 45 persons per square kilometer (World Bank 2018), and a growth rate around 3% per year (ISTEBU 2017). Projections estimate that Burundi **could double its population by 2050**, due to one of the highest fertility rates in the world (5.5 children per woman). Its population is composed of 50.4% women³ and **45% children under the age of 15** (DHS 2017).

→ In terms of human development, according to UNDP, **Burundi is ranked 185th out of 189 on the Human Development Index**. It is estimated that 65% of the population lives below the poverty level, and 78.2% of Burundian children suffer from at least three dimensions of poverty⁴ (access to a balanced diet, access to primary health care, safe drinking water, hygiene, sanitation, access to information, protection, education and shelter).

→ **Agriculture and livestock in Burundi account for 80% of employment and provides 40% of GDP**. It is mostly low-yield subsistence farming, with very limited investment in improved techniques such as irrigation technology and adapted seeds. This type of economy is very sensitive to the effects of worsening climate change impacts, as floods and droughts cause major crop losses each year, leading to even more problems of food insecurity and child malnutrition.

→ **Burundi ranks 169th out of 181 countries according to the ND-GAIN index**. This index summarizes a country's vulnerability to climate change and other global challenges, combined with its readiness to improve its resilience. This shows a great need for urgent action as well as investment in innovation to improve resilience. Progress from 1995 to 2020 has been limited, improving slightly in both vulnerability and resilience.

ECO-CLIMATIC ZONES



Source: Martens A. and Sautiaux G. (ISABU, 1979) modified and mapped by the Centre d'Information Environnementale (CIE), Bujumbura, Burundi.

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A child runs past a shelter during a rainstorm in Kibande, Burundi.

✦ CLIMATE TRENDS AND PROJECTIONS

According to future climate forecasts, temperatures are expected to increase by 1 to 3°C by 2050. Likewise, precipitation is expected to increase by 10% and the rainfall pattern is expected to be altered, leaving only two seasons and uneven distribution of precipitations. There is a trend towards the disappearance of the short rainy and dry seasons, giving way to only two seasons, which will have a major impact on the agricultural seasons. This will also affect the recharge of aquifers, leading to difficulties in accessing water at certain times of the year.

Climate change has already increased the intensity and frequency of natural disasters such as drought, torrential rains, hail and violent storms, floods and flash floods, landslides, and mudslides. Climate projections would imply an exacerbation of these problems, increasing in frequency, magnitude and impact of the disasters.

The most vulnerable areas to drought are in the north-east of the country, which suffers from water stress and crop failures. This situation pushes the population of these areas to migrate to neighboring countries, a phenomenon that has been occurring since 1998. Floods usually affect the larger river basins, such as the Congo and the Lake Tanganyika area, but flash floods affect any region of Burundi. Landslides are common in areas with mountainous terrain where there is high rainfall, and high vulnerability due to soil erosion and deforestation.



Dead maize plants stand in a field in Kibande, Burundi.

✦ HUMANITARIAN SITUATION RELATED TO NATURAL DISASTERS

According to the Index for Risk Management (INFORM), the whole of Burundi is vulnerable to natural and man-made risks. The environmental problems, coupled with the enormous demographic pressure on natural resources (mainly soil and water) and the rugged geography of the country make natural disasters recurrent, with floods and landslides as the most common disasters. However, the increase in rainfall caused by climate change makes disasters more recurrent and with more severe consequences. Due to rising temperatures in the Indian Ocean, there has been a significant increase in heavy rains in the region, **affecting 268,659 people from 2018 to May 2021, and 36% of whom have become internally displaced** (IOM DMT 2021). There is an upward trend in the number of disasters and the infrastructure and people affected. However, human activities have exacerbated the consequences, with construction on the shores of Lake Tanganyika or in places prone to flooding, as well as deforestation increasing the risk of landslides.

Besides the direct effects, the costs of natural disasters and climate-related GDP losses are compromising. Burundi's socio-economic development and the progress made so far is offset by climate change impacts. For example, **the annual economic cost of flooding in Burundi alone is US\$3.3 million and drought losses (crop production affected) amount to US\$20 million per year and for natural disasters it rises to approximately US\$23 million** (not including the cost of landslides) (UNSDIR 2013). If the current climate projections prove to be true, these costs will be higher in the future having a direct effect on the well-being of children and is likely to increase both economic and multidimensional poverty.

Energy access

The main sources of energy are wood and coal burning, and according to the World Bank less than 1% of the population uses clean cooking solutions.

Access to electricity represents only 7% in the country, 49% in urban areas and being lower in rural areas with just a 1% of the population connected to electricity. Continued logging will likely worsen the already degraded situation of forests and soils, reducing forest cover and biomass, leading to a reduction in the country's carbon sequestration capacity and erosion of watersheds.

→ Burundi has **great potential and favorable conditions for renewable energy, including hydropower, solar and wind energy.** Currently, the government is committed to increasing hydropower through the construction of hydropower plants. However, the hydropower plants are also being affected by environmental problems, as erosion and increased rainfall are silting up the dam and thus reducing the capacity to produce energy. Moreover, although the solar energy sector is in its early stages, there are some projects underway that will supply 87,000 homes and businesses in the capital area, Gitega, and the potential is very large. Improving access to renewable energy will have a positive effect not only on the decarbonization of the energy sector and increased sustainable energy access, but also on reducing deforestation and improving the economic development of the country.



Floodwaters can be seen in Gatumba, near Bujumbura. At least 70,000 people have been affected by the floods in the region in the past year.

→ One of the government's objectives mentioned in the Intended Nationally Determined Contribution (INDC) of 2015 was to convert all stoves to improved stoves to reduce emissions, **reduce the use of wood and coal** and improve health. Unfortunately, the goal has not yet been achieved, but there are several projects aiming at improving cooking methods. There are also some small-scale initiatives for the **construction of clean ovens** and the production of **green charcoal from organic waste**.

→ Lack of access to electricity and the use of coal and wood as energy sources have negative effects on children and their families. **80% of children live in households that use unimproved fuel, as a result, respiratory infections** are one of the leading causes of mortality and morbidity among children in Burundi. The 2016 child poverty report recommended appropriate campaigns to raise awareness of the side effects of certain fuels⁸.

Poor lighting in the households means that children have less time to do homework, charge their mobile phones and operate basic appliances such as the fan, fridge, radio and television.

In the community, little or no street lighting makes it especially dangerous for children and women to walk safely outdoors after dark. This makes it difficult to live a healthy, social and productive life.

→ In health clinics, reliable 24-hour electricity and good quality lighting throughout the facilities is of high importance for diagnosis and treatment, including surgery and delivery. Electricity is essential for maintaining the cold chain for vaccines and other life-saving medical supplies⁹. Only <0.5% of primary schools are powered by electricity¹⁰ (in urban areas from the national energy and water company-Regideso, and in rural areas from solar energy initiative led by partners like UNICEF and ENABEL).

UNICEF has carried out solar electrification projects in schools and health centers with a large positive impact on improving learning conditions for children and access to health systems.

This photograph shows cultivated land on a hill near Gisheke, Burundi. In December 2019, the region was hit by heavy rains causing several landslides.



8. UNICEF, La pauvreté des enfants au Burundi, 2016

9. UNICEF 2017, Addressing climate change for children

10. MENRS-UNICEF, Diagnostics des infrastructures et équipements scolaires au Burundi, 2018



3

Sector impacts and vulnerabilities

The NAPA (National Adaptation Plan of Action 2007¹¹) specifically highlights the mutual influences and cumulative impacts of:

- the degradation and exhaustion of soils fueled by demographic pressure on arable lands and natural resources;
- the degradation of forestry resources relating also to natural vegetation and artificial woodlots (which are the primary source of fuel); and
- the human environmental degradation relating to underdeveloped and fragile sanitation infrastructure and consequent degradation of sanitary conditions.

A high proportion of Burundi's population has high vulnerability because they depend on services that are directly provided by ecosystems (food and energy), and because such a high proportion of the population (and economy) depends on agricultural and livestock sectors (noting previous climate related food crises).

A dried maize lies on a field in Kibande, in Kirundo Province, which has not seen a good crop for the past three years.



11. DFID 2009, The Economic Impacts of Climate Change in Burundi



Villagers carry rocks and sand up the hill in Gisheke, where a new community is being built after many of residents lost their homes in landslides.

HEALTH & NUTRITION

The effects of climate change have an influence on people's health, due to deterioration of water quality, water shortages or excesses, and poor air quality due to inappropriate practices and natural disasters.

These problems are more severe among children, as they are more susceptible to disease because they need more water and air and suffer more from nutritional deprivation. The main health problems related to climate change among children in Burundi are malaria, diarrheal diseases, respiratory diseases, with malnutrition as an underlying cause of child mortality.

Almost half of the Burundian households is food insecure, and 1 in 2 children under 5 are chronically malnourished according to SMART Survey 2020, one of the highest rates in the world, which is more than the WHO threshold (30% of Global Chronical Malnutrition). This nutritional situation is rooted in deep structural causes, related to food insecurity, lack of dietary diversity and insufficient access to quality complementary feeding, especially for children between 6 and 23 months. Besides, the country has limited water supply, hygiene, and sanitation capacity. Climate projections predict that these causes will be aggravated by reduced agricultural yields, deteriorating water quality and reduced water availability in some areas of the country.

According to the Humanitarian Response Plan 2021, around 2 million people are estimated to need life-saving food assistance in 2021, 15% more compared to 2020. This increase is mainly due to natural disasters that have destroyed crops, but also to delayed planting due to erratic rainfall.

The Covid-19 pandemic has also had a negative impact on food security due to the closure of borders, which has had a negative outreach on cross-border economic activities. These catastrophes cause the food stock planned for the off-peak season to run out more quickly and given that most people do not have the means to preserve food with low quality-to-zero energy access, it is not always possible for them to be able to provide food for the family throughout the year. Over the year Burundi has recorded a deterioration of the nutritional situation among children under five with a prevalence of Global Acute Malnutrition (GAM) of 6.1% compared to 5.1% in 2019 and 4.5% in 2018 (SMART survey).

One of the consequences of chronic undernutrition is stunting, a problem that has reached 52% of children under five in 2020. The number of children suffering from stunting due to chronic undernutrition, which is also an underlying factor of death for one in two children, is estimated to be at least 30%.

In terms of malaria, the year 2020 has been particularly mild compared to 2019, which was marked by many cases. However, climate projections and vulnerability studies do not show very encouraging data. Rising temperatures will mean that malaria will affect practically the entire country with more than 2.9 million cases already recorded at health facility level by July 2021. High mountain areas where temperatures are lower may be excluded.

The so-called "cholera belt" of Burundi is in the area of Lake Tanganyika and the Ruzizi plain, which are also flood-prone areas. Although the disease is more prevalent in the dry season, when water supplies are depleted, **flooding can lead to contamination of water sources** as well as the destruction of sanitation structures, putting children's health at stake and increasing the risk of cholera and other diarrhoeal diseases. The projected increase in heavy rains and flooding will also increase the risk of cholera and other water-borne diseases.

Respiratory diseases in Burundi account for 14% of child deaths and 25% of hospital visits. Most of these diseases

are caused by poor indoor air quality, mainly caused by using unimproved cooking stoves that cause air pollution. **Exposure to air pollutants through inhalation is particularly dangerous for children** because their lungs are small and developing until the age of 18 years. Their average breathing rate up to the age of 12 years is about twice as fast as that of an adult, so they inhale twice as much contaminated air.

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About 55% of households cook indoors, most commonly in rural areas, and almost all households in Burundi (98.5%) use either wood, vegetable waste or charcoal for cooking. Mothers are usually the ones in charge of cooking and children are often together with

PROTECTION

Natural disasters and other climate-related crises expose children to hazards, increasing their vulnerability and need to be considered for protection measures. The consequences of natural disasters force many children to leave their homes behind and expose them to various risks of exploitation. Orphans are even more exposed as their capacities to cope with the situation are lower as they do not count on the family as a protection network. People with disabilities are even more vulnerable, because of their dependence on others, they may often be left behind, and their disability may prevent them from accessing information sources about possible risks.



Dead maize plants stand on a field in Kibande, Burundi.



A woman prepares a meal in her restaurant, located at displacement camp in Gatumba, near Bujumbura.

People returning from neighboring countries are among the most vulnerable segments of the population because they must settle in host communities, and they usually have the bare minimum to survive. **In 2020, 39,411 returnees arrived in Burundi, and as of June 2021, 42,299 have returned to the country, mainly from Tanzania, Rwanda and DRC, of whom 57% are children¹².**

The areas to which they return in considerable numbers, such as Makamba, Kirundo and Ruyigi, are among the poorest and most chronically food and nutritionally insecure provinces in Burundi, which may put extra pressure on the already scarce natural resources that the host community relies on for survival.

12. Regional overview of the Burundian refugee population (unhcr.org)

Recent years have seen a rural exodus to Bujumbura due to the depletion of natural resources in rural areas, environmental degradation, and population growth. Urban density pushes people to settle in unplanned settlements without access to minimum services and with associated environmental risks such as areas prone to flooding, landslides, or areas close to landfills, putting the safety and health of children at risk.

Children particularly girls also face protection risks as they must walk further and further away from their homes in search for firewood and are exposed to toxic materials with the use of **paraffin and firewood as a lighting source**. These factors are significant enough for a child to drop out of school due to the inability to compete with other children.



A boy washes himself at a displacement camp which is home to people whose houses were flooded in Gatumba, Burundi.

Furthermore, progress in water, sanitation and hygiene is being undermined by natural disasters. Between 2018 and 2021, 95 water systems (sources or networks) have been affected, leaving large numbers of people without access to water, and forcing them to rely on unprotected water sources or surface water.

The resulting displacement of people due to natural disasters and climatic hazards forces people to settle in places that do not have adequate water supply and sanitation systems like in IDPs camps.

In most cases, they rely on water trucking organized by humanitarian actors, which is often insufficient to supply all the people in need with the recommended minimum water quantity.

Poor access to safe water, inadequate sanitation and poor hygiene practices are persistent causes of water-borne diseases and contribute to malnutrition in Burundi.

Floods put extra pressure on WASH services, both in terms of infrastructure, water quality and hygiene practices. Latrines overflow due to rainwater



A person fills buckets with water in a displacement camp in Gatumba, Burundi.

WASH

According to the last JMP report¹³, 9% in urban areas and 42% in rural areas do not have access to basic safe drinking water; and of those who do, there are no data available that show that the quality of the consumed water is recommended. As for basic sanitation, only 41% and 46% of the urban and rural population, respectively, have access.

intrusion, exposing people to excreta and putting their health at risk. In addition, in unprotected water sources, contamination of the groundwater can occur, leading to contamination of the aquifer.

In addition, the fact that infrastructures are affected may jeopardize acquired community-led sanitation due to the loss of latrines.

Droughts can cause water sources on which children depend for their survival to dry up. Lack of water availability forces families to prioritize water uses, and often hygiene is a lower ranking use of water, putting hygiene at risk.

13. JMP (washdata.org)

As mentioned previously, one of the main environmental risks in Burundi is the contamination of water sources, mainly due to agricultural practices and the lack of adequate sanitation. The progressive reduction of water quality may compromise access to drinking water, especially in Bujumbura, because of the difficulty of treatment due to increased turbidity or the presence of certain pollutants.

Both the drying up of water sources and their destruction due to floods or landslides force most women and girls to travel longer distances to access water. This endangers both their safety and time spent in school related activities, compromising their future opportunities, and increasing their vulnerability.

Climate events will exacerbate this situation, putting even more children at risk of disease, insecurity and deprivation of basic services.

Based on HNO, in 2021, the number of people in need of WASH assistance will increase by 10%



8-year-old Divine walks to class, barefoot, in Kibande, Burundi.

ba and Rukaramu) 78.5% of basic schools have suspended classes for at least two weeks due to floods. The deterioration or destruction of classrooms and teaching materials prevent children from going to school. More frequent and intense extreme weather events can disrupt education services on a recurrent basis and/or the ability of children to access them and/or teachers to continue teaching.

Climate impacts can lead to degradation of livelihoods, and children, especially girls, often have to supplement family income by sacrificing their education and taking on more household chores. Besides, after suffering the consequences of natural disasters, and facing the costs of rehabilitation, money for education may no longer be a priority for the family.

On the other hand, population migration sometimes forces classrooms to become places of refuge for the displaced people, which prevents the normal functioning of the school, resulting in a delay in the school year, which the children (host community and IDPs) will suffer as a consequence.



Children attending school in Kibande, Burundi.

compared to 2020. This increase is based on the projection of further repatriations, the continuation of the impacts of climate shocks in 2020 and those occurring in 2021 and the socio-economic impact of Covid-19.

EDUCATION

Although the gross enrolment rate for the 2019/2020 school year rose to 121.7%, in the 2019-2020 school year, natural disasters interrupted the school year for 110,000 children in Burundi and 1609 classrooms were affected. In some areas in Bujumbura province (Gatum-

Despite the problems that climate change may pose for the education of children and adolescents, it is also an opportunity to improve the adaptation of families, to gain effective participation of youth and adolescents to face impact of climate change and the creation of youth employment.

Children and adults, especially education duty bears, need to be informed about the risks associated with climate change and will need adequate problem-solving skills as well as knowledge about environmental sustainability. Teachers and school management committees need be equipped with relevant competencies to systematically integrate climate change in their daily activities, including having running disaster risk reduction plans.

✦ SOCIAL POLICY

Climate change is an equity issue, unequally affecting the people who depend most on natural resources, affecting children and adolescents the most. Poverty increases environmental degradation, and in turn exposes the most vulnerable populations, making them less resilient. In Burundi, **78% of children suffer multiple deprivations, which will be increased by climate change**, so tackling climate change is vital to building a more sustainable future for children.

Most rural households in Burundi depend on agriculture for their livelihoods, one of the sectors most affected by climate change, largely because the main crops are poorly adapted to changing climatic conditions, but also because investment in the modernization of the sector is very limited. **The lack of livelihood diversification and the level of poverty do not allow most households to cope with recurrent shocks due to climate effects, and they do not have the capacity to implement an adaptation strategy.** The doubling



A woman sells vegetables at a displacement camp in Gatumba, Burundi.

of the population, as well as the growth of the capital Bujumbura, also poses several environmental and economic threats, especially in terms of access to social services, and the "urbanization" of poverty and deprivation.

This weakness in livelihoods hampers the ability to save, thereby decreasing household resilience.

The lack of quick access to cash prevents them from coping with disasters and often forces them to divert their budget from other activities, for example, preventing good access to education for children or to health systems when needed. As a result, the greatest risk could be an increase in the number of children in need. Few people are covered by safety net systems, which are a way to be more resilient when a shock occurs.

Social protection system in Burundi is too weak to help most affected households to adopt good coping strategy when it is necessary.

✦ GENDER

Burundian women play an essential role in household food and nutrition security and water collection, yet in rural areas women are often not involved in the management of household assets and income. As land for agricultural purpose is the primary source of income for most households in Burundi, less than 15% of land registered in the name of individuals is registered in the name of a woman¹⁴, which forces them to rely on their husband's land, if they are married, to feed the family. With restricted access to land, the women has therefore limited economic resources that prevent her from decision making related to the nutrition and education of her children.

The effects of climate change are already reducing agricultural productivity, and this, coupled with rapid popula-



A woman hangs her laundry to dry in an internally displaced camp in Gatumba,

tion growth, will pose a severe problem for feeding the entire population of Burundi in the future. The vulnerability of women and their children will increase as it will be difficult for them to ensure that their families have access to minimum services if they do not have access to an income or at least a piece of land to cultivate. This situation is even more complicated for single mothers or widows who are totally self-dependent.

In terms of gender-based violence, 4% of women and girls suffer violence in accessing basic services and 4% while accessing water and food. Due to climate change, this situation is likely to increase in significance as access to basic services is expected to worsen and distances to fetch water to become longer.

14. Rapport World Bank, ZOA/Royaume des Pays Bas, La Gouvernance foncière au Burundi, 2017, <http://documents.worldbank.org/curated/en/941011504864703338/pdf/119610-WP-P095390-FRENCH-PUBLIC-7-9-2017-9-33-21-BurundiRapportfinalFrench.pdf>



4 Life cycle analysis

CLIMATE CHANGE AMPLIFYING EFFECT TO EXISTING PROBLEMS

This photograph, taken on 2 March 2021, shows a damaged sunflower field in Kibande, Burundi.

Climate change impacts throughout the life cycle



MATERNAL AND NEONATAL (1000 DAYS)

PREGNANCY

HIGHER EXPOSITION TO VECTORAL DISEASES: *Malaria.*

- Increased mother's morbidity and mortality.



HIGHER EXPOSITION TO CHOLERA, DIARRHOEAL DISEASES: *lack of water, polluted water.*

- Increased mother's morbidity and mortality.



HIGHER EXPOSITION TO INDOOR AIR POLLUTION: *use of dirty energy sources.*

- Respiratory diseases weakening, long-lasting damage to health and well-being, foetal loss, pre-term delivery, lower birth weight, and infertility.



FOOD INSECURITY: *soil degradation, crop depletion, lack of food diversity, livestock die, income drops, increased food prices.*

- Increased undernutrition, distress (aggravated for single mothers).



LONG DISTANCES TO FETCH WATER, WOOD AND CULTIVATE THE FIELDS: *depletion of resources, water contamination, reduces crops yield.*

- Exposition to insecurity,
- Reduced time for other activities.



NATURAL DISASTERS: *flood, drought and landslides, violent winds.*

- Risk of death and injuries,
- Forced displacements, exposure to violence, sexual abuse and labor exploitation,
- Increased risk of premature labor and risk of miscarriage, increased financial burden, lack of social support (access to health, education, sanitation),
- Limited access to ante and neonatal care, lack of social network (family, community),
- Increased exposure to climate risks,
- Risk of death.



CHILDBIRTH AND NEWBORN 0-2 YEARS

HIGHER EXPOSITION TO VECTORAL DISEASES: *Malaria.*

- Increased children's morbidity and mortality.



HIGHER EXPOSITION TO CHOLERA, DIARRHOEAL DISEASES: *lack of water, polluted water.*

- Increased children's morbidity and mortality.



HIGHER EXPOSITION TO INDOOR AIR POLLUTION: *use of dirty energy sources*

- Respiratory diseases, child morbidity, debilitated baby, lower birth weight.



FOOD INSECURITY: *soil degradation, crop depletion, lack of food diversity, livestock die, income drops, increased food prices.*

- Increased several forms of malnutrition.



LONG DISTANCES TO FETCH WATER, WOOD AND CULTIVATE THE FIELDS: *depletion of resources, water contamination, reduces crops yield.*

- Compromised parental care.



NATURAL DISASTERS: *flood, drought and landslides, violent winds.*

- Risk of death and injuries, forced displacements,
- Risk of family abandon and family separation,
- Increased lack of birth registration, increased violence (abuse and neglect),
- Risk of lack land tenure (single mother's kids),
- Lack of access to health care and sanitation services,
- Loss of land rights (children of single mothers and displaced persons),
- Compromised ECD due to displacement.





DROUGHT



TEMPERATURE RISE



FLOOD



HEAVY RAIN



AIR POLLUTION

EARLY CHILDHOOD DEVELOPMENT

OLDER CHILDREN

INFANTS 3-5 YEARS

HIGHER EXPOSITION TO VECTORAL DISEASES: *Malaria*.

- Increased children's morbidity and mortality.



HIGHER EXPOSITION TO CHOLERA, DIARRHOEAL DISEASES:

lack of water, polluted water

- Increased children's morbidity and mortality.



HIGHER EXPOSITION TO INDOOR AIR POLLUTION:

use of dirty energy sources.

- Respiratory diseases, weakened immune system, child morbidity.
- Compromised brain development.



FOOD INSECURITY:

Soil degradation, crop depletion, lack of food diversity, livestock die, income drops, increased food prices.

- Increased several forms of malnutrition,
- Compromised physical and cognitive development.



NATURAL DISASTERS: *flood, drought and landslides, violent winds.*

- Risk of death and injuries,
- Forced displacements,
- Difficult access to basic social services including health and schooling (destruction of classrooms and learning materials),
- Compromised ECD,
- Early domestic work,
- Exposition to sexual abuse.



YOUNG CHILDREN 5-8 YEARS

HIGHER EXPOSITION TO VECTORAL DISEASES: *Malaria*.

- Increased children's morbidity.



HIGHER EXPOSITION TO CHOLERA, DIARRHOEAL DISEASES:

lack of water, polluted water.

- Increased children's morbidity.



HIGHER EXPOSITION TO INDOOR AIR POLLUTION:

use of dirty energy sources.

- Respiratory diseases, weakened immune system, child morbidity.



FOOD INSECURITY: *soil degradation, crop depletion, lack of food diversity, livestock die, income drops, increased food prices.*

- Increased several forms of malnutrition,
- Delayed learning, amorphous physical development of the child.



LONG DISTANCES TO FETCH WATER, WOOD AND CULTIVATE THE FIELDS:

- Increased workload,
- School drop-out.



NATURAL DISASTERS: *flood, drought and landslides, violent winds*

- Risk of death and injuries,
- Forced displacements,
- Loss of viable and healthy educational environment,
- Increased child labor,
- Risk of sexual exploitation and abuse,
- Family separation, risk of begging and becoming a street child, interruption of the school year or school dropouts (destruction of classrooms and learning materials),
- Human trafficking.



SCHOOL-AGE CHILDREN 8-14 YEARS

HIGHER EXPOSITION TO VECTORAL DISEASES: *Malaria*.

- Increased children's morbidity, school drop-out.



HIGHER EXPOSITION TO CHOLERA, DIARRHOEAL DISEASES:

lack of water, polluted water.

- Increased children's morbidity,
- School drop-out.



HIGHER EXPOSITION TO INDOOR AIR POLLUTION:

use of dirty energy sources

- Respiratory diseases, weakened immune system, child morbidity.



LONG DISTANCES TO FETCH WATER, WOOD AND CULTIVATE THE FIELDS:

- Increased workload, child labor,
- School drop-out.



NATURAL DISASTERS: *flood, drought and landslides, violent winds.*

- Risk of death and injuries,
- Forced displacements,
- Child labor,
- Risk of sexual exploitation and abuse,
- Loss of viable and healthy educational environment,
- School dropouts (destruction of classrooms and learning materials),
- Risk of begging and becoming a street child, human trafficking,
- Issues with menstrual hygiene and disruption of services in sexual and reproductive health,
- Risk of unwanted pregnancy, increased burden of family responsibility children (head of household),
- Major risk of conflict with law,
- Risk of getting involved in illegal activities (armed groups, prostitution, criminality).



ADOLESCENTS (GIRLS AND BOYS) 15-20 YEARS

HIGHER EXPOSITION TO VECTORAL DISEASES: *Malaria*.

- Increased children's morbidity,
- School drop-out, compromised future, inability to work,
- Reduction in economic income.



HIGHER EXPOSITION TO CHOLERA, DIARRHOEAL DISEASES:

lack of water, polluted water.

- Increased children's morbidity,
- School drop-out compromised future, inability to work,
- Reduction in economic income.



HIGHER EXPOSITION TO INDOOR AIR POLLUTION:

use of dirty energy sources.

- Respiratory diseases, weakened immune system, morbidity.



LONG DISTANCES TO FETCH WATER, WOOD AND CULTIVATE THE FIELDS:

- Increased workload, child labor, school drop-out,
- Risk of sexual exploitation and abuse.



NATURAL DISASTERS: *flood, drought and landslides, violent winds*

- Risk of death and injuries,
- Forced displacements, child labor,
- Risk of sexual exploitation and abuse, juvenile delinquency, begging and street youths,
- Lack of job opportunities, school dropouts (destruction of classrooms and learning materials, family financial support),
- Risk of unwanted pregnancy,
- Increased burden of family responsibility children (head of household),
- Risk of social marginalization,
- Major risk of conflict with law,
- Risk of getting involved in illegal activities (armed groups, prostitution, criminality)
- Increased risk of social marginalization.





5

National strategies and plans



Children carrying tools walk past landslides near Gisheke, Burundi

- The Government of Burundi has a **National Climate Change Policy** from 2013 as well as a strategy and an implementation plan.
- In 2007, Burundi developed the **NAPA (National Adaptation Plan)**, which will be replaced by the NAP that is currently being elaborated.
- **National Communication** (NCs) offers countries the opportunity to contribute with technically sound studies and information that can be used for designing mitigation and adaptation measures, and project proposals that can and will help increase their resilience to the impacts of climate change¹⁵. Burundi has submitted three communications, from 2001, 2010 and 2019 respectively.
- In addition, Burundi ratified the **Paris Agreement and developed the first INDC in 2015**, which has just been evaluated and which shows that despite progress, some of the objectives have not been achieved. Currently, the government of Burundi and other stakeholders are working on the elaboration of the next NDC to be submitted before the COP26 which will take place in November 2021.
- UNICEF is **working to be part of the key documents** to ensure that climate policies consider the rights of children.

15. National Communications (NCs) | UNDP Climate Change Adaptation (adaptation-undp.org)

6

Conclusions

A social vulnerability analysis that considers climate risks, which could be combined with a risk-based study,

→ is recommended for a good understanding of the actual impacts of climate change on the different spheres affecting children.

Knowing the perception of the community, with an emphasis on children and adolescents, will allow us to better target our activities and adapt them to the real needs. An anthropological survey will be carried out to understand the perception of the community and the endogenous coping measures they use.

→ This will serve as a basis for developing a communication and awareness-raising plan, as well as for integrating behavioral change aspects into the projects.

The study on the effects of climate change on water resources and WASH systems will provide a basis for understanding other issues such as the partial effects of malnutrition or health.

→ This data in combination with other existing data in the country, such as the climate risk studies that IOM is carrying out, could provide interesting results to prioritize UNICEF's actions.



A child stands near a water pump surrounded by floodwaters in Gatumba, located near Bujumbura in Burundi.



A woman carrying a bucket on her head walks in Gisheke, where a new community is being built after villagers lost their homes in landslides.

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